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# THE SURGICAL TREATMENT OF EXOPHTHALMOS*

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Exophthalmos of slight degree may occur in high degrees of myopia, but when more marked it is commonly caused by the growth of soft tissue or bony tumors in the back of the orbit, and rarely it may be produced by arteriovenous aneurysm. The only constitutional disease causing the condition is exophthalmic goiter. The peculiar staring with widening of the palpebral fissure caused by myocardial disease is often confused with exophthalmos. In this way toxic goiter may be confused with true hyperthyroidism, as pointed out by Plummer.[1]

Exophthalmic goiter was described by various observers in the latter half of the eighteenth century, notably by Morgagni[2] and Parry,[3] followed in the first half of the nineteenth century by further writings of Parry, Flajani,[4] Graves,[5] Basedow[6] and numerous others. Each described the symptoms of hyperthyroidism with sufficient accuracy to leave no doubt that their observations were made on the same type of cases.

It was Graves, however, in his lectures in 1835, who laid the most stress on exophthalmos. Many observers do not consider the condition to be true Graves' disease unless the protrusion of the eye is marked enough to be easily recognized. This was correct, since early observers based their diagnoses on symptoms unsupported by pathologic evidence. If the other symptoms were present, it was considered pseudo-Graves' disease until exophthalmos occurred. Usually, however, the staring (of Stellwag), and the widening of the palpebral fissure (of Dalrymple) were accepted in lieu of exophthalmos.

The eye symptoms in hyperthyroidism are so striking in character and often so distressing to the mind of the patient that they have been made the subject of frequent observation. In extreme cases, erosions and ulcers of the cornea occur. I have observed two patients totally blind from this cause, and several patients blind in one eye. The lagging behind of the lids, which follow the movement of the eyeball with a jerking motion, was noted by Graefe[7]. Stellwag[8] noted the staring without winking for much longer intervals than common. Dalrymple[9] noted the unnatural widening of the palpebral fissure, and Möbius[10] observed that when exophthalmos was extremely marked, diplopia occurred on near vision. The exophthalmos was ordinarily considered a congestion of the venous plexus of vessels at the back of the orbit and therefore connected with the circulatory disturbance of the disease.

The late Dr. Landström,[11] of Stockholm, has given a most acceptable version of the development of exophthalmos in hyperthyroidism. He has shown that a previously undescribed microscopic muscle in streaked layers occurs in the fascia behind the eyeball and about the globe.

This irregular muscular sheath is attached forward to the lids and anterior orbital fascia. The muscle-bundles are irregularly placed and are scarcely to be distinguished macroscopically, but may readily be found microscopically. They are under the control of the sympathetic nervous system and their function is to resist the action of the four active orbital muscles which otherwise draw the eyeball back. When irritated, they draw the eyeball forward and the lids backward. This muscular system is additional to the well-known muscle of Müller.[12]

It was noted in 1873 that the irritation of the sympathetic ganglion caused dilatation of the iris with some protrusion of the globe. The experiments of Claude Bénard[13] confirmed these observations and showed that by the irritation of the cervical sympathetic the eyeball is pressed forward and to a certain degree the closure of the eyelids is prevented. It is therefore doubtless the sympathetic which innervates these muscles, and an irritation of its fibers doubtless affects this muscle first, the symptoms observed by Stellwag, Graefe and Dalrymple being produced as a direct result of such irritation.

Wiener[14] showed that irritation of the sympathetic ganglion caused increased intra-ocular tension, while its destruction caused lower tension for a time. This led to the operations on the sympathetic for the cure of glaucoma by lowering the tension and causing contraction of the iris.

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* Read before the Section on Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Plummer, H. S.: The Clinical and Pathologic Relationships of Hyperplastic and Non-Hyperplastic Goiter, The Journal A. M. A., Aug. 30, 1913, p. 650.

[2] Morgagni: De sedibus et causis morborum, Cap. xxi, Art. 36; Cap. xvii, Art. 19; Cap. xxiii, Art. 4 and 6.

[3] Parry: Collections from the Unpublished Medical Writings of the Late Caleb Hillier Parry, London, 1825, Elements of Pathology and Therapeutics, 1815.

[4] Flajani: Collezione d' osservazioni, e reflessioni di chirurgia, p. 270.

[5] Graves: London Med. and Surg. Jour., May 23, 1835 (Repr. System of Clinical Medicine, Dublin, 1843).

[6] Basedow: Wchnschr. f. d. ges. Heilk., 1840, p. 13.

[7] Graefe: Arch. f. Ophth., 1857, iii, 278.

[8] Stellwag: Wien. med. Jahrb., 1869, p. 25.

[9] Dalrymple: Jour. Morbid Anat., 1828, p. 43.

[10] Möbius: Schmidt's Jahrb., 1886, No. 210, p. 237.

[11] Landström: Ueber Morbus Basedowii, 1907.

[12] Müller: Ztschr. f. Zool., 1858; Würzb. Verhandl., 1859.

[13] Bénard: Contribution à l'étude du goitre exophthalmique, pathogénie, traitement, Paris, Thèse, 1882.

[14] Wiener: Ueber einen Fall von Morbus Basedowii mit Tabes incipiens, Berlin, 1891, p. 31; Ueber die Basedowsche Krankheit, 1868.

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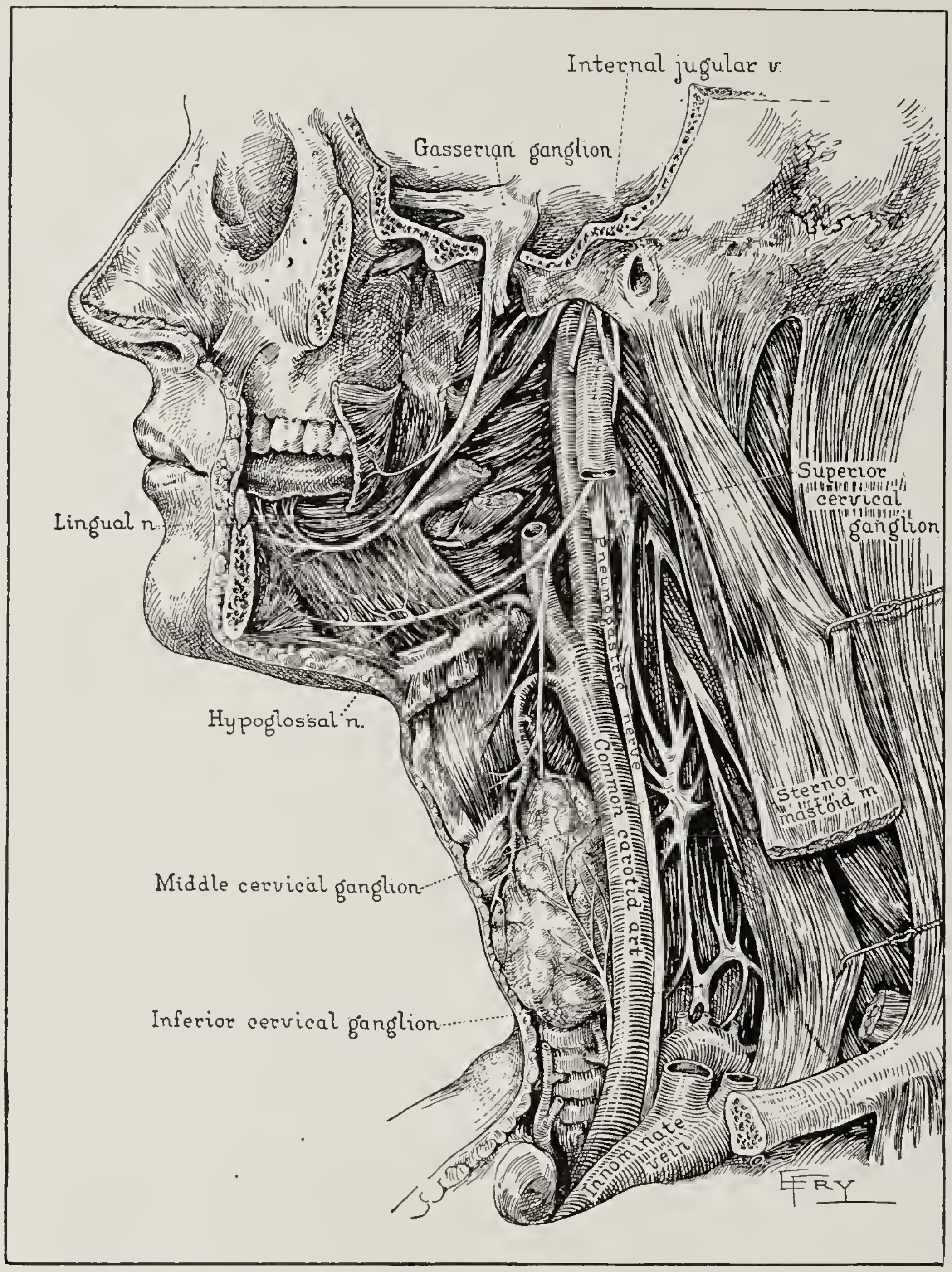

Fig. 1.—Showing position of superior, middle and inferior cervical ganlions.

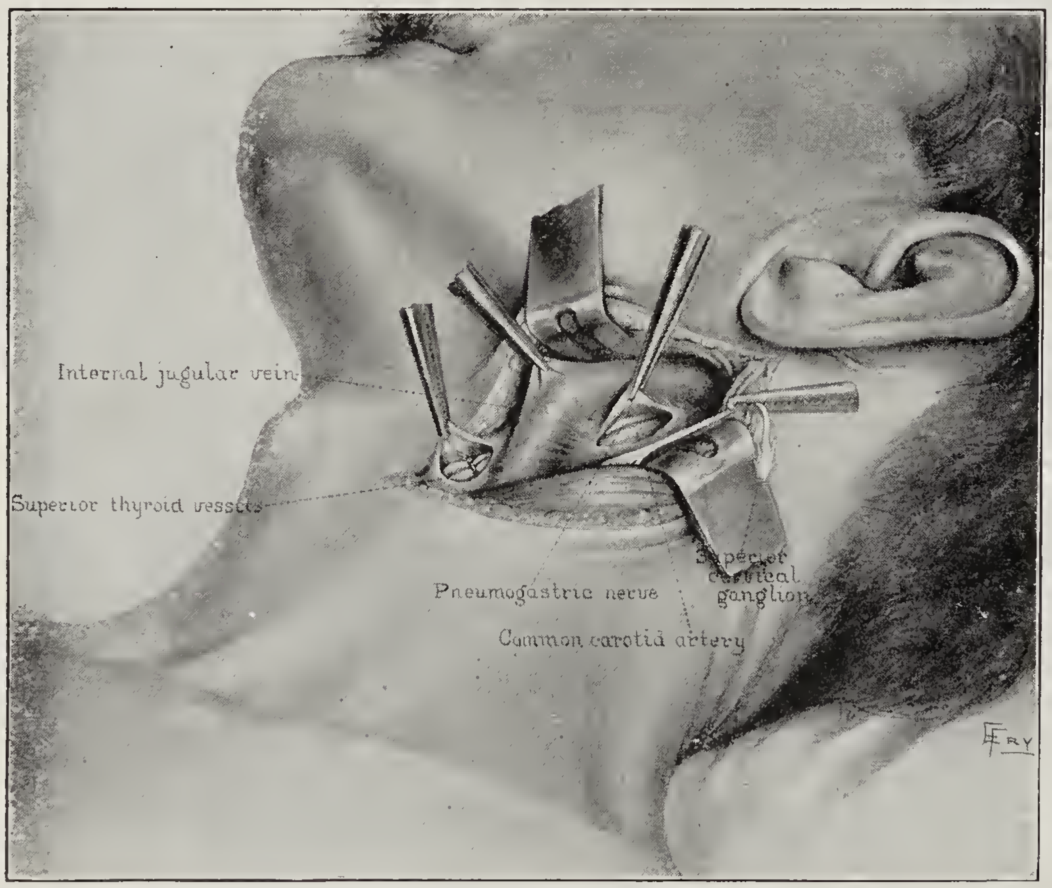

Fig. 2.—Shows incision into the sheath of the carotid vessels and exposure of pneumogastric nerve. Dissection of superior cervical ganglion and superior thyroid vessels ligated.

Trousseau[15] believed the cervical sympathetic to be involved in exophthalmic goiter, and an operation which would relieve this extremely marked feature of the disease was looked on by him as being at least theoretically advisable.

Jaboulay,[16] in 1896, was the first to introduce an operation on the sympathetic ganglion for exophthalmic goiter. His most enthusiastic disciples were Abadie and Jonnesco. While quite a number of operations on the cervical sympathetic for hyperthyroidism have been performed at a few clinics, especially Jonnesco's, and a few scattered operations have been performed at many clinics, the relief in general is apparently about the same as that which follows ligation of the vessels and injection of boiling water into the gland. The reduction of the exophthalmos is often very marked.

In 1906, before a meeting of French surgeons, Abadie[17] stated that this operation produced perfect cures while partial extirpation of the thyroid removed only part of the symptoms, and did not remove the exophthalmos. He maintained that sympathectomy would surely cause the disappearance of the exophthalmos.

Balacescu[18] believes that the removal of the whole of the cervical sympathetic is indicated and that no bad results follow the operation.

It is very certain that while the surgical ablation of the greater part of the thyroid cures in the majority of cases of hyperthyroidism, and even relieves eye-symptoms in most cases, yet in numerous instances this one feature remains to distress the patients when otherwise they feel very well.

Some of these patients are greatly improved by a secondary operation which consists of scalping the edge of both lids from a quarter to a third of an inch at the outer canthus and uniting the margins of the lid. The Jaboulay operation, that is, a cervical sympathectomy of the superior and sometimes of the middle ganglia (Fig. 1) for the purpose of reducing exophthalmos and securing a slight ptosis of the upper lids has been used in our clinic. In cases of hyperthyroidism in which the exophthalmos is extreme and the nervous symptoms out of proportion to the size of the thyroid, the sympathetic ganglia are removed and in the same incision the superior thyroid vessels are ligated. This operation can be done with novocain as a local anesthetic, but is preferably made with a general or combined anesthetic. Incisions are made in the lines of the natural creases in the neck opposite the bifurca-

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15. Trousseau: A Report on Paper by Hiffelsheim before Paris Academy of Medicine in 1860; Cliniques, v, 571.

16. Jaboulay: Bull. de l'Acad. de méd., 1897, xxxviii.

17. Abadie: Traitement chirurgical du goitre exophthalmique, Cong. franç. de chir., 1906.

18. Balacescu: Arch. f. klin. Chir., 1902, p. 59.

tion of the carotid (Fig. 2). The sternomastoid is drawn outward and a blunt dissection is made down to the jugular and carotid veins, which are then drawn inward. The posterior sheath of fascia inclosing these vessels is opened that the vagus nerve may be kept under observation since this nerve is bulbous above this point and might be confused with the sympathetic.

Under normal conditions the sympathetic ganglion is one-eighth to one-fourth of an inch wide. Many branches lead from it on either side. The connecting branches are divided, the upper part of the ganglion torn off or cut and the lower portions of the nerve cut or torn off at the midlde ganglion unless the middle ganglion is also removed. The wound is closed without drainage.

When the sympathetic ganglion is thus removed with the middle cervical ganglion, the result is very good in securing relaxation of the eyeball and slight ptosis of the upper lid with great general improvement of symptoms. In some cases in which the sympathetic does not seem to occur as a ganglion, but in which fewer and larger communicating branches are found, the result has not been so good, some patients receiving but slight benefit from the operation, the operation seemingly being incomplete. The ease with which it is performed and the excellent results which frequently follow its employment, however, warrant its consideration for the relief of certain patients suffering from extreme degrees of exophthalmos.

In our cases in which the vessels of both upper poles were ligated in addition to the sympathectomy the primary results were good, but the time since operation is yet too short to warrant a positive statement as to the permanency of cure. Time will show just how extensive resections of the sympathetic may be made without causing complications.

## ABSTRACT OF DISCUSSION

Dr. Dean Lewis, Chicago: Notwithstanding the amount of work that has been done on exophthalmic goiter during the past ten years, we are still in doubt concerning the causes of the thyroid hyperplasia which gives rise to the symptoms, and which after it develops dominates the clinical picture. One of the most bothering symptoms and one which remains most frequently after operation is exophthalmos which in some instances is so marked as to be actually disfiguring and may lead to such exposure of the cornea that ulceration follows. The earlier operations on the cervical sympathetic were followed by marked improvement in this symptom, and the mechanism of the exophthalmos, as demonstrated by Landstrom, furnishes a basis for the operation suggested by Dr. Mayo. We are beginning to realize that all the ductless glands are intimately related and that in cases of ductless gland disarrangement we are dealing with a pluriglandular syndrome. We can expect ideal results when we can bring about a readjustment of these glands. At present we are not doing this, as would seem to be indicated by the frequency with which some symptoms persist even after most successful thyroidectomy. This operation controls the exophthalmos with a greater degree of certainty than any yet suggested, but should be reserved for the bad cases which are actually disfiguring or may result in ulceration of the cornea.

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**Cleanliness and Progress.**—Truly our changed point of view denotes progress. Once cleanliness was a virtue; now the lack of it is a crime.—*Bull. Dept. Health, New York.*

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# APERIOSTEAL AMPUTATION*

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NEW YORK

In amputations there are four methods of treating the bone: periosteal, osteoplastic, tendinoplastic and aperiosteal. Modern surgical technic demands that both diaphyseal and epiphyseal amputations must yield stumps capable of directly supporting the whole weight of the body.

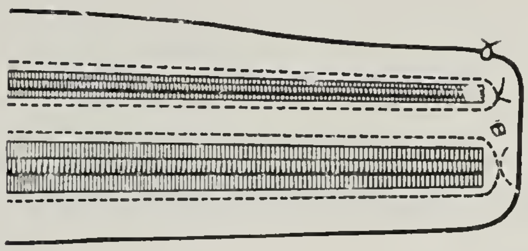

Fig. 1.—Periosteal method of treating the bone.

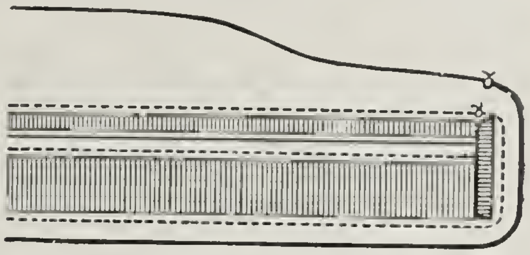

Fig. 2.—Osteoplastic method of treating the bone.

In the periosteal method (Fig. 1) the periosteum is divided at a sufficient distance below the saw-line to provide a covering for the raw bone. The functional results of this method cannot be compared with those obtained by the osteoplastic or the aperiosteal methods. In diaphyseal amputations an end-bearing stump is rarely obtained, and in amputations through the shaft of the femur the results are notoriously bad. Cramer[1] in a series of 96 cases of amputations through the thigh and leg found 70 bad stumps, and only 2 capable of bearing direct weight. In a personal study of 13 amputations through the thigh I found only 1 end-bearing stump. These amputations were performed in New York clinics, and the majority of them by our ablest surgeons; the fault lay not in the technic of the operator, but in the method. Of these cases

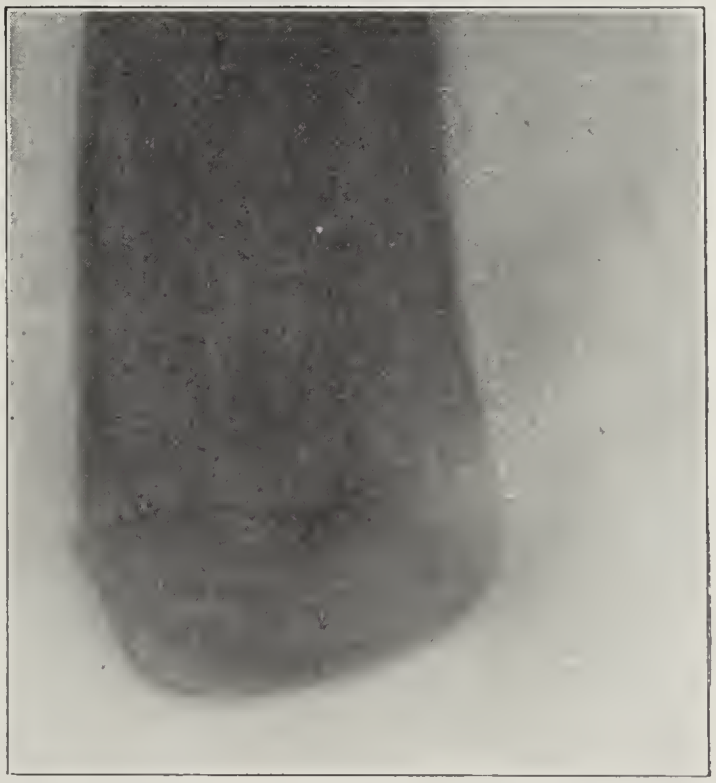

Fig. 3.—Result after a Gritti-Stokes osteoplastic amputation of the thigh. A good end-bearing stump with no bone atrophy.

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Cramer: Klinischer Bericht über 96 Diaphysenstümpfe des ober resp. Unterschenkels, Arch. f. Orthop., Mechanotherapie und Unfallchir., 1905, iii, 101.

12 healed by primary union and 1 by secondary intention; all had the usual artificial limbs applied at the end of three months. Bräunig[2] in 122 amputations of the thigh and leg found only a few with end-bearing stumps. Salomon[3] and others report similar results.

In the osteoplastic (Fig. 2) the raw bone surface and the medullary canal are covered by a bone flap whose periosteum has a normal connection. In this way the possibility of painful bony outgrowths, developing from the periosteum and marrow, is avoided. Given ideal conditions this method yields splendid results (Fig. 3), but it requires considerable practice to cut and fit the bone flap. In traumatic cases and cases of doubtful asepsis it is unsuited. If infection of the wound or necrosis of the bone flap occurs the result will probably be a failure. Pirogoff's[4] operation (1853) furnished an osteoplastic end-bearing stump. Contrary to what most writers have asserted, Pirogoff attached only a secondary importance to the osteoplastic feature; his main endeavor was to provide a procedure which would overcome the difficulties encountered in dissecting the heel flap of a Syme operation. Gritti[5] in 1857 introduced his osteoplastic transcondylar amputation. In spite of the favorable stumps obtained by these methods, surgery was slow to grasp the underlying principle, and it is to the efforts of Bier[6] and his pupils that the development of the modern osteoplastic methods is due. Bier's original view, that the raw surface of the bone and medullary canal remain tender, was erroneous; he now accepts that in a large measure the tenderness is due to the irregular bony outgrowths from the periosteum and endosteum of the medullary canal. Binnie[7] has modified Bier's method and uses a free bone transplant; this simplifies the technic and, according to Binnie, yields equally good results.

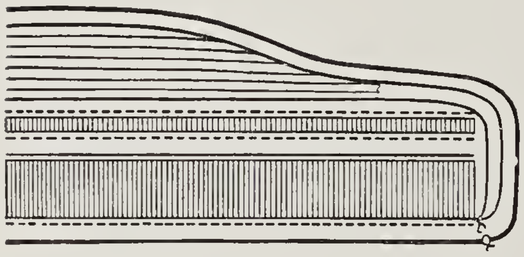

Fig. 4.—Tendinoplastic method of treating the bone.

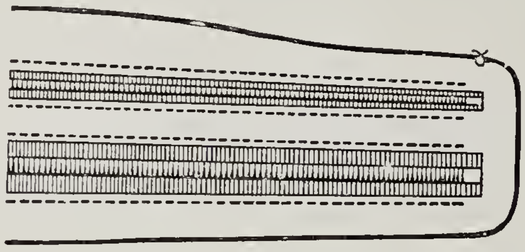

Fig. 5.—Aperiosteal method of treating the bone.

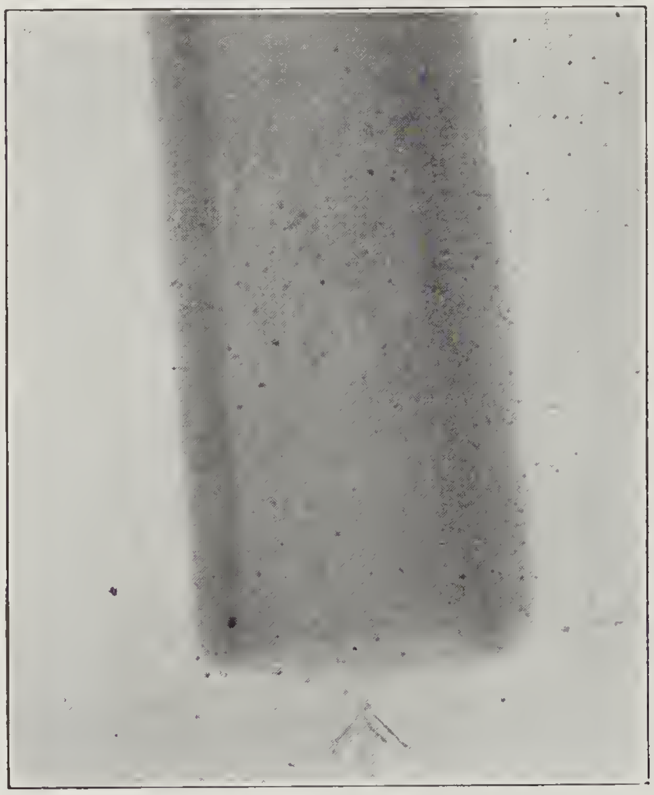

Fig. 6.—Result of an aperiosteal amputation of the thigh in a man aged 64. Note smooth stump end and absence of bone atrophy. Patient was able to bear his whole weight on the end of the stump within fourteen days, and walked on a provisional peg leg within eighteen days.

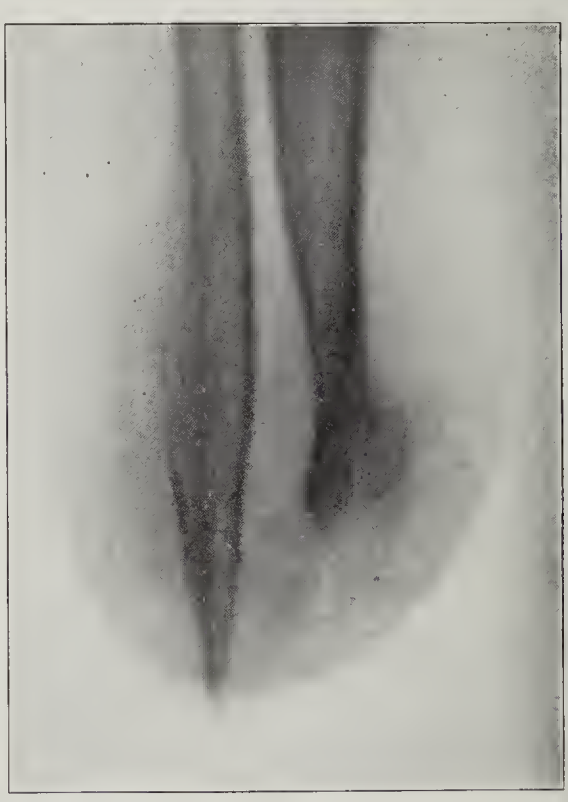

Fig. 7.—Painful, conical stump resulting from periosteal amputation of the leg.

The tendinoplastic method (Duval-Wilms[8]) aims to cover the sawn bone by a broad tendon which is stitched to the periosteum (Fig. 4). This method is of limited application, although good functional stumps can be obtained at the knee, ankle and humerus, where the quadriceps tendon, Achilles tendon and triceps are available. It is of special value as a covering in the finger and metacarpal amputations.

The aperiosteal method aims to produce a painless, supporting stump, capable of early functional use (Figs. 5 and 6). Hirch's[9] investigation (1899) showed that in the old method of stripping up a periosteal cuff to cover the bone, many shreds of periosteum resulted. These shreds, still retaining their

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2. Bräunig: Uber die Unterschenkelamputationen der Rostocker Universitätsklinik, Verhandl. d. nord-westdeutsch. Chir., October, 1911; Zentralbl. f. Chir., 1911, p. 1630.

3. Salomon: Die heute gebrauchlichste Methode der Unterschenkel-amputation, Verhandl. d. nord-westdeutsch. Chir., October, 1911; Zentralbl. f. Chir., 1911, p. 1628.

4. Pirogoff: Osteoplastische Verlängerung der Unterschenkelknochen bei der Exarticulation des Fusses, Leipsic, 1854.

5. Gritti: Ann. Univ. d. Med., Milan, 1857; Cong. méd. de toutes des nations (1869) Bologne, 1870, p. 357.

6. Bier: Ueber plastische Bildung eines künstlichen Fusses aus der mit ihren weichteilen bedeckten Tibia nach tiefen Unterschenkelamputationen., Deutsch. Ztschr. f. Chir., 1892, xxxiv, 436; Ueber plastische Bildung tragfähiger Stumpfe nach Unterschenkelamputation, Verhandl. d. deutsch. Gesellsch. f. Chir., 1893, ii, 1; Weitere Mitteilungen über tragfähige Amputations-stumpfe im Bereich der Diaphyse, Arch. f. klin. Chir., 1895, i, 356; Operationstechnik für tragfähige Amputationsstümpfe, Zentralbl. f. Chir., 1897, p. 833; Samml. klin. Vortr., N. F., 1900, p. 264.

7. Binnie: Amputation of Leg, Quatrième Cong. de la Soc. Internat. de Chir., 1914.

8. Wilms: Zentralbl. f. Chir., 1902, p. 721; Verhandl. der deutsch. Gesellsch. f. Chir., 1904, i, 356.

9. Erzielung tragfähiger Stümpfe durch Nachbehandlung, Deutsch. med. Wchnschr., 1899, p. 776; Vorstellung eines Unterschenkelamputirten mit (durch Nachbehandlung) tragfähigen Stumpf und neuer Prothese, Verhandl. d. deutsch. Gesellsch. f. Chir., 1900, ii, 358; Einige Bemerkungen über die Behandlung der Gliederstümpfe, Deutsch. med. Wchnschr., 1908, xxxiv, 464.

primitive osteogenetic function, produced painful, bony spikes which interfered with the early functional use of the stump (Figs. 7, 8, 9 and 10). For this reason Hirsch reintroduced the Celsian method of dividing the bone and periosteum at the same level, adding to it massage, exercise and early functional use. Bunge[10] (1900) went a step further and advocated the removal of 1 cm. of the periosteum, and the scraping out of the bone-marrow for a similar distance. The correctness of Hirsch's and Bunge's views are substantiated by von Eiselsberg,[11] Kocher,[12] Moskowicz, Witzel[13] and Ranzi.[14] This method had an extensive practical test in the Russian-Japanese and Balkan wars. At the International Surgical Congress of 1914, Ranzi, from von Eiselsberg's clinic, reported on the results in aperiosteal amputations of the leg. In 75 cases, between the years 1901-1913, the end-results on 40 of these were obtained; 25 healed by primary union, 15 by secondary intention. In 31 cases end-bearing stumps were obtained, in 7 cases the results were fair, in 2 cases the results were not end-bearing. In the 15 cases which healed by secondary intention, 10 were completely satisfactory, 4 were fair and only 1 a failure. The ages of the patients varied from 20 to 80 years. The remarkable feature of this report is the number of successful stumps which were obtained in the infected cases. It is in just these cases that the periosteal method fails, as the inflammation leads to the production of exostoses.

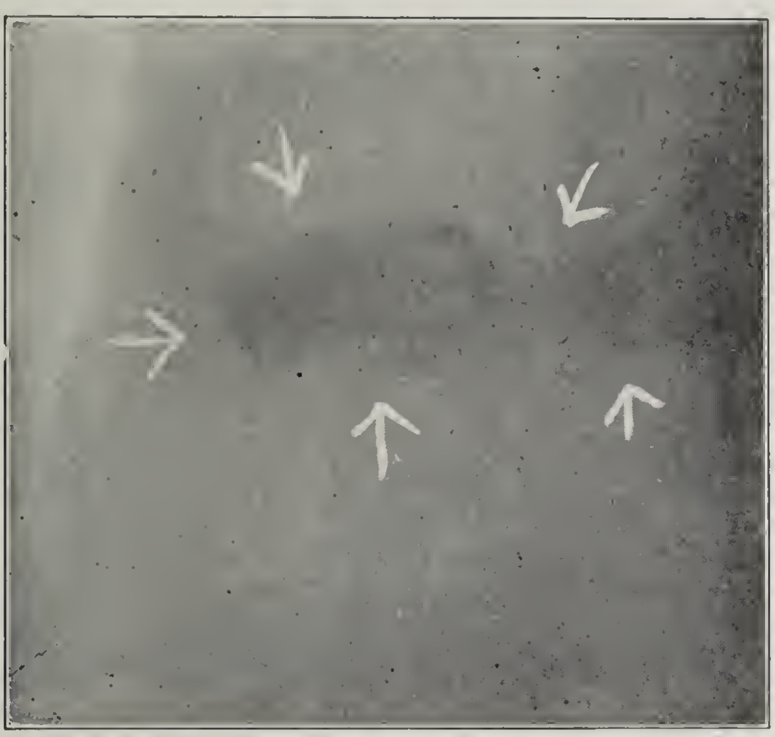

**Fig. 8.—Subperiosteal disarticulation of the hip. Patient was unable to wear artificial leg on account of the pain caused by the bony spicules. Note bone atrophy, result of disuse.**

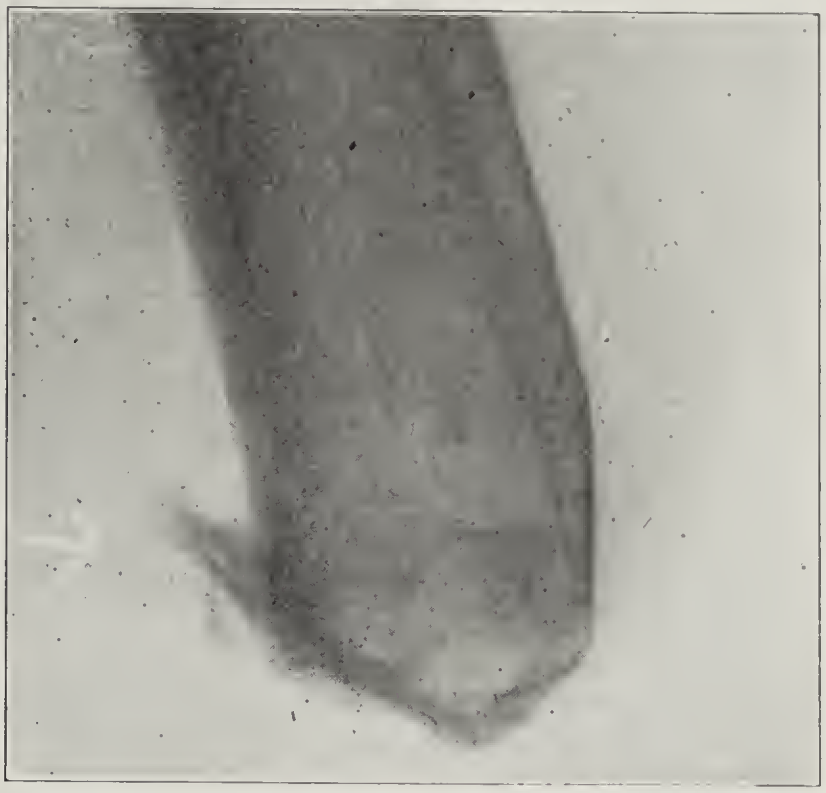

**Fig.** 9.—Painful stump due to bony spicules resulting form periosteal amputation of the thigh.

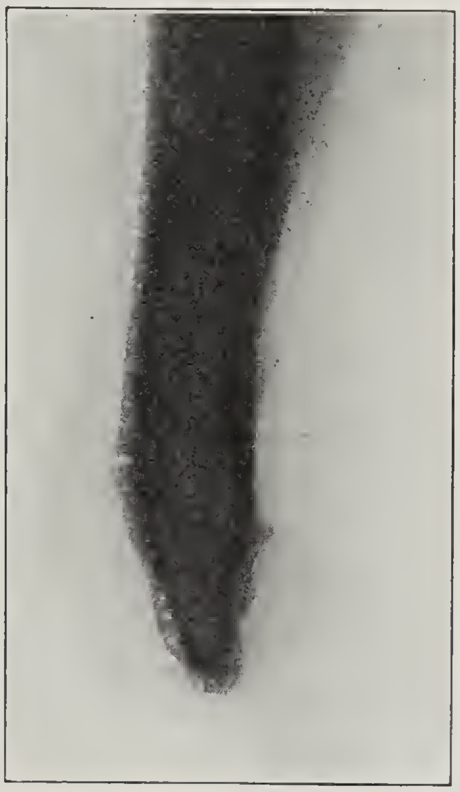

Fig. 10.—A painful conical stump after periosteal amputation of the thigh. Patient was unable to bear any weight.

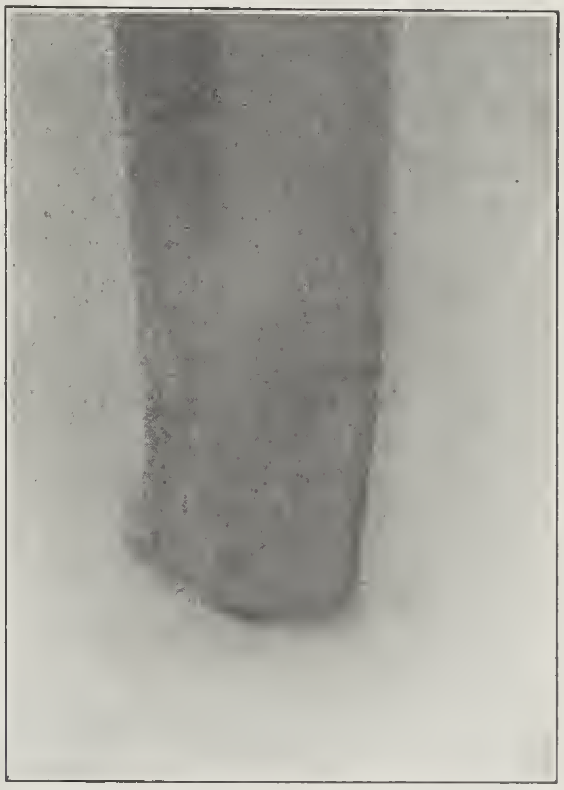

Fig. 11.—Painful atrophic stump after periosteal amputation of the thigh, showing baneful results of disuse, stump shrinkers, etc.

Salomon reports similar results, and concludes that the aperiosteal method should be the normal procedure in amputations. In the production of end-bearing stumps, the prevention of atrophy is of as great importance as the prevention of bony outgrowths. The best-formed stump if not quickly put to use as a real support may become atrophied and useless (Figs. 11 and 12).

## APERIOSTEAL METHOD

*Technic.*—Sterilize skin with tincture of iodin. Use temporary hemostasis by ligature; permanent hemostasis by Perthes[15] pneumatic tourniquet. Employ the oblique circular incision of Kocher, or if flaps are indicated cut and suture according to Jackson's[16] method. Plan the incision so that the cicatrix will not be subjected to terminal pressure; if available use skin accustomed to pressure. Remove the periosteum for a distance of 1 cm. above the saw-line; spoon out the medullary canal for a similar distance (Fig. 13). Before dividing inject the large nerve-trunks with 1 per cent. solution of novocain. Draw the nerves well down; make a smooth division. Provide for the muscular balance of the stump by suturing the antagonistic muscles. If important muscular insertions are destroyed, new ones must be provided.

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[10] Bunge: Zur Technik und Kasuistik der osteoplastichen Unterschenkelamputation nach Bier, Deutsch. med. Wchnschr., 1899, p. 833; Weitere Beiträge zur Tragfähigkeit der Diaphysenstümpfe, Verhandl. d. deutsch. Gesellsch. f. Chir., 1901, i, 163; 1902, i, 54; 1904, i, 137; Zur Technik der Erzielung tragfähiger Diaphysenstumpfe ohne Osteop.astik, Beitr. z. klin. Chir., 1905, xlvii, 808.

[11] Von Eiselsberg: Dem. d. k.-k. Ges. der Aerzte in Wiem am 12. February, 1904, Wien. klin. Wchnschr., 1904, p. 202.

[12] Kocher: Chirurgische Operationslehre, Ed. 5; Jena, G. Fischer, 1907.

[13] Witzel: Die Amputation, Rapports, Quatrième Cong. de la Soc. Internat. de Chir., 1914.

[14] Ranzi: Ueber Unterschenkelamputation, Rapports Quatrième Cong. de la Soc. Internat. de Chir., 1914.

[15] Perthes: Zentralbl. f. Chir., 1910, xxxi, No. 31, Beilage, 13.

Fig. 12. — Fracture occurring in an atrophic stump following a periosteal amputation of the thigh. The stump was not put to early functional use, atrophy resulted and a light trauma fractured the bone. Weight-bearing has improved under exercises.

*After-Treatment.*—Put the patient to bed with the leg elevated. As soon as the wound is healed begin Hirsch's medicomechanical treatment. Massage the stump twice daily, and after each treatment rub in a 2 per cent. solution of salicylic acid in olive-oil. At night bathe in a warm sodium carbonate solution. Protect the stump with cotton wool. Place a box at the foot of the bed and have the patient press the stump against it for from five to ten minutes three times a day, then four times, finally every hour. After each treatment energetically flex and extend the hip and knee. Now begin standing exercises. Rest the stump on a bran-bag, at first placing the weight evenly on both legs; later place all the weight on the stump. At the end of two weeks the patient should be able to wear a peg leg (Figs 14 and 15), later a permanent prosthetic appliance which directly receives the weight through the end of the stump.

I do not wish to convey the impression that the Roentgen-ray findings are final, for it is possible to have a perfectly smooth stump which is functionally useless, and on the other hand, a rough bone and a good functional stump. I do believe, however, that 80 per cent. of the painful stumps are due to atrophy and exostoses; in the remaining 20 per cent. the causes will be progressive ostitis, periostitis, neuritis from compression of the nerves, diseases of the vessels and adherent cicatrices. While any of the four methods may yield useful end-bearing stumps, without early functional use any of them may fail.

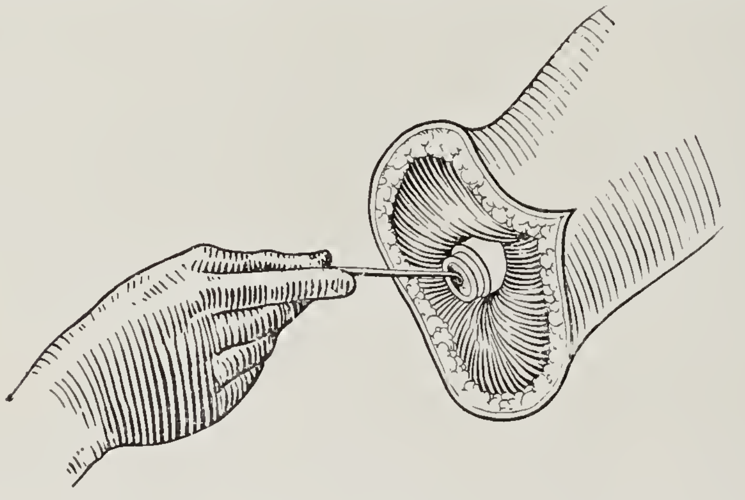
Fig. 13.—Aperiosteal method; spooning out the marrow (after Muller).

### CONCLUSIONS

The osteoplastic is the ideal method, but requires ideal conditions; the tendinoplastic is of limited value; the periosteal, although employed by the majority of surgeons of this country, is inferior to the other methods; while the aperiosteal, in the advent of complications in healing, is the only method which is likely to furnish a useful end-bearing stump; it is the simplest, the most universally applicable and the most practicable.

### ABSTRACT OF DISCUSSION

**Dr. F. J. Cotton**, Boston: This is another nail in the coffin of the periosteum. There was no regeneration without it years ago and I suppose that was the reason why we were always taught to turn back the cuffs on an amputation. It has been a long while since I paid attention to periosteal cuffs. I find stumps get along perfectly well when one does not take that trouble. Of this subject of aperiosteal stump I know nothing from personal experience. I know one obtains a good stump when the periosteum is cut off flush. Spicules of bone should not be in any stump. The osteoplastic operation is not ordinarily applicable when amputating after trauma, nor do most of us feel when operating fairly close to a denuded surface of a mangled limb with the extra chance of sepsis, like introducing bone grafts. So that it comes down to aperiosteal operation or using the periosteal cuff. It seems interesting and sounds as if it were perfectly right. The artificial-leg makers say that they don't care anything about it. I have tried for a stump that would stand an upward pull. For that reason it seemed to me that if the bone end were smooth and if muscle or tendon could be gotten comfortably over a smooth bone surface that is the thing to do. I may be wrong. I hope Dr. Lyle will tell us whether the end-bearing stump is the one wanted. End-bearing function has not been prominent in my mind for recent amputation work. Stumps that make trouble seem to be mainly due to two things, neuromas from carelessness in cutting back the nerves, and cases in which there is too close adhesion of the skin, and too little skin for the bone. These are the cases which seem to make trouble. A minor point is that at least one of the stumps shown was apparently a question of persistent growth as we get it in the stumps in children. I would ask Dr. Lyle whether a stump of this sort, which would seem to be more necessarily close to the skin than the ordinary type, is more or less likely to show that thrusting forward of the bone?

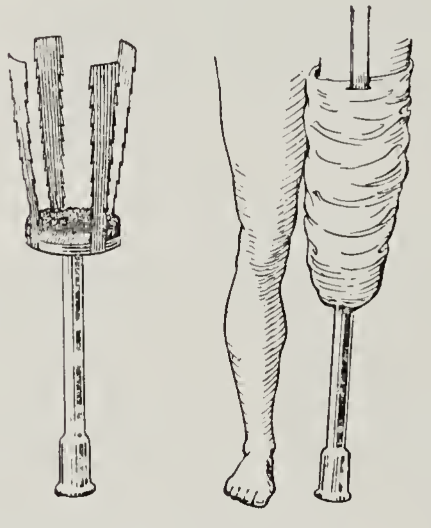
Fig. 14.—Bier's provisional peg leg.

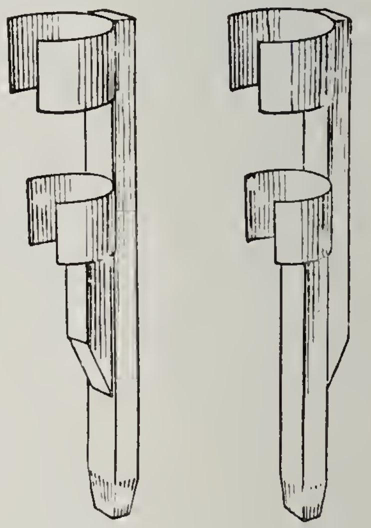
Fig. 15.—Hirsch's provisional peg legs.

**Dr. Henry M. Lyle**, New York: Regarding the use of the stump and the selection of an artificial limb two cardinal points are to be considered: (1) The stump must be put to early functional use; (2) the limb must be so constructed that the whole weight is transmitted through the stump to the artificial limb. These two principles are at variance with the common practice of advising the patient to wait three months until the stump has shrunken before fitting the limb. It is in these three months of inactivity that atrophy is produced, which condition is further increased by wearing an artificial leg so constructed that little or no weight is borne on the end of the stump. By developing the stump according to the aperiosteal method these results are avoided. It is extremely difficult to convince an artificial-limb maker that it is possible to obtain a painless end-bearing diaphyseal stump. Investigation of some of the patients they receive to be fitted will explain their point of view. Recently, in examining seventeen cases, considered by instrument makers to be ideal, three only were end-bearing, of these two were Pirogoff's, one a Gritti. There was not one true periosteal amputation through the shaft. Whenever possible I cover the bone with muscle, using Jackson's method; but in the infected cases in which the wound was left to granulate I had successful results when the bone was covered only by skin. I remove 1 cm. of the periosteum and spoon out 1 cm. of the marrow canal. Necrosis of bone following the removal of 1 inch of the periosteum has been reported; the difference between a centimeter and an inch must not be overlooked. After-treatment, exercises and early functional use are as important as the removal of the periosteum. In the production of a conical stump two factors are to be considered; the relatively rapid growth of the bone and the atrophy of the muscles. For these reasons the cineplastic amputation will give the best result, as it produces an active muscular development which tends to maintain the balance of growth between the bone and the soft parts.

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[16] Jackson: Surg., Gynec and Obst., 1913, xvi, 432.

# SPOROTRICHOSIS IN THE MISSISSIPPI BASIN

RICHARD L. SUTTON, M.D.
KANSAS CITY, MO.

In a recent statistical study Hamburger[1] reviewed the reported instances of sporotrichal infection in man occurring in the United States during the past fifteen years. Of the fifty-eight cases recorded all were of the cutaneous variety, and of the fifty in which the seat of primary infection was stated, the organism gained entrance at some point on the hand or forearm in thirty-eight. The geographic distribution of the cases was of interest. Fifty-four of the patients became infected while residing somewhere in the region comprising the Mississippi River basin. Of the ten cases reported since the publication of Hamburger's first paper, by Newman,[2] Rhamy and Carey,[3] Sutton,[4] Adams,[5] Ravogli,[6] Cooke,[7] Miller,[8] Hamburger,[9] and Wilder and McCullough,[10] nine were from this territory.

Despite the publicity given this disorder by the numerous examples that have been reported, many instances of sporotrichal infection undoubtedly escape recognition. Judging from a rather extensive correspondence with physicians throughout the Middle West, I should say that there are few practitioners of wide clinical experience who have not at some time encountered one or more cases of this disease in their practice. Unfortunately, however, not all of us are in a position to keep closely in touch with current medical literature, and consequently there are many busy practitioners who have never even heard of sporotrichosis. For this reason, I believe that all recognized cases of the affection should be reported, during the next few years at least, in order to disseminate as widely as possible a knowledge of its characteristic symptomatology. In the past eight months I have seen, or been consulted concerning, five new clinical cases. In each instance the history was taken by the physician in charge, and I am indebted to these various gentlemen for the privilege of making a collective report.

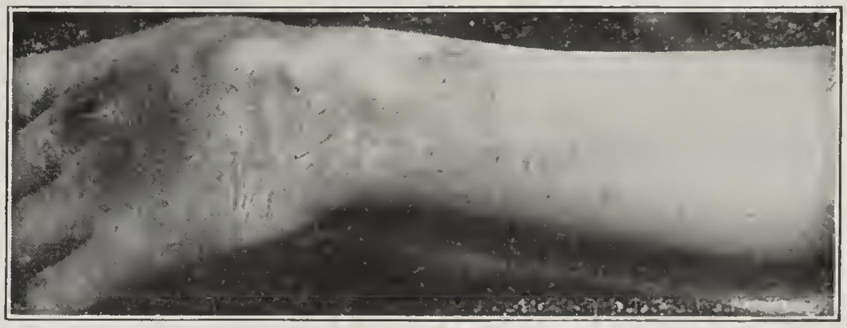
Fig. 1 (Case 1).—Showing primary lesion on knuckle, and secondary nodules on wrist and forearm.

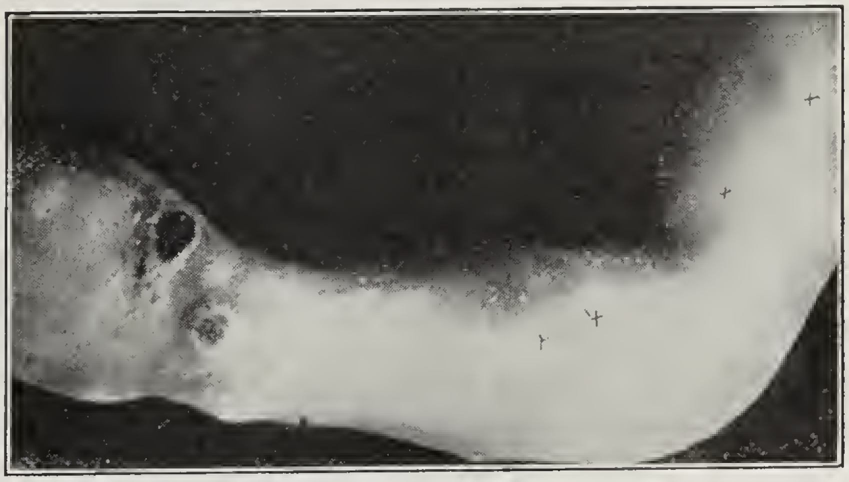
Fig. 2 (Case 2).—Large ulcer shows location of primary lesion. Cross marks indicate location of abscesses on forearm and arm.

### CASE REPORTS

CASE 1.—A. R., male, married, aged 24, assistant division superintendent, Metropolitan Street Railway; under the care of Dr. Frank Iuen, Kansas City. Nov. 11, 1913, while inspecting a car, the patient struck his left hand against the edge of a sand-box, and sustained a superficial wound about 2 cm. in length in the region of the second knuckle. The hand was bathed and bound up in a handkerchief, and no further attention was paid to the wound that day. November 13 the wound became inflamed and painful, and on the fourteenth medical advice was sought. At that time the symptoms were those of a mild streptococcic cellulitis. The wound was cleansed, and tincture of iodin freely applied, the patient being advised to keep the hand immersed in hot saline solution for a period of five or six hours each day. Considerable improvement resulted, and it was thought that the lesion would give rise to no further trouble. On November 19, however, a hard, oval lump, about 1.5 cm. in diameter, appeared on the outer surface of the forearm, about 20 cm. below the elbow. The tumor was dark red in color, painless, and lay in, or just beneath, the epidermis. The epitrochlear lymph-nodes were palpable and tender. On the following day it was found that three new tumors had developed, all on the dorsal surface of the left hand and wrist. They were arranged in a linear manner, extending upward toward the elbow. The one nearest the open lesion was reddened and painful, the others were almost duplicates of the tumor that had first developed on the forearm. Two days later the lowermost tumor became fluctuant, and that night it broke into the primary wound, considerable amounts of brownish-yellow, blood-streaked pus being discharged.

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[1] Hamburger, Walter W.: Sporotrichosis in Man, THE JOURNAL A. M. A., Nov. 2, 1912, p. 1590.
[2] Newman: Western Med. Rev., 1912, p. 646.
[3] Rhamy and Carey: Jour. Indiana State Med. Assn., 1913, p. 274.
[4] Sutton, Richard L.: The Occasional Clinical Resemblance of Blastomycosis and Syphilis to Sporotrichosis, THE JOURNAL A. M. A., Jan. 11, 1913, p. 115.
[5] Adams, G. S.: Another Case of Sporotrichal Infection in Man, THE JOURNAL A. M. A., June 7, 1913, p. 1784.
[6] Ravogli: Lancet-Clinic, Aug. 2, 1913.
[7] Cooke: Texas Med. Jour., 1913, ix, 190.
[8] Miller: Ann. Surg., 1913, lviii, 540.
[9] Hamburger: Illinois Med. Jour., 1914, xxx, 99.
[10] Wilder, W. H., and McCullough, Clifford P.: Sporotrichosis of the Eye, THE JOURNAL A. M. A., April 11, 1914, p. 1156.

*Treatment.*—Under the circumstances it was thought best to incise the abscess on the dorsum of the hand in order to provide free drainage. This was done, and dressings moistened with 1 per cent. liquor cresolis compositus applied. November 14, and again November 18, combined bacterin (stock) was given, but without appreciable benefit. December 2, the lesions on the forearm having remained practically unchanged, the patient was placed on potassium iodid, the dosage to be gradually increased. All of the nodules had completely disappeared at the end of sixteen days.

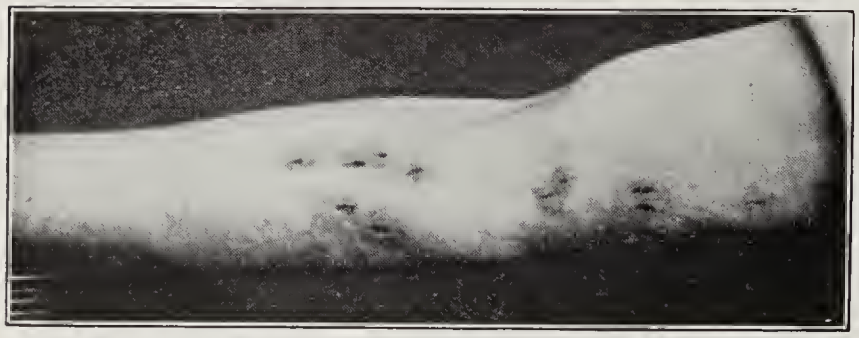

Fig. 3 (Case 3).—Lesions on inner surface of arm and forearm.

Case 2.—E. A. B., male, grocer's clerk, aged 26; under the care of Dr. French M. Smith, Lyndon, Kan. Early in September, 1913, the patient sustained a slight puncture wound from a pine splinter on the dorsal surface of the left hand near the base of the thumb. He thought nothing of the injury at the time, but about one week later a small ulcer began to develop at the site of the wound. The lesion became quite tender and painful, and considerable amounts of thick, grayish-yellow pus were discharged. The ulcerated area gradually increased in size until it had attained a diameter of 2 or 3 cm. The edges were undermined, and the borders red and congested. September 20 the family physician was consulted. A tentative diagnosis of furunculosis was made, and flaxseed and bread and milk poultices were prescribed. Later, ointments, dusting powders and caustics were applied. About October 15 a hard, indurated nodule appeared on the wrist near the point of infection and slowly increased in size until at the end of a week it was as large as a hazelnut. A tiny fistulous opening developed near the summit of the lesion and discharged viscid, sticky, grayish-yellow pus. In the course of a few days the tumor broke down completely and a small ulcer was formed. After the appearance of this nodule, however, and prior to the occurrence of ulceration, several (seven in all) other nodules appeared on the forearm and upper arm. The patient experienced no inconvenience from the presence of the lesions.

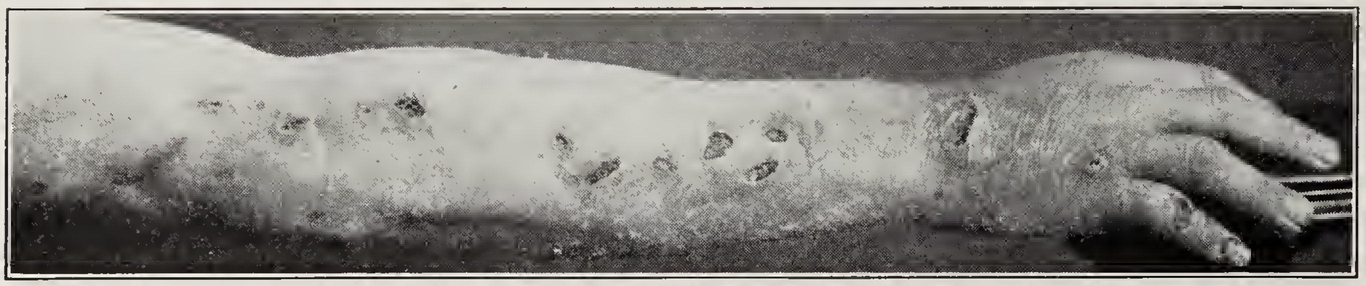

Fig. 4 (Case 3).—Showing point of inoculation on little finger, and ulcers which resulted from incising abscesses on forearm and arm. About eight months' duration.

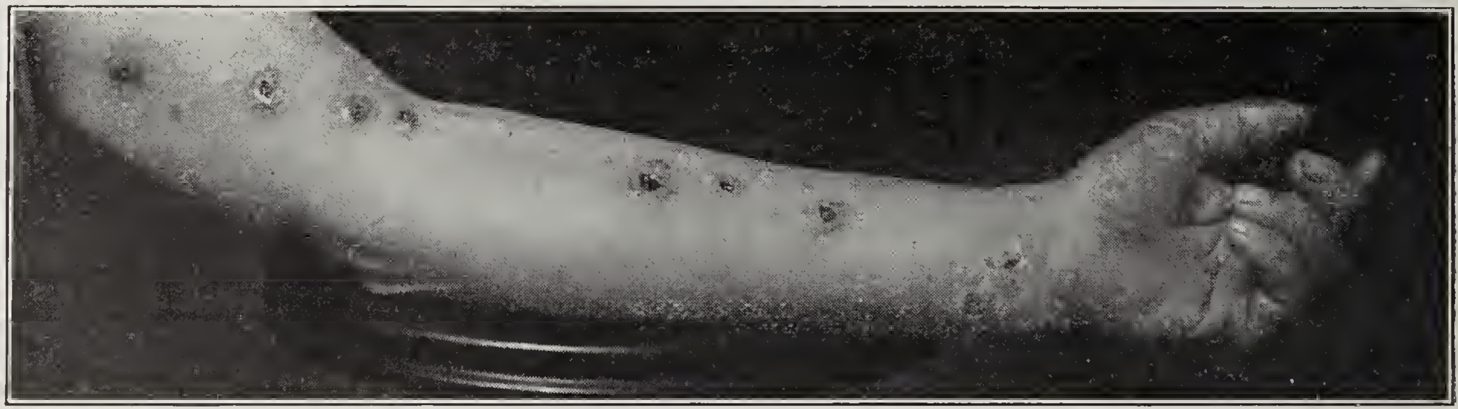

Fig. 5 (Case 4).—Showing character and distribution of lesions, ten weeks after onset of disease.

Dr. Smith saw the patient for the first time in December, 1913. The ulcers on the hand were deep and crateriform, with ragged, undermined edges, and were partially covered with yellowish, stringy pus. There were seven large, and numerous small, nodules extending in a chain-like manner from the wrist to the shoulder. The axillary and epitrochlear lymph-nodes were not palpable. The large tumors were dark red in color and hard and resistant to the touch, and were tightly adherent to the overlying skin. A diagnosis of sporotrichosis was made and afterward confirmed by cultures taken from both of the ulcerated lesions. The patient was placed on a saturated solution of potassium iodid, 15 drops, well diluted, after each meal, the amount being gradually increased to 40 drops, t. i. d., then slowly reduced to 20 drops. Locally, a 1 : 2,000 mercuric chlorid dressing was applied, and renewed morning and evening until the discharge had noticeably decreased, when a dithymol-di-iodid dusting powder was substituted. Recovery was prompt and uneventful.

Case 3.—J. F. J., male, married, farmer, aged 42. Under the care of Dr. Isaac W. Amerman, Nevada, Mo. Dec. 17, 1913, the patient sustained a slight wound of the dorsal surface of the right little finger. Despite the application of various household remedies the lesion refused to heal, and when Dr. Amerman was first consulted, early in January, a second ulcer had appeared on the adjacent knuckle, and a small nodular mass, the size of a large hazelnut, had developed on the dorsal surface of the hand just below the wrist. During the course of the next twelve weeks numerous other nodules developed on the forearm and arm. The majority became soft and fluctuant within ten days or a fortnight, and were incised, drained and swabbed out with tincture of iodin. In spite of the most rigorous surgical measures, however, new lesions continued to develop. When I first saw the patient, about ten weeks later, the ulcers were still unhealed. The arm was swollen but little, and there was no pain. Owing to the thorough course of treatment the wounds had received, all efforts to secure cultures of the sporothrix resulted in failure. Following a fortnight of treatment with potassium iodid, all of the lesions healed promptly and with comparatively slight scarring.

Case 4.—W. E. D., male, married, farmer, aged 62. Under the care of Dr. Q. M. Brown, Nevada, Mo. Ten weeks prior to the time of consultation the patient first noticed the presence of a small papule on the inner side of his left wrist. There was no history of trauma. In the course of a week the lesion increased in size until it was the diameter of a dime. It then broke down in the center, the resulting ulcer being purplish in color and painless, with a slightly elevated, indurated border. A few days later a small, oval tumor appeared on the anterior surface of the wrist, just above the initial lesion, and this was followed, at intervals of from three days to a fortnight, by a series of purplish nodules extending in an irregular line from the wrist to the shoulder. The lesions were from 2 to 4 cm. in diameter and firmly imbedded in the skin. After a lesion had existed three or four weeks it would break down in the center, forming a soft, fluctuant tumor, the overlying skin remaining intact. Nine weeks after the onset of the disease the abscesses were opened and drained by the family physician. The epitrochlear and axillary lymph-nodes were not palpable at any time. Probably because of the energetic treatment employed, cultural tests instituted at the end of the tenth week were negative.

Case 5.—J. B., male, ice-man, aged about 36. Under the care of Dr. Edward Asbell, Kansas City, Kan. Early in September, 1913, this patient, who had just entered the employ of the City Ice Company, reported to Dr. W. A. Wilson, the company's surgeon, for advice concerning an ulcer on his right forefinger. The lesion was a sharply circumscribed one, about 3 cm. in diameter, dark red in color, and only slightly painful. The injured member was thoroughly cleansed and antiseptic dressing applied and the patient instructed to return as necessary for further treatment. Despite the careful employment of modern surgical methods, the wound did not heal, however, and the patient, becoming discouraged, consulted his family physician, Dr. Asbell. During the months of September and October a dozen or more small, sharply circumscribed cutaneous nodules developed on the outer surface of the forearm between the first knuckle and the fold of the elbow. In the course of a fortnight or so these tumors broke down the resulting abscesses remaining subcutaneous. The cavities were opened, drained and curetted, and iodin and other antiseptics applied. The lesions refused to heal, however, and when I saw the case in April, 1914, both physician and patient stated that there had been little change during the past four months. At that time the case was a medicolegal one, the patient having brought suit against the City Ice Company for damages, and the plaintiff's attorney refused to allow the removal of material for cultural examination.

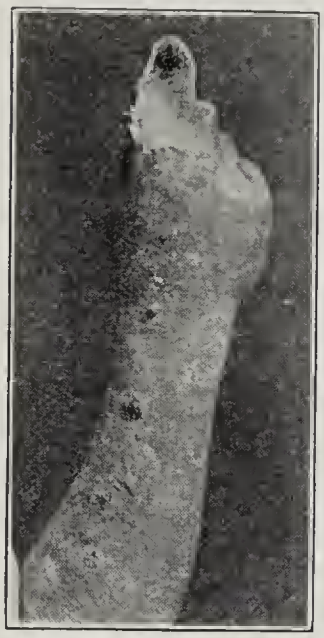

Fig. 6 (Case 5). — Showing characteristic distribution of lesions. The scaling and discoloration of the surrounding skin is due to the long continued use of antiseptics. (Photograph about eight months after onset of disease.)

### CONCLUSIONS

Cutaneous sporotrichosis is a comparatively common disorder in the Middle West. In every suspected case a bacteriologic test should be made as early as possible, otherwise the employment of powerful antiseptics, such as iodin, may render cultural examinations negative even though the fungus is still present. In the majority of instances the symptomatology of the affection is so characteristic that a mistake in diagnosis is hardly possible if one is at all familiar with the disease.

Commerce Building.

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**The Man Behind the Gun.**—Every art is eventually destroyed by the machinery it creates for itself, and medicine is in a like danger. The practitioner by too persistent reliance on his instruments of precision falls into the situation of one who has eyes and sees not, and having ears hears not. He becomes so ignorant of the principles of diagnosis that he will perform a laparotomy to elucidate a simple abdominal condition, or have a Roentgen-ray plate made to disclose what a trained eye would discover for itself. —*Canadian Med. Assn. Jour.*

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# BILATERAL PERIPHERAL FACIAL PALSY

## WITH REPORT OF CASE

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DES MOINES, IOWA

The occurrence of bilateral facial paralysis, whether of central or peripheral origin, is of sufficient rarity to warrant a due consideration of the subject whenever an opportunity for the study of a case is given. A unilateral facial paralysis is by no means an uncommon condition and results from a lesion involving some part of the facial nervous mechanism between the cortical origin of its cells in the lower third of the motor area of the brain and the ultimate distribution of the facial fibers in the periphery of the human economy. In the central type, in which only the lower quadrant of the face is involved, the lesion is usually due to tumor formation, hemorrhage, degenerative conditions, syphilitic manifestations, etc., whereas any of these factors may also be instrumental in producing a paralysis of the peripheral type, but usually a history of trauma, middle-ear disease, exposure to cold, toxic and infectious conditions, alcoholism, etc., will be obtained.

Bilateral facial palsies, however, are much more rare than are unilateral phenomena and may be caused by any of the factors above mentioned implicating both sides of the facial mechanism. Sometimes they are the result of such a peripheral nerve involvement as may accompany a general multiple neuritis due to toxic substances, such as lead, alcohol, etc. That one may encounter a true Bell's palsy which simultaneously, or almost simultaneously, affects the two sides is also possible, but the rarity of localized lesions involving only the seventh pair of cranial nerves seems evident from the frugal statements bearing on the subject, found in recognized neurologic works and literature. That lesions simultaneously involving some portion of the peripheral distribution of the facial nerves do occur is evident from the following case report.

### REPORT OF CASE

An unmarried white man, aged 34, native of Iowa, a singing evangelist, consulted me Jan. 7, 1914, for bilateral facial paralysis. The onset of the paralysis had been sudden and the duration had extended over a period of some seven months.

*Family History.*—On the paternal side, nothing of direct bearing on the case could be elicited from the history. His maternal grandfather, however, at the age of 50 sustained a unilateral facial paralysis (Bell's type), and the patient's mother at 65 suffered from a similar condition for a period of some three months. No definite cause could be ascertained for the onset of the paralysis in either case but recovery ensued in both instances.

*Personal History.*—Patient as a rule had always enjoyed good health and had never had any serious illness or affliction until the onset of present trouble. Had measles at the age of 16 without sequelae, one attack of "grip" eleven years ago and another attack about four years ago, from which good recoveries were made. Has had three attacks of what he termed "rheumatism" in which the muscles about one shoulder were involved. The attacks lasted about a day but there were no inflammatory changes, joint involvement or other untoward phenomena. For the last ten or twelve years he has been more or less constipated. Does not use tea, coffee, narcotics or alcohol.

*Present Illness.*—May 24, 1913, while engaged in church work in Wisconsin, he was taken with an attack of the "grip." He stated that he felt quite ill, fever rose above

104 F., he had several chills, headache, and in a few hours had general aches and pains. On the third day the temperature reached normal, headache and general aches subsided and although he felt weak, he returned to his work and conducted a musical rehearsal. On the evening of the fourth day he became quite heated following the physical exertion of conducting a large chorus choir. The weather was warm and humid and he occupied a seat near a window which was lowered from the top, exposing the back of his head and neck to a draft.

Two or three days later, while at the breakfast table, he noticed that his cheeks felt rather strange to the touch and that they had a tendency to droop. Food, which he says tasted normal, collected between the cheeks and the teeth, and necessitated the cheeks being pushed inward in order to clear away the particles. On examining his face in the mirror, he found that both sides were completely and absolutely paralyzed. There was total inability to wrinkle the forehead, elevate the eyebrows, close the eyes, dilate the nostrils, move the ears, or to move any of the muscles of expression. He then recalled that one or two evenings before the onset of the paralysis he had suffered from pains in the region of the angles of the jaws and that gradually the pains had radiated backward behind the ears. Following the paralysis, the pain became exceedingly severe at times, so much so that a hypodermatic injection was given by the attending physician to alleviate the suffering. Paroxysmal pains radiated over the scalp posteriorly and gradually became more or less localized in the median line of the neck a little below the external occipital protuberance. He does not recall having any tinnitis, pain in the ears, or increased or decreased sensitiveness to low or high-pitched sounds. No herpes developed about the ears. He was confined to his bed at irregular intervals during the week following the onset of the paralysis but was obliged to remain quiet for a period of some three weeks following, owing to weakness.

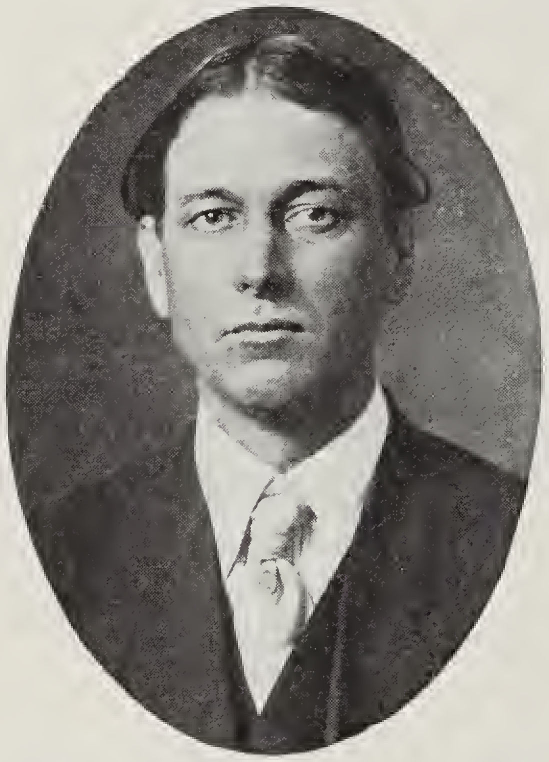

Fig. 1.—Showing expression of patient when facial muscles are at rest.

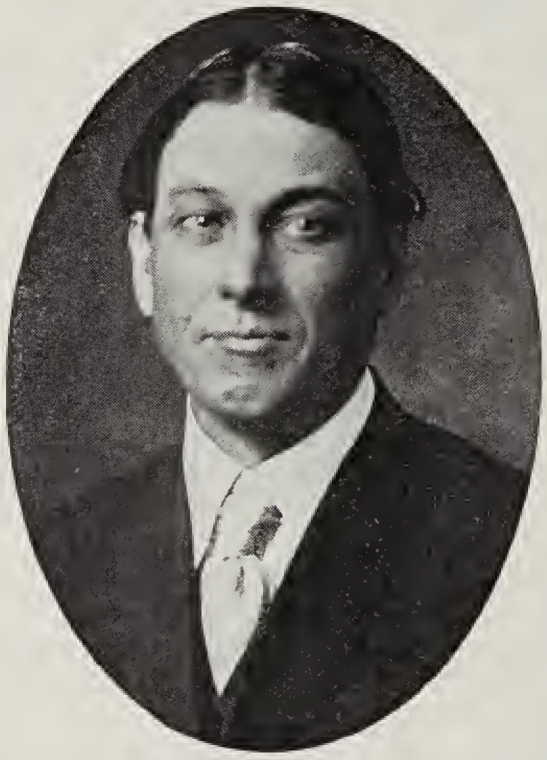

Fig. 2.—Maximum voluntary movement on effort to elevate eyebrows.

There was no return of motion to any of the affected muscles until ten weeks after the paralysis, when a very slight elevation of the outer angle of the right eyebrow could be accomplished. Two weeks later there was a little return of power to some of the oral muscles, so that the corners of the mouth could be retracted very slightly. Very gradually there was a little return of power to the facial muscles, but the first marked return of motion in the occipitofrontalis was not until between five and six months after the paralytic onset and was then noticed on the right side only. For a long time the salivary flow was greatly diminished, but of late this condition has improved. The sense of taste was never lost but apparently there must have been some diminution, for the patient was obliged to season his food with far greater quantities of salt than he formerly was accustomed to do.

Apparently the treatment instituted consisted largely of anodynes, measures to relieve the local congestion, and nerve tonics. During the following September, the patient began using, of his own accord, the faradic current and the statement was made that at times it seemed to make some of the muscles contract. Galvanism was never used.

*Examination.*—Inspection of the face, when no voluntary effort at contraction of the facial muscles is made, does not reveal any special change or defect. There is an absence of any transverse lines or wrinkles across the forehead and the nasolabial lines are considerably erased, yet apparently equally so. The moment that voluntary effort is made to move the muscles, however, the bilateral palsied condition of the face at once becomes markedly apparent. The paralysis is more noticeable on the left side, there being a trifle more ability to elevate the outer angle of the right eyebrow, and on marked effort the right corner of the mouth can be retracted more than is possible on the left side. The movements, however, are greatly limited, considering the range of normal muscular action.

The eyes can be opened and closed at will, but any attempt to close them tightly meets with ill success. All efforts at talking or laughing brings out the inequality between the palsied sides, and attempts to whistle, purse the lips, wrinkle the forehead, expose the teeth, etc., are unavailing. Speech is not interfered with so far as linguals are concerned, but there is a very noticeable defect in the enunciation of words and letters in which labial sounds play an important part. There is hardly a perceptible movement of the lips during the act of talking.

The tongue protrudes in the median line, is covered equally with a whitish fur and its lateral margins are somewhat fissured. Sensation is preserved, but various tests with acid, sweet, bitter and salty materials indicate a possible diminution of the sense of taste, particularly in the anterior two-thirds of the organ. The sense of smell is preserved, vision and range of ocular movements are normal, ptosis, diplopia, nystagmus, hemianopsia and abnormal pupillary phenomena, are absent. The masseter groups are firm and contract equally, and no disturbance of sensation in the distribution of the trigeminals could be elicited. Hearing is retained and about equally so, and no abnormal findings indicative of the involvement of the ninth, tenth, eleventh or twelfth pairs of cranial nerves can be found. The uvula hangs in the median line, and the soft palate contracts equally when "ah" is sounded. Station and gait are normal and the deep reflexes of the extremities are all preserved.

As may well be expected in a case in which improvement has been gradually taking place, the electrical changes are not typical of a complete peripheral nerve degeneration. The response to faradism and galvanism are about equal on the left side, while on the right side faradism produces a little more pronounced contracture than does galvanism when the motor points are stimulated.

That the case is one in which the peripheral branches of the seventh pair of cranial nerves were simultaneously involved, needs, I feel, no special comment. That the process extended upward in the Fallopian canals as high as the points where the chordi tympani branches are given off, is evident from the diminished taste sensation and salivary secretion.

The absence of hyperacusis or painful sensitiveness to musical notes of low pitch, as well as lack of evidence of pain or a herpetic eruption involving the auricles and external auditory canals, shows that the process did not extend to the nerve supplying the stapedius, or to the geniculate ganglion. The etiologic factor or factors, however, that may have been responsible for the bringing about of the bilateral facial paralysis, is not only a question of considerable interest but perhaps of some speculation as well. The too sudden cooling off in a draft following the marked physical exertion incident to conducting a large chorus, would give, of itself, in the absence of other possible causes, a goodly and sufficient reason for believing it to be the direct cause. This becomes all the more apparent when we realize that in a large number of cases (73 per cent. according to Oppenheim) in hitherto healthy individuals, this condition has been known to follow as a direct consequence of a chill, a draft, washing the head, sleeping with open windows, etc. The question, however, as to the possibility of an infectious or toxic origin due to an influenza infection is not to be wholly ignored. Paralysis of the facial nerve has been known to follow such diseases as diphtheria, and mumps, and, as pointed out by Oppenheim, "a facial paralysis and an otitis may be produced simultaneously by the same cause, chill, infective disease (influenza, typhoid, etc.)" It is by no means difficult to understand the modus operandi in those cases in which parotitis is present, or for that matter where an otitis exists. That there is direct involvement, in such instances, of the facial nerve at some place along its course in the bony canal or after its exit from the same, by an inflammatory process or resultant edema is, I am sure, perfectly obvious. In this case, if an influenza infection played any rôle as an exciting agent, it would appear to be in the absence of any associated otitic involvement. That the paralysis may have resulted from a combination of an infectious process and chilling is, it is needless to state, well within the realm of possibilities. The occurrence of a facial palsy of the peripheral type, however, in members of three generations of direct descendents, may be worthy of more than a passing glance. Philip believes that a congenital narrowing of the stylomastoid foramen in certain persons predisposes them to a compression of the nerve on any slight congestion of its trunk. Such a theory is not only in harmony with facts incident to the case under consideration, but may also give a clew as to why one attack of facial palsy predisposes to another, and why, in a certain percentage of cases (7 per cent. according to Starr) there is a recurrence of the disease.

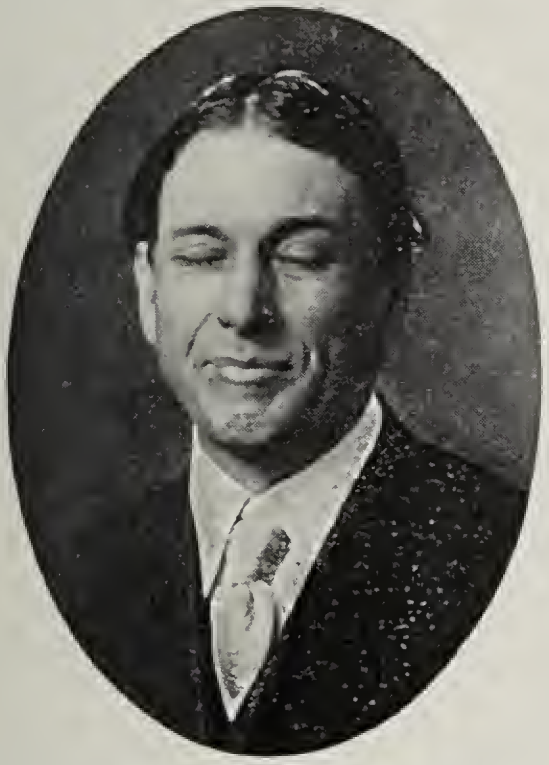

Fig. 3.—Maximum voluntary movement on effort to close the eyes tightly and to retract the corners of mouth.

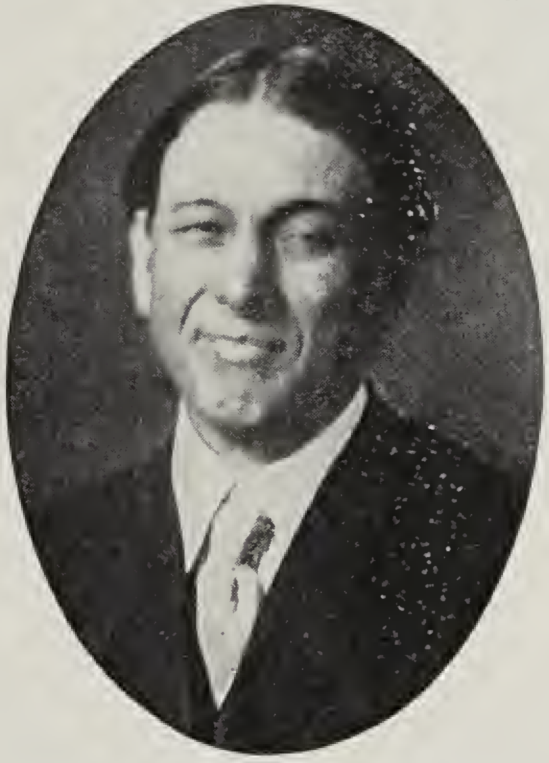

Fig. 4.—Facial expression of patient during laughter.

### CONCLUSIONS

From the foregoing statements I feel that the following conclusions may be justified:

1. Bilateral facial paralysis is much more rare than is the unilateral type.
2. While exposure to cold, drafts, localized congestive conditions, infectious and toxic processes, etc., seem to be largely responsible as direct agents in the production of the peripheral type of facial paralysis, the relationship between the nerve-trunk and its bony canal (Fallopian aqueduct) may not be altogether a negligible factor.
3. Congenital narrowing or stenosis of the Fallopian aqueduct may be more instrumental as a true basic causal factor in the production of peripheral facial palsy than is commonly believed.
4. Hereditary predisposition to peripheral facial paralysis may be present in some individuals.

407 Equitable Bldg.

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# PELLAGRA IN MINNESOTA

DEANE R. BRENGLE, M.D.
ST. PAUL

### REPORT OF CASE

Up to the present time four cases of pellagra have been reported to the Minnesota State Board of Health, a man and three women.

The first case was that of a man aged 53, a resident of Olmstead County. His former residence was North Dakota. He died at his home in Olmstead County of undoubted pellagra, June 4, 1913, after an illness of three years.

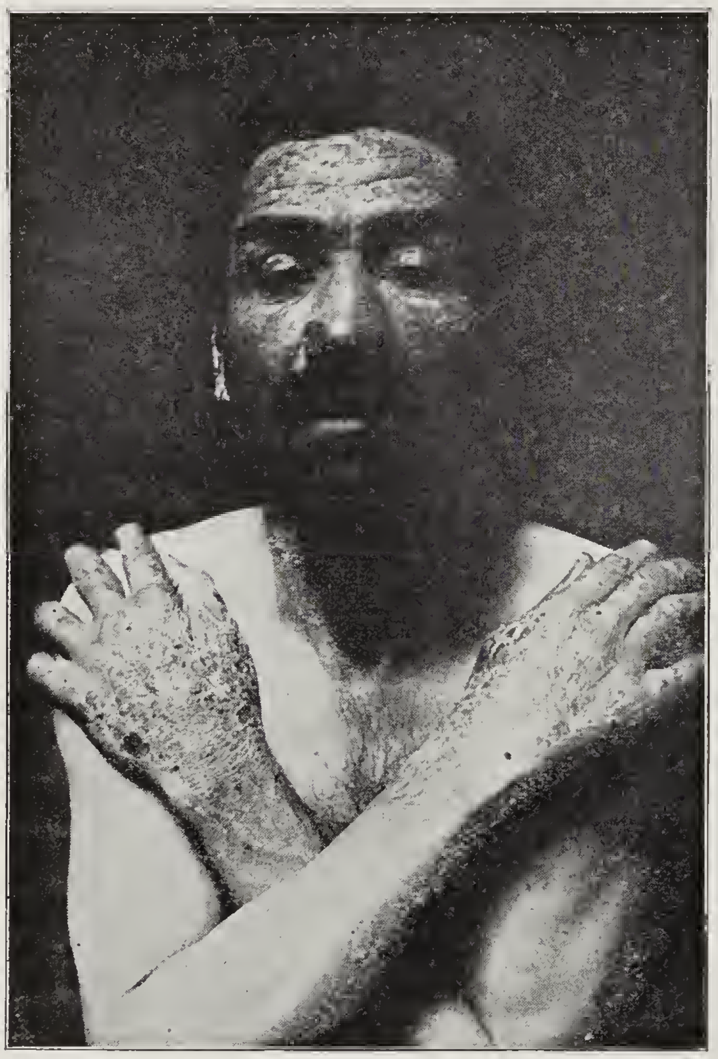
The second case was that of a woman, a resident of McLeod County. Death occurred at the University Hospital, Minneapolis.

The third patient was a woman, aged 45. Residence and place of death was Minneapolis. Duration of illness was two years. She died April 21, 1914.

The fourth patient, a woman aged 55 residing at Rochester, died in June, 1914. This case terminated fatally in less than two years following the first symptoms.

The discovery of at least three of the reported cases in the most important medical centers in this part of the Northwest is significant: It is a matter of common observation that the best diagnosticians live in the cities and larger towns, and their opportunity for knowing the possible extent of pellagra in the rural districts is limited. Certainly the reported cases are not a true index to the number actually existing in the commonwealth. How many pellagrins the physicians of the smaller towns have overlooked, we can only surmise. Especially is a mistake apt to occur in that type of the disease lacking definite cutaneous manifestations, designated by Roussel as pellagra sine pellagra. Such a case has recently been reported by Frazer[1] of Asheville, N. C. Following is a report of a case which recently came under observation in St. Paul:

*History.*—W. Y., man, aged 35, Cuban, laborer, entered the St. Paul City and County Hospital, June 17, 1914. He sought admission because of a dermatitis of the face and hands which was accompanied by an intense itching and burning. He also complained of headache of several weeks' duration, pain in the back and shoulders, and vague digestive disturbances. He was despondent to a degree that had assumed suicidal tendencies. General malaise was marked. The skin symptoms had existed for three weeks previous to admission—the headache and gastro-intestinal symptoms for a somewhat longer period.



Patient with pellagra.

I was on contagious service at the time and was called on to admit the case as one of a possible erysipelas. At once I was impressed by the characteristic symmetry of the skin lesions and strongly suspected the probability of their pellagrous nature.

The patient gives the following history: He is a native of Cuba, but has resided in the United States since the age of 4 years. He has traveled extensively; worked in many states of the Union, but has been very little in the extreme southern sections of the country. Much of his time has been spent in railroad and construction camps. He recalls distinctly having seen at least one case similar to his own, among his fellow laborers. He states that for several years he has eaten excessively of cornbread and that the meal often became moldy from being kept in the damp store-car. This statement was unsolicited and is mentioned without regard to its possible bearing on etiology, which is not within the province of this article. His habits have not differed materially from those of his associates. He smokes excessively, uses alcohol immoderately, and is addicted to periodic venery. He denies luetic infection. With the exception of chancroid, a possible lead poisoning ten years ago, and one attack similar to his present malady, coming on at the same time last year, he has never been sick.

Such family history as he can give is without significance: Father died of "a fever." Mother of pneumonia. Beyond these simple facts he is uninformed.

*Physical Examination.*—Adult male, fairly well nourished; height 6 feet 1 inch; weight 165 pounds. The face and neck, dorsal surface of the hands and upper one-third of forearms are covered with a diffuse dermatitis in which coin- and wreath-shaped figures are prominent. The distribution is characteristic and pathognomonic. On the hands only the dorsi are affected, and the extent on the wrists corresponds to the weather-tanned areas. The line of demarcation is definite and pronounced, giving the hand a glove-like appearance. The lesions are most marked and extend farther around on the radial than on the ulnar side. The terminal phalanges are uninvolved, as are also the contiguous portions of the digits. The elbows are slightly but distinctly involved. The entire affected surface presents a uniformly deep red, or reddish purple color, on which the mottlings stand out prominently. The skin is thick and hypertrophic—tense and hard to touch.

On the face the erythema is of a deeper hue and there is some edema which has increased since admission. There is evidence of extensive epidermal exfoliation, the scales being much larger than those on the hands. Pustulation almost approaching furunculosis has occurred on the forehead and cheeks, accentuated undoubtedly by a preexisting acne. The ears are markedly excoriated and fissured. On the face, as on the hands, the eruption is definitely confined to the sun-exposed areas; anteriorly a narrow zone of healthy skin separates the dermatitis from the hair line.

Eyes: There is a ptosis of left lid and a bilateral drooping of the superciliary folds. The right pupil is dilated. Pupils react to light and accommodation.

Chest and Abdomen: Lung boundaries are normal. Both lungs are emphysematous. There are no areas of dulness.

Cardiac dulness is increased from side to side. Apex beat is not palpable. Pulse was 65 on admission; it continued unchanged for the first week, and then increased to 70.

Area of splenic dulness is decreased.

Superficial glandular enlargement is limited to the epitrochlears, which are enlarged to such an extent as to be plainly visible on inspection. I have never seen this finding referred to in the literature and would be glad to know if any one has made similar observation.

Gastro-Intestinal: Anorexia is a prominent symptom. Constipation predominates but alternates with diarrhea. There is some pyrosis and flatulence. There are no ventral or dorsal foci of tenderness over region of the stomach.

Nervous System: Static sense is markedly impaired (positive Rombergism). The deep reflexes are greatly exaggerated. Cutaneous sensibility over inguinal region and extensor surface of thighs is decreased. There are no areas of anesthesia or hyperesthesia. There is no Babinski or Oppenheim. Over the upper dorsal vertebrae there are marked pain and tenderness. Headache is at times intense and is accompanied by great lassitude and mental depression, almost amounting to a phobia.

Patient is well orientated and intellect seems unimpaired, but he is apathetic and shows marked mental abstraction. The simplest questions are answered with apparent effort and only after prolonged hesitation.

*Laboratory Findings.*—The laboratory examination conducted by Dr. M. Barron, Pathologist of the Medical Department of the University of Minnesota is as follows:

Blood: Hemoglobins, 0.75; erythrocytes, 4,700,000; leukocytes, 7,200. Differential: Polymorphonuclears, 61 per cent.; lymphocytes, 26; large mononuclears, 8; transitionals, 3;

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[1] Frazer, Thompson: Report of a Case of Pellagra with Late Skin Lesions, The Journal A. M. A., June 20, 1914, p. 1964.

eosinophils and basophils, 1 per cent. of each. Two Wassermanns taken one week apart were negative.

Urinalysis: Examination was made particularly for indican, and the reaction (Obermayer's method) showed it to be present in great quantity. There were no albumin or casts, and no sugar.

Unfortunately gastric analysis was not done until the disease had begun to improve under treatment. Ewald's test meal was given and removed in an hour. The quantity was about 25 c.c. Free hydrochloric acid 26. Total acidity 61. Occult blood ++. No lactic acid was present. No tests for ferments was made.

*Subsequent History.*—The case has attracted a great deal of attention and has been seen and examined by many physicians of St. Paul and Minneapolis and by other medical men, prominent in the Northwest. At no time has the diagnosis been seriously questioned. The triad of cutaneous, gastro-intestinal and nervous symptoms are plainly evident, even on cursory examination.

The patient has now been in the hospital and under constant observation for a period of over seven weeks. During this time he has received a nourishing diet, and all forms of exertion have been interdicted. Medicinally he has received Fowler's solution, begining with 5 drops, and increasing to 20, three times a day. In his general condition marked improvement has occurred. The skin symptoms have ameliorated; in fact, the facial eruption has almost entirely disappeared, leaving a surface of peculiar dark-red color. His mental state has also improved. At first he paid little heed to his surroundings unless solicited to do so, and was inclined to resent attention of any sort. He has now become more communicative and cheerful, takes an interest in all proceedings affecting him and is an exceedingly well-behaved person. His present attitude is one of distinct euphoria, and he is subject to outbursts of senseless laughter. He still complains of insomnia, but his former intense cephalalgia has receded. At first scarcely able to move about, he now assists in the general work around the ward. Certainly all has been accomplished that could be expected of any line of treatment in so short a time.

City and County Hospital.

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# PEMPHIGOID OF THE NEW-BORN (PEMPHIGUS NEONATORUM)

## WITH REPORT OF AN EPIDEMIC [*]

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AND
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Pemphigus neonatorum, or, as Jadassohn[1] more aptly terms it, "pemphigoid of the new-born" or "infantile pemphigoid," was first described as an independent disease in 1773 by Ochene.[2] Previous to this time it had been confounded with syphilis, and even up to the end of the last century there were many who considered it syphilitic in origin.

A number of epidemics of this disease have been reported by different men, for example, Rigby[3] in 1834 described several mothers in a London obstetric house who were affected from their infants, and he himself contracted the disease while performing a necropsy on one of the infants. Brocq[2] thinks that in 1850 Lasegue and Trousseau[4] without a doubt described an epidemic of this disease from the Necker Hospital under the name of "Varicelle Pemphigoid." Following this, epidemics were reported by Hervieux, Olshausen and Mekus, Klemm, Koch and others.[2] Moldenhauer in 1874[5] reported an epidemic of ninety-four cases from the Leipsic clinic, and E. Vidal[6] the following year studied about fifty cases at the clinic of Saint Louis Hospital.

After all these careful observations no more doubt was held as to the contagious and epidemic character of the disease, and the later reports and researches have only tended to clear up some of the mooted questions as well as to prove or disprove the relationship of the disease to some of the allied affections. Since 1875 the question has been studied quite thoroughly by many men; a number of epidemics have been reported; but as these have been very carefully reviewed by several others we would refer those interested to the able articles with bibliographies of Brocq,[2] Carlton,[7] Foerster,[8] Della Favera[9] and others that will be mentioned later. Nevertheless, in spite of the seemingly simple character of the clinical picture, to use the words of Hofmann,[10] "there are still some points about the disease as yet not satisfactorily settled," for example, its etiologic agent, its relation to impetigo contagiosa seu vulgaris, and to Ritter von Rittershain's dermatitis exfoliativa neonatorum.

During the past year we had the opportunity of studying an epidemic of this disease in Maternity Hospital. The case histories will be given here in brief,[†] after which we will discuss the problems which they present.

### REPORT OF CASES

Case 1.—Baby B., aged 11 days, with negative family history was seen April 27, 1913. Child was delivered with instruments and six days after birth had a few vesicles, which appeared first on the face. They kept increasing in size and number, breaking shortly after being formed. Baby had no rise of temperature and had been increasing daily in weight. As there seemed to be no improvement one of us was called in consultation.

As examination showed nothing abnormal internally the skin condition will be described.

Around the mouth, in the right axillary space and around the buttocks there were found numerous large and small vesicles, varying in size from a split pea to a half-dollar or a little larger. In places they had coalesced and broken and a very little serum ran out leaving a reddened derma with a slight bleeding on the floor of the lesions. With the exception of a slight vesicle on the right palm, both palms and soles of feet were free from lesions.

Gelatin baths and emollients were ordered for the baby but two days later he was worse, a large part of the face and buttocks being involved. Cultures were made from several intact vesicles on agar-agar, three tubes being used to each culture, made with a sharply pointed platinum needle which was inserted as carefully as possible into the base of an intact vesicle and then three smears made on each of the tubes in succession. Locally, ammoniated mercury ointment was ordered.

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[*] From the Department of Dermatology and Syphilis and from the Department of Pediatrics of Western Reserve University.

[*] Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Jadassohn, J.: Ueber Pyodermien, die Infektionen der Haut mit den Banalen Eiterregern, Halle, a S., Carl Marhold, 1912.

2. Brocq: La pratique dermatologique, Paris, Masson et Cie, 1902, iii, 829. Quotes Ochene, Hervieux et al.

3. Rigby: London Med. Gaz., 1833, xvii, 125.

4. Lasegue and Trousseau: Gaz. méd. de Paris, 1850, 478. Quoted by Brocq.

5. Moldenhauer: Arch. f. Gynäk., 1874, vi, 369.

6. Roeser: Du pemphigus chez les nouveau-nés. Thèse de Paris, 1876.

7. Carlton, E. P.: New York Med. Jour., 1907, lxxxvi, 573.

8. Foerster, O. H.: Pemphigus Neonatorum, or Bullous Impetigo Contagiosa of the New-Born, Journal A. M. A., July 31, 1909, p. 358.

9. Della Favera: Arch. f. Dermat. u. Syph., 1909, xcviii, 231.

10. Hofmann, L.: Arch. f. Dermat. u. Syph., 1913, cxviii, 245.

11. Ritter von Rittershain: Centr.-ztg. f. Kinderh., October, 1878.

[†] Case histories and histologic studies will be described more in detail in the reprints.

Forty-eight hours later a spot on the forehead inoculated from one of the intact vesicles showed a small vesicle while all cultures taken showed a pure staphylococcus growth. As the child grew steadily worse an autogenous vaccine was prepared.

May 3, 1913: Child much worse. The entire epidermis is more or less scaly and red. The vesicle formation has spread over the entire face and down over the chest and into the axillary spaces, and over the groins and buttocks, while the epidermis of the hands and feet is raised like gloves. The skin peels off in large strips, leaving a moistened, slightly bleeding derma. The child's temperature is high and he is taking practically no nourishment and is very restless. As the autogenous vaccine was not ready the patient was given 5,000,000 of a stock staphylococcus vaccine.

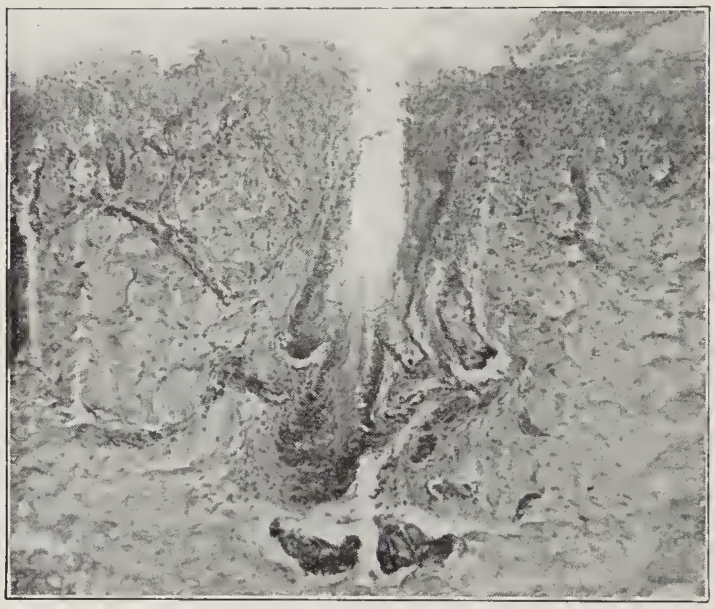

Fig. 1.—Extreme loss of epidermis with a few epidermal cells imperfectly attached on the right. The necrotic process has extended down into the hair follicles and even into the sebaceous glands. Marked cellular infiltration and edema. Eosin and hematoxylin stain.

May 4, 1913: Babe died during the night.

*Necropsy Findings.*—At necropsy the skin changes were much the same as already described but almost universal in extent. No true ulcerations were noted. No gross pathologic changes of the internal organs were noted. On microscopic examination the cells of the heart, liver and kidneys all showed an extreme grade of cloudy swelling while the liver and kidneys were markedly congested. Moreover, in the veins of the liver and lungs numerous emboli, made up of agglutinated cocci were found by the Gram-Weigert stain.

Skin: In many areas the epidermis is lost and when present consists of only a few layers of cells. There is an imperfect cornification, even the uppermost layers of cells still retaining their nuclei; while there is no stratum lucidum or granulosum. Above the epidermis, or rather its remnants, there is generally found a thick crust made up of fibrin, broken-down cells, and large clumps of cocci as shown in Figure 4. The epidermis is very edematous and infiltrated with numerous polymorphonuclear leukocytes and erythrocytes. In many places however, it is entirely lost, as shown in Figure 1, and there is a denuded necrotic derma markedly infiltrated with serum, erythrocytes, leukocytes and cocci. This process is especially marked along the course of the hair follicles (Fig. 1) where in some instances it was possible to find inflammatory and necrotic changes with bacterial invasion down to the root of the hair. The deeper vessels are all much engorged and surrounded by leukocytic infiltration, while the edematous tissues of the corium, as is usual in such cases, take the stain rather poorly.

Case 2.—Baby M., seen May 12, 1913, was first noted on the eighth day after birth as having a small vesicle on the face. Later several more formed and a large pustule started below the right eye. The child was given 0.2 c.c. (about 5,000,000) of the autogenous vaccine prepared for Patient 1. There were no intact vesicles from which to make cultures. The baby showed immediate improvement and three days later was given a second injection and two days later a third, and was discharged May 20.

Case 3.—Baby M., aged 7 days, seen May 20, 1914, first developed a vesicle near the right corner of the mouth and later several started on the chest and in the axillae and groins. Babe was well otherwise and gained regularly. It was given some of the vaccine prepared for Patient 1, dose being repeated twice and the baby was discharged May 24. Cultures in this case by Lewandowsky's method showed a pure *Staphylococcus aureus.*

Case 4.—Baby B., aged 12 days, was seen May 14, 1914. Three days before a small vesicle started at the right side of the neck which tended to spread and one of us was called in. At the time of the examination several spots of folliculitis were noted around the eyes, the infection having apparently involved the follicles of the eyelashes. On the neck and lower left chin there were several vesicles, one or two of which had already ruptured. Along the right side there was a long irregular-shaped lesion (8 by 5 cm.) showing a large broken bulla with wrinkled epidermis and a moist reddened floor. The armpits were also involved, while the left hand showed complete loss of the epidermis from the wrist down, leaving a moist red uncovered derma showing here and there slight bleeding puncta. The baby had no elevation of temperature and seemed well and was gaining regularly in weight. Cultures were taken from several intact vesicles. In this case likewise, the vaccine was used and the improvement was remarkable after one injection, while after two more the baby was practically well.

Case 5.—Baby H., aged about 5 days, seen May 14, 1913, had several vesicles on the neck, and the skin around a fresh circumcision wound on the penis was markedly involved, likewise the axillae. Cultures made by Lewandowsky's method showed pure *Staphylococcus aureus.* In this case all the lesions but the one on the penis healed readily after use of the vaccine but the open wound healed rather slowly.

Case 6.—Baby E., aged 6 days, had merely a few vesicles on the side of the face and neck which reacted immediately to the vaccine.

Cases 7 and 8.—These two infants, not seen by us, had only one or two vesicles and were immediately removed to their homes and tincture of iodin applied locally with good results (questionable).

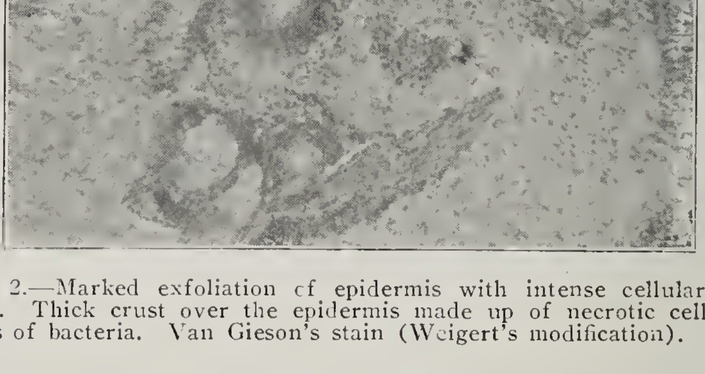

Fig. 2.—Marked exfoliation of epidermis with intense cellular infiltration. Thick crust over the epidermis made up of necrotic cells and clumps of bacteria. Van Gieson's stain (Weigert's modification).

Case 9.—In addition, another child, aged 3 weeks developed a crusted lesion on the cheek after leaving the hospital. This did not react to ammoniated mercury, but cleared up quickly after use of the vaccine.

### SUMMARY OF EPIDEMIC

In a series of eight or possibly nine cases of infantile pemphigoid the *Staphylococcus aureus* was cultivated in pure culture in all cases in which unbroken vesicles could be found. In the first case a bacteriemia developed, resulting in death on the twelfth day of the disease. In the other cases the use of an autogenous vaccine seemed to give prompt results when other measures failed. The infections were apparently carried from one to another and despite strict isolation precautions and fumigation of separate rooms, the epidemic became so extensive that it was necessary to close the institution for a thorough disinfection. Only after the disinfection of the entire institution did no new cases develop.

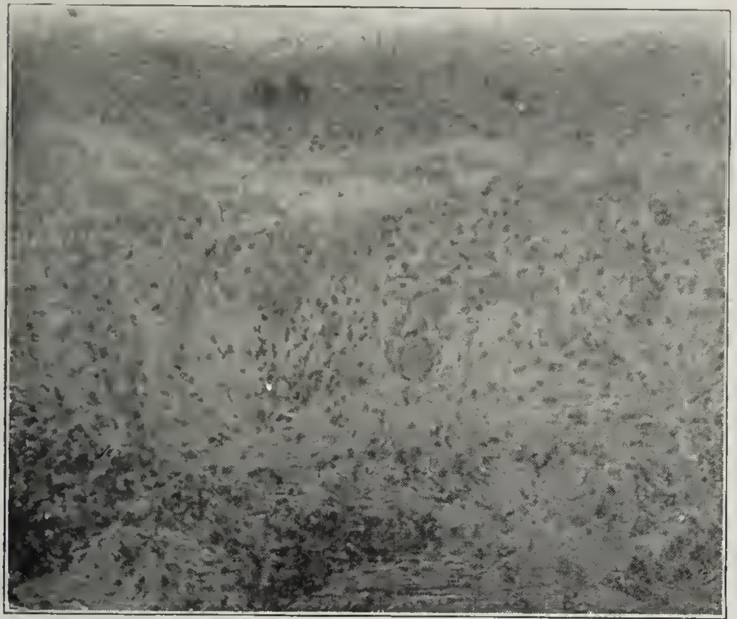

Fig. 3.—Process much like that in Figure 2 but with a higher magnification. Marked dilatation of the vessels. Clumps of bacteria in the crust covering the exfoliating epidermis. Eosin and hematoxylin stain.

Pemphigoid is a disease found all over the world, cases having been reported from Asia, Japan, Europe, North and South America. Season apparently has little effect on its prevalence. The sexes are about equally affected. It generally appears from about the fourth to ninth day after birth and is, through contagion, comparatively often seen up to the age of 3. After the age of 6 the skin is not so susceptible, though it is occasionally seen in adults who contract it from the infants or children, for example, nurses contract it on their fingers, mothers on their mammae, etc. The disease in its epidemic form attacks the strong, normal infants as well as the weaklings.

There has been much discussion concerning the etiologic agent in the disease. Kaposi believed that it was simply an increased physiologic exfoliation taking place after birth, and others of the older writers mentioned mycoses, while Vargas[12] in his cases thought that toxins were to blame. The following authors found the staphylococcus in the skin lesions in a number of cases: Lewandowsky,[13] Engman,[14] Call,[15] MacGuire,[16] Schwartz[17] and Köhler.[18] Della Favera and Hofman not only found the staphylococcus in the vesicles, but also in the blood. Almquist[19] in 1890 studied an epidemic in the Maternity Hospital in Gottenborg. Despite all attempts at disinfection and isolation the epidemic lasted six months, and 134 of the 216 children were attacked and four died. Several of the mothers were also affected with lesions on the breasts. He regularly isolated an organism much like a *Staphylococcus aureus* with which he inoculated himself and produced vesicles. He considered, however, that the organism, on account of cultural characteristics, should be differentiated from the staphylococcus. Clegg and Wherry[20] have isolated a diplococcus much like Almquist's organism, which they term *Micrococcus pemphigi contagiosi.* They state that it was found by them in all of the five cases investigated at the Manila, P. I., Civil Hospital. Moreover, they state that practically every child in this hospital has pemphigus neonatorum. Manson[21] has also found a diplococcus, while Holt[22] in one case found the staphylococcus, streptococcus and *Bacillus lactis aerogenes* at necropsy. Foerster asserts that there is no one causative organism, while Bloch[23] in a carefully studied series of fifteen cases from Baginsky's clinic found in the eight coming to necropsy pure cultures of the streptococcus in the blood and the staphylococcus in the skin lesions. He thought that in all of them there was a mixed infection and that the streptococci worked the deleterious influence. The majority of the writers, however, feel that the staphylococcus bears an etiologic relationship to the disease. We shall discuss the variability in the findings more fully at a later point in this paper. As in our case, it is often a difficult matter to find the source of contagion. In one of Hofmann's cases it was from a case of impetigo Bockhart, a disease known to be due to the staphylococcus. In one case reported there was an infected vaginal tear. The midwife has frequently been the guilty carrier of the disease from one case to another; thus Corlett's[24] two cases occurred in the practice of one midwife. Maguire's[16] eighteen cases with one exception, and Jukovsky's[25] twelve cases could likewise be traced to one midwife. Nurses, on account of carelessness in technic, have also been reported as carrying the disease from one child to another. Thus in Bumm's clinic at the Berlin Charité

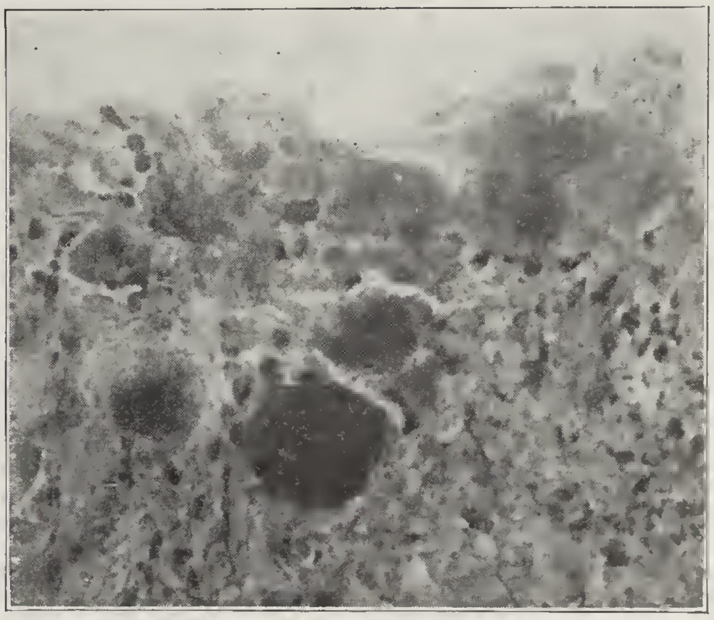

Fig. 4.—Epidermis showing edema and cellular infiltration with large dark masses of agglutinated cocci. Eosin and hematoxylin stain.

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12. Vargas, A. N.: Festschr. for Abraham Jacobi, New York, 1890, p. 363.
13. Lewandowsky, F.: Arch. f. Dermat. u. Syph., 1909, xciv, 163.
14. Engman, M. F.: Jour. Cutan. Dis., 1901, xix, 180.
15. Call, Emma L.: Am. Jour. Obst., 1904, i, 473.
16. MacGuire: Brit. Jour. Derm., 1903, xv, 427.
17. Schwartz, H. J.: Bull. Lying-in-Hosp., New York, 1908, v, 1.
18. Köhler, F.: Deutsch. Arch. f. klin. Med., 1899, lxii, 579.
19. Almquist, E.: Ztschr. f. Hyg. u. Infectionskrankh., 1891, x, 253.
20. Clegg and Wherry: Jour. Infect. Dis., 1906, iii, 165.
21. Manson, P.: Tropical Diseases, London, Cassell and Company, 1900, p. 611.
22. Holt, L. E.: New York Med. Jour., 1898, lxvii, 175.
23. Bloch, W.: Arch. f. Kinderh., 1900, xxviii, 61.
24. Corlett, W. T.: Am. Jour. Med. Sc., 1894, n. s., cvii, 413.
25. Jukovsky: Trudi Obsh. S. Peterb. dietsk. vrach., 1901, vi, 31.

there were nine cases in which it was possible to trace the disease from the first child by means of a nurse to other nurses and to the children. Zechmeister[26] in eleven months saw twenty-eight out of seventy-six children infected, that is, 37 per cent. Nearly all of these cases were due to one midwife, while the others had no trouble. Some older children who came into contact with the patients were also infected. Brosin[27] reports two such epidemics traceable to midwives in which there were eighteen cases in sixty-four confinements. When an epidemic is once started, it is often exceedingly difficult to trace the starting-point of new cases, for even in such well-organized clinics as the Charité it was finally necessary to empty the rooms and disinfect them one by one. Such was also the case in the epidemic here reported and also in Almquist's and Call's epidemics. In the latter, 27 per cent. of the infants were infected despite the strictest isolation precautions. Probably the infection takes place through any open lesion on the skin, even the slightest scratch. Many of them no doubt take place through the intact mucous membranes; hence the tendency for the lesions to appear first around the mouth. It is noteworthy that in all of Maguire's fatal cases the umbilicus became infected, secondary to the skin infections, and it is quite probable that this is one of the main avenues by which the bacteriemia develops.

The necropsy findings in fatal cases are those of any infection or bacteriemia: parenchymatous degeneration of the liver, kidneys, pancreas and heart; inflammatory changes in the gastro-intestinal tract varying from a simple catarrhal and follicular inflammation to true ulcerative processes. In the cases in which a bacteriemia exists, bacterial and agglutinative thrombi are frequently found. Throughout the tissues in such cases, by proper staining methods, clumps of organisms can be found. There is some difference of opinion as to the histologic changes produced in the skin. It is sufficient to state here that the most characteristic changes are dilatation of the papillary vessels with edema and cellular infiltration, followed later by an edema of the epidermis and vesicle formation. In a progressive lesion the deeper vessels become involved, with extensive edema of the deeper tissues. The changes in the epidermis are dependent on the underlying tissues, and the desquamation is in proportion to the intensity of the exudation and of the infection.

Experimentally, several workers have been successful in producing the lesions by inoculations. Almquist inoculated himself with the coccus, which he isolated from his epidemic in Gottenborg, and there was produced vesicle formation, but no general infection. Landsteiner, Levaditi and Prasek[28] isolated a coccus from an infant dying with infantile pemphigoid and for several generations inoculated it into chimpanzees (five with pemphigoid lesions). They found that the virus was not filtrable. They also inoculated themselves and succeeded in producing vesicle formation, but they were not reinoculable or autoinoculable. Their histologic findings were similar to those mentioned above.

The symptoms of pemphigoid are quite typical though atypical cases are often seen as in our epidemic. The skin at birth shows nothing abnormal, but between the fourth and ninth day there suddenly appears, after perhaps a slight preliminary redness, an acute outbreak of vesicles varying from 1 mm. to 2 cm. or even larger in diameter. The vesicles usually appear first around the oral cavity and generally spread with considerable rapidity to other portions of the body. Neighboring vesicles may coalesce and form lesions from 5 to 6 cm. in diameter, resulting in extensive exfoliation of the epidermis and leaving the moist red cutis beneath it. As a rule, the vesicles break early, and it is stated by Brocq that they do not involve the palms or soles, though in our first and fourth case both were markedly involved. There is said to be no elevation in temperature unless a secondary infection intervenes; while not uncommonly the infant will gain weight during the illness. As a rule in a case terminating favorably after two or three recurrences the disease disappears, the usual duration being one or two weeks. In the fatal cases the vesiculation and desquamation may become so marked that practically the entire surface of the body is involved. In such cases digestive disturbances are very severe; bacteriemia develops and extensive changes in the parenchymatous organs occur.

The typical case is quite characteristic and the diagnosis is comparatively easy; in atypical cases, however, considerable difficulty is encountered. In the differential diagnosis, congenital syphilis is probably the first disease that must be ruled out. Impetigo contagiosa seu vulgaris seu bullosa is another that may cause considerable trouble; in fact, some authors believe the diseases to be identical. Dermatitis exfoliativa neonatorum in its early stages is said to be very similar; we will mention our views on this subject later. Pemphigoid eruptions of medicinal origin, bullous-varicella of the new-born, a case of which in an infant at the age of eight days one of us has seen, and Duhring's disease (dermatitis herpetiformis Duhring) must always be in mind. Brocq states that bullous urticaria is more frequent in infants than in older children. Epidermolysis bullosa, a rare hereditary disease, must also be remembered. Köhler[18] has written a lengthy article on "febris bullosa," a disease characterized by short prodromata and fever followed by the appearance of vesicles on an intact skin. It is markedly contagious, affecting both adults and infants. There is some question whether this affection is a separate disease or only an atypical pemphigoid developing under favorable circumstances.

In congenital syphilis showing bullous lesions differential diagnosis may be quite difficult. The marked involvement of hands, feet and buttocks, however, together with the occurrence of snuffles, an enlarged liver and spleen and positive Wassermann reaction should be sufficient to simplify the matter.

There are still many workers who believe in the identity of impetigo contagiosa and pemphigus neonatorum despite the fact that such careful workers as Sabouraud,[29] Lewandowsky, Jadassohn and others have shown conclusively that the ordinary impetigo contagiosa is due to the streptococcus, and that Cole[30] has further shown that it is due to the *Streptococcus longus seu haemolyticus* in particular, while this organism has not been shown to be the etiologic factor in pemphigoid. Matzenaur[31] in particular may be mentioned as one holding to the identity of the diseases. He may have changed his views since 1901, but at that time he cited the case of a woman with impetigo contagiosa circinata of universal extent, from which her babe, three days old, contracted a disease on those parts which came into contact with her. Of the physicians who saw the child, all were forced to make a diagnosis of pemphigus neonatorum, though in the course of a week the disease took on the characteristics of the circinata form of impetigo contagiosa. Engman,[14] as late as 1901, still believed in their identity. He was able at that time to isolate in seven cases of bullous impetigo the staphylococcus in six and a streptococcus in one case. Sabouraud[29] has shown that the streptococcus is a facultative aerobe and grows better in a liquid than in a solid medium. In order to obtain the true organism in such cases as Engman's, Sabouraud's pipette bouillon method or Lewandowsky's successive stroke-culture method must be used. In all likelihood if such a technic had been used the streptococcus might have been obtained in the first six cases. Not a few authors, however, agree with Engman and Matzenaur. Thus Bunch[32] says that pemphigus neonatorum, when transmitted to adults, always results in a typical impetigo contagiosa while the same contagium, transmitted to infants, causes pemphigus neonatorum. Faber[33] claims to have seen a specific instance of the above occurrence and states that many times crust formation is found in infants with pemphigus neonatorum. To strengthen his contention he quoted Moldenhauer in his report of the epidemic of 1872-1873 in the Leipsic clinic: "the numerous vesicles dried into a rather thick scab" (*das manche Blasen zu einem recht dicken Schorf vertrockneten*). Marsh[34] in 1910, says, "That pemphigus neonatorum and bullous impetigo contagiosa of the new-born are identical, is now practically proven." He describes three cases of pemphigus neonatorum in which two attending nurses developed typical impetigo. Luithlen[35] in 1899 reviewed the histologic picture of the two diseases and found them to be practically identical. Foerster in 1909 says, "Although many instances of an association of pemphigus neonatorum and impetigo contagiosa have been recorded, the possible identity of the two affections has not been given sufficient prominence in English dermatological literature." The main evidence as to their identity has come from their clinical resemblance in certain cases and in certain epidemiologic studies. Careful bacteriologic studies by numerous authors, however, have quite uniformly shown that in pemphigus neonatorum the staphylococcus is the etiologic agent, while in impetigo vulgaris seu contagiosa seu bullosa, the streptococcus is the organism causing the disease. It is quite probable that some cases diagnosed as pemphigus neonatorum are really bullous impetigo, as in a case of Whitfield's,[36] in which pure cultures of streptococci were recovered from the mother and infant, the baby having a bullous eruption and the mother an impetigo contagiosa of the forehead. There is one rare type of impetigo, however, from which we must admit that infantile pemphigoid can without question be contracted. We refer to impetigo Bockart staphylogenes, a disease characterized by isolated, discrete, thin varnish-like crusts limited to the follicles, that leave a pigmented area in healing, rather than redness as in impetigo contagiosa. In Hofmann's case, numerous bacteriologic examinations of both the mother and child gave only the staphylococcus, and he believes that the first case described by Winternitz[37] was a case of pemphigus neonatorum which probably was contracted from such a type of impetigo. We must also recognize the fact that several epidemics of a staphylococcus "impetigo" have been noted in Japan by Dohi and Dohi[38] in which the *Staphylococcus albus* was always cultivated. This was an epidemic and sporadic skin disease of children characterized by serous or seropurulent vesicles and bullae "that built no waxy yellow thick crusts, and left rather fine white or light yellow transparent lamellae or crusts." This type of "impetigo" has been reported in Europe and must be remembered as a possible explanation in the cases of pemphigus said to have been contracted from impetigo. As mentioned by Jadassohn, we must not forget, too, the possibility that it may be the secondarily infecting staphylococci in impetigo which cause the pemphigus neonatorum, while the streptococcus may not be so capable of infecting the infant's skin as the former organism. Only very careful observations and extensive cultural examinations will enable us strictly to rule out the possible existence of a pemphigus neonatorum due to the streptococcus. As the problem now stands, however, and in the present state of our knowledge, we must assert our belief to be that the large majority of the cases of infantile pemphigoid are due to the staphylococcus and are to be differentiated from impetigo vulgaris contagiosa.

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[26] Zechmeister: München. med. Wchnschr., 1887, xxxiv, 737.

[27] Brosin: Ztschr. f. Geburtsh. u. Gynak., 1899, xl, 418.

[28] Landsteiner, K.; Levaditi, C., and Prasek, E.: Compt. rend., Soc. de biol., Paris, 1911, lxx, 643, and 1026.

[29] Sabouraud, R.: Ann. de dermat. et de syph., 1900, Series 3, i, 62, 220, 426.

[30] Cole, H. N.: Arch. f. Dermat. u. Syph., 1913, cxvi, Heft 1, 207.

[31] Matzenauer, R.: Wien. klin. Wchnschr., 1900, xiii, 1077.

The question of the differentiation of pemphigus neonatorum and dermatitis exfoliativa neonatorum (Ritter) now arises. We would refer any one interested in the historical side of this disease to the able article by Carlton.[7] In the year 1878 Ritter von Rittershain described 297 cases of this peculiar skin disease affecting new-born babies. It had undoubtedly been observed previously, but he was the first author to describe it accurately and to recognize its clinical significance. The disease begins during the first or second and up to the fifth week of life. It is characterized by a not sharply defined redness which is at first most marked around the mouth and spreads rapidly over the entire body or portions of it. With this there is an increased turgescence of the skin and the connections between the rete malpighii and horny layer become loosened so that, at times, spontaneously or with slight trauma, the latter can be removed in large placques as in pemphigus foliaceus, leaving a dark-red moist or dry bed beneath it. The horny layer of the hands and feet may sometimes be removed as a glove, as in our case, and according to the intensity of the disease vesicles, bullae and cracks in the true skin may occur. Following the breaking of the vesicles or bullae crust may form. The entire process usually lasts a week or ten days and is fatal in 50 per cent. of the cases. As in pemphigus neonatorum the patient may have no elevation in temperature and may make the normal gain in weight during the duration of the disease. The complications and histologic findings are similar to those in infantile pemphigoid. Luithlen finds a marked proliferation of the rete malpighii in its lower layers with a lack of cornifica-

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32. Bunch, J. L.: Brit. Med. Jour., 1908, ii, 1260.
33. Faber: Monatsh. f. prakt. Dermat., 1890, x, 253.
34. Marsh, A. D.: Yale Med. Jour., 1910, xvii, 90.
35. Luithlen, F.: Wien. klin. Wchnschr., 1899, xii, 69.
36. Whitfield, A.: Brit. Jour. Dermat., 1903, xv, 218.
37. Winternitz, R.: Arch. f. Dermat. u. syph., 1898, xliv, 397.
38. Dohi, K., and Dohi, S.: Arch. f. Dermat. u. syph., 1912, cxi, 629.

tion and casting off of the upper layers. He believes that the disease begins with a hyperemia and exudation in the papillary and subpapillary layers and as an expression of this there is a hyperemia of the skin with consequent disturbances in the normal nutrition of the epidermis leading to a proliferation of the rete malpighii which causes the scaling. Winternitz found much the same histologic picture and was able to cultivate the staphylococcus from the blood. Della Favera's findings agree with the preceding, but he believes that the epidermal changes are dependent on lesions lower down in the corium. He also found the staphylococcus in the blood. From his studies, he believes that the lesions in pemphigus neonatorum are more localized in the papillary body and that the changes were more striking in the epidermis. He admits that it is sometimes difficult to distinguish between the two diseases, but he was unable to find in the literature any mention of a case of pemphigus neonatorum starting from a dermatitis exfoliativa neonatorum (Ritter). Other authors do not agree with Della Favera in this latter critical statement. For example, our own epidemic started with an infantile pemphigoid and later changed into a typical clinical case of dermatitis exfoliativa neonatorum. In Hofmann's case the disease began on the fourth day with a typical Ritter's disease, which on the seventeenth day changed to an ordinary pemphigoid with staphylococcemia and death on the twenty-ninth day. The mother had a few impetigenous lesions of the staphylococcic type which were the source of the infection. Bloch, from his-experience in the epidemic from Baginsky's clinic, says he can see no reason why the two diseases should be differentiated, for, in nearly all his cases, at least two-thirds of the skin could be stripped off as in a burn. Thus we are able to cite cases changing from Ritter's disease into pemphigus neonatorum and vice versa. Epidemics result from both diseases of varying severity, the histologic findings are similar and the etiologic agent is the same, and therefore we feel with Richter that "dermatitis exfoliativa needs no other classification than as a variety of pemphigus neonatorum, characterized by an especially ready exfoliation of the epidermis with malignity."[39] We share this opinion along with such men as Jadassohn, Hedinger, Baginsky and others. Undoubtedly the condition of the skin, state of maceration, age of the infant and severity and extent of the infection have a large influence on the character of the lesions found, and this may, and probably does explain in a large part their variability. There is no reason why there should be a differentiation between the two affections. It would seem that Ritter's disease is only a malignant type of infantile pemphigoid.

The prophylaxis of infantile pemphigoid is extremely important. Because of the marked contagiousness and high mortality, we believe that laws should be enacted placing this disease among the reportable and quarantinable diseases. Impetigo contagiosa is, in many states, a reportable disease, but we find no mention of pemphigoid seu pemphigus neonatorum. We feel that this is very important and might be the means of saving many lives in the future. Once the disease is started in a babies' or maternity hospital, only the most stringent quarantine will stop its ravages. Removal of both mother and infant to a contagious disease hospital in which the technic of aseptic nursing is well understood and carried out, would no doubt save lives, trouble and expense.

In view of the excellent results in our cases we would recommend the use of autogenous vaccine in all cases,[40] though when a bacteriemia has already developed it would be of quite doubtful value. Locally, astringents and drying powders appear to give the best results, while ointments in our experience were worse than useless, serving only to help spread the disease. Tincture of iodin, 1 to 3, in water may be of some service on single lesions.

## SUMMARY

1. In an epidemic of nine cases of "infantile pemphigoid" (pemphigus neonatorum) it was possible to isolate in pure culture the *Staphylococcus aureus* in all cases in which unbroken vesicles were to be found. In one case the termination was fatal and a coccus was found in the internal organs at necropsy.

2. The epidemic was started from a case of typical pemphigoid of the new-born, which later changed into a clinical picture of dermatitis exfoliativa neonatorum (Ritter), and as the etiologic agent in the two diseases is the same we believe there should be no distinction between them.

3. Impetigo contagiosa seu vulgaris seu bullosa (streptogenes) should be sharply differentiated from infantile pemphigoid because of its different bacteriologic origin.

4. We believe that infantile pemphigoid (pemphigus neonatorum) should be placed among the reportable diseases because of its severe epidemic characteristics and high mortality (from 25 to 50 per cent.).

5. Because of the striking results obtained in our epidemic we would recommend the use of an autogenous vaccine in all cases of infantile pemphigoid.

## ABSTRACT OF DISCUSSION

Dr. William A. Pusey, Chicago: I was much interested in the discussion of the ever-recurring question of the identity and lack of identity of these various bullous affections. I have nothing to say on the subject, however, except to protest against the use of the term pemphigoid as a noun. We already have sarcoid, a very catchy word which everyone remembers, although no one knows what it is, and we have erysipeloid, and now we have pemphigoid. Oid is an adjective terminal and to use such adjectives as nouns is bad English. Usage has already fixed it in sarcoid and erysipeloid, but bad forms should not be increased; we have to defend too many of them already.

Dr. A. Ravogli, Cincinnati: Some years ago I published a report of a similar case under the title of dermatitis exfoliativa neonatorum (Ritter), the affection occurring in an infant whose mother had been delivered by a midwife who at the time was suffering from a kind of paronychia. A few days after birth the child became feverish and developed bullae larger than the palm of the hand over the entire body. Death occurred from exhaustion. I also object to classifying these diseases under the name of pemphigus or pemphigoid. It is quite a different disease which clearly shows an infectious nature, and it is due to the staphylococcus. In the case I have referred to, large numbers of these micro-organisms were found. Nearly all the cases I have seen ended fatally.

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[39] Die Dermatitis Exfoliativa braucht vielmehr nichts anders zu sein, als eine durch besondere leichte Ablösbarkeit der Epidermis und Malignität charakterisierte Untergruppe des Pemphigus Neonatorums. Richter: Dermat: Ztschr., 1901, viii, 507 and 680.

[40] Since the above was written one of the authors was called to see a child 15 days old who had a typical severe pemphigoid which had persisted for 10 days. A vaccine was made from the staphylococci obtained in pure culture from several young unruptured bullae. Marked improvement was noticed three days after the first dose and on the seventh nearly all the lesions had completely healed and no new lesions had appeared. Two days after the babe was seen the mother developed vesicular and pustular lesions on the breasts from which no uncontaminated cultures could be obtained.

Dr. H. N. Cole, Cleveland: The term pemphigoid was suggested because we felt that pemphigus was not a good name for this affection, and as it was somewhat similar clinically to pemphigus we adopted the name pemphigoid. As these cases are unquestionably due to the staphylococcus, there is a great field here for the use of autogenous vaccines, and I trust that others will give them a trial when such a case comes under their observation.

# PENETRATING WOUNDS OF THE ABDOMEN *

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The subject of the treatment of penetrating wounds of the abdomen is of perennial interest. Notwithstanding the establishment of the International Court of Arbitration at the Hague, and the negotiation of arbitration treaties, wars and rumors of war are still rife. In civil life, also, strife is frequent, and deadly lesions are not infrequently inflicted. In considering penetrating wounds of the abdomen we must divide the subject into two classes: First, those occurring in civil practice, and second, those occurring during military service.

In this country, since the great Civil War, injuries of this character generally have been the result of individual frays or accidents, and are usually inflicted by missiles from pistols, rifles, shotguns and toy cannons, propelled at a moderate velocity and causing extensive lacerations of the tissues and viscera; or by stabs with knives, scissors or other sharp-pointed objects. Hospitals are usually conveniently accessible and such cases are generally promptly carried to suitable institutions, where they can receive appropriate care. Twenty years ago it was thought that the last word had been said with regard to the treatment of gunshot wounds of the abdomen, and that the rule had been firmly established to open the abdomen in all such cases, but the experience of the Spanish-American and Philippine wars cast doubt on the propriety of operative procedures in active military practice. The conflicts in various parts of the world since 1898 have still farther emphasized the impropriety of active surgical interference in this class of cases. Notwithstanding this opinion which has been rather reluctantly accepted by the profession, it was still thought that penetrating wounds of the abdomen occurring in civil life always demanded exploration. I am, therefore, surprised to find that Colonel Lagarde, in his recent book on gunshot wounds, casts a doubt on the advisability of laparotomy in civil as well as in military practice. He fortifies his position by quoting the results of both non-operative and operative treatment of penetrating gunshot wounds of the abdomen, in the great Charity Hospital of New Orleans, which appear to have less mortality when left to nature than when subjected to operation. He also expresses the opinion that the operative treatment of these injuries is followed by a higher mortality than formerly and attributes this to the fact that the pistols and revolvers now in use inflict more serious injuries than formerly. After a considerable personal experience with penetrating wounds, I am firmly of the opinion that all such wounds should be operated on if seen sufficiently early and if there are no urgent contra-indications to operative procedures.

In many explorations I have seen but two gunshot wounds from which I think the patients might have recovered without an operation, and but one patient not operated on primarily, in whom there were undoubted serious lesions, recovered, and she had an extremely stormy time and required several operations subsequently for subdiaphragmatic abscesses. She eventually recovered her health. My attention has been called to this matter again within a month by the following deplorable case, which forcibly illustrates the danger of delay in the performance of laparotomy.

### REPORT OF CASE

May 25, 1914, at about 7 p. m., a student at a well-known college was shot in the abdomen with a 32 caliber bullet, the missile first passing through a door panel. He was rushed to a hospital in the same town and was attended by local physicians. A surgeon was not summoned until the next day, and it was at least twenty hours subsequent to the shooting when he came under the care of competent surgeons. An inspection showed a healthy, well developed young man, about 20 years of age, with a large pistol-wound in the lower right side of the abdomen. He was suffering considerable pain, had an anxious expression, had vomited frequently, pulse was about 120 and thready, abdomen hard and tender, and the mouth temperature was but little elevated. He was at once taken to the operating room, anesthetized, and the abdomen opened through the right rectus muscle. A large quantity of dark-colored, ill-smelling fluid at once escaped through the incision. The intestines were red and covered with lymph, and when the nearest loop of intestine was withdrawn three ragged holes were found, in close proximity, in the ileum. After stripping the fibrinous exudate from the margins of the openings they were closed in the usual manner, with silk sutures. Four drains were inserted into the pelvic cavity and the patient returned to bed in pretty good condition. He was then placed in Fowler's position, and rectal instillation of hot water instituted. He did not respond favorably to the treatment, though the vomiting ceased and the abdomen remained flat, and he died about forty-eight hours thereafter.

In domestic brawls most penetrating wounds are inflicted by pistol-shots, and a single projectile may cause from one to twelve perforations of the intestines and other viscera. In a case of my own in which there were two shots, one passing from before backward and the other in the opposite direction, there were twenty-five perforations of the intestines, one of the mesentery and two of the bladder. Rifle-shots are not so common in civil life, but may be received either by accident or by design. In similar manner, injuries from the discharge of shotguns occur occasionally, and, when close to the object, the lesions may be very extensive and ghastly. At a greater distance there may be multiple perforations of the intestines. My colleague, Dr. J. Holmes Smith, operated successfully on a patient in whom there were fourteen perforations from a load of bird-shot. Very occasionally lesions are produced by air-guns, toy pistols and toy cannons. I have had one case in which boys firing a toy cannon loaded with buckshot caused a perforating wound of the stomach. Stabs with knives are not infrequent and occasionally similar injuries are inflicted with scissors or with other pointed objects. In one of my cases a man with melancholia inflicted serious injuries with a pair of shears found in a barn. Pistol-balls usually lodge in the body though at times

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they pass entirely through, having a wound of entrance and one of exit. It is absolutely impossible to determine the amount of damage done except by a laparotomy or a post-mortem examination. Projectiles passing transversely or obliquely across the abdominal cavity can scarcely fail to produce many and scattered lesions.

### SYMPTOMS

While there may be positive signs of penetration and of perforation of the viscera, such is not usually the case. There may be vomiting of blood which would suggest an injury to the stomach or duodenum; or bloody stools indicating lesions of the intestinal tract or blood in the urine or the escape of fecal matter, bile or urine from the external wound, or the protrusion of the omentum or intestines. These signs, however, are usually absent and the diagnosis of penetration must be made from other phenomena. Shock may or may not be present, but it is of no special diagnostic significance. In many cases it is not present and when present it is no criterion of the injuries sustained. If the shock is persistent it usually indicates hemorrhage. The presence of concealed hemorrhage may be suspected from pallor, weak pulse, clammy skin, and the presence of shifting areas of dulness in the flanks.

The most manifest sign of a penetrating lesion is the location of a pistol or stab wound on the front or side of the abdomen, and this justifies an exploration. More difficult it is to decide whether wounds of the thorax, back, pelvis, scrotum and buttocks also penetrate the abdomen. In such cases we must rely on general symptoms to guide us in our diagnosis and treatment, such as increased frequency of the pulse, vomiting, pain, tenderness and rigidity of the abdominal walls, with or without elevation of temperature. We should try to ascertain not only the character and size of the weapon and projectile used but the distance of the patient from the assailant, as well as the position of the assailed when shot or stabbed. A pistol or stab wound located over the abdomen is sufficient justification for an exploration of the wound and of the peritoneal cavity. Symptoms are misleading and one should not wait to see if deleterious symptoms may develop but should ascertain by sight and touch the true condition of the internal organs. . Patients in whom there is a reasonable suspicion of penetration of the abdominal cavity should be subjected to laparotomy without delay.

### PROGNOSIS

The prognosis of penetrating wounds of the abdomen is always grave, and depends on many factors, such as the size and nature of the vulnerating body, the organs and structures injured, the fulness or emptiness of the hollow viscera, the presence or absence of serious hemorrhage and especially on the time at which the case comes into the hands of the surgeon, as well as on the treatment that has been instituted previous to coming to the surgeon. In perforating wounds of the hollow organs death almost invariably occurs if the patient is not operated on. In some penetrating wounds of the stomach and large intestine death does not occur, as the mucous membrane may become everted and so plug the opening, or in the case of the large intestine the perforation may be extraperitoneal and the intestinal contents may not enter the peritoneal cavity. Wounds of the solid organs are not invariably fatal even when left to nature. I do not believe that the results of laparotomy and suture of the lesions are likely to be much better than those that have been attained hitherto. The general mortality of the operative treatment of penetrating wounds of the abdomen is at least 50 per cent. and it is not likely to be much, if any, less, if the cases are honestly reported. Some operators will have better success than others, either because of superior skill or on account of having to deal with less serious injuries. Complicated injuries such as penetration of the chest and diaphragm, fracture of the ribs or pelvic bones, injuries of the vertebrae and spinal cord, and serious loss of blood must always increase the mortality. Stab wounds are less serious than gunshot injuries, as the lesions are more localized and clean-cut, and are likely to be less extensive; but the hemorrhage is usually greater. The prognosis will also be affected by the age, general health and physical condition of the patients. Very young persons as well as the aged, debilitated and obese are not likely to survive such injuries, whether operated on or not.

### TREATMENT

When a person is shot or stabbed in the abdomen no probing of the wound should be done, nor should it be interfered with in any manner except to apply an aseptic dressing, or if that is not at hand, to lay a piece of clean cloth over the injured area. The patient should then be transported to a hospital without delay, and be placed in the care of a competent surgeon; or if a hospital is not accessible he should be taken to the place at which he is to remain, and the most competent physician available summoned.

The patient's abdomen should now be thoroughly cleansed, or painted with iodin, and the track of the bullet should be incised and followed, if there is any doubt that it has penetrated the peritoneal cavity. Sometimes it may be best to open the abdomen through the bullet wound, but generally the best incision is in or near the midline, as it permits a more thorough exploration of the viscera. If the patient is shocked it is usually due to hemorrhage, and he should be infused intravenously with salt solution and the operation proceeded with. Bleeding should be controlled by clamps and ligatures. In gunshot injuries the bleeding is usually not great, but large vessels may be lacerated and the hemorrhage be severe. In stab wounds the hemorrhage is often severe. Sometimes it will be necessary to compress the aorta or the vena cava in order to control the hemorrhage. Wounds of the liver, kidneys and spleen often bleed freely, and may be controlled by suture and packing; or in the case of the kidneys and spleen by removal of the organ. After attending to the bleeding the viscera should be explored systematically for perforations, which should be closed with the usual forms of intestinal sutures. When the intestinal perforations are close together it may be necessary to resect the intestine and perform circular enterorrhaphy or lateral anastomosis, which may also be necessary when the wound is on the mesenteric border of the intestine or when the mesentery is detached. After making a careful examination of all the viscera that are likely to have been injured, the peritoneal cavity should be flushed with hot salt solution and ample drainage provided, both at the seat of the injury, and in the pelvis. The abdominal incision is partially closed, leaving room for the exit of the drains. Subsequently the patient is placed in Fowler's position, and if the perforations are not situated too low down, the rectal instillation of hot tap-water should be commenced at once.

This is in brief an outline of the treatment of penetrating wounds of the abdomen according to my understanding of the subject. In all intestinal and visceral injuries, whether perforation from typhoid ulcers or ulcer of the stomach or duodenum, or subparietal traumatisms, or perforating lesions of the hollow organs from gunshots or stabs, the treatment should be a laparotomy, and the substitution of methods of precision for those of doubt and uncertainty.

### PENETRATING WOUNDS OF THE ABDOMEN IN MILITARY PRACTICE

Following the suggestion of Marion Sims in 1881, as the result of his observations in the Franco-Prussian war, it was hoped that a great lessening of the mortality of penetrating wounds of the abdomen as the result of early operation would occur in subsequent conflicts. This anticipation, however, has not been realized. It was early seen in the Spanish-American war and the Philippine insurrection, that serious injury to the abdominal viscera was frequently recovered from when left to nature, while those patients who were subjected to laparotomy almost invariably died. This unexpected result has been still further confirmed by the observations of surgeons in the Anglo-Boer and Russo-Japanese wars, and in the recent struggles in the Balkans. The conditions in the field are entirely different from those in civil life. Many of the wounded die on the battle-field before any assistance can be afforded them; but even when they do not speedily perish, there is no time or opportunity to undertake such operations when they can be done with any hope of success. The confusion, hurry, insanitary surroundings, flies, dirt, dust and often lack of water, all combine to render it almost or quite impossible to secure asepsis, and make abdominal exploration exceptionally unsafe.

As has been stated, a considerable proportion of those who have penetrating abdominal wounds, with probable visceral lesions, recover if left alone. The reason for this unexpected result is to be found in the character of the modern weapon. The projectiles from the modern army-rifle are long, pointed and narrow, steel or nickel jacketed, and are propelled with great velocity. At close range they make ragged and generally fatal wounds, but at the ordinary battle ranges they make clean wounds and usually pass entirely through the body. The intestines are either pushed aside or the perforations are small and without leakage. The missiles themselves appear to be aseptic or at least cause but little trouble. It seems impossible that a rapidly moving projectile could traverse the abdominal cavity obliquely or transversely without causing perforations of the hollow organs, but such seems to be the case in some instances. As many of these patients recover under expectant treatment, and but few under operative methods, military surgeons in the field are not justified in performing laparotomy in this class of cases.

When gunshot or stab injuries of the abdomen are inflicted while the troops are in garrison and can be operated on as early as in civil practice, it is my opinion that they should be subjected to the same treatment, that of laparotomy and repair of the lesions inflicted.

### SUMMARY OF CASES

My experience is limited entirely to cases occurring in civil practice.

The total number of cases treated by me and my personal assistants has been 44.

Cases in which laparotomy was not done, 6; recovered, 2, or 33 per cent., died, 4, or 67 per cent.

Penetrating wounds of the abdomen in which laparotomy was done, 38; of which 21 recovered, or 55 per cent., and 17 died, or 45 per cent.

Penetrating wounds with perforations of the hollow viscera 31; of which 15 recovered, 48½ per cent., and 17 died, 51½ per cent.

Gunshot wounds with perforations of the hollow viscera, 25, recovered 10, 40 per cent., died 15, 60 per cent.

Stab wounds with perforations of hollow viscera 6, recovered 5, 83 per cent., died 1, 17 per cent.

Cases in which the liver and spleen and other structures were injured, but without perforations of the hollow organs, 7; recovered 6, 86 per cent; died 1, 14 per cent.

The stomach was perforated in 11 cases, with 5 recoveries, 45½ per cent., and 6 deaths, 54½ per cent.

The intestines were perforated in 29 cases, with 15 recoveries, 51¾ per cent., and 14 deaths, 48¼ per cent.

The urinary bladder was wounded but once in 44 cases of penetrating abdominal wounds. The gall-bladder has not been injured in any case of my own; but I have seen a case in the hands of a colleague, followed by recovery.

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### ABSTRACT OF DISCUSSION

Dr. Ernest Laplace, Philadelphia: I wish to express my approval and appreciation of the conservative stand taken by Dr. Winslow on this important subject. There is but one question at issue—to operate or not to operate. Statistics are often misleading. We must adopt a policy as to whether it is right in cases of penetrating wounds to undertake an exploratory operation at once provided this can be done with modern requirements of surgery. I say unhesitatingly yes under all circumstances. It is the patient's only chance and it cannot be given to him too soon. Should a fatal termination take place without surgical interference then somebody has blundered in letting the precious moment pass by when operation might have saved the patient. This policy is to my mind the surest one for saving the greatest number of patients.

Dr. Cunningham Wilson, Birmingham, Ala.: Dr. LaGarde in his recent book has doubted the advisability of operating on patients in military practice. I see no reason in this day why a man should any more neglect to operate on a gunshot wound of the abdomen than he would on a typhoid perforation. I think they are both in exactly the same class. We have probably had patients in both conditions get well. Another point on which I do not quite agree with Dr. Winslow is the question of hemorrhage in gunshot wound of the abdomen. It has been my experience that it is really, in recent cases, a question of the amount of hemorrhage. The mortality in all cases of this kind is due to the great amount of blood lost, making very little difference how many perforations there are. A few years ago I reported at the Louisiana State Medical Society a series of twenty-five of my personal cases, with ten deaths. I flattered myself on the recoveries, but I think it was because I happened to get a run of pretty good cases. Since that time I have had twenty-two or twenty-four cases and I have almost reversed myself. I have had instead of 65 per cent. recoveries, a mortality of about 65 per cent. The thing that I have not been able to understand is why the military surgeons do not prepare themselves, or will not be prepared, to operate on such conditions in war as well as in civil life.

Dr. Jacob Frank, Chicago: Recently I have contributed to the *Military Surgeon* and the *Deutsche Militärästliche Zeitschrift* articles on this very subject from the point of view of the military surgeon. I agree with Dr. Winslow in the practice of gunshot wounds in civil life. I carried out the same treatment in my civil practice as does Dr. Winslow, and I cannot see why this same treatment cannot be practiced in military surgery, provided we have the proper equipment and surroundings. The reason military surgeons say, as does Dr. Winslow, leave these wounds to nature, is because when a man is shot in the abdomen on the firing line he lies there from four to ten hours or even longer before he is carried back to a first-aid station. There the wound is sealed up with a so-called first-aid packet or dressing and the patient is sent to the field hospital. Meanwhile twelve to twenty-four hours elapse before the patient reaches the hospital. On arrival septic peritonitis is so pronounced that it is too late to operate, and if operation is performed the results are disastrous. Why do they do this? To prevent ectogenic infection. Is there more danger of infection on the battlefield than in a large city where everything is teeming with bacteria? What is accomplished when the wound is sealed up? The germs within are sealed up, and, where can be found a better place for the propagation of, say, the colon bacilli than in the abdominal cavity? I can readily see why so many die and why they advise against operation in perforating gunshot wounds of the abdomen. It is not an easy matter to get the government to furnish the proper equipment to operate on these patients in the field; however, this could be supplied. If instructions were given to introduce immediate drainage for the purpose of allowing the bacteria, intestinal contents and gases to escape through the wound, there necessarily would result less danger to the peritoneum than from sealing up the wound. We are told that the field is dirty and that the attendants' hands are soiled; but dirt is not necessarily identical with pathologic germs. The great cry has been the danger from tetanus. We know that there is less danger from tetanus on a field that has not been trampled over for months or years than in a large city with an infection-spreading population! Let us suppose that a drain has been introduced soon after receipt of an injury. When such a patient reaches the field hospital an opportunity is afforded the surgeons for individualization. They will either renew the drainage or operate, as conditions indicate. Let us have this plainly understood, that by sealing up this class of wounds we probably prevent infection from without but positively invite the most virulent infection from within. In my judgment, the avoidance of the latter will mean the saving of many lives doomed from the beginning unless nature is assisted, and this can be accomplished only by drainage plus the usual conservative treatment.

Major Clyde S. Ford, Washington, D. C.: As a military surgeon I feel the onus of defense of my colleagues, inasmuch as their practice of non-interference with abdominal gunshot wounds in war seems to be questioned. From my observations in the Balkan wars, I have no doubt that the expectant treatment of gunshot wounds of the abdomen, in military surgery, is rational and is amply justified by experience. Among 500 cases in my service in Constantinople all of the patients with abdominal wounds when admitted were on the way to recovery notwithstanding the danger, distress and lack of transportation in the flight of a routed army. Many cases, owing to the essential injury or abuse, must have perished on the field. I can offer no comparisons, in figures, but as many of these patients recovered without operation, and as the decidedly great majority died with operation in the field, it seems probable that the soldier will fare better with his abdominal wounds left untouched. In Constantinople twelve cases of abdominal gunshot wounds were received in a military hospital within twenty-four hours after occurrence; the patients were all operated on and all died. No question need be raised as to the skill of the operator, or care in the hospital; both were under the direction of a most capable and scientific German surgeon, Wieting Pasha, and were superior to anything that could obtain in the field. In an evacuation hospital in the Bulgarian army at Kustendil, 10,000 wounded were admitted within a month. Two thousand of these were first treated by a Bulgarian colleague and myself—500 in one day. The hospital, in a high-school building, had fair facilities for aseptic surgery. Our patients —most of them—were carried four days in bull carts, over the roughest mountain roads, and many of them bore abrasions on their backs to mark the journey's trials. Abdominal wounds were found resolving spontaneously or with localized abscess or with general peritonitis. In the latter class the twenty patients operated on all died. One accidental wound received in camp adjoining the hospital was operated on within six hours and the patient died. Incidents of transportation, before and after operation, lack of operative facilities and deficiencies in postoperative treatment, furnish positive indications for non-interference. It has been said here that the surgeon must always try to do something—the best he can—for these cases, but it does not follow that he must try an operation. Nature's trial is sometimes better for the patient than the surgeon's interference. In the German and Austrian armies instructions are issued to the sanitary service, in unequivocal terms, that gunshot wounds of the abdomen are not to be subjected to operation in the field. Von Oetlinger is the authority for this practice and his conclusions are based on experience with military conditions. Dr. Winslow's paper has been edifying and instructive and his conclusions from his experience in hospitals, in civil life, are convincing, but the rule of non-interference with abdominal wounds in war is based on other conditions.

Dr. F. N. McRae, Atlanta, Ga.: Those of us from the South have seen more than an average number of penetrating wounds of the abdomen. In Atlanta we see a great many in civil practice. There are several little expedients. Our statistics will never be fair until they state the length of time elapsing between the reception of the injury and the resort to operation. An operation done within an hour gives a patient 75 per cent. better chance than an operation done six hours after the injury. An operation done after brief transportation gives a patient a much better chance of life than operation done after long transportation when shaking up tends to disseminate infection in the abdominal cavity. Dr. Parker, then of New Orleans, said "get things clean, get into the abdomen, do your work and get out." Chronic surgery has no place in penetrating wounds of the abdomen. The surgeon must get to his work quickly, do it thoroughly and then get out. One of the expedients I found was slipping a loop of catgut around the intestine to mark the beginning point, trace, wash off with salt solution and close the perforations as you go. The late Dr. Douglas of Nashville, Tenn., collected statistics of those cases flushed and those of the dry toilet. The statistics were in favor of the dry toilet. I do not think flushing the abdomen is good practice in many cases. It tends still more to the dissemination of the infection. The location of the wound has a great deal to do with the results. The patients who recovered from wounds of the large intestine had extraperitoneal wounds as he stated. The other point mentioned that is of great value is the removal of the spleen and kidney when they have been seriously injured. I know of deaths in several instances following attempts to save a kidney when extensively lacerated. These patients almost always die unless nephrectomy is performed at the time of operation.

Dr. William L. Rodman, Philadelphia: The paper by Dr. Winslow is safe, sound and sane in all particulars. I would particularly make the point with reference to side to side flank feeling. Not only may you have as many as twelve wounds, but I had one boy shot accidentally with a rifle with twenty-one perforations. As he was gotten into the hospital within one hour after the accident he was operated on immediately. The military surgeons, though, I am satisfied are right. The difficulties on the battle-field are insuperable. In the first place, just as Dr. McRae said, it is the time at which the operation is done. He spoke of Douglas' statistics; he quoted Siegel's statistics. I think I can recall those statistics exactly: If the operation is done within the first twelve hours the mortality is 15 per cent., the third twelve hours it is 67 per cent., and if it is done after that time it is over 70 per cent.; but even in late cases men sometimes get well. One man was shot Friday morning, carried over a rough road, was operated on the following Sunday at 12 o'clock, which you see is the time I specified. He had general peritonitis and a stormy convalescence, yet he recovered. Again, I have operated early in cases in which the patients died. I think the whole question hinges on the time, the damage wrought and particularly whether solid or a hollow viscus has been injured. I absolutely agree with Dr. Winslow that the small ball going with many revolutions a second and cutting like a knife, may go through the liver and do practically little damage, or through the lungs, and these men are often on the firing line within a short time. As to the last question raised by Dr. McRae, I think he takes the correct stand. It also depends on the amount of soiling of the peritoneum. If you operate within the first six hours, where the mucosa acts as an ectropion, plugs the wound, and there is some sepsis, there will be no extravasation; but it comes later. If there is gross soiling, however, the only thing to do is to flush and make an opening above the pubis and drain. In the early cases in which there is no visible soiling, flushing does harm if the peritoneal cavity be full. I think Dr. Winslow has given us many accurate statistics. In my own experience gunshot wounds of the abdomen have been very fatal and I think he is right that 50 per cent. will get well and 50 per cent. will die.

Dr. Randolph Winslow, Baltimore: Dr. Frank is a brigadier-general while I am a first lieutenant in the medical reserve corps, and I would like to take orders from him in military surgery, but I am afraid that from what I have read, not from what I have seen, it would be quite difficult to do a safe laparotomy on the battle-field. I would not like anyone to suppose that I flush every abdomen. It is only in case there is soiling, and perhaps not always then.

# ABDERHALDEN'S TEST IN THE DIAGNOSIS OF CANCER*

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Statistics, together with the dreadful nature of the disease, demand that any and every method proposed for the early diagnosis of cancer should be thoroughly and impartially tested. Emil Abderhalden of Halle, Germany, recently presented to the medical profession a biologic test that is demanding the closest attention. Time alone can thoroughly prove the accuracy of his test, and only as impartial reports of large numbers of cases examined are offered by reliable workers. It is readily apparent by a casual review of the literature pertaining to the test that the differences in the results obtained are due to some variation as to technic, selection of tissues used as fundaments, unless the test is unreliable. Frankel states that the Abderhalden reaction was not reliable in the cancer cases examined at the research institute at Heidelberg, while Frank and Heimann, Marcus, Epstein, Erpicum abroad, and Lowry in this country report more favorable results.

Apparent errors in the specificity of the test do not appear to be evidenced by malignant conditions failing to give a reaction, as much as the finding of a positive reaction in individuals almost certainly not malignant. My experience with this test would indicate that there are some conditions clinically not malignant that occasionally give a positive malignant reaction when not expected; as, for instance, certain pathologic conditions, as myomas of the uterus, and even the physiologic condition of pregnancy in a few instances, as has also been noted by Frank and Heimann. Especially is such a reaction to be obtained if a cancer of the uterus were used as the prime fundament. The uterine cell in such tissue is digested instead of the cancer-cell. For this reason a cancer of the uterus should never be used for making the test. Data based on such work are necessarily unreliable (Table 1). The majority of positive reactions tabulated as errors in my clinically non-malignant cases were secured by the use of such tissue, used for a time without recognizing its treacherous nature. It is notable that all of these cases possessed a distinct pathologic uterine condition—myomas, metritis and endometritis. The elimination of these cases in my series greatly increased the percentage of accurate interpretations, in nearly one hundred examinations, largely clinical as well as experimental. There were, however, a few with which by repeated examinations with indifferent cancer tissue only a positive reaction could be obtained. Of these one has to class them either as errors, or admit the possibility of an individual giving the test that has harbored an invasion and recently dispelled it (Vaughan), or possesses an active invasion (second-degree cell proliferation of Mayo) that had not at the time of the test made itself manifest by even suspiciously clinical symptoms. I am led to consider the latter possibility by the developing histories obtained in several of these cases since the making of the tests. That is, they have progressed to a third-degree proliferation. I admit that in the remaining few cases there is absolutely no reason as yet for thinking the test other than erroneous.

TABLE 1.—CLINICAL CLASSIFICATION OF EIGHTY-TWO ABDERHALDEN REACTIONS

Clinically Malignant

| Location of Known Cancer Growth | Reaction |  |
|---|---|---|
|  | Positive | Negative |
| Breast | 3 | .. |
| Uterus | 3 | .. |
| Stomach | 1 | .. |
| Liver | 2 | .. |
| Sigmoid | 1 | .. |
| Cervical Glands | 2 | .. |

Suspiciously Malignant

| Location of a Suspicious Tumor | Reaction |  |
|---|---|---|
|  | Positive | Negative |
| Breast | 2 | 1 |
| Uterus | 10 | .. |
| Stomach | 10 | 4 |
| Liver | .. | 1 |
| Gastro-Intestinal | 4 | 1 |
| Sigmoid | .. | 1 |
| Bladder | 2 | .. |
| Testicle | 1 | .. |
| Thyroid | 4 | .. |
| Congenital Nevi | 1 | 1 |
| Pancreatic Diabetes | 1 | .. |
| Cancer of the Tongue | 1 | .. |
| Ulcer of the Tongue | 1 | .. |

Clinically Not Malignant

| No Cancer Manifestation of any Degree | Reaction |  |
|---|---|---|
|  | Positive | Negative |
| Normal Males | .. | 3 |
| Normal Females | .. | 2 |
| Pregnant Condition | 7 | 7 |
| Simple Hyperthyroid | .. | 1 |
| Sciatica | .. | 1 |
| Uterine Disturbances | 2 | .. |
| Peritonitis | .. | 1 |

## PRACTICAL APPLICATION

The differences of opinion that arise relative to the findings in the suspiciously malignant cases develop the practical application of the test. The finding of a positive reaction in a known malignant condition is gratifying but of little practical value to the sufferer. The weight of responsibility resting on a positive or negative finding in suspiciously malignant individuals is tremendous. Until further work perfects the technic, a clean-cut, negative reaction carries much more weight than a positive one, because of the many possibilities contributing to an erroneous positive finding. A negative reaction associated with a negative bismuth injection differentiated a grave secondary anemia of a suspected malignant origin, from what has subsequently proved by a regular blood-study to be pernicious anemia. In gastric conditions the test is useful in answering the uncertain roentgenographic findings obtained from a small carcinoma or callous ulcer. Case says, "I do not know of any way to differentiate from the x-ray findings alone between the defect caused by a small carcinoma and that caused by a callous ulcer." I believe that the Abderhalden reaction is especially valuable in answering quite positively any question arising as to the actual cause producing some of the border-line roentgenographic filling defects. The association of this test with the bismuth meal and injection makes the strongest combination now at our command in the diagnosis of gastro-intestinal diseases.

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### SELECTION OF FUNDAMENTS

I am confident that it has been found by all working with the test that the preparation and preservation of the substrate has been vexatious. While one working with the pregnancy test has necessarily but one prime fundament, one working with the cancer reaction has several varieties of tissue at his command. Experience has taught me that the selection of the tissue for the best results is fully as difficult as either the preparation or preservation. The fresher the tissue the better the results. As soon as it is found that it takes more than four to six boilings, after careful washing, to clear the tissue for use, it becomes necessary to be especially guarded in the interpretation of reactions obtained with such tissues. It is better to discard it as useless. The case used in freeing the tissue of blood and the putting away of the tissue in relatively small quantities in relation to the amount of chloroform-water used, covered with toluene, largely determines the value and length of time of preservation. All my tissue has been kept in an ice-box maintaining a temperature of about 8 C. (46.4 F.). Treacherous tissue will give treacherous results no matter how careful your technic may be. Such tissue is even worse than loose thimbles.

Experience teaches one to avoid using any cancer-tissue as a fundament that is mixed with a large amount of the tissue invaded, as for instance, cancer of the

TABLE 2.—FUNDAMENT REACTIONS

| Combined Cases Clinically or Suspiciously Malignant | Prime Fundaments; Variety of Types Used | | | | | | | | | | | | | | | | | | Results | | | | | | Secondary Fundaments | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sarcoma D. | | Carcinoma M. | | Carcinoma S. | | Carcinoma T. | | Carcinoma Liver | | Carcinoma Stomach | | Epithelioma Hand | | Sarcoma Thyroid | | Correct Interpt. | | History | | Errors | | Normal Placentas | | Thyroid Tissue | | Fibromas | | Brain | | Muscle | |
| Reactions | P | N | P | N | P | N | P | N | P | N | P | N | P | N | P | N | P | N | P | N | P | N | P | N | P | N | P | N | P | N | P | N |
| Cancer of Breast | .. | 1 | 1 | .. | 3 | .. | .. | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | 3 | .. | 2 | 1 | .. | .. | .. | 3 | .. | .. | .. | .. | .. | .. | .. | .. |
| Cancer of Uterus | 3 | .. | 3 | .. | 4 | .. | .. | .. | 2 | .. | 1 | .. | .. | .. | 3 | .. | 3 | 3 | 6 | 1 | 3 | .. | 5 | 5 | .. | 4 | .. | .. | .. | .. | .. | .. |
| Cancer of Stomach | 1 | 1 | 1 | .. | 3 | 2 | 1 | .. | 3 | .. | 3 | 1 | .. | .. | .. | .. | 5 | 3 | 3 | 1 | .. | .. | 2 | 6 | 2 | .. | .. | .. | .. | 1 | .. | .. |
| Cancer of Liver | .. | 1 | .. | .. | 1 | .. | 1 | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | 1 | ... | 1 | 1 | .. | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. |
| Cancer, Gastro-Intestinal | .. | .. | .. | .. | .. | .. | .. | .. | 4 | 1 | 1 | 1 | .. | .. | .. | .. | 1 | 1 | 3 | 1 | .. | .. | 1 | 2 | .. | .. | .. | .. | .. | .. | .. | .. |
| Cancer, Sigmoid | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | 1 | 1 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Cancer of Bladder | 1 | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | .. | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Cancer of Testicle | .. | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Cancer of Cervical Glands | .. | .. | .. | .. | .. | .. | .. | .. | 3 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 3 | .. | .. | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. |
| Cancer of Thyroid | .. | .. | .. | .. | 2 | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | 2 | .. | .. | 1 | .. | .. | 1 | 2 | .. | .. | .. | .. | .. | .. | .. | .. |
| Cancer of Congen., Nevi | .. | .. | 1 | .. | 1 | .. | 1 | .. | . | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Cancer of the Tongue | .. | .. | .. | .. | .. | .. | .. | .. | . | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Cancer of Pancreas (Diabetic) | . | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| | | | | | | | | | | | | | | | | | 19 | 8 | 22 | 6 | 3 | 0 | | | | | | | | | | |
| Normal and Abnormals, Non-Malignant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Normal Male | .. | 2 | .. | 1 | .. | .. | .. | . | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 3 | .. | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. |
| Normal Female | .. | .. | .. | .. | .. | .. | .. | . | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Pregnancy | 2 | 2 | 2 | .. | .. | 2 | .. | . | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 8 | .. | .. | 9 | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Suspected Pregnancy | .. | 3 | 1 | .. | 1 | .. | .. | . | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 7 | .. | .. | 7 | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Hyperthyroidism | .. | .. | .. | .. | .. | .. | .. | 1 | . | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Peritonitis | .. | 1 | .. | .. | .. | .. | .. | . | . | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Indefinite History | .. | .. | .. | .. | 2 | .. | .. | . | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | .. | .. | 1 | 1 | .. | 1 | .. | .. | .. | .. | .. | .. |
| Examinations Made | .. | .. | .. | .. | .. | .. | .. | . | . | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. |
| | | | | | | | | | | | | | | | | | 0 | 1 | 1 | 22 | 0 | 0 | | | | | | | | | | |

uterus, as previously mentioned. Metastatic glandular tissue is far preferable to tissue from the primary invasion. It usually contains a larger proportion of actual cancer-cells than any other tissue available.

Fresh tissue secured from a person accidentally killed should always have first choice. Tissue from the operating-table usually has to be accepted and is far preferable to tissue obtained at necropsy. Tissue received at necropsy that requires many repeated boilings to render it negative to ninhydrin should be condemned. When tissue requires many repeated boilings, there is such an amount of the protein material already broken down, at or near the amino-acid stage by decomposition, that it reacts to ninhydrin even though it may not have been acted on in the incubator by its accompanying serum. Bad tissue explains practically all of our erroneous findings. Bad thimbles come second.

Tissues used as substrate or fundament should be accompanied by a carefully prepared statement concerning the history of its donor, together with a microscopic study. Series of cases reported should be accompanied by a detailed description of the tissues used as fundaments. It will be evident from such data that there is a great difference as to the reliability of different tissues. It will also materially aid in standardizing the technic and value of the test (Table 2).

Providence determined circumstances leading to the possession of the first cancer-tissue used in my research work. The results obtained with this tissue were very gratifying, and the reactions were cleaner-cut, giving a distinctly lower percentage of possible errors than some tissue I have been obliged to use since. This tissue was a lymphosarcoma of the cervical and retroperitoneal glands. The all-cancerous nature of this material determined its value. A careful study of the accompanying tables will readily demonstrate the most desirable histopathologic requirements of the prime fundament. Combinations between prime and secondary fundaments suggest the possibility of being able to roughly locate a malignant invasion (Lindig, Kabanow). Varying the combination formulas of fundaments in reexaminations is of distinct advantage in suspiciously malignant investigations (Table 2).

I fully realize the fact that the histories tabulated as confirming the accuracy of the test are in some ways possibly unreliable. I have, however, endeavored to so use only such cases as gave very definite clinical manifestations, or those in which the cause of death was due unmistakably to the effects of a malignant disease. I readily appreciate that the only absolute solution of the problem is the number of malignant cases examined that give a positive reaction in which a microscopic diagnosis is able to verify the validity of the reaction. There will be, however, a border-line class of cases giving the reaction in which pathologists may differ, owing to the presence of a positive reaction in very early malignant cases, microscopically not well defined.

### SUMMARY AND CONCLUSIONS

1. Keep carefully prepared histories of all cases examined.
2. There should be a follow-up interest, especially in such cases as gave a positive reaction, not clinically malignant at the time of making the test.
3. Care in selection of fundaments should be observed, keeping a carefully prepared statement concerning their donor, with a microscopic study of each.
4. Varied association of data pertaining to patient and fundaments, with reaction obtained, is essential.
5. Reexaminations in determining the progress of the disease are of especial value.
6. As yet the test cannot be considered as strictly specific for the diagnosis of cancer.
7. A positive reaction, however, should receive careful consideration before calling it erroneous.

### AUTHOR'S TECHNIC

My technic is given in detail, that the reliability of my work may be judged accordingly.

Only distilled water, distilled at the time of making the test, was used, except in a very few instances in the very first of my work. All glassware is carefully washed, drained, and rinsed with alcohol, followed by ether; it is then sterilized by dry heat. The entire work has been done in a room never used for bacteriopathologic work. All apparatus is reserved exclusively for this work. I have used a few of the 579 Schleicher and Schüll thimbles, but practically all of my work was done using the 579A thimbles, selected as follows:

The thimbles were first well soaked in cold water, then boiled for five minutes. When cool, they were placed on the inner end of the funnel-form stopper of my dialyzing chamber. This was done at first with bare, well-washed hands, but now I use rubber gloves entirely and handle the thimbles as little as possible, rinsing with sterile distilled water before replacing in my dialyzing outfit, previously filled with 15 or 20 c.c. of distilled water. Cotton plugs were placed and then the entire outfit was sterilized by steam heat. No part of the remaining technic allows of the possibility of contamination of the outer wall, or surrounding sterile distilled water. Chloroform and toluene were added through the side tube provided for this purpose. Sufficient toluene was used to overlie the surface thoroughly. The apparatus was then ready to receive the materials intended for dialysis. New thimbles were filled with 5 c.c. of a 1 per cent. silk peptone (Hoechst) solution, covered with 10 drops of toluene, placed in an electrical incubator for from fourteen to sixteen hours. After removal from the incubator, 5 c.c. of the diffusate were tested with 0.2 c.c. of a 1 per cent. ninhydrin solution. Only those thimbles giving a corresponding *faint* shade of blue color were reserved for further examination.

The reserved thimbles were then run, first with 5 c.c. of a 10 per cent. solution of egg albumin, and if any were found to give the ninhydrin reaction they were immediately discarded. By selecting only such thimbles as give a faint blue ninhydrin reaction in the first test, seldom one is found that is permeable to the albumins. New thimbles are never used in an actual test until they have been run at least twice with human serum and test negative, 5 c.c. of diffusate to 0.2 c.c. of a 1 per cent. solution of ninhydrin; examination is run in duplicate with a previously tested and satisfactory set of thimbles and the new thimbles judged accordingly.

I have always selected thimbles in groups of four, notching the top with one to four notches, and punching in the side just below the notches one or more holes; in any set of four, each has the same hole-punch as one 0 to four 0; or one 000 to four 000. Each set of thimbles is placed in a wide-mouthed container, of 120 c.c. capacity. The bottle was then filled with distilled water and the whole placed in a steam sterilizer for one-half hour. After removal and cooling, 1 c.c. of chloroform was added, and the surface of the chloroform-water was well covered with toluene. The cork stopper was put in place and the thimbles then set away in the ice-box, kept at a temperature of about 8 C. (46.4 F.). Control experiments demonstrate that only the thimbles barely permeable to the silk peptone solution are suitable for the cancer-test as cancer-tissue is quite readily broken down by the "protective ferment" in the dialyzing thimble.

Preparation of tissue, selected as previously suggested, must be complete in the removal of all traces of blood and the saving of only that portion of the cancerous material that contains the smallest amount of near-normal tissue invaded. Such tissue is cut up into small pieces about the size of a pea, well washed, and then thrown into a large volume of boiling water, 10 parts by volume, containing 1 or 2 drops of glacial acetic acid, and allowed to boil for just five minutes. The tissue is then drained of its boiling water and again similarly boiled except that no acetic acid is used. The boiling is repeated in this manner for from three to six boilings, until the boiling-water gives not the slightest reaction with ninhydrin, using 1 c.c. of a 1 per cent. solution of ninhydrin to 5 c.c. of the liquor. Any tissue requiring more than five or six boilings is discarded. After the tissue has tested negative to ninhydrin, by boiling in bulk, the tissue is then placed in small quantities—about 15 gm.—in a 60-c.c. Erlenmayer flask, and again boiled. After the contents of the flask have cooled, chloroform is added, and the whole covered with toluene, the mouth of the flask is plugged with cotton, and the tissue thus placed in the ice-box in the water in which it was last boiled. Whenever tissue is removed for use, the remaining tissue is similarly treated.

At least 30 c.c. of blood should be taken from the patient, either by venipuncture or actual bloodletting under strict aseptic precautions, and always using only dry glassware. The blood is usually collected by using a modified Jellinghaus-Losee outfit. Constant rigidity should be maintained in using only blood obtained before the morning meal, or if the blood has to be taken in the late afternoon, the patient should present himself without having eaten dinner; not even a lunch is allowed. The blood is allowed to stand at room temperature in the collecting outfit until the serum separates, which varies from three to twelve hours—usually four to six hours sufficing. Accordingly, blood collected at 8 o'clock in the morning is usually ready for setting up in the afternoon; that collected in late afternoon is ready next morning, but should be kept in an ice-box over night.

During the time that the blood is separating, apparatus required for the test should be made ready; and the fundaments to be used should be reboiled and made to test negative to ninhydrin, using 1 c.c. of a 1 per cent. solution to 5 c.c. of the boiling water. In reboiling the tissue, care should be taken to use ten times by volume the amount of distilled water as tissue to be prepared.

The separated serum is pipetted off from the collecting outfit into a centrifuge tube, and centrifuged at *high* speed until the serum is perfectly clear, and free from any reddish tint or cloudy appearance. One and one-half c.c. of such serum is placed at once in a small test-tube in the water-bath, maintained at a temperature of 56 C. (132.8 F.), for the purpose of inactivating this amount of serum, which is to be used as a control along with the prime fundament to be used with the untreated serum. At the same time that the serum is being inactivated, the dialyzing outfits as described in a previous article are sterilizing. After the outfit has been sterilized and cooled, chloroform is added through the side tube and then sufficient toluene to cover thoroughly the sterile, distilled water surrounding the sterile thimble free from all possibility of outside contamination due to the special construction of this apparatus. Each dialyzing outfit is labeled and the formula made up of various fundaments to be used, writing on the label the particular fundament and the amount of serum that each outfit is to receive. Then a small piece, from 0.5 to 1 gm., is dropped through the funnel-form stopper supporting the dialyzing thimble on its inner end, in spaced relation to the wall of the outer container. One c.c. of serum is then added to each (formerly used 1.5 c.c.) except to the one to receive the inactivated serum. After placing the serum, 10 drops of toluene are added, replacing the cotton plug, at which time the entire set is ready for the incubator. They are placed in an electrical incubator, at 37 C. (98.6 F.). Abderhalden specifies in the pregnancy test that dialysis should go on for from fourteen to sixteen hours; experience with his technic in the cancer test indicates that a shorter period, about twelve hours, gives better differentiation of color reactions, and so, better satisfaction.

After removal from the incubator, the funnel-form stopper supporting its dialyzing thimble and contents is removed. Five c.c. of the dialysate is placed in a calibrated test-tube, to which is added 0.1 c.c. of a 1 per cent. solution of ninhydrin. The test-tube with its contents is then boiled with its fellow in an electrical heating device so constructed that a definite, constant and predetermined heat is applied, boiling the contents of the test-tubes for exactly one minute (author's electric test-tube heater). By thus boiling the dialysates with ninhydrin, the ratio of evaporation is constant for each. After cooling for one-half hour, interpretations are made by the color reactions obtained. If the test has gone on satisfactorily, negative reactions will be apparent by the entire absence of any color in the contents of its test-tube. Positive reactions will manifest themselves by a distinct, usually not too deep, bluish-purple color in the contents of the test-tube. Such reactions are easy of interpretation as to reactions obtained. The association of all the reactions obtained, together with the particular formula for the test, is necessary for the making of a diagnosis. My most frequently used formula for a set of four thimbles is the following:

One thimble containing the prime fundament and untreated serum; one thimble containing the prime fundament and inactivated serum; one thimble with either serum or fundament alone, as might be indicated by a suspicion as to the reliability of either one or the other; the fourth thimble contains the secondary fundament, common to any particular series of studies. Invariably my secondary fundament has been a placental protein. In a few instances I have also used muscle-tissue, brain-cortex, and thyroid gland. When the interpretation of the test depends on the meaning of various shades of color reactions, it cannot be considered in any other way than unsatisfactory, and indicates the necessity for a reexamination. Whenever possible, controls should be run using the same formula either with a known normal or malignant. The larger number of my cases were run with a known control, but this was not invariable.

Gryphon Block.

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# A STUDY OF THE FERMENT ACTIVITY OF THE BLOOD-SERUM

## DURING PREGNANCY AND UNDER NORMAL AND PATHOLOGIC CONDITIONS *

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A large amount of work has been done with the Abderhalden test, using the dialysis method. Almost diametrically opposite conclusions have been arrived at by the various workers in this field. L. Flatow,[1] using an acetic acid coagulation method, and neutralizing with calcium oxalate, found that all serum has the power of digesting placenta. H. Kämmerer, M. Clausz and K. Dieterich[2] found that serum of non-pregnant individuals sometimes reacted positively, and that the serum from known pregnant individuals sometimes reacted negatively. Sunde,[3] in eighty-three cases, found that the test corresponded to the clinical diagnosis in seventy-five cases; and that eight non-pregnant cases gave a positive reaction.

Stoekel[4] believes that the proof of the specificity of the reaction is still lacking. He thinks that it, at present, is of little significance for general practice or forensic medicine. A. K. Pain,[5] on the other hand, feels that with good laboratory technic the test is the most accurate of the present-day methods of diagnosis and ranks with the Wassermann and Widal tests. Williamson[6] found that in twenty known pregnant cases the reaction was positive in all; while in thirty known non-pregnant cases the results were uniformly negative. In sixteen unknown cases, however, the reaction was wrong in two and doubtful in two. In other words, the reaction was of no value in the diagnosis of 25 per cent. of the unknown cases. Oller and Stephan[7] conclude that, while pregnant serum contains proteolytic ferment that can be demonstrated by the Abderhalden dialysis method, the reaction is of little clinical value, because a relatively large number of non-pregnants likewise give the reaction. They mention Lichtenstein, Rubsamen, A. Mayer, Tschudowsy, Gambaroff, Stange and Aschner as supporting Abderhalden claims, but point out the fact that these investigators rarely show controls with normal serum or, what is of more importance, with serum from pathologic cases. Also that Aschner gets 30.5 per cent. positive reactions in non-pregnant cases. Mühsam, Hies and Lederer, Werner and Wininwarter consider the reaction as entirely untrustworthy. Noncommital are Schafer, Ebeler and Lohnsberg, who report positive reactions in 12.5 per cent. of non-pregnant cases, Frank and Heiman, Frank and Rosenthal, Kohler and Deutsch.

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* From the Department of Research Medicine, University of Illinois, Chicago.

* Read before the Section on Pathology and Physiology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Flatow, L.: München. med. Wchnschr., 1914, lxi, No. 9.
2. Kämmerer, H., Clausz, M., and Dieterich, K.: München. med. Wchnschr., 1914, No. 9.
3. Sunde: Norsk. Mag. f. Laegevidensk., 1913, lxxiv, 1234.
4. Stoekel: München. med. Wchnschr., 1913, No. 9.

E. Schiff[8] concludes that the test is entirely reliable, but he gives no details as to his technic or controls. He admits getting seven weak positive tests and controls in thirty-six non-pregnant cases. Schwarz[9] found forty-one known pregnants who gave a positive test, while thirty known non-pregnant cases gave a negative reaction. The latter cases included fibroids, pus-tubes, carcinoma and a few male patients. Jellinghaus and Losee[10] do not deny the defensive ferment theory, but feel that the dialization method is not always correct in non-pregnant cases. They therefore do not recommend the test for diagnostic purposes, because errors in technic, responsible for poor diagnosis, cannot be found till after the test. Williams and Pierce[11] conclude that there is an increase of ferment in the blood during pregnancy, but that the ferment is not specific—a similar increase having been noted in other conditions.

Much of the work reported has been done with modifications of the original Abderhalden technic, which renders it totally unfit for comparison either with the original Abderhalden work or with that of other men who used Abderhalden's technic. Many men reported work, without giving detailed account of their technic and control experiments. Such work is of no possible value, and merely serves to increase the confusion that exists regarding the use of the Abderhalden test as a valuable addition to our diagnostic methods in obscure cases.

This work was undertaken to determine:

1. Whether there is a ferment constantly present in the blood of pregnant women that can be demonstrated by means of the Abderhalden dialysis method.

2. Under identical conditions does blood, normal or pathologic, contain a similar ferment which might give the same reaction?

3. If blood, from non-pregnant individuals, gives this reaction, what conditions are most likely to lead to a wrong conclusion when doing the test in a case of suspected pregnancy?

4. Will a quantitative estimate of the strength of the reaction assist in differentiating pregnancy from other conditions that might give a positive reaction?

In undertaking this work it was decided to follow Abderhalden's technic.[12] About thirty cases, pregnant and non-pregnant, were tested, in order to become familiar with the technic, and to be able to avoid the inevitable mistakes of the beginner. These results were not recorded.

In my opinion, at present at least, in order that the results may have a more uniform comparison, all Abderhalden tests should be made according to Abderhalden's technic. Only in this way can a sufficient number of tests be made to permit us to draw warranted conclusions as to the clinical value of the test. Various modifications, at the present state of our knowledge, merely serve to add to the confusion without throwing any real light on the subject.

### THE ABDERHALDEN TECHNIC

The technic used in this work is here briefly described:

*Preparation of the Placenta.*—I was present at the delivery of the placenta and received it immediately after brief examination by the accoucheur. The amnion and cord were hurriedly removed with a scissors, and all large blood-clots washed away. It was then quickly cut into pieces the size of a hazelnut and washed continuously in cold water, with frequent changes and continuous squeezing with the hands till all blood was removed from the pieces. The tissue then looked white, and any pieces containing the faintest tinge of pink were discarded. The washing usually took about two and a half to three hours. The tissue was next transferred to a pan, containing about 1 liter of boiling water, and boiled for five minutes. The tissue was removed, rinsed and pressed repeatedly, and the five-minute boiling repeated. This was continued until 5 c.c. of the filtrate, after boiling the tissue with five times the amount of water, failed to give a reaction with 1 c.c. of ninhydrin on boiling one minute. The tissue had to be boiled and rinsed at least six times; and with some placenta eight and ten boilings were necessary. It was found that some placenta could not be freed from substances that reacted with ninhydrin; and these after repeated boiling had to be thrown away. After the filtrate from the boiling showed absolutely no color on boiling with ninhydrin, the tissue was placed in colored glass jars with chloroform, under toluene. It was reboiled three times and tested with 1 c.c. of a 1 per cent. solution of ninhydrin before each test.

*Method of Obtaining Serum.*—The blood was taken from the median basilic vein, by means of a clean, dry Luer syringe, and transferred at once to a clean sterile centrifuge tube. It was allowed to stand from three to twelve hours till the clot began to separate and press out the serum. It was then centrifuged at about 1,600 revolutions for four to five minutes. The clear serum was pipetted off, care being taken to avoid the formed elements. Hemolized blood was discarded at this juncture to avoid errors in reading the test, due to the ferment set free by hemolysis; 1.5 c.c. of the clear serum was inactivated in the water bath, at 60 C. (140 F.) for one hour and used as a control. In the later experiments 1 c.c. of serum was used according to later advices from Abderhalden.[13] An equal amount of the clear serum was used for the test.

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[5] Pain, A. K.: Boston Med. and Surg. Jour., 1914, clxx, 303.
[6] Williamson: Jour. Obst. and Gyn. Brit. Emp., 1913, xxiv, 211.
[7] Oller and Stephan: München. med. Wchnschr., 1914, lxi, Nos. 1 and 2.
[8] Schiff, E.: München med. Wchnschr., 1914, lxi, No. 14.
[9] Schwarz: Am. Jour. Obst., 1914, lxix, No. 1.
[10] Jellinghaus and Losee: Am. Jour Obst., 1914, lxix, No. 4.
[11] Williams and Pierce: Surg., Gynec. and Obst., 1913, xvi, 411.
[12] Described in Beitr. z. Klin. d. Infectionskrankh. u. Immunitätsforsch.
[13] Abderhalden: München. med. Wehnschr., 1914, lxi, No. 8.

*The Diffusion Tubes.*—Schleicher and Schüll 579 dialyzing tubes were used. These were first tested with albumin to insure their impermeability to it. Any tubes found to let through albumin were discarded. The remaining tubes were tested with a 1 per cent. solution of silk peptone from Hoechst Farbwerke von Meister Lucius and Bruning. These tubes that let through the peptone solution at the same rate, as measured by the depth of color on boiling 10 c.c. of the diffusate with 2/10 c.c. of a 1 per cent. ninhydrin solution, were reserved for future use in making the test. The remaining tubes were discarded. After testing with peptone solution, the tubes were allowed to stand in a liter of distilled water for twenty-four hours in order to remove all peptone solution that might remain in the tube wall. They were then boiled for about two minutes, and stored under toluene in distilled water. They were reboiled for about one minute just before each test.

*The Test.*—One c.c. of clear serum was introduced into the diffusion tube, together with 1 gm. of placenta protein. Care was taken that all placenta protein was below the surface of the serum to prevent error from decomposition of pieces, adhering to the sides of the dialyzer, and so not covered by the toluene. The outside of the parchment was carefully washed off with distilled water. The diffusion tube was next placed in a large test-tube, containing 20 c.c. of sterile distilled water. A layer of toluene was placed within and without the dialyzing membrane to prevent the growth of bacteria and to prevent evaporation.

*The Controls.*—The controls, with the exception of the first twenty-five to thirty cases, were made exactly the same as the test, excepting that the serum added had been inactivated at 60 C. for one hour. In the first cases the serum alone, without the placenta, and not inactivated, was run as a control. The importance of running an inactivated serum control and placenta is that a negative result obtained thus must mean that there are no dialyzable substances in the serum, and that the placenta itself is not the source of the dialyzable substances, and hence must have been properly prepared. The controls were found to be uniformly negative in this series, which, to my mind, is the strongest point in favor of proper technic. In many cases the tubes used as "test-tubes" on one day were used as "control-tubes" on the succeeding day in order to detect leakage of albumin that might occur after a tube had been used several times. Bacteriologic examination was made of the content of the diffusion tubes in cases in which an unexpected positive reaction occurred, in order to rule out the possibility of the digestion products being due to bacterial decomposition. In no case was more than an occasional organism found.

*Dialyzation.*—The period of incubation in the first twenty-five to thirty cases was sixteen hours, according to Abderhalden's original suggestion; later it was increased to twenty or twenty-four hours because difficulty was experienced in getting strong enough reactions in the positive cases to admit of a definite conclusion as to whether the test was positive or negative. Abderhalden,[13] later, has advised the same modification of his technic. Ten c.c. of the diffusate from the test- and control-tubes were boiled with 0.2 c.c. of a 1 per cent. solution of ninhydrin. Test and control were boiled over the same flame with the same amount of ninhydrin and as near as possible at the same rate. They were read in all cases after standing one-half hour. All glassware used in the tests was cleaned by allowing to stand over night in potassium dichromate and sulphuric acid, removed, rinsed, and placed in strong potassium hydroxid solution, rinsed in tap-water and then in distilled water, and dried. This was also attended to personally, in order to obviate errors in testing, due to traces of acid or alkali in the tubes.

## FINDINGS

*Clinical Material Examined.*—In all 145 cases were examined.

*Pregnancy Cases Examined.*—Twenty-nine cases were examined. Most of these were known pregnants at the time of examination and the majority were seven months pregnant or more. Two cases gave negative reactions. One of these tests, an unknown in the twelfth week after menstruation, was made while using the sixteen-hour incubation period; and the error might have been due to the fact that the reaction was so weak that it could not be read. The other was an obscure case in which the uterus was enlarged to the size of a six months' pregnancy but no fetal heart-tones could be heard, nor could fetal movements be felt, or fetal outlines be mapped out accurately. The Roentgen ray revealed a shadow of the fetal head above the brim of the pelvis, and the shadowy outline of the vertebral column. The fetus might have been dead, and the reaction negative on that account. I have not had an opportunity to study a case in which the fetus was dead, and do not know how the reaction results under such conditions. The positive reactions varied from very weak to very strong positives. There seemed to be no way of telling which cases would give a weak, and which cases a strong reaction. On the whole, cases from four to six months appeared to give the strongest reactions. Ten cases reacted positively, and six were weakly positive, leaving eleven that reacted strongly positively.

*Puerperal Cases.*—Twelve cases were examined, varying in time from just after the completion of the third stage of labor, to five months after an abortion. One case gave a strong positive, five gave a positive and six a weak or very faint positive reaction.

*Lobar Pneumonia.*—Nineteen cases of lobar pneumonia were investigated. The reaction was negative in only two cases and in one of these dialyzation proceeded only sixteen hours and a negative result might be attributed to that. The other was a case in the third day of the disease. On the whole, the five cases examined before the crisis gave considerable weaker reactions than those examined just after the crisis.

*Acute Rheumatic Fever.*—Having in mind the close relationship of the causative organisms of pneumonia and rheumatism, it was decided to test out the proteolytic power of the serum in the latter disease, as well as in the former. Eight cases in all, including acute and convalescing cases, were examined. The reaction proved negative in one out of the eight tests. One test gave a strong positive. The other six gave a weak or very weak positive test.

*Typhoid Fever.*—Five cases were examined, varying from the second to the sixth week. The reactions varied from a faint trace to a weak positive in all cases, and were apparently more marked later in the course of the disease.

*Tuberculosis.*—This was next investigated. Six cases were examined, all in advanced stages of pulmonary tuberculosis, according to the clinical diagnosis. One of these gave a negative result, the other five a weak positive or a positive reaction.

*Nephritis.*—Eleven cases of nephritis were examined. They were mostly of the chronic interstitial type. Nine gave a positive reaction, two, weakly positive and one a negative reaction. Two cases at the verge of uremic coma gave strong positive reactions.

*Carcinoma.*—Eight cases were examined: six carcinoma of the uterus, one carcinoma of the stomach and one carcinoma of the bladder. Two negative reactions were obtained, two were positive and four weakly positive. There seems to be little, if any, relation between the extent of the carcinomatous involvement and the strength of the reaction.

*Meningitis.*—Five cases of meningitis were examined. These included two epidemic, one syphilitic and two tuberculous forms. The reaction was negative in the syphilitic, one of the tuberculous and one of the epidemic forms. The other tuberculous and epidemic cases gave a faintly positive reaction.

*Diabetes.*—Five cases of diabetes mellitus were examined, in various stages of the disease. One gave a negative reaction, two a faint positive, one strong positive and one medium positive.

*Fibroids.*—Four cases were examined. Two were negative, one gave a very faint reaction and one a positive reaction. In the latter case sufficient time had not elapsed since the test absolutely to rule out the possibility of a pregnancy being coexistent.

*Blood and Nervous Diseases.*—Under this head are considered two cases of pernicious anemia, which gave weak positive reactions; one splenomyelogenous leukemia, which gave a strong positive reaction; one malarial infection, a few hours after the chill, which gave a strong positive test. One case of hypopituitarism gave a faint trace. One case of head tetanus, in the seventh day of the disease, gave a weak positive. One dementia praecox gave a trace. One case of scurvy in the convalescent stage gave a negative reaction. Three cases of syphilis were examined, all in the latent stages; two were found positive and one strongly positive. One alcoholic neuritis was strongly positive.

*Normal Cases.*—Seventeen normal or patients suffering from minor affection, not giving systemic reactions, were examined. Thirteen gave negative tests and four were positive. Of the latter, one had had a light meal one hour before the test, one was a case of chronic constipation, two were hernia cases just before operation, and it is possible that these patients might have eaten more than they admitted.

One case of suspected chorio-epithelioma was examined. The woman had passed a hydatid mole one year previous. She had flowed on and off ever since. The Abderhalden test was positive, but scrapings from the uterus failed to show malignant changes or evidence of recent pregnancy.

### SUMMARY

From the results it would seem that there is a ferment present in the blood of pregnant and puerperal women in the vast majority of cases, and that it can be demonstrated by the Abderhalden dialysis method.

Under the same conditions normal blood sometimes, and blood from various pathologic conditions frequently, gave the same reaction. The strength of the reaction varied, with some exceptions, with the disease present in the case examined.

A large number of pathologic conditions may give a positive reaction; and hence would have to be ruled out when applying the test to a given individual for the diagnosis of pregnancy.

Quantitative estimation of the strength of the reaction is of little value in differentiating pregnancy from other conditions that give a positive reaction.

Abderhalden[14] states his position very definitely on the reaction in non-pregnant individuals. He says:

> The serums from gravid and non-gravid individuals differ from each other, among other things, in that the serum of the former contains a ferment that will digest placenta protein. This statement holds at least for normal non-gravidae. According to my experience and that of many other investigators this statement holds for pathologic non-pregnant cases also.

I have been unable, however, to find any data by him of a systematic investigation of other pathologic conditions using the same technic as used in the pregnancy test.

From these results it appears to me that the best working hypothesis to explain the phenomena noted here is the following:

In many conditions of altered metabolism, whether due to infection, malignant disease, pregnancy, the involution period of the puerperium, kidney lesions or certain nervous diseases, there is an abnormal amount of ferment in the blood. This may be due to:

A. Absorption of ferment by the blood from some source in the body, where a great amount of ferment activity is going on. Six such sources may be recognized by this work:

1. In pneumonia, especially after the crisis, when the lobes of the lung are undergoing resolution.

2. In pregnancy when there is a constant transfer of nutritive material from the mother to the fetus, and of waste material from the fetus to the mother, and the whole process carried on by anabolic and catabolic ferments in the chorionic cells. It is easy to structure so rich in ferment as the placenta.

3. In carcinoma, in which apparently abnormal ferment activity is going on in a poorly defined mass of tissue, invading and breaking down other tissue.

4. At the height of digestion, at which time there is absorption of the products of digestion and a large amount of fluid containing an immense amount of ferment is bathing the surface of a rapidly absorbing membrane. Were the positive Abderhalden tests when the serum is obtained at the height of digestion due to amino-acid content of the blood at the height of digestion, I fail to see why the inactivated serum would not contain just as many dialyzable substances as the active serum and therefore the control give the same color reaction as the test.

5. In malaria, when there is, at the time of the chill, a great destruction of red cells with the setting free of ferment.

6. In splenomyelogenous leukemia, in which there is a great increase in the formation of and destruction of white cells and destruction of the red cells.

B. In the acute infections recovery is probably due to the mobilization of the ferments by the body-cells, which either prevent the development of the bacteria or actually digest them and their toxins. Tuberculosis being in the advanced stages, almost always associated with secondary infection, might be considered as coming under the same heading as acute infectious diseases.

The reason for the reaction in diabetes is less apparent, but with the altered functions of the pancreas one might expect to find various disturbances in the tryptic or antitryptic power of the blood.

The positive reaction in chronic nephritis is not so easy to explain by this theory, but it is known that there is profound alteration in protein metabolism, which is essentially carried on by proteolytic ferments; and therefore it would not be surprising to find an abnormal amount of these in the blood-stream.

These points are merely mentioned here, and are not to be regarded as definite conclusions. It is my wish to go deeper into the subject, to see a wider range of diseases, and to examine more cases from each before trying to formulate definite conclusions. It is hoped that other workers will investigate along similar lines; and that such investigations will enrich our knowledge of the underlying principles of physiology and pathology.

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[14] Abderhalden and Fodor: München. med. Wchnschr., 1914, lxi, No. 14.

I wish to express my thanks to the resident and attending staffs of the Cook County Hospital for access to the clinical material, without which this work would have been impossible. Also to Drs. D. J. Davis and C. S. Bacon for timely suggestions and helps throughout the work.

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## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. BALL AND FALLS

**Dr. Charles Goodman**, New York: I have transplanted kidneys and thyroids in dogs, and while the autotransplants were successful, my homotransplantations were followed by autolysis; this occurred although I was able by special technic to overcome the tendency to physical injury observed in the transplant during the stage of vasomotor, paralysis. I have used the Abderhalden method in determining the specific ferments in the blood. I found, in a series of fourteen cases of transplantation of the thyroid gland, that, in nine instances, a ferment could be isolated by the dialysis test which was capable of digesting suprarenal tissue. I intend to determine by the Abderhalden method what other organs are susceptible to vital insult following homotransplantation.

**Dr. M. G. Wohl**, Philadelphia: I have applied the Abderhalden test in cases of pregnancy and carcinoma but chiefly in nervous diseases. My material was obtained from the Philadelphia General Hospital, the epileptic colony of Spring City, and from wards of the Samaritan Hospital. The technic was followed closely in all details as laid down by Abderhalden. In twenty-two cases of pregnancy I found the test positive. The patients varied in term from three to nine months. Cases of toxemia of pregnancy gave surprising results. In one case of eclampsia, placenta gave a faint rosy color and liver tissue strongly positive. Three patients with pernicious vomiting gave the same faint reaction with placenta, and moderate violet with liver. I applied this reaction in cases of dementia praecox and epilepsy at various times, between the attacks, etc., and in some cases I have been fortunate enough to obtain the blood five minutes after the attack, and I find that if the technic is correct in all details, we get uniform results. In cases of dementia, and epilepsy which advanced to dementia, I have obtained a positive reaction with brain and testicular tissues if the serums were taken from males; and with brain and ovarian tissues with serums from female patients. Dr. Falls obtained a positive reaction with placenta in some cases of dementia. I recall a similar case of positive reaction with placenta in an epileptic male, 17 years old. When I obtained this reaction, I went over my technic again and was convinced that there was no error in it. After careful investigation I found that a day and a half before the blood was taken the patient had suffered an injury of his arm. This gave me the clue to the situation. As you know, through hemolysis of blood-corpuscles, a ferment is liberated which is non-specific and this non-specific ferment was very likely responsible for the cleavage of the placenta. The reason for obtaining negative reactions from inactivated serums taken soon after a meal, which according to Dr. Falls should be positive, is the fact that the amino-acids present in the blood after a meal are easily diffusible and are found in the circulation in such small quantities that they would hardly give a positive reaction with the ninhydrin.

**Dr. C. P. McCord**, Detroit: I began working with this test in the fall of 1912 and since that time have performed nearly two thousand tests. These have been in part clinical and in part laboratory tests. They have been distributed over pregnancy, tuberculosis, goiter, cancer, a few cases of syphilis and laboratory experiments with organ-tissues to determine the specificity of organ-proteins. This work when performed with proper regard for the intricacies of the technic has yielded results corresponding to the clinical condition in a high percentage of cases. Proper regard for the technic presupposes careful testing of the parchment thimbles so that they are of known accuracy. These should never be actually boiled but merely brought up to the boiling point. Further, these thimbles should be allowed to cool before using, for if serum is placed in heat-expanded thimbles, the serum passes into the spaces in the parchment and, when the thimble cools off and contracts, the serum may be forced to the outside of the thimble and thus vitiate the tests. I have used this test in a few cases of carcinoma of the thyroid in dogs. I find that serum from dogs with cancer of the thyroid reacts not only with carcinomatous thyroid gland but with normal thyroid tissue as well. This is to be expected, for carcinoma retains some of the characteristics of the cells from which it develops. The intensity of the color reaction with normal thyroid tissue was much less than with carcinomatous thyroid. Moreover, when the serum from these animals was tested with tissue from other organs, for instance, kidney or ovary, positive tests were obtained. Although the serum alone is in many instances dialyzable, the serum plus any organ tissue yields a positive reaction of greater intensity than the serum alone, but of less intensity than the serum plus cancer thyroid tissue. This I consider very plausible. While I believe that the parenchymatous proteins of an organ are specific, I also believe that the connective-tissue stroma of the organs is non-specific. In destructive lesions of organs such as the thyroid cancer, the stroma may be altered as well as the parenchyma and non-specific as well as specific ferments arise. These are capable of digesting the non-specific parts of other organs. I believe that herein is a method that is very useful within certain limitations. The method is not infallible. After the technic was carefully controlled, 5 per cent. of my cases gave erroneous results. There are certain natural limitations. For instance, in 140 cases of tuberculosis (these I have carried out collaborating with Dr. Lockwood), 25 cases in the cavity stage were uniformly negative. Apparently the serum in this stage contains no protective enzymes. Withal, I think this a useful method in diagnosis and likely to prove helpful.

**Prof. A. J. Carlson**, Chicago: The explanation offered by Dr. Falls of the positive reactions in non-pregnant cases is probably the correct one. I do not believe that the position taken by Abderhalden, namely, that normal blood is free from polyvalent proteolytic enzymes, is tenable. The Abderhalden test must therefore be a quantative one, and unless the test can be made a quantitative one, it will be of limited value. I dare say the qualitative test would be positive in 100 per cent. of normal cases if the time of digestion is extended. We have polyvalent ferments in the blood of normal animals and any condition which involves a rapid impairment of the tissues leads generally to liberation of an increased amount of ferments into the blood. Hence, a greater digestion in certain diseases. Abderhalden has done a very great service for biology and medicine by this extension of the anaphylaxis and immunity phenomena, but I think some workers have been led astray by his view that normal blood is free from non-specific or polyvalent enzymes. Furthermore, the Abderhalden test depends, of course, on a reaction to proteins similar to that to antigens in immunity, and the intensity of the immunitary reaction varies greatly in different individuals.

**Dr. C. F. Ball**, Rutland, Vt.: The technic described by Dr. Falls is practically mine. My own, however, has been the half method of Schwartz instead of the 10 c.c. of Abderhalden. I have guarded that by using 0.2 c.c. of ninhydrin to 5 c.c. of my solution instead of the usual quantity of ninhydrin, which would give me an error if I were to get one, more readily than using 0.1 c.c. All of my tissue has been properly prepared, as has been suggested, and when I can't get it clean by half a dozen boilings, using 1 c.c. of the ninhydrin to 5 c.c. of the boiling water, I throw it away as useless. The time I have taken in preparing my tissue, as has been stated, is anywhere from one to two hours, depending on the tissue. I have prepared tissue and have boiled it a dozen times and couldn't get it satisfactory. I have also boiled tissue a dozen times and got it apparently satisfactory and when used it would give treacherous reactions and I would have to throw it away. I never have used tissue until I have run it as a control with a known condition and tried out fundaments at least two or three times before I depended on it for new work. At first I used water distilled at the time of making the test, but in the latter part of my work I have used water distilled at or near the time of making the test and then boiled. Normal tissue of the gland invaded would be expected to give a reaction along with the malignant tissue used, as Dr. McCord has found. In a sarcoma of the thyroid normal thyroid tissue used also showed the reaction. The quantitative determination, spoken of by Dr. Carlson, is to be hoped for. When we get the quantitative determination, we will then find that there is a difference in the amount of ferment produced by the apparently healthy or normal person afflicted with a malignant infection, as compared with the patient who has passed on to the latter stages of the disease in which the ferment is largely reduced, the system having given up the fight, which accounts, I think, in a few reported cases, for the lack of a positive reaction in grave malignant cases just prior to death.

Dr. F. H. Falls, Chicago: I think Dr. Ball is wrong. Abderhalden uses 5 c.c. instead of 10—that is the technic I have been following—5 c.c. of the filtrate of the boiled water plus placenta. In the few toxemic cases that I have examined, I found, as Dr. Wohl did, a weakness of the reaction. One patient with puerperal insanity which developed about four or five days after the delivery was examined. She gave a very weak positive reaction. That might have been due to the fact that in the puerperal state the reaction is usually weakened. I don't know. I have had no chance to examine any epileptic cases. Did Dr. Wohl use placenta as substrate in his epileptic cases? I think there is some slight misunderstanding about my statement of the amino-acid contained in the blood giving a positive Abderhalden reaction. My position is this: If the blood is taken at the height of digestion in an Abderhalden test, and 1 c.c. of inactivated serum and 1 c.c. of active serum are put in separate dialyzation thimbles, with the same amount of protein in each thimble, then if you get a positive reaction in your test and a negative reaction in your inactivated serum control, it cannot mean that the reaction is due to amino-acid in the serum. There must be ferment activity in the active serum test, and no ferment activity in the inactivated serum control. The criticism that I have heard, heretofore, has been that boiling renders the thimbles thicker and less permeable. Concerning Dr. McCord's point about cooling the thimbles, after boiling the protein was put into the thimble first and then the serum. The thimble had cooled to very nearly room temperature when the serum was introduced. My controls, which were uniformly negative, had the same amount of serum, and were handled in the same way. Dr Carlson's idea of the quantitative estimation of the reaction is a very good one. Dr. Welcher and I, at the University of Illinois, tried to split up the placenta by various chemical methods in an endeavor to find a pure placenta protein which would react more delicately with the serum from pregnant women. We hoped to find a protein in the placenta for which the ferment would be specific. We were unable to do so. I believe that Dr. Ball's modification of using 5 c.c. of the diffusate in testing is wrong. This is a quantitative reaction, absolutely. I believe that we must all use the typical Abderhalden technic without modification and put down our results as we find them. That will soon tell us about the reliability of the test not with ten or a dozen cases, but with hundreds and thousands of cases. Then we will get results that will be reliable, and comparable. I do not wish to be misunderstood concerning the value of the test. I think that in any obscure case it would be valuable when there is a question of pregnancy. The point is this: If we can get a test that will be reliable in even 80 per cent. of cases, we have no right to disregard such a test, and say it is of no value. The Wassermann and other tests are far from infallible, but nevertheless valuable.

# THE PHYSICIAN'S FIELD IN INFANT FEEDING *

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Within the past few years there has been a gradual change in the relation of the physician to his infant patients and also in the conception of what his duties are in connection with the feeding problem. Ideas of what constitute successful feeding also have undergone a change.

A great wave of interest in infants and children has been sweeping over the country, and everywhere civic agencies are at work to improve the care and nutrition of the infant population, but the training of many physicians has not fitted them readily to adjust themselves to the new conditions and naturally to take the leading part in this social work. The family physician, who assists at the birth and who is usually called on when anything goes wrong with the infant, is the one who should direct the nutrition of the infant when it is well, as well as when it is in an abnormal condition. He should thus familiarize himself with the principles and simple methods of managing the normal healthy infant as well as the disturbed infant he often sees.

The scientific training of physicians has been in the diseases and abnormalities of infants, as their services were not looked on as necessary until the infants were so ill, or the effects of bad management had become so pronounced, that the parents could see that something needed attention. The principles involved in the feeding and management of the growing infant must be in consonance with the general science of animal nutrition.

The enormous importance of meat production has caused experiments in animal nutrition and production to be carried on by highly trained scientists whose work has shed a flood of light on the practical problems of infant feeding. Their work has resulted in the teaching of the principles of animal nutrition in certain classes of high schools, in agricultural colleges, and in the domestic science courses for women. Physicians should be better acquainted with this work.

It has been too generally believed by physicians that when the digestion of an infant became normal and there was gain in weight, that their work was done and thereafter the infant would be properly nourished if it continued to gain in weight. But the extended experiments in modifying the structure and tissues of the animal body by different forms of food during the period of most active growth have shown this to be a mistaken belief. Gain in weight and proper nutrition do not necessarily go hand in hand. There may be gain in weight with poor nutrition on what the physician may have been led to believe is highly scientific food, and good physical development may result from the use of food the physician has been taught to believe is decidedly unscientific.

In the struggle for scientific feeding, technical methods of preparing food have often been allowed to overshadow the preparation of scientific food. Many times unscientific food has been prepared by highly scientific methods and used with poor results; while what really was scientific food, prepared by crude methods, has perhaps given results which were all that could be desired, to the perplexity and disgust

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of the physician. It is of first importance, then, to be able to distinguish between elaborate and complicated methods of preparing food and scientific foods.

In all scientific investigations there must be care, system, and exactness so there can be no doubt about how the results were obtained; but in the search for scientific truth prodigious amounts of the most exact, painstaking work have been done, the only value of which has sometimes been to show that the truth was not found. Scientific work does not necessarily mean that the results will be scientific truth.

After a scientific principle has been discovered it is a waste of effort to employ in everyday work the tedious, exact, and often difficult methods of scientific research when equally good results can be had by simpler methods. Infant feeding is an applied science and in its application does not call for the methods of scientific research. The physician is called on only to apply in the best way he can, under existing circumstances, the scientific principles on which animal nutrition has been found to be based. He can originate his own methods and if they apply correct principles he will get as good results as if he used some other methods which were more complicated. Results justify any method that produces them.

Among the factors that have hindered a wider knowledge of the science of infant feeding among physicians has been the tendency to concentrate attention on a single point instead of viewing the subject broadly. At one time it was all bacteria; at another, all chemistry; again, feeding was to be mathematical, and finally there has been caloric feeding. While there is truth in all conceptions of feeding which have been proposed, the really essential thing has been largely overlooked, and that is that infant feeding is a matter of biology and must be governed by the broad laws of biology. Chemistry and physics are simply means to an end, and not the end itself, as has been too generally considered.

In dealing with chemistry and physics in living things, factors have to be taken into account which are not met with in the laboratory. For instance, it has been taught that food was taken into the cells by osmosis and the laboratory work on osmosis was accordingly considered final. But chemistry has undergone a revolution during the past few years, and Findlay[1] in lecturing on the new chemistry as applied to medical and biologic science, has called attention to the fact that it should be applied by the biologist who understands chemistry and physics and not by the chemist, because a membrane which in the laboratory will allow substances to pass through it in either direction by osmosis, when in the living body has the power of selection and will there allow water to go through in one direction and a salt in the other direction. It is this selective action of cells, membranes and tissues in the body that completely upsets chemistry as taught in the laboratory when applied without qualification to infant feeding, and it explains why one infant may select one form of food that another infant rejects.

/ The inability successfully to apply the chemistry of the laboratory directly to animals and plants has resulted in far reaching experiments to discover the principles on which successful animal nutrition is based. Not only have different foods been tried for restricted periods on adults, but different types of food have been tried during the growing period to determine what effect such diets would have on bodily development. So instructive has such work proven that it has been applied to groups of animals continuously through several generations to exclude effects of idiosyncrasies of individuals. As a result of such work there stands out prominently the fact that the chemical and caloric standards of feeding of the past are not final.[2] The differences in the vigor, weight, and strength of animals and their offspring, fed on different foods of supposedly the same chemical composition and yielding the same number of calories, are so striking as to have led to a warning not to place too much dependence on the caloric value of food, it having been found to be but a rough guide at the best.

Other experiments have great significance in connection with infant feeding. It is a well established fact that the milk of an animal has essentially the same composition and digestive properties regardless of its food and that no method of permanently altering the properties of milk through food has been discovered. Attempts have been made to develop the bones of a fetus by feeding the mother large quantities of bone-forming materials, but the mother's organism excluded these materials. After birth the same materials, mixed with food of the young animal, produced very strong and large bones.[3] It has long been known that colostrum differed from the later milk in its composition and in the digestive properties of its proteins, but it has only recently been discovered that the colostrum contains immunizing bodies protecting against streptococci, staphylococci and tubercle bacilli, which are not found in the later milk.[4] It appears, therefore, that the power of selection by the organism extends to picking out for the offspring just what it needs at each stage of its development and putting it into suitable form, and it is evident that the foods of young organisms are highly specialized. With this knowledge, how inadequate appear the theories of feeding that look on food as a mere mixture of protein, fats and carbohydrates, or as a source of calories?

The foods that are the mainstay of life and the sole bases of the various dishes of the cook, excepting meat and fish, are milk, eggs, cereals, and legumes. These substances are the specialized foods supplied by parents to their offspring during the formative period, when there is the greatest demand for protoplasm-forming materials.

All living things have protoplasm as a common basis and need the same elementary substances for the formation of protoplasm. Skeletons differ, however, and in plants they are mostly carbohydrates and silicates, while in animals they are largely carbonate or phosphate of lime. In examining the food for developing organisms—milk, eggs, cereals and legumes—it is found that milk and eggs in addition to protoplasm-forming substances contain materials for bone formation, while cereals and legumes contain large quantities of carbohydrates to form the skeletons of plants. The protoplasm-forming materials of the cereals and legumes are all sufficient for some animals, but the absence of proper bone-forming materials is deleterions. For rapidly growing animals the mineral matter of milk and eggs is of vital importance.[5]

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[1] Findlay, Alex.: Physical Chemistry and its Applications in Medical and Biological Science.

[2] Physiological Effect on Growth and Reproduction of Rations Balanced from Restricted Rations. Research Bull. 17, Wis. Agric. Exper. Station.

[3] Calcium and Phosphorus Supply of Farm Feeds and their Relation to the Animal's Requirements. Research Bull. 30, Wis. Agric. Exper. Station.

[4] Famulener, F. W.: On the Transmission of Immunity from Mother to Offspring, Jour. Infect. Dis., 1912. Tunnicliff, Ruth: The Content in Antibodies of Normal Human Colostrum and Milk, Jour. Infect. Dis., 1912.

Experimental feeding with restricted diets has shown that the more the integrity of the natural food for the young is disturbed, the less satisfactory is nutrition, and if the natural combinations are broken up too much nutrition fails. An adult seems to have a capacity for synthesis which is absent or not fully developed in the young, for adults have been found by experiment to be capable of taking one form of vegetable protein and from this alone producing the proteins of its offspring and the specialized proteins of milk, while this single form of protein alone failed to produce proper nutrition in the young, although the forms of protein prepared from it by the mother resulted in satisfactory nutrition.[6]

All experiments with animals tend to show that milk, eggs, cereals, and legumes, when fed in various combinations, produce the highest possible physical development, while attempts to base feeding merely on protein, fats, carbohydrates and calorie yield, are moves in the wrong direction. The most scientific foods for infants, that is foods which will produce the best physical development, are readily prepared from milk, eggs, cereals and legumes through simple, easily-learned methods by which their chemical integrity is but slightly altered. The most scientific methods of taking these natural specialized foods apart and putting them together in attempts to improve on Nature may produce unscientific food, because an important, although small, element may be left out or put in wrong. Such methods of feeding have little to commend them.

The field for the physician as an infant feeder is broadening out and it will not require much effort for him to fit himself to occupy it. His greatest successes will come from avoiding attempts at solving feeding problems by intricate and profound chemical manipulations of the food, but rather by always being ready to utilize scientifically the biologic factor. This practically means an ability to select food of proper strength that will agree with the infant. The base of all feeding is the use of milk, eggs, cereals, and legumes and when the physician has become acquainted with the biologic principles of infancy and the properties of these food materials, he will have learned all that is necessary. He must then apply what he has learned to the individual infant. This is his problem and no one else can solve it for him in every case. The object of this paper is to show that the latest scientific studies in nutrition point favorably to great simplicity in the preparation of artificial food for infants if the biological side is properly emphasized. The principal ingredient, cow's milk, if scientifically produced and handled, may be simply diluted in right proportion to the age, keeping in mind that none of its ingredients—protein, fats or carbohydrates—must be long reduced below what is known to be their average content in human milk. The food elements entering into a complex fluid are not interchangeable at will in the scheme of nutrition. Too much manipulation, with supposed chemical or caloric requirements in mind, is apt to ignore the biologic or vital elements in the food that cannot be overlooked without danger. If a few underlying principles are conserved, the physician may employ any method that will give good results.

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[5] Bull. 228, Wis. Agric. Exper. Station.

[6] Osborne, Mendel and Ferry: The Rôle of Gliadin in Nutrition, Jour. Biol. Chem., 1912.

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# A CONSIDERATION OF SOME PRACTICAL BREAST-MILK PROBLEMS *

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In the crusade against high infant mortality so much has been said about the advantages of maternal nursing that there is coming into being a better understanding of its desirability and a general acceptance of the theory of its uniform superiority over substitute foods.

This is a long step forward; but in order to hold the ground which has been gained, the theory and the facts must be shown to be in harmony. In a statistical study of the situation there is no difficulty whatever in proving the advantages of maternal nursing or in convincing the most skeptical of its possibility in a very large percentage of cases.

But there are some very real difficulties which arise not infrequently in the course of breast-feeding in which both the mother and the child require more help than can be found in a study of statistics, interesting as these may be.

A great deal has been accomplished in the way of making maternal nursing more uniformly successful by calling attention to the importance of regularity in nursing habits and of proper intervals between feedings, and by placing proper emphasis on the necessity for rest, fresh air and proper exercise for the nursing mother. In the management of the secreting breast the importance of cheerfulness and serenity of mind has not been overlooked and the value of encouragement and confidence is generally admitted, for in no other organ is the connection between glandular activity and psychic states more easily recognizable.

It would be a misunderstanding and an injustice to charge with indifference or neglect all the mothers who give up at an early period the effort to nurse their babies. Many of them have tried faithfully, fully realizing its value to the average infant, and they may have called to their aid what medical advice was available. But they have been overcome by the obstinate logic of facts. The children did not do well.

No amount of imagination or psychotherapy can convince a mother that she is pursuing the best method of feeding when her baby is constantly uncomfortable and especially when the added testimony of the scales shows that ground is being lost instead of gained.

That the number of cases of this character is fairly large will be admitted by one who inquires carefully into the reasons which have led to the abandonment of maternal nursing in the feeding cases which present themselves in any large children's hospital or dispensary. A frequent story is this: "My milk did not agree with the baby after I got out of bed, and it soon left me"; or this: "I tried for two months to nurse the baby but he cried day and night and did not gain, so I gave it up." Many of these mothers have consulted physicians in the effort to make the milk agree with the baby and have done all that they and their medical advisers knew how to do before they gave up the fight.

The problem is a real one and by no means unimportant. No doubt many factors enter into it. No one theory will explain all the difficulties which arise.

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But there is one influence which is so potent in many cases that it deserves more attention than it has recently received. I mean the diet of the nursing mother.

It has been a commonplace in text-books of pediatrics to find general directions for modifying the composition of the breast-milk. Milk and all fluids are to be taken to increase the total quantity, large amounts of food with little exercise to increase the proteins, and meat, eggs and animal broths to increase the fats. All this is good in its way. But beyond this point the text-books leave us in the dark, and in the cases to which I refer there may be no departure whatever from the normal in the chemical composition of the milk, as far as can be told by ordinary methods of analysis.

The effect of various foods on the milk of the cow is well recognized. In Denmark, for example, the leading dairy country of the world, the contract of one of the principal milk-handling companies requires that the cows shall not be allowed to eat beet-tops, beet trimmings, cabbage, distiller's slops, malt, etc., and for cows producing nursery-milk the following foods as well are prohibited: molasses, cotton-seed meal, green and dry buckwheat and mustard. If rape seed is used it must be shown not to contain any considerable quantity of oil of mustard. The effect on the odor and taste of milk of silage given just before milking and of too large rations of oil cake are well known to the average dairyman. The effect of brewer's and distiller's slops in causing diarrhea in those using the milk from cows thus fed is an old story.

And yet the minor changes in the human milk caused by variations in the diet have received but scant attention in recent years. This is due in part to the fact that these changes cannot be demonstrated chemically or microscopically, but only clinically, in part to the fact that the changes in the milk do not follow instantaneously on the changes in the diet, and thus at times the connection is overlooked, and in part to the fact that in many cases the tolerance of the digestive tract of the infant is sufficient to take care of the variations in the milk of the average mother, and so no discomfort results from a reasonably varied diet.

With the child who is comfortable this paper has nothing to do; only those concern us here whose breast-feeding is presenting difficulties.

These children are not comfortable, there is restlessness, particularly during the evening or at night, or there is marked discomfort after nursing which is not relieved by the eructation of a small amount of gas. At times the abdominal distress continues through almost the entire length of the interval between nursings, and is relieved temporarily by the taking of more food, to return twenty or thirty minutes later with renewed vigor. In spite of this distress the color and appearance of the stools may be satisfactory and the child may be gaining in weight.

Or, instead of satisfactory stools, various departures from the normal may be present, varying in degree from slight changes in color alone to severe diarrheal conditions. With the more marked disturbances, loss of weight is almost invariable.

In the early weeks of lactation the effect of continued restlessness on the part of the baby is very easy to trace both in the quantity and in the quality of the mother's milk. At this period the mother has regained her strength only in part, and unless she is able to get an adequate amount of rest the milk-supply fails rapidly. If the child is continually in distress the mother usually has little opportunity to sleep and is constantly fatigued. Unless digestive comfort can be secured for the baby the supply of breast-milk may soon be entirely lost.

To indicate the character of the cases in which the diet of the nursing mother seems to be the disturbing element, a few illustrative cases will be cited.

Case 1.—Boy, 3 months of age, always breast-fed at suitable intervals, has had green stools almost constantly since birth, now has five or six small green stools daily, containing some mucus, is very restless and uncomfortable, and rarely sleeps more than half an hour at a time night or day. Examination of the mother's milk showed nothing abnormal. During the past week attempts have been made to wean the child, but the cow's milk feedings have been vomited promptly. In spite of its digestive disturbance the baby weighs 1½ pounds more than at birth.

Inquiry into the mother's diet revealed the fact that she was on an abundant general diet containing generous amounts of fruit and vegetables to overcome a slight tendency to constipation.

When the fruit and vegetables were omitted, excepting starchy vegetables like potato and rice which cause no disturbance, the number of stools became normal and within a week their green color disappeared, and the child began to sleep three and a half or four hours at a stretch. No medicine was required. Nursing was carried on successfully up to the age of 12 months.

Case 2.—Girl, 5 weeks of age, has a gonorrheal ophthalmia and vaginitis, and a superficial infection of the umbilical stump. Breast-fed entirely until a week ago but always had eight to twelve stools daily. For the past week has been given alternate feedings of breast-milk and of barley-water. Stools reduced in number to five or six daily, smooth and brownish, but baby is loosing strength. Weight 6½ pounds, half a pound less than at birth. Child cries almost constantly, mother is worn out.

The feeding intervals had been reasonable and the mother had been on a moderately restricted diet as to vegetables but had been eating oranges, apples and jellies quite freely. When the fruit was omitted the diarrhea disappeared, comfort was restored and the child began to gain in weight. A nurse was secured to enable the mother to get a sufficient amount of rest. No medicine was needed.

Case 3.—Boy, 3 months of age, always breast-fed. Bowels move only once or twice daily, but stools are always greenish and undigested in appearance. The baby is very uncomfortable most of the time and is particularly troublesome at night. In spite of the constant restlessness the child's nutrition is good and there has been a moderate but steady gain in weight.

The breast-milk has been examined and found normal, but the mother is nearly worn out by the continued loss of sleep, and the amount of milk appears to be diminishing rapidly.

Inquiry into the nursing habits showed that the breast-feeding had been intelligently directed. Numerous attempts had been made to bring digestive comfort to the child but all had failed.

On going into the subject of the mother's diet it was found that in the main she was eating very sensibly, but that she was taking oranges and cooked apples every day. When these were omitted the character of the stools became normal, the baby began to rest well, the mother was able to secure sufficient rest and her supply of milk increased promptly. Instead of finding it necessary to wean the child she was able to nurse it up to the age of 10 months.

These cases are fairly typical and it is needless to continue their recital; in all of them the aid of medical men had been sought, in all of them weaning had been considered the only solution of the difficulty, in all of them regulation of the mother's diet was all that was required.

It seems possible that some of the aromatic bodies which give flavor and odor to food substances pass over into the human milk just as they do into cow's milk. Certain it is that the foods which seem to give rise to the greatest amount of disturbance during the early weeks of lactation are those which contain the aromatic bodies in the largest amounts, such as fruits, vegetables of the more highly flavored sorts, and spices. These aromatic bodies are not destroyed by boiling, so that they are present in cooked as well as raw fruits, and in such articles of diet as jellies, preserves, marmalades, wines, etc., they are found in a considerable degree of concentration.

Whatever the nature of the irritating substances contained in the milk, there is manifestly a great variation in the sensitiveness to them displayed by the digestive tracts of different babies, or even by the digestive tract of the same baby at different ages. Many babies seem to be serene and happy under all conditions, no matter what the mother eats; other babies are restless and disturbed during the early weeks or months of life by food substances in the mother's diet which causes no such reaction at a somewhat later period.

It has seemed to me that the best method of approaching these cases is to begin by forbidding entirely to the nursing mother the use of fruits, fruit derivatives, spices, and highly flavored vegetables at the beginning of lactation or when digestive disturbances are manifested, withholding them until a norm has been established, departures from which may be recognized readily, or until digestive comfort has been restored.

An ample and varied dietary can be provided from fresh meat, fish, eggs, potato, rice, macaroni, cereals, milk, cream, butter, bread in various forms, and starchy substances, like corn-starch, tapioca, sago, etc., and from these there is very little possibility of harm.

In order to avoid the danger of disturbing lactation before it is well established and before the mother has regained her strength to a reasonable degree, it has seemed to me desirable to have an extremely bland diet of this character continued until the end of the first month. After this time additions to the diet in the shape of vegetables and fruit may be tried cautiously, not more than one new thing being tried in any one day to avoid confusion in interpreting the results, and not striving for too great a variety in order to avoid exceeding the gradually increasing tolerance of the infant's digestive tract.

Lest I be suspected of claiming originality for these ideas let me add that among the earliest writings on pediatrics which have come down to us from Greek medicine are instructions as to the diet of the nursing mother. Paul of Aegina quotes from Oribasius, who lived from 326 to 403 A. D., the following directions:

> She ought to avoid everything of a very desiccative nature, and likewise such as are saltish, sour, acid, bitter, very heating, or of offensive smell; also, such as are strongly fragrant, condiments, and such like acrid substances.

To-day the pendulum has swung in the opposite direction and it has become the fashion to say that restriction is unnecessary and that the mother's diet has very little effect on the digestibility of her milk, except in a general way.

It seems to me that we have gone too far in removing our restrictions and that in this matter we can well afford to listen to Oribasius, Aristotle, and Hippocrates.

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# THE FEEDING OF SKIMMED BREAST-MILK*

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The problem of digestive and nutritional disturbances in the breast-fed is ever with us, and should be met scientifically before resorting to complete artificial feeding. High fat content of the milk, intolerance of the infant for fat, nervous disturbances in the mother, inherited feeble digestive powers of the infant and other causes must be considered. Examination of the stools will often furnish evidence of the nature of the intolerance, and when the fat is at fault a reduction in the amount ingested may permit the continuance of breast-feeding and be only temporarily necessary.

It seems conservative to say that a fat-reduced breast-milk will be as easily digested, when a reduction is necessary, as is fat-reduced cow's milk or any artificial food. Efforts to increase the digestibility of breast-milk through attention to the mother's health are often unsuccessful. Regulation of the length of nursing, giving a known quantity of milk by weighing the infant before and after nursing, lengthening the intervals, diluting the drawn milk—all may be tried. When these are done, we still have many infants that are unsuccessfully fed. Simple dilution of the milk reduces all the percentages, but in skim milk there remains the original amount of sugar, salts and protein. None of these causes disturbances in the breast-fed with the possible exception of great variations in the sugar.[1]

## INDICATIONS FOR THE USE OF A FAT-REDUCED BREAST-MILK

Cowie[2] has demonstrated that high fat food tends to slow stomach evacuation, because the duodenal closing reflex is stimulated when fat is present in the duodenum.

Morse[3] believes that in the treatment of pyloric spasm, the best food is good breast-milk, and if this is vomited, it is well to remove a part of the fat so as to keep its percentage low and thereby hasten the emptying of the stomach.

The value of stomach washing in pylorospasm cannot be denied, but an adjuvant is found in the reduction of the fat in the food. Persistent vomiting in which there is no constant or intermittent obstruction at the pylorus gives also a like indication. Rott[4] believes that certain cases of vomiting which consist of a gastric neurosis are caused by a fat-rich breast-milk, and are cured by administering the opposite.

Towle and Talbot[5] came to the conclusion that the indigestion of fats and carbohydrates as found in the stools occur with some regularity in association with infantile eczema. In the exudative diatheses an intolerance exists for fat.

Infantile eczema occurs more often probably in the breast-fed. It is often found in the overfed child. A reduction in the amount of fat ingested is indicated.

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* Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Lust (Monatschr. f. Kinderh., 1912, xi, 226) shows that high percentage of sugar can in some instances be the cause of acid formation in the intestine and therefrom give occasion to diarrhea. When the sugar is low, an inhibiting influence on intestinal peristalsis can be occasioned.

[2] Cowie: Am. Jour. Dis. Child., March, 1913, p. 233.

[3] Morse: Am. Jour. Dis. Child., May, 1911, p. 366.

[4] Rott: Vortr. Ver. f. inn. Med. u. Kinderheilk., Berlin, May 29, 1911.

[5] Towle and Talbot: Am. Jour. Dis. Child., October, 1912, p. 219.

Too great a fat content in breast-milk can cause digestive disturbances, especially in the premature.[6]

Finklestein and Meyer[7] have shown that the nutrition of breast infants can suffer from the fat of human milk, if a severe enough injury has been done to the intestine.

Nothmann[8] advises the use of less rich milk in the premature infants with weak digestions.

Ritter[9] reports a series of cases in which intestinal injury occurred through the feeding of fat-rich breast-milk, and repair was brought about through the use of fat-poor milk.

Langstein,[10] in the study of eighty-eight infants suffering from disturbances of nutrition, found that the restoration of the child was often completed in a shorter time by the use of breast-milk from which the fat was removed.

During the past year I have been trying to determine the value of fat-reduced breast-milk as a food in congenital weaklings and in infants who show intolerant symptoms after nursing. If it were possible to change the composition of the milk so that digestion would be rendered comfortable, the child might soon increase its tolerance for larger quantities of whole milk and thus continue to be nursed at the breast. In not all cases was the experiment successful. In some the child was lost sight of or it was impossible to secure enough breast-milk. Some distinctly successful cases warrant their report in brief.

Case 1.—Baby F., born at 8 months, birth weight 5 pounds. At the age of 3 weeks child began to vomit and to have numerous loose undigested stools. The length of breast-nursing was cut to a few minutes and a definite amount of breast-milk given. Whenever nursing over five minutes, the stools increased to six to eight daily. Had much pain from distention. At the age of 10 weeks the weight was 6 pounds. A wet-nurse was secured and her milk drawn and skimmed. Beginning with 1½ ounces of skimmed milk supplemental to the three-minute nursing of the mother, the stools reduced in number from three to five daily, sleep became normal, weight gained. Child was uncomfortable when on an entire feeding of whole milk. At the end of fourteenth week, weight was 7 pounds and 9 ounces. At the end of fourth month weighed 9 pounds, and has since gained normally.

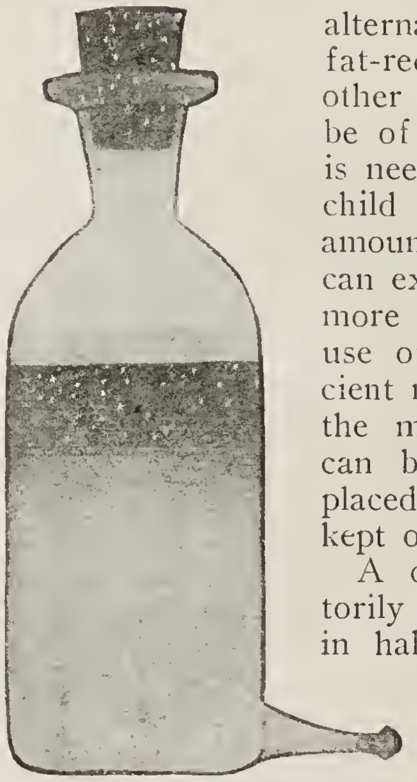
Case 2.—Baby N., full-term child, had been taken from the breast because of evidences of indigestion and failure to gain. Artificial food, a condensed milk, had been resorted to with no improvement in the condition. A wet-nurse was secured at my suggestion, with a continuance of the dyspeptic symptoms. The amount of breast-milk was reduced definitely to the minimum necessary for a sustaining diet. The colic and crying did not abate. As much drawn milk as could be secured was skimmed and given as supplemental or exclusive feedings with increased comfort to the child and a gain in weight permitting a complete return to whole milk within a few weeks.

Case 3.—Baby E., aged 3 months. Had been exclusively on mother's milk since birth with exception of the recent supplemental use of a proprietary food. Vomiting of most of the food, much colic, but stools were said to have been apparently normal, no gain over birth-weight, which was 4 kg. Child markedly atrophic. The possibility of pyloric obstruction was disproved by the administering of a barium chlorid meal, under fluoroscopic and roentgenographic observation, there being no delay in the emptying-time of the stomach. Stomach-washing brought no considerable residue. A wet-nurse's milk was substituted for a part of the mother's nursings with no improvement, reduced in amount to 1-ounce nursings at three-hour intervals. The wet-nurse's milk, skimmed, was then administered at the beginning in 1-ounce doses, supplemental to the known amount of mother's milk. No gain in weight during the time the child was under my observation, two weeks. Vomiting promptly ceased, the child's comfort and sleep practically normal.

Case 4.—Baby H., aged 2 months, breast-fed, mother in good health and had successfully nursed two other children. Constant vomiting with pylorospasm and daily convulsions. Lavage and regulation of the amount ingested brought relief from vomiting but no gain in weight. Supplemental feedings of skimmed breast-milk from the mother and wet-nurse were given, at first in small amounts and later in as large as the infant could tolerate. Uneventful recovery.

### METHODS OF OBTAINING BREAST-MILK

An effort is made to withdraw a part or all of the twenty-four-hour milk from the mother. Allowing the infant to nurse a few minutes each time and then supplementing it with the necessary ounces of breast-milk, previously drawn and skimmed, will keep the breasts active and in some instances will be found to be tolerated well by the child. Or alternate nursings and feeding of fat-reduced milk may be used. In other cases all the feedings will be of skimmed milk, as long as is needed for the welfare of the child and while the necessary amount is available. Many women can express the milk by massage more satisfactorily than by the use of the pump. When sufficient milk is not obtainable from the mother, a wet-nurse's milk can be obtained. The milk is placed in a covered reseptacle and kept on ice.



Eight-ounce tubulated bottle used for separating the breast-milk from the cream.

A detail that works satisfactorily is the storage of the milk in half-pint or larger tubulated bottles which have been made in an 8-ounce size for me by Whitall, Tatum and John M. Maris. A rubber stopper closes the mouth of the bottle, and another one the small opening at the bottom. This bottle is a duplicate of the nasal douche bottle listed in the catalogs. All of the milk up to the cream line can be withdrawn without mixing the cream. With a little experience rich or poor milk can be told at a glance by the depth of the cream-line in this bottle.

I have examined numerous specimens of breast-milk to determine how much fat is removed by this method. The average fat-content of skimmed breast-milk was determined by the Lewi modification of the Babcock test:

Average content of specimens before skimming, 3.1 per cent.

Fat content at the end of four hours, 1.8 per cent.

Fat content at the end of eight hours, 1.5 per cent.

Fat content at the end of twenty-four hours, 0.9 per cent.

In the specimens from which the foregoing averages were taken:

From 1 to 1.7 per cent. fat was removed at four hours.

From 1.5 to 2.7 per cent. fat was removed at eight hours.

From 2.0 to 3.0 per cent. fat was removed at twenty-four hours.

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[6] Planchaud and Rendu: Arch. de méd. d. enf., 1911, xiv, 582.

[7] Finklestein and Meyer: Jahrb. f. Kinderh., 1910, lxxi, 525.

[8] Nothmann, H.: Ztschr. f. Kinderh., 1913, vi, 578.

[9] Ritter: Vortr. Deutsch. Gesellsch. f. Kinderh., Wien, 1913, ix, 20.

[10] Langstein: Vortr. der Berlin. med. Gesellsch, 1911, xi.

Breast-milk stays sweet on ice much longer than cow's milk, and even during the summer months has been perfectly good as long as three days.

### CONCLUSIONS

1. There are certain cases in which the temporary feeding of skimmed breast-milk is advisable until the digestive difficulties of the infant are over and a return to whole breast-milk is possible.

2. This method of feeding is worthy of trial in the great class of infants with intestinal indigestion as manifested by abdominal distention, colic, fretfulness, loose, green dyspeptic stools, failure to gain in weight through several weeks; in babies that have gastric and pyloric symptoms; in the eczema of infancy, and in the congenitally weak and premature infants.

3. Skimmed breast-milk is a safe and digestible food, and is applicable whenever a fat-free milk is indicated.

4. Human milk permits of simple cream separation and can usually be obtained for this purpose from the mother or wet-nurse.

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## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. MYERS AND NEFF

Dr. John Zahorsky, St. Louis: If there is one thing we need it is a simple method of treating or preventing the severe dyspepsia that some infants have in the first few days or weeks of life. Little that is definite is found in the literature and I believe we should more and more study these cases. I was surprised to hear Dr. Myers say that the effects of fruits were so bad. Oranges and apples and other fruits have been permitted to nursing mothers, yet, from his observations, these things are not tolerated. Modern writers do not exclude fruit from the mother's diet. Some of the older writers are substantiated by our observations of to-day. We know that these dyspepsias often disappear spontaneously. I recall one baby who had severe attacks of acid dyspepsia, with severe pain, loss in weight and fever. The baby was put on rice-water each time, gradually going back to the breast. The symptoms slowly disappeared. What we want to know is what caused the acid dyspepsia. After all, we know very little about breast-fed babies. As soon as we do know we will be able to keep mothers nursing their babies. The mothers are not unwilling, but when the poor mother who has been up night after night with a screaming baby finds it is not thriving, she will not keep the baby on the breast. No matter how much you may encourage her, she will not nurse it under these circumstances.

Dr. Charles Douglas, Detroit: For many years I have been opposed to fruits in the diet of nursing mothers, and general practitioners have opposed and laughed at me, because they said fruits did no harm. These papers I think should be of great force to general practitioners. Unfortunately, the profession has learned to give everything to the nursing mother. It is a well-known fact that those who deal in animals, breeding stock, etc., know more about the nutrition of the young animals that they raise to sell than the human family knows about their own offspring. It is a shame to own it but it is true. I have commented on it for many years. Dr. Myers classifies the fruit foods which should be objected to. He gives as a reason "high flavor." I think he should have gone further. It is not the high flavor alone; it is the sugar. Fruits are composed almost entirely of sugars and acids. Must we exclude sugar or flavors from the milk? I believe it is the sugar. I have seen instances in which mothers have indulged in sweet things to excess and have ruined their children's digestion. The children would immediately improve when the mothers abstained from sweets. I would prohibit sugar in the various drinks which are given to children. To have a baby's digestive organs ruined by an ignorant woman is an everyday occurrence. Some of our trained nurses also are guilty, I am sorry to say. They give the child something sweet because it likes it, and they lay up trouble right from the first twenty-four hours. I think physicians should take as much interest in the child as in the mother. At each visit they inquire particularly into the health of the mother but give little attention to the child. If the physician would always lay down a rule in the beginning to prevent the nurse feeding sweets to the child, we would have less of those troubles.

Dr. Harry Lowenburg, Philadelphia: Last year I read a paper dealing with this subject, "The Etiology of Artificial Feeding," in which I discussed some of the causes leading to discontinuance of breast-feeding, and I believe this study will lead us to handle these cases more intelligently. Physicians are very quick to discontinue breast-feeding when these symptoms appear, because they are at a loss how to meet them. In the treatment of green stools, and of vomiting, which is not organic but dependent on some food mixture which the child receives, I believe the study of the mother's diet is important. Dr. Neff's suggestion that some of these cases will do well on skimmed milk is also important. If this knowledge could be spread broadcast to the general practitioner, I think more children could be kept on the breast and infant mortality would be lessened.

Dr. John Lovett Morse, Boston: We all believe that human milk is the best food for the baby. We have been inclined for that reason to conclude that human milk was the best food for the baby under all conditions. That is not always true. We have to remember that human milk contains fat, milk sugar and protein. When we have poor fat tolerance, or when we have bad milk-sugar tolerance, the fat and sugar in human milk will disagree in almost the same way as the fat and sugar in cow's milk would disagree. I say almost, because they do not disagree to the same extent. The baby will often be able to assimilate human milk when it could not assimilate cow's milk of the same composition. It is in the cases in which skimmed milk is useful, that straight breast-milk does not agree. Skimmed breast-milk may be used in these cases and will often be tolerated when skimmed cow's-milk is not. I think there is no question that fruit and highly flavored foods in the mother's diet cause a disturbance in the baby's digestion, but I believe that it is the exception and not the rule, and that the majority of healthy nursing mothers can eat almost everything. If the baby is disturbed, we must find out what article of food is the cause. When the baby is crying, having green stools, etc., the trouble in the breast-milk is usually not so much due to the diet of the mother as to anxiety and fatigue, which increase the amount of protein in the milk. I believe a great deal can be done, not by changing the mother's diet, but by regulating her habits and life and by reassuring her if she is nervous. I feel confident that there are practically no data to prove that any ordinary increase in the amount of sugar in a woman's diet will have any influence on the amount of sugar in her milk. It must be extreme in amount to have any effect.

Dr. A. W. Myers, Milwaukee: Among the substances which influence the taste and odor of foods are certain phenol derivatives which are largely responsible for the flavoring in the more highly flavored foods. What rôle they play in the body is not exactly clear. In the ordinary process of metabolism, these phenol bodies are apt to be combined with the glucose of the blood and eliminated in the urine in the form of phenylglucuronic acid. During lactation a new outlet for the blood-sugar is provided and it is possible that some of the phenol bodies may enter the milk in combination with the sugar.

It is remarkable how large a gap there is in our knowledge of the composition of human milk. Meigs and Marsh have recently shown that there are unknown substances in human milk amounting to about 1 per cent., approximately equal to the percentage of lactalbumin.

As Dr. Morse has truly said, undoubtedly these cases to which I have attempted to call your attention are the exception rather than the rule. I stated that when a baby was doing well on the breast, the ideas expressed in the paper did not apply; they apply only to the baby who is not doing well. I think there are more babies who have than who have not a digestive tolerance sufficient to take care of the normal variation in the mother's diet. Fatigue and worry have a distinct effect. I attempted to call attention to this effect of anxiety and fatigue, which increases the digestive disorders at this period. With regard to the effect of sugar in the mother's diet, it seems to me the effect is indirect. Sugar ingested by the mother may disturb her digestion and in that way indirectly disturb the infant's digestion.

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# SOME PRESENT-DAY PROBLEMS IN THE SURGERY OF GASTRIC AND DUODENAL ULCER*

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When your officers paid me the great compliment of asking me to submit a paper to the Section on Surgery, I felt that if I were to accept I must present a contribution which would be of practical value and would stimulate some discussion.

The life of a surgeon attached to a large hospital presents few opportunities for purely experimental research, and his observations are to a large extent confined to the clinical side of surgery. It has been my great good fortune to be closely associated with Sir Berkeley Moynihan for a number of years in both his private and hospital practice, and my interest in the surgery of the stomach and duodenum has naturally been greatly stimulated and by his kindness I have been offered numerous opportunities.

Sir Berkeley Moynihan in my country and Drs. William and Charles Mayo in your own have said almost all that is to be said with respect to the treatment of chronic duodenal and pyloric ulceration, but there are still certain complications and varieties of ulcer concerning the treatment of which surgical opinion is not yet crystallized, and it is with these that I wish to deal. I cannot pretend that what I have to say is in any sense final or that from the material at my command I can draw absolutely definite conclusions, but I will endeavor to indicate in what direction I imagine the road lies to a satisfactory solution of the problems.

I wish first to consider the condition of acute perforation of a duodenal or gastric ulcer. During the last year or two much has been written on this subject and I can present nothing new to you with regard to the diagnosis. I wish to lay stress however, on the following points.

Perforation of a gastric or duodenal ulcer is, with the exception of appendicitis, the most frequent acute abdominal lesion.

It is a condition in which the mortality is directly proportionate to the number of hours which have elapsed between the perforation and operative relief. This is well illustrated by my own cases. Up to the present date I have been called on to operate in 53 cases of acute perforation of a gastric or duodenal ulcer; of these 40 were duodenal and 13 gastric. Of the 40 cases of duodenal perforation, 27 patients recovered and 13 died; of the 13 gastric ulcers 6 patients recovered and 7 died. Out of the 53 cases 24 patients were operated on within twelve hours of perforation, with 21 recoveries and 3 deaths, a mortality-rate of 12.5 per cent.; of these three patients one, who was an alcoholic, died of acute pneumonia and another died on the eighth day quite suddenly and from no ascertainable cause, the peritoneal cavity being quite clear. Of the remaining 29 patients operated on at various periods after the first twelve hours had elapsed, 12 recovered and 17 died, a mortality-rate of over 58 per cent.; a further investigation shows that in the cases of over twenty-four hours' duration, the mortality is close on 80 per cent., so that in reality the seriousness of the prognosis increases by leaps and bounds as every hour elapses. This fact has been frequently insisted on and is well borne out by the collective report of 200 cases of perforated duodenal ulcer, published by a number of Edinburgh surgeons in the *Edinburgh Medical Journal* of last year.

The imperative necessity for early operative interference makes it essential that the symptoms of perforation should be realized by the practitioner who first sees the case, for on his prompt diagnosis the fate of the patient depends.

That diagnosis is becoming more accurate is evidenced by my own cases, for of the last 13 patients, 12 were operated on within twelve hours and all but one of these recovered.

I would emphasize the importance of the following points in diagnosis:

1. The sudden onset of violent pain in the upper zone of the abdomen.
2. The short duration of symptoms of shock or collapse.
3. The board-like rigidity of the abdominal muscles, particularly above the level of the umbilicus; this rigidity is, in my experience, more marked than in any other acute abdominal condition and in itself is almost sufficient to justify the diagnosis.

Diminution of liver dulness and signs of free fluid are later in their appearance and should not be considered as in any sense necessary for diagnosis; it should be our endeavor to make a decision before they are manifest.

It is not my intention to consider differential diagnosis, for this has frequently been discussed, so I will at once proceed to the consideration of some points in the operative technic.

As soon as operation is decided on, it is my practice to give a hypodermic injection of ¼ grain of morphin. By this means the amount of anesthetic necessary to abolish the rigidity of the abdominal muscles is materially diminished and postoperative restlessness overcome.

I am a firm believer in the Fowler position, notwithstanding the fact that recent investigations appear to show that the physiologic reasons urged for its adoption were fallacious; clinical experience, I am convinced, justifies us in retaining it.

We have all patients in whom a perforation is suspected propped up in bed at once and conveyed to the operating-theater in this position. The operating-table is tilted, so that the patient's thorax is considerably higher than his pelvis, and afterward he is returned to bed in the same manner.

The abdomen is opened through the right rectus muscle and the existence of a perforation is determined by the presence of free gas or the characteristic effusion. Gauze packs are passed into the right kidney pouch and downward to the umbilical region, and then the position of the perforation is determined.

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

In perforated duodenal ulcer I am usually content to close the opening by three sutures of Pagenstecker thread of the Lembert type by which the perforation is infolded. These I endeavor to place at right angles to the long axis of the intestine in order to prevent stenosis; in large perforations I have frequently taken two or more sutures through all the coats of the bowel to close the gap and then infolded these by a second layer. Exceptionally I have excised the perforation by an elliptical incision in the long axis of the bowel and closed it by two layers of suture in the opposite direction. The treatment to be adopted must necessarily vary according to the condition found. In many small perforations with little surrounding infiltration, infolding sutures are simply applied and are quite effective; but in the larger perforations with much induration, more elaborate procedures may be necessary.

The foregoing remarks apply equally to ulcer of the body of the stomach, although in such cases more extensive infolding is possible than in the case of pyloric and duodenal ulcers.

After the perforation is closed I spend a moment or two in cleansing the subphrenic and subhepatic spaces; the semi-upright position materially assists in this, and the exudate is carefully swabbed out with gauze mops saturated with warm saline solution. No further attempt is made to cleanse the peritoneal cavity, but a stab incision is made above the pubes, a large split rubber tube inserted through it to the bottom of the pelvis and the upper wound closed without drainage. The patient is returned to bed in the Fowler position and continuous proctoclysis begun.

This is the operative technic which experience has shown me to be the most satisfactory, and I believe that it differs hardly at all from that of most other surgeons who have had to deal with many of these cases. There is one question, however, on which there appears to be a considerable difference of opinion, and that is whether or not a gastro-enterostomy should be performed at the time the perforation is closed. Sir Berkeley Moynihan, in 1901, was, I believe, the first to advocate the occasional performance of a primary gastro-enterostomy, but his views have been somewhat misrepresented on more than one occasion. Since that time widely divergent opinions have been expressed by many authorities, and the arguments for and against a routine gastro-enterostomy have been admirably set forth by Elsworth Eliot.[1] With his conclusions I entirely agree.

The question may be considered from two points of view.

1. Is a gastro-enterostomy necessary or advisable for the immediate recovery of the patient?
2. Is it advisable in order to obviate future trouble provided he recovers from the perforation?

The first proposition that a gastro-enterostomy should be performed in all cases as a routine procedure because it materially assists the immediate recovery of the patient is, I am convinced, a dangerous view to hold. If this course were universally adopted I am quite sure that it would result in a large increase in mortality. The arguments advanced for routine gastro-enterostomy are that more secure closure of the perforation can be attained, that there is less risk of leakage, hemorrhage and subsequent perforation, and that feeding and purgation of the patient are simplified. While I am prepared to admit that in certain instances, such as perforation of an ulcer at the isthmus of an hour-glass stomach or of a very indurated ulcer of the pylorus where closure produces almost complete stenosis, a gastro-enterostomy is imperative whatever the condition of the patient may be, I am strongly of opinion that in practically every case of ulcer of the body of the stomach and the vast majority of pyloric and duodenal ulcers, a gastro-enterostomy is unnecessary for the immediate recovery of the patient and that its performance as a routine is unsound.

In the series of cases collected by Elsworth Eliot and by the Edinburgh surgeons I have already mentioned, there was no evidence to show that in a single case its omission was responsible for a fatal result. My personal experience is identical. Among the twenty fatal cases in my series there is only one in which there was evidence of leakage after suture, and this was a case in which a very large indurated ulcer on the lesser curvature showed a perforation the size of a shilling. The only method by which secure closure could have been attained would have been by excision of the ulcerated area, and the grave condition, of the patient made this impossible. The fact which has impressed me more and more as my experience has accumulated has been that an infolding of the pylorus or duodenum which at the time appears to produce a considerable grade of stenosis subsequently gives rise to no symptoms of obstruction. I have on only two occasions had to operate within a short time, that is to say a couple of months, for obstruction at the pylorus. So far as I can judge, the immediate convalescence of the patients with and without a gastro-enterostomy differs little or not at all.

Let us now consider the second proposition, that an immediate gastro-enterostomy is advisable in order to prevent further trouble and a persistence or recurrence of ulceration. My own experience may be summarized as follows:

Out of 33 cases of perforated ulcer with recovery, 28 were ulcers at the pylorus or in the duodenum; of these 13 were treated by suture alone or excision and suture and 15 by suture and primary gastro-enterostomy. Three of the cases of suture and 1 case of gastro-enterostomy are too recent to be of value. Of the remaining 10 treated by suture I have been able to trace 9; of these, 4 patients are perfectly well with no symptoms of recurrence and of the other 5, 1 has symptoms of persistent ulceration and 4 have had a secondary gastro-enterostomy. The conditions found in these 4 patients are of interest; in 1 case operation was performed within a month for stenosis, but in the other 3 there was at the time of the secondary operation no evidence of either active ulceration or actual stenosis, the symptoms apparently being due to adhesions about the pylorus and duodenum. All these four patients are now in good health.

Of the 14 cases treated by a primary gastro-enterostomy I have traced 11. Of these 9 are quite well, 1 has since died of carcinoma of the esophagus and another has pain and vomiting after food. Three days before I left home I operated on this man and excised a large gastrojejunal ulcer which had occurred at the anastomosis. My colleagues on the staff of the Leeds Infirmary have kindly allowed me to inquire similarly into the late results of their cases, but I have been unable to trace a considerable percentage of the patients; I will give the results, however, for what they are worth. Of 26 cases of pyloric and duodenal ulcer treated by suture or excision and suture, I have traced 17; of these 13 patients appear to be quite well and 4 have had a recurrence of symptoms. In 2 of these a secondary gastro-enterostomy has been performed. Among the 9 cases which I am unable to trace, it is probable that there are some with a recurrence of trouble.

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[1] Eliot, Elsworth: Ann. Surg., 1912.

Of 22 cases in which a primary gastro-enterostomy was performed I have been able to trace 16, of these 10 patients are quite well and 6 still have some digestive trouble. Combining the results of my own and my colleagues' cases therefore we have 26 cases treated by excision or suture in which the subsequent history is known; of these 17, or 65 per cent., are quite well, and 9, or 35 per cent., have had a recurrence of symptoms; in 6 of these a secondary gastro-enterostomy has been performed with a satisfactory result. Of the 27 cases of primary gastro-enterostomy, 19 patients, or 70 per cent., are well, 1 is dead from another cause and 7 still have digestive trouble.

Among the cases of perforated duodenal ulcer in which a primary gastro-enterostomy was not performed are 9 cases in which one of my colleagues, Mr. Dobson, excised the ulcer very freely and then sutured the wound transversely to the axis of the intestine, performing a plastic operation much on the same lines as that described by Dr. W. J. Mayo. Of these patients 7 have been traced, and of these only 2 have any symptoms of indigestion. It may be that an operation of this type or a Finney pyloroplasty is more likely to confer immunity from recurrence than a mere infolding of the perforation.

With regard to perforated ulcers of the lesser curvature and body of the stomach, I find that my colleagues and myself have had during the same period 49 cases with 20 recoveries. Of the latter I have been able to trace 13. All were treated by suture or excision of the perforation and in no case was a gastro-enterostomy performed. Of the 13 patients 10 are quite well and in 3 there has been a recurrence of symptoms; one of these was a patient of my own in whose case I subsequently did a gastroplasty for hourglass stomach. The patient still has some trouble but is much better.

The number of cases, reports of which I have been able to collect, is perhaps too small to draw any definite conclusions, and the time which has elapsed since operation in some of them is too short to eliminate the possibility of a recurrence of symptoms; but the results of my investigations I believe justify one in drawing the following conclusions:

In cases of ulcer of the lesser curvature or body of the stomach, closure of the perforation and infolding is followed by cure of the condition in a large proportion, possibly 75 per cent. of the cases, and a primary gastro-enterostomy is unnecessary.

In cases of pyloric or duodenal ulcer a considerable number of the patients, probably about 40 per cent., will suffer from a recurrence of symptoms if the perforation is merely closed, but these symptoms seem in a proportion of the cases to be due to adhesions and not to stenosis or recurrent ulceration. This estimate of the frequency of recurrence is less than that of my friend Mr. Corner.

Judging from my own cases with which I have kept closely in touch, there is no doubt whatever that the patients in whom a primary gastro-enterostomy has been performed present more satisfactory late results than those in whom the perforation has just been closed, and it will be noticed that among the recovered cases the former are more numerous than the latter. This is explained by the fact that I have performed a gastro-enterostomy only in those cases in which the perforation was recent and the patient in good condition.

I would briefly summarize as follows:

1. There is no evidence that the performance of a primary gastro-enterostomy is necessary for the recovery of the patient.

2. In cases in which the grade of peritonitis is severe as evidenced by semipurulent effusion, injection of the visceral peritoneum and symptoms of toxemia, a primary gastro-enterostomy should not be performed except in the very rare cases in which closure of the perforation causes an almost complete stenosis.

3. The surgeon who is familiar with the operation is justified, and I think, is well advised to perform a gastro-enterostomy in cases of pyloric or duodenal ulcer in which the perforation is recent and the patient in good condition. In ulcers of the body of the stomach a gastro-enterostomy is best omitted.

4. The surgeon who is not experienced in gastric surgery had better be content with closing the perforation.

5. Both to those who are experienced and those who are not I would make the following suggestion: "When in doubt, don't."

I wish now to draw your attention to a type of ulcer the treatment of which presents one of the most perplexing problems in gastric surgery. I refer to the chronic ulcer of the lesser curvature of the stomach. There is probably no operation which produces more gratifying results than gastro-enterostomy for chronic ulcer of the duodenum and pylorus, but there appears to be no doubt that similar results are not forthcoming in many cases of chronic ulcer of the body of the stomach for which a similar operation has been performed.

In endeavoring to find an explanation for this, one is confronted with the question, "In what manner does a gastro-enterostomy produce healing of an active ulcer at the pylorus or in the duodenum?" Some authorities maintain that the beneficial result is the consequence solely of more rapid evacuation of the stomach and diversion of the contents through the new opening. Others, Paterson particularly, maintain that the effect of the operation is purely physiologic and is dependent on an alteration in the gastric secretion mainly in the direction of the reduction of the total acidity. Possibly the truth lies somewhere between the two theories, but I believe that modification of the gastric secretion plays a not unimportant part. Paterson, in support of his view, states that in his own experience the results of gastro-enterostomy for ulcers of the body of the stomach have been almost universally successful and quite as good as in ulcers situated at the pylorus or in the duodenum. In this I believe he is at variance with other surgeons who have had extensive experience. Mayo and Moynihan long ago recognized that many cases were unrelieved by the short-circuiting operation, and were pioneers in the treatment of ulcers of the lesser curvature by a wedge excision and those of the posterior surface by the transgastric route.

In considering the operation of excision the first question one asks oneself is, Why should not ulceration recur either at the line of the incision or in another part of the stomach, seeing that it is probable that the conditions which gave rise to the ulceration in the first instance still persist? That such recurrent ulceration does not infrequently take place I shall endeavor to show.

Mayo, in a review of 1,000 cases of ulcer of the stomach and duodenum, gives one to understand that the results of excision alone have been disappointing and the results which I will put before you leave much to be desired.

By the kindness of my colleagues I have been able to investigate the end-results in a considerable number of cases of ulcer of the body of the stomach treated in various ways; the larger number of the cases occurred in the practice of Sir Berkeley Moynihan, and to him and my other colleagues of the Leeds Infirmary I wish to express my indebtedness. I have arranged the cases in the following groups:

1. Cases treated by excision alone.
2. By gastro-enterostomy.
3. By excision and gastro-enterostomy.
4. By other methods such as partial gastrectomy.

Cases of chronic ulcer on the lesser curvature or posterior surface of the stomach treated by wedge excision or transgastric excision.

Of these I have been able to collect 39, and 33 of them have been traced. Of the 33 patients 12, or 36 per cent., are quite well at periods varying from two to five years. Four patients are improved but not free from trouble, there was 1 operative death, and 1 patient died six months after operation with no improvement. In the remaining 15 cases, or 45 per cent., there has been a recurrence of symptoms. It is worth while to consider some of these cases in detail.

In 10 of the cases symptoms recurred within twelve months of the excision and necessitated further operation. Two of these patients were operated on for acute perforation of a recurrent ulcer at the site of the previous excision, and both patients died. One of them I operated on myself. The history is briefly as follows:

J. D. S., man, aged 40, admitted November, 1911, under one of my colleagues, with symptoms of gastric ulceration. At the operation a large chronic ulcer was found on the posterior surface of the stomach involving the lesser curvature about two-thirds of the distance from pylorus to cardia. This was excised by the transgastric method and the gap in the stomach closed. He was well for about six months and then had a recurrence of indigestion with occasional vomiting. The symptoms became worse and early in 1913 he had several attacks of hematemesis. In March he was admitted obviously very ill and much blanched. Hematemesis recurred and four days after admission he was suddenly seized with acute abdominal pain and all the symptoms of perforation. I saw him within an hour and operated immediately. I found a large indurated ulcer on the lesser curvature and posterior surface of the stomach, adherent to the upper border of the pancreas; there was a perforation the size of a pea at its upper margin and extensive peritoneal extravasation. The perforation was closed, but the patient died twenty-four hours later. Post mortem, it was found that the old anterior incision in the stomach was soundly healed, but that at the site of the posterior wound there was a large indurated recurrent ulcer which had perforated. Between this ulcer and the pylorus on the posterior stomach wall there was a second acute ulcer the size of a shilling.

In the second case of acute perforation operation was performed by my colleague, Mr. Dobson, and with several other cases was reported by him in a paper read before the British Medical Association in 1912. The acute perforation occurred in an ulcer at the site of an excision seven months earlier. This patient also died.

In 5 other cases a secondary operation demonstrated recurrence of active ulceration at the site of the old excision; in 3 of these a posterior gastro-enterostomy has been performed with considerable relief; in the fourth case recurrence of ulceration had produced a marked hour-glass contraction of the stomach, and gastrogastrostomy combined with posterior gastro-enterostomy has apparently brought about a cure. In the fifth case an operative death followed anterior gastro-enterostomy.

The eighth case in which we have definite evidence of recurrent ulceration having taken place is worthy of description in detail. The patient was under the care of Mr. Dobson and the case was recorded by him in the communication I have already referred to. Briefly the case is as follows:

E. L., woman, aged 39, admitted July, 1910, with a very long history of gastric trouble. At operation an ulcer was found on the posterior surface of the lesser curvature high up near the cardia. Ulcer excised. Appendicectomy. Readmitted June, 1911 (twelve months later), for recurrence of symptoms. There was tenderness and rigidity in the epigastric region. When the abdomen was opened, an ulcer was found on the anterior surface of the stomach adherent to the parietal peritoneum. The ulcer was situated below the scar of the previous excision and was quite distinct from it. It was found to have chronically perforated into the abdominal wall. The affected middle zone of the stomach was resected, the pyloric pouch closed and a posterior gastro-enterostomy performed into the cardiac portion. The patient has remained perfectly well up to the present time.

In three other cases a secondary operation has been performed but no evidence of active ulceration discovered, extensive adhesions about the pylorus and site of the excision evidently being responsible for the persistence of symptoms. A posterior gastro-enterostomy has been performed and the patients are much relieved. In the remaining 4 cases the patients have symptoms suggestive of recurrent ulceration, but no secondary operation has been performed.

To recapitulate, therefore, out of 39 cases of excision we have 15 cases in which severe recurrence of symptoms has occurred. Eleven have been submitted to a secondary operation; of these 7 showed active ulceration at the site of excision, 1 showed chronic perforation of an ulcer distal to the previous ulcer and 3 were the subjects of extensive adhesions with no evidence of active ulceration. Four cases have a return of symptoms but no operation has yet been undertaken.

One must confess that these results are not encouraging. It may be that the recurrence of ulceration is consequent on a too niggardly excision of the ulcer, but an ulcer occurring at a distance from the site of the excision, as was found in two of the cases, must be due to another cause, the persistence of the morbid condition which was responsible for ulceration in the first instance.

The presence of adhesions around the area of excision, by interfering with gastric mobility is evidently liable to produce symptoms even if there be no active ulceration.

Let us now see what are the results in cases which have been treated by gastro-enterostomy alone.

I have been able to trace 19 which were treated by posterior gastro-enterostomy; of these 1 is too recent to make the result certain, but of the remaining 18 patients, 11, or 61 per cent., are quite well at periods from six to two years after operation, 5 show marked improvement, 1 is not improved and the remaining one had a persistence of symptoms which have been relieved by the subsequent excision of a large and adherent posterior ulcer which was found to be unhealed nine months after the gastro-enterostomy.

In addition to these cases there are 3 in which an anterior gastro-enterostomy had to be performed, and 7 in which an anterior gastro-enterostomy in Y was done. Of these 10 patients 4 are quite well, 1 is improved, 1 is dead, 2 are not improved and 2 have developed jejunal ulcer. It will be seen, therefore, that the results of the anterior operation are not nearly so favorable as those of the posterior, and this may be accounted for by the fact that an anterior anastomosis has usually been necessary for cases in which a large ulcer was infiltrating the pancreas.

Of cases treated by excision of the ulcer and gastro-enterostomy I have traced 9, 4 of which are my own cases. Of the 9 patients, 6 have remained quite well up to the present and a seventh after eighteen months of good health has had a return of indigestion.

The remaining two cases present points of interest. One, a patient of Sir Berkeley Moynihan, died of acute pneumonia ten days after the operation, and at the necropsy it was noted that there was active ulceration spreading from the site of the excision and that the intestine contained a quantity of blood.

The other case has already been recorded by Mr. Dobson. Briefly, a large adherent ulcer was excised from the anterior abdominal wall and an anterior gastro-enterostomy with entero-anastomosis performed. Six months later the patient was readmitted. At operation a large jejunal ulcer was found just below the anastomotic opening and adherent to and perforated into the anterior abdominal wall, the scar of the previous excision being quite healthy. The whole of the anastomosis was excised and the continuity of the stomach and jejunum restored. The patient was thus left with a small stomach and without a gastro-enterostomy. She has remained perfectly well up to the present time, a period of three and one-half years. It will be noted that the original ulcer in this case was quite healed and it is probable that the recurrence of symptoms would have been avoided if it had been possible to perform a posterior gastro-enterostomy.

I am quite aware that the number of cases I have had at my disposal is rather too small to lay down any absolute rule as to the best method of treatment of this very serious type of ulcer, but the large proportion of cases in which actual ulceration persisted or recurred after excision and was verified by a second operation makes one doubt very much indeed whether this is an operation which can be recommended.

So far as one is able to judge from my figures excision and gastro-enterostomy produces the best results, gastro-enterostomy alone comes next and excision produces the worst results.

I am well aware that excision of a large ulcer may be an extremely difficult operation and to combine it with a gastro-enterostomy may in many cases entail such a strain on the recuperative powers of the patient, who is not infrequently extremely feeble, as to make it scarcely justifiable.

The difficulty of the wedge excision and the length of time required to combine with it a posterior gastro-enterostomy has led to the suggestion that a certain number of these cases can best be treated by a partial gastrectomy.

My colleague, Mr. Dobson, in the paper previously quoted, describes an operation by which the affected middle zone of the stomach is resected. After ligation of the requisite amount of the gastrohepatic and gastrocolic omenta, the stomach is divided between clamps on the distal side of the ulcerated area and the pyloric pouch closed by suture; the stomach is then turned over to the left and a posterior gastro-enterostomy performed well to the left of the ulcer. Clamps are now applied on the proximal side of the ulcer and the middle portion of the stomach removed. The cardiac pouch is then closed by suture. In cases in which the patient's condition will admit of it this operation is undoubtedly an excellent one and has the advantage over the type of partial gastrectomy which is performed for carcinoma in that it is less extensive and the closure of the pyloric pouch is more easily performed and less liable to be followed by leakage than is the closure of the duodenum when the line of section is distal to the pylorus.

If the conclusions of the Mayo Clinic with regard to the frequency with which carcinoma is grafted on chronic ulcer are to be relied on, it is an operation which should be performed whenever possible. I have been able to ascertain the late results in five patients on whom this operation has been done and they are all in perfect health. In a sixth case in which the middle zone of the stomach was resected and the continuity restored without the performing of a gastro-enterostomy a secondary operation became necessary and was followed by a fatal result. The operation described is one which seems to me to be more likely to give a good result than the resection of the affected zone and restoration of the continuity of the stomach. In suitable cases it can be more easily performed than a wedge excision and gastro-enterostomy and with a better prospect of a complete and permanent cure.

In five cases I have performed a partial gastrectomy, on the lines of the Rodman operation, for cratered chronic ulcer situated on the lesser curvature 1 or 2 inches on the proximal side of the pylorus. The method I employed was precisely similar to the operation for carcinoma, but the resection was not so extensive. One of these patients died as a result of a secondary operation which had to be undertaken to remedy a technical defect at the site of the anastomosis, but the other four patients made an uneventful recovery and at the present time are in perfect health, eating anything and better than they have been for years. There is no doubt that the ultimate results in these cases are better than in any other type of operation performed for chronic ulcer in this situation. Unfortunately a partial gastrectomy cannot be performed for the large ulcer which is found to lie close up to the cardia; a resection would leave insufficient material to allow of closure of the proximal pouch, and the operation would practically amount to a complete gastrectomy.

It is in such a case that the most difficult problem arises, and a solution of the difficulty may be found in a jejunostomy. Robson, Mayo and Moynihan have all drawn attention to the value of this operation; it may be used alone or in combination with a gastro-enterostomy in cases of irremovable ulcer, and by its means the patient's nutrition may be maintained and improved and absolute rest given to the stomach. The technic of the operation is simple and though I have up to the present employed it in only one or two cases of inoperable gastric carcinoma, I have reason to know that it is an operation which has a certain sphere of usefulness in these very difficult cases of chronic ulcer.

As the result of the work of Robson, Moynihan and the Mayos, much has been done to place the surgery of gastric and duodenal ulcer on a sound basis, and when one looks back over the progress of the last fifteen years one notes its gradual development. The most salient feature of this progress has been the realization by surgeons of the type of case for which operative interference is indicated. At first gastro-enterostomy was confined to the cases which presented the complications of ulcer, stenosis and hemorrhage. As diagnosis improved, the operation came to be performed for the cure of ulcer before its complications became manifest; next it was done for symptoms alone when no naked-eye evidence of ulceration could be discovered, with the result that large numbers of patients were unrelieved and many made materially worse. When we came to realize that pain and vomiting after food did not necessarily mean the presence of gastric ulceration and that unless an ulcer was visible and palpable operative interference with the stomach was contra-indicated, the operation of gastro-enterostomy began to find its true place as one of the most valuable operations in the whole range of abdominal surgery.

The technic of gastric surgery leaves little to be desired, but there are still problems to be solved, and one of the most important is the treatment of the chronic ulcer of the lesser curvature. It may be that a clearer conception of the etiology of gastric ulcer would lead us by a short cut to the solution; but our notions of etiology amount to little more than theories and for the present it is only by a survey of the results of the different types of operation that we can arrive at what we wish to know.

If the paper I have presented to you to-day will assist in some small degree to this end I shall be more than pleased.

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## ABSTRACT OF DISCUSSION

Dr. John B. Deaver, Philadelphia: I agree with Mr. Collinson. The diagnosis, if made early, before the oncoming peritonitis, is, comparatively speaking, simple, particularly if one can elicit a characteristic history, which, unfortunately, in a small percentage of cases, is impossible. In the majority of the thirty-two cases in which I have operated, with one death, the diagnosis had been made by my house surgeon when I arrived at the hospital. The patients had a clear history of pain after eating, extending over a number of years. One condition I failed to recognize on two occasions—perforation of the base of the appendix. I have seen this condition give rise to the characteristic board-like rigidity, rendering a diagnosis impossible. I have on two occasions withheld the knife on account of the uncertainty and have subsequently operated on these patients for appendiceal abscess. In one of these in which I believed a perforated duodenal ulcer existed I found extensive peritonitis below, and nothing wrong with the duodenum. I closed the abdomen, sent the patient back to bed and with anatomic and physiologic rest, recovery from the peritonitis ensued. My patients were operated on within twenty-four hours, with one exception, the majority in eighteen hours. The fatal case occurred in thirty hours and as Mr. Collinson stated, these are the cases in which the patients die, as a rule, do what one will. Shock is of short duration. When I see the patients ten or twelve hours after the perforation I do not find them in shock. They have a pulse of 72, rarely above 80, but with a board-like rigidity of the abdomen. I go further than the Fowler position; I seat the patients straight up in bed. We all agree now not to irrigate. The procedure is drainage of the pelvis, except in very early cases, a stab wound and a glass tube. I still adhere to the use of the glass tube. One cannot expect as much from a cigaret drain or a rubber tube as from a glass tube. The vital question is whether a posterior gastro-enterostomy should be done when perforation is closed; and whether it, in addition to the closure, is of value to the permanent recovery of the patient. It takes only ten or twelve minutes more; it is one of the simplest operations in surgery for the expert surgeon. It has been argued that there is danger, in opening the lesser peritoneal cavity, of spreading peritonitis. In numerous bacteriologic examinations we have not been able to obtain cultures in early cases, therefore no peritonitis is present and this objection is removed. In certain cases much surgery would be foolish. In addition, if the ulcer is not indurated and practically closes the lumen of the bowel, I plicate the duodenum, at the same time reinforcing the ulcer. I believe a gastro-enterostomy is of value because, first, it relieves tension on the suture, purse-string or otherwise, which closes the ulcer; secondly, it changes the chemistry of the stomach, in that enough bile and pancreatic juice enters to neutralize the hydrochloric acid. The latter and not the drainage, I believe, accounts for the cure in these cases. I have never excised an acute ulcer. I believe there are few cases in which it is warranted. When the ulcer is close to the pylorus I frequently make a pylorectomy. The majority of these patients recover. The percentage of subsequent perforations I believe is low. On a number of occasions I have referred to a friend who has had three acute perforations, two of the duodenum and one of the posterior wall of the stomach. He had a posterior gastro-enterostomy done when the first perforation was closed. This man recovered from all three operations.

Dr. Albert J. Ochsner, Chicago: I believe that the surgeon is responsible in a large majority of these cases of recurrence. It is true that we are not absolutely certain of the cause of the ulcer, or, therefore, of the recurrence, and it is not proper to speak with the same certain feeling so long as we cannot be absolutely sure of the causation. I believe that Dr. Rosenow, of Chicago, has proved or will prove shortly that the cause of duodenal and gastric ulcer is a specific micro-organism which he has found in a large number of his cases and which, when applied properly to animals, has resulted in the production of these ulcers. It is true, however, that in these cases we have practically always vicious habits in the diet of the patient. The patient's history will determine that he has been eating things that would probably produce injury. In a large proportion of these cases we also find a great amount of infectious material either connected with the roots of the teeth, the tonsils, the posterior nares, or the eustachian tubes, so that much septic material is placed in the stomach constantly. This source of irritation should be eliminated. These patients should be taught how to take care of their stomachs after they leave our care. We know, also, that in almost all of these cases there is a period of hyperacidity. For about twelve years I have given each of these patients two carefully worked out diet lists, one to be used so long as this newly repaired lesion is in a fair condition, and with which any one could be satisfied. The other diet is to be used as soon as the patient suffers from the first symptoms of irritation or recurrence. It is similar to that which the internist or specialist in this line employs, namely, a non-irritating diet to which some alkaline substance like milk of magnesia is added. This diet is given every two or three hours, not oftener than every two hours, in order not to have half-digested food and raw food in the stomach at the same time and not at a longer period than three hours so that there shall always be a fairly alkaline condition in the stomach so long as there is any irritation. In following this plan we have found that the jejunal ulcer has been eliminated in over 95 per cent. of the cases. We have had less than 2 per cent. of cases in which we have had a jejunal ulcer, and the proportion of recurrence is, I should say, not one-fourth as great as in the histories mentioned.

**Dr. John M. T. Finney**, Baltimore: I am compelled to dissent from much that I heard Mr. Collinson say. It seems to me that the procedure suggested by him and advocated by Drs. Deaver and Ochsner is not the rational procedure in the premises. In perforative gastric ulcer the majority will be on the anterior wall close to the pylorus. Therefôre, why not enlarge the already existing hole a bit and excise the ulcer, the pathologic process which gave rise to the perforation, and then enlarge the pylorus sufficiently by means of a pylorectomy so that there can be no possibility of its subsequent cicatricial contraction, which might necessitate a subsequent operation of gastro-enterostomy? If it be true that gastric ulcer is an important predisposing factor in the subsequent production of cancer, it is an additional argument in favor of getting rid of the process. It seems to me that these two arguments are sufficient to weigh down the balance in favor of the operation of pyloroplasty. I do not know whether Mr. Collinson mentioned that as a possibility. I refer you to a paper read by me in Chicago last fall which gives the statistics of 100 pyloroplasties performed by my assistants and myself. I want to insist that, in the first place, pyloroplasty is a more rational and more satisfactory operation than gastro-enterostomy. Now that may not be true in the hands of my colleagues, Drs. Deaver and Ochsner, and in the Leeds clinic where the operation of gastro-enterostomy is so well done. I am speaking of the general run of surgeons of the country. A deep-rooted feeling exists among the profession at large that gastro-enterostomy, while it works in the majority of cases, yet in general shows a large percentage of unsatisfactory results. I want to call attention to the fact that pyloroplasty, when properly performed, will do all that a gastro-enterostomy will do and more. If it is drainage that does the work, it affords drainage almost at the most dependent portion. If it is a chemical process that does the work then the reversed peristalsis causes the presence in the stomach of the contents of the duodenum. I have come to the conclusion that gastro-enterostomy should never be an operation of choice. It is only an operation of necessity. That means under all circumstances. I never perform it except when I cannot do a better thing. I noticed, too, an undercurrent of dissatisfaction with the results reported. It appeared that there had been a large number of recurrences. I would recommend excision of the ulcer through a pyloroplasty and then see what the results will be. I have found that, in a good many cases, the ulcer is situated on the posterior wall. It is impossible there, for obvious reasons, to excise it. The reason old chronic ulcers elsewhere don't heal is because of the dense fibrous tissue in the base which cuts off the blood-supply. In dealing with leg ulcers, for instance, I have found, for years, that if crucial incisions are made deep through the base of the ulcer, immediately granulations spring up and the ulcers will heal in an incredibly short time. I have done the same thing in gastric ulcer in the posterior wall, made crucial incisions in the base. If there was hemorrhage I stopped it with catgut suture. I have found that these ulcers do much better with this than any other form of treatment. Care must be taken, however, not to make the incision too deep.

**Mr. Harold Collinson**, Leeds, England: I feel that it is unwise to say that in operating for an acute abdominal condition a certain procedure should be invariably undertaken and so I cannot go all the way with Dr. Deaver in his advocacy of a primary gastro-enterostomy. Dr. Deaver's cases were almost all early and these are the ones in which to perform gastro-enterostomy; but there are some in which a gastro-enterostomy would be absolutely unjustifiable. By the Fowler position I meant exactly what Dr. Deaver has described, one in which the patient is sitting straight up, a position we adopt almost invariably in cases of peritoneal inflammation. Dr. Ochsner drew attention to the need for careful postoperative treatment in all cases of operation on the stomach; there is a tendency to believe that as soon as a short circuiting operation is performed the patient may be left to his own devices; this is not so, for considerable care in diet is necessary for some time. I was interested in Dr. Finney's remarks with regard to the operation which he has practiced and the results of which in his hands have been so successful. Quite recently at Rochester I saw a similar operation performed by Dr. Charles Mayo and Dr. Judd and I shall take the first opportunity of combining it with an excision for a lesser curvature ulcer or for ulcer on the posterior surface of the stomach.

# THE AUTOSERUM TREATMENT IN DERMATOLOGY *

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It is a common criticism of the dermatologic specialty that it busies itself so largely with the purely scientific aspects of its field, and so little with the practical results that justify its existence. Medical men find that in our cutaneous journals and special societies we have much to say on minute points of pathology and microscopic findings, and that we are strong on differential diagnosis or rather on questions of terminology that we mistake for questions of diagnosis; but that we are strangely reticent on treatment, and rarely have anything that is generally useful and practical to suggest. In one sense this criticism is unjust; it has not been for want of effort that dermatotherapeutics has been for many years a comparatively unfruitful field. In another, however, it is merited. One of us (W. S. G.) looking back on the quarter century during which he has been more or less intimately connected with the specialty, finds but very few facts that can be justly said to be distinct and permanent steps forward either in our understanding of the nature of many common dermatoses, or in our means of curing them. To take a few of the commonest of the diseases of the skin: What can we do in eczema, psoriasis and lichen planus that our fathers could not do, and what more than they do we know of their real nature? Endless study and experimentation has led in most cases to an impasse.

It was therefore with considerable skepticism that we read the reports that have been published during the last year or two concerning the treatment of certain dermatoses with serum, autogenous or foreign; and the more so since these reports in some cases were of that very rosy hue which we have learned to know as the reflection of the subjective illumination of the observer. Here are a few of them:

Veiel[1] records a severe case of herpes gestationis, coming on very intensely toward the end of pregnancy, and resisting all treatment; he injected the serum of a healthy gravida, with temporary improvement. After a second injection of twice the amount there was very marked improvement, rapid disappearance of the itching, and cessation of the bulla formation.

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* Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Veiel: A Contribution to the Serum Treatment of Pregnancy Dermatoses, München. med. Wchnschr., 1912, No. 35.

Rübsamen[2] had two cases, one of severe pruritus due to pregnancy toxemia and the other a pustular herpes gestationis in childbed, which he cured by the injection of the clear blood-serum of healthy gravid women. Rongy[3] has recorded good results in pregnancy pruritus from the same means. In these cases a foreign and not autoserum was employed; and in the toxemic symptoms of pregnancy, including those appearing on the skin, the serum treatment seems to have definitely established its value.

Pretorius[4] gives an account of a woman suffering from a severe chronic pemphigus, which he had long watched and treated. She was given 20 c. c. of blood from her husband; in eight days she was cured, and had had no relapse in eight months.

Spiethoff[5] records good results in dermatitis herpetiformis, chronic urticaria, prurigo, psoriasis and chronic eczema from the autoserum.

Linser[6] has used human serum (whether autogenous or not we do not know) with brilliant results in a case of herpes gestationis. In four cases of chronic urticaria he reports startling and immediate results fifteen minutes after the injections, fifteen out of his eighteen urticaria patients were cured by from two to three injections. Twelve prurigo patients were much improved by the injections, and, finally, from four to six months later, were nearly all cured. He obtained especially good results in pemphigus and dermatitis herpetiformis, and also in the eczemas of children.

Ullmann[7] used autoserum injections in eighteen itchy dermatoses, without other treatment. In seven cases of dermatitis herpetiformis he obtained no results; in two cases of generalized eczema in children be obtained no results from the injections, but exceptionally good and quick results as soon as local treatment was instituted; three urticarias were improved but not cured; four cases of pruritus were cured, and one prurigo was much improved.

The results reported above, though conflicting in some respects, were sufficiently impressive to lead us without attempting any complete review of the literature of the subject to take up the matter last fall in the City Hospital of New York. Our facilities there for clinical experimentation of this kind are especially good. Twelve cases were treated there, six of very extensive general psoriases, three of generalized eczema, two of pemphigus, and one of leprosy. The records have already been reported.[8] Since that time we have obtained records of six private cases of psoriasis, two cases of radiodermatitis, and one each of chronic urticaria, pustular acne with dermic abscesses, furunculosis and lichen planus. That this list is a comparatively small one is due to various factors. The process of treatment is rather troublesome, and above all, takes care and time. In the busy hospital, with many demands on the laboratory and house staff, it was difficult to arrange for the proper treatment of any long series of cases. In private practice other factors, such as the idiosyncrasies of the patients, and the question of expense, naturally interfered. What interests us here more especially is first, the results, and second, the method to be employed. We shall consider the latter first.

To those experienced in intravenous medication technic, this presents no difficulties, the only additional apparatus required being an efficient electric centrifuge and some platinum needles. The ordinary centrifuge will not do, since it is too slow and it would take too long to separate the serum thoroughly. An electric machine capable of making at least 4,000 revolutions a minute is required; this will thoroughly separate the serum in about half an hour. The tubes should be large enough to hold about 200 c. c. of blood; we employ four of about 60 c. c. capacity apiece. It being desirable to avoid all possible transfers of the blood and serum, we draw the blood directly into the centrifuge tubes. A platinum needle of large caliber is used for the veripuncture; this is much smoother on the inside than the steel needles, and very much more fluid can be obtained before occlusion occurs; besides this, the needle can be more readily and thoroughly sterilized in the flame. It is well to have one or two extra venipuncture needles in reserve, so that no time is lost in resterilizing, if necessary, and so that two needles can be introduced simultaneously if the flow is too slow. One of the minor difficulties encountered in our first work in the hospital was the trouble in obtaining the requisite amount of blood with needles of the ordinary caliber and material; as a rule not more than from 15 to 20 c. c. could be obtained from one puncture, and the flow was very slow. With the platinum needles we can obtain 200 c. c., the largest amount hitherto drawn, in from three to ten minutes, depending on the blood-pressure; in some cases the flow from the vein is in a continuous stream and not in drops.

The blood is allowed to clot thoroughly, which takes about ten minutes; the clot is then well broken up with a glass rod, and centrifuged at high speed. In the electric centrifuge at about 5,000 revolutions a minute this takes from thirty to forty minutes. In a slower, water-driven or hand centrifuge it would take much longer, which is an additional objection to their use; the serum should be reinjected within about an hour after the blood is drawn. All utensils coming in contact with the blood or serum should be cool.

The amount of blood drawn has varied from 40 to 200 c.c., usually the latter amount or an approximation to it; and the serum recovered has been from 40 to 45 per cent. of this quantity. We had little to guide us as to dosage in the beginning. The German investigators usually employed from 25 to 60 c. c. of serum at a dose, some of them asserting that exactly the same results were obtainable from the smaller as from the larger amounts.

The serum recovered is injected into a vein, usually on the other side from that from which the blood is drawn, and the operation is completed. We use an ordinary salvarsan needle for the reinjection.

We have now given over 250 of these autoserum injections, without seeing, save in a single case, any contra-indications to their employment. The patients feel no effects at all either from the drawing of the blood or from the reinjection of the serum; they go back to their occupations as soon as the operation is completed. The one exception was in a very bad case of gangrenous radiodermatitis, in a case of leukemia in which the patient did marvelously well under the first four, but had a reaction, and chills followed by fever after the fifth and sixth, which we took to be attacks of serum sickness due to the sensitizing of the organism by the previous injections. We have never seen any similar occurrence in another case, no matter how many injections were administered.

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[2] Rübsamen: A Further Contribution to the Serum Therapy of Pregnancy, Deutsch. med. Wchnschr., 1913, No. 20.

[3] Rongy: New York State Jour. Med., January, 1914.

[4] Pretorius: Pemphigus Malignus Cured by a Single Intravenous Blood Injection, München. med. Wchnschr., 1913, No. 16.

[5] Spiethoff: On the Therapeutic Use of Autoserum, Deutsch. med. Wchnschr., Oct. 18, 1913; On Treatment with Autoserum and Autoblood, Arch. f. Dermat., January, 1914.

[6] Linser: Dermat. Wchnschr., Oct. 18, 1913.

[7] Ullmann: Arch. f. Dermat., September, 1913.

[8] Gottheil, W. S., and Satenstein, D. L.: Autoserum Injections in Certain Obstinate Dermatoses, Med. Rec., New York, 1914, lxxxv, 620.

Following is a brief summary of the results so far obtained: The cases were eighteen in all, twelve of psoriasis, two radiodermatitis, and one each of furunculosis, pustular acne and dermic abscesses, chronic urticaria, and lichen planus. To take the last first, the pustular acne has been very markedly improved, is still under treatment, and is nearly cured; and the urticaria, lichen planus and furunculosis got much better while subjected to it. One of the radiodermatitis cases was a gangrenous one, and the result here was not to be described as otherwise than astounding. The details have been given elsewhere. The patient was apparently in a hopeless condition; he was constantly under opiates, could hardly get out of bed, and the sloughing ulceration had been almost unaffected by the various local and general measures that had been tried. The result of even the first injection was the rapid throwing off of the necrotic tissue, beginning cicatrization of the ulceration, cessation of the agonizing pain and the tenderness, and a rapid convalescence. This was the patient who had the symptoms of serum sickness after his fourth injection; the treatment was stopped in consequence of it; at present the patient is perfectly well and attending to his business; the ulceration is three-quarters healed, healthy, and slowly closing up under ordinary surgical local treatment.

While in these various affections our results have been only partially satisfactory and of a nature that enables us to say only that the autoserum injections deserve further trial in these and kindred diseases, in psoriasis they have been uniform, and extremely satisfactory. We have now twelve carefully observed cases on record, all of them of the severe and extensive type of the disease. Many of these patients had had psoriasis for many years or all their lives, so far as they could remember; some of them had had repeated courses of treatment without any noteworthy results, or with partial or very temporary results; some had been treated for half a lifetime without benefit, and others had long given up all attempts to cure the disease. One and all were enthusiastic for the treatment, and one at least has voluntarily asked for another course of the injections to prevent the possibility of a relapse. On the latter point we have as yet nothing to say; the time has been too short; many of the patients have disappeared, which an enthusiast might take as evidence that they needed no further treatment.

These patients were given from four to six autoserum injections at intervals of from five days to one week, during which time they were not hospital patients or confined to bed, but could pursue their ordinary avocations. During this time also no local treatment other than ordinary baths and soap frictions were employed. In most cases the efflorescences became paler and less elevated, and showed signs of beginning retrogression. Then, at the end of the serum course, treatment with a weak chrysarobin petrolatum, 2 or 3 per cent. for the body, and an equally weak white precipitate ointment for the head and hands, was begun. In from three to eight days every lesion had disappeared, with but very little if any dermatitis from the medication. This also has been the case with gigantic indurated plaques of years' standing, and with patients who have been treated *secundum artem* many times without effect, or who had had their bodies cleaned before at the expense of six weeks treatment with 40 per cent. chrysarobin ointments, violent dermatites, and the administration of arsenic in very large doses. Those who had been through cures before, or who had given up their cases as hopeless, were loudest in their praise of the new method.

Questions as to the theory on which these injections are employed, which are asked by every patient and by every physician, have to be answered in the main by a confession of ignorance. So long as we are unaware of the real nature of most eczemas, of psoriasis, of lichen planus and other common skin affections, our therapeusis is necessarily empiric and based on the experience of accident. In view, however, of the great development and refinement of microscopic technic in recent years, we are justified in regarding it as probable that there are no micro-organic causes for their occurrence; any such would probably have been discovered by the unremitting work that has been devoted to them by multitudes of investigators. We must look to some change in metabolism, to some derangement of the internal economy, for their explanation. Nor does it seem likely that any metabolic change of the grosser sort will be found at fault; these have been thoroughly investigated, and have thrown no light on the subject.

The most promising field of investigation into the etiology of the still mysterious dermatoses is that of the internal secretions. In that as yet little known domain there are certain well known facts that are worth noting in this connection. The bronzing of the skin and mucosae and the falling of the hair in Addison's disease are admittedly due to derangement of the suprarenal glands. The thickened, white, cold and always dry condition of the skin in myxedema, together with the brittleness of the nails, falling or premature whitening of the hair, with irregularities in the development of the teeth, are recognized results of disturbances in the thyroid glands, and are remediable by the administration of thyroid extract. Thyroid hypersecretion, giving us the symptom-complex known as Basedow's disease, makes the skin smooth, thin and moist, and the nails and hairs brittle. Scleroderma is ascribed by some authorities to dysthyroidism; and a connection between the two conditions in certain cases at least cannot well be denied. Alopecia areata, occurring as it does usually at adolescence or at the climacterium, is thought with some reason to be in some way connected with the hyperactivity of the generative glands; and the hypothesis has been evolved that the mysterious and characteristic premature alopecia that occurs so commonly in the male at the time of the greatest activity of the reproductive organs may be in some way connected with their internal secretion. With persistent thymus, the so-called status thymuslymphaticus, there are frequently changes in the skin and its adnexa; the integument is pale, and there is often either a heterosexual hair-growth, or these structures are partly or entirely undeveloped. In acromegaly, dependent on increased secretion of the pituitary gland, the skin is usually thickened and pigmented, the sweat increased, and the hair development either deficient or very abnormally increased. The dystrophies of heredosyphilis are not to be explained on the theory of a direct action of the invading organism, and may possibly be secondary effects due to dyssecretion of the endocrinous glands. It can hardly be denied that there is some relationship between either unusually active or deficient internal secretion of the ovary and testis in such conditions as acne juvenilis, chloasma uterinum, and the various menstrual, pregnancy and parturition exanthems. In diabetes, changes of the skin and its adnexa are common; the bronze diabetes and xanthoma are extreme instances.

Cederkreutz,[9] in a recent review of the subject, believes it possible that there is an internal secretion proper to most or all of the body-tissues; that their action and correlation deserve careful study; that the idea of Claude and Gougerot that an *insuffisance pluriglandulaire,* and not a derangement of a single secretion may be the basis of skin changes, has much plausibility, and that, in addition to the affections already mentioned, the internal secretions offer us the most hopeful field for investigation as to the etiology of vitiligo, psoriasis, ichthyosis, lichen planus, pruritus senilis and xeroderma pigmentosum.

Psoriasis is perhaps the most mysterious of the common dermatoses. Schamberg's elaborate studies seem to point to nitrogen retention in the system as a factor in its etiology, and the results of an absolutely meat-free diet in some cases is well known to all of us. Occasional cases seem to be dependent on mental conditions, such as worry and overwork. But in the vast majority of cases we are entirely at a loss to ascertain its cause. On the other hand, the administration of thyroid extract and epinephrin has done good in some cases. It seems very unlikely, with the history of the affection and the unending efforts that have been made to find it, that a microbic cause will be found. Some derangement of the endocrinous secretions seems to be the most promising field for future etiologic investigation.

We are naturally not in a position to say much as to the action of the blood-serum when administered in the way that we have described. It is more than probable that the blood-serum reinjected is by no means just the same material that was withdrawn in the previous bloodletting. Blood-serum is an extremely complex material, and it is undoubtedly changed by its retention for a time outside the body, by the coagulation and centrifugation. The fact that in one case we saw distinct attacks of serum sickness follow its administration is proof of the fact. There can be no doubt that its administration in some way alters the sensibility of the skin, increasing its susceptibility to local medication, and at the same time diminishing its liability to the growth of psoriatic efflorescences and to reactive inflammation. How this is effected, whether by supplying a deficiency of some material elaborated by the endocrinous glands, or by stimulating one or more of them to renewed activity, or by supplying some material required for their action, we are unable to say.

One further point deserves mention. Is it possible that the good results attained are due to the bloodletting alone? The thought has often struck me, as it must have struck others, that the generations of acute observers and habile clinicians who practiced bloodletting in so many affections cannot have been entirely wrong; they must have seen some good result in some cases at least. And there is at least one case of psoriasis on record, to which our friend Dr. P. Brynberg Porter has called our attention, in which the late Weir Mitchell in his young days, being left in charge of a very bad case of psoriasis and not knowing what to do, put the patient to bed and bled her every day, and cured her disease. Bloodletting alone, however, has been tried, and has not given results. We do not think that the benefits of the procedure can be ascribed to it.

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## ABSTRACT OF DISCUSSION

**Dr. Howard Fox**, New York: My attention was first called to this subject by a demonstration given by Dr. Gottheil before the Manhattan Dermatological Society in New York. Two cases of psoriasis were shown in which the therapeutic results impressed me as remarkably good. A little later I saw a further demonstration of this method in Dr. Fordyce's service at the City Hospital, and was again impressed favorably. I then took up the work myself and within the past few months have treated thirty cases by autoserum, twenty-five of these being patients suffering from various forms of psoriasis. All of my patients with psoriasis were given three injections of serum at intervals of a few days, followed in every case by local inunctions of chrysarobin, and at times, in addition, by covering the lesions with rubber cloth. The results of this serum treatment have been unusually good and in some cases truly remarkable. The crucial test of the serum treatment is when it is applied to patients who have previously been treated in vain by the recognized methods, such as the local use of chrysarobin, diet, etc. A number of refractory cases in which the patients had been treated for a considerable time by my father and myself by various methods, cleared up after the combined serum and chrysarobin method in a most astonishing and gratifying manner. Whether the results will be more permanent than heretofore it is of course impossible to say. Some other obstinate dermatoses were also treated, including eczema, lichen planus and dermatitis herpetiformis. In one case of the last-mentioned disease, of six months' duration and moderate severity, the condition had not been benefited in the least by the use of tar, sulphur and other ointments. Two days after the third injection of autoserum, no other treatment being given, there was an immediate cessation of all itching, and from that moment a rapid disappearance of the lesions. My technic consisted in withdrawing 50 c.c. of serum at each sitting, and injecting as much serum as could be obtained by prolonged centrifuging. The serum was generally injected intravenously; at times intramuscularly. I believe that in the autoserum we have a valuable aid in treating one of the most obstinate of chronic skin-diseases, namely, psoriasis.

**Dr. James M. Winfield**, Brooklyn: We have been studying the autoserum injection method of treatment in the other large charity institution in Brooklyn, and one of the most startling results we have thus far obtained has been in a case of pemphigus. After the initial injection the condition was aggravated; the second injection produced no noticeable effect, but after the third dose a steady improvement began. In psoriasis our experience was similar to that of Drs. Gottheil and Satenstein. We did not withdraw as much blood and we did not follow the injections with vigorous chrysarobin inunctions, but our results were excellent. I think the subject is a vast one and the treatment is bound to be of benefit in skin-diseases. In psoriasis we know that any new method of treatment may effect an apparent cure, and the question is whether or not the improvement after this method will be permanent. We must keep these patients under observation and see if the cure will be more lasting than that accomplished by other methods.

**Dr. John A. Fordyce**, New York: I have employed this method at the City Hospital and the Vanderbilt Clinic, as well as in my private practice, in psoriasis, in chronic recurrent urticaria, in dermatitis herpetiformis and to some extent in pemphigus. I have had encouraging results in a number of cases of psoriasis, notably in one patient, who had an acute generalized psoriasis develop on a chronic psoriasis. She had never been absolutely free from the disease for years. After she had received five intravenous injections of autoserum the eruption improved. She was then put on a 2 per cent. chrysarobin ointment, and within forty-eight hours the eruption disappeared entirely. That was about two months ago, and since then she has had a few slight recurrences. My most impressive result by this method was in a case of dermatitis herpetiformis, with most intense and persistent multiform lesions, with vesicles and bullae. The patient, a girl, was compelled to give up her position on account of the severe itching, with insomnia and loss of weight. After the first two injections of autoserum the lesions increased in number and the itching became more intense—so much so, in fact, that the patient objected to further treatment, but after some urging she was given three more injections and then put on a mild calamine lotion. Within a week the eruption, together with the itching, had practically disappeared, and she was able to resume her work. Recently, she had a slight recurrence and she is now receiving a second series of injections. Those two cases show the most striking effects of the treatment that I have seen. I have also tried it in chronic persistent urticaria, but have not been so much impressed with its value. In one case of angioneurotic edema of the cheek the autoserum did not have much effect, but the method is worth trying. I think the technic described by Dr. Gottheil can be improved if he will use a MacRae needle attached to a large centrifuge tube. It is very easy then, by producing a vacuum in the tube, to permit the blood to run through.

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[9] Cederkreutz: Praktische Ergebnissen auf dem Gebiete der Haut- und Geschlechtskrankheiten, A. Jesionek, 1914.

Dr. William Thomas Corlett, Cleveland: Two cases of dermatitis herpetiformis have been under my observation for the past year. The first one was treated with normal salt solution injected into the veins every third day for a period of three weeks. When I recently heard of the method of treatment described by Dr. Gottheil I had under my observation a case of dermatitis herpetiformis in a woman who had recently miscarried. When she was admitted to the hospital we were able to withdraw only about 40 c.c. of blood, from which, approximately, 20 c.c. of serum were obtained. This was injected intramuscularly the following morning; in a few days there followed marked improvement. On account of the patient's anemic condition we have not been able to repeat the injection. To lessen the danger of extraneous infection a suggestion of Dr. Cole was followed which modified the technic by placing the blood in an incubator over night and decanting the serum on the following day.

Dr. Charles J. White, Boston: At the Massachusetts General Hospital we have taken the blood from a healthy person and injected it "whole" into the patient. We have tried this in cases of rebellious eczema and in dermatitis herpetiformis without any striking success.

Dr. M. L. Heidingsfeld, Cincinnati: I have had considerable personal experience with serum treatment in chronic dermatoses, using heterogeneous serum, subcutaneously, after the method described by Dr. White, and have obtained good results, particularly in dermatitis herpetiformis (Duhring) and some of the chronic persistent forms of dermatitis. It has failed utterly, however, in some particular types, notably the chronic bullous dermatitis of several years' duration, following vaccination.

Dr. William S. Gottheil, New York: We are well aware that the autoserum injections alone do not cure psoriasis, though in almost every case there is a distinct and in some cases a very marked improvement under their use alone. They affect the skin in some as yet undetermined way, possibly through their influence on one or all of the internal secretions, so as to lessen the appearance and growth of the psoriatic efflorescences and to render the integument more susceptible to the ordinary remedies. After their administration we get marked and very rapid results from very weak local applications, and complete the cure, so far as the immediate lesions are concerned, in a very few days. That the serum undergoes some change while outside the body is undoubted, both from its effects on the efflorescences and on the subsequent local treatment, and from the marked anaphylactic reaction that we have observed in several cases. The integument apparently becomes sensitized to the proteins of its own blood or corpuscles after a few injections. In view of the complexity of the organochemical reactions that go on in the blood when withdrawn from the body, and of our small knowledge of their exact nature, we consider it dangerous at present to keep the blood for any prolonged period before reinjecting it, as was done by Dr. Cole in the case mentioned by Dr. Corlett. So far, an hour and a half is the limit of time that we have allowed to elapse before reinjection.

Dr. H. N. Cole, Cleveland: In the case cited by Dr. Gottheil, neosalvarsan was mixed with the serum and kept over night. There is no danger in keeping the unmixed serum over night.

# ROENTGENOLOGIC OBSERVATIONS ON THE FUNCTION OF THE ILEOCOLIC VALVE

## WITH SPECIAL REFERENCE TO THE CAUSATION OF ILEAC STASIS *

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The subject of intestinal stasis, particularly ileac stasis, has recently aroused much interest and not a little controversy. Most of the discussants are agreed as to the significance of ileac stasis, but the mechanism of its causation, and, consequently, the choice of methods aimed at its relief, has been the subject of much theorizing and controversy. Enteroptosis, adhesion bands, various pericolonic membranes, intestinal kinks, cecum mobile, and typhlatony have been among the causes named; but the instances in which ileac stasis exists without any demonstrable bands or kinkings are so numerous it seems some other cause must be found to explain the stagnation.

It is, therefore, important to determine, if possible, the correct basis on which to build the argument relating to the causation of ileac stasis. If the case be the kinking of the terminal ileum or some similar lesion and it is conceded that, in comparatively rare cases, obstructing kinks and adhesions do occur, careful consideration must be given the recommendations for serious surgery which seem to be indicated. On the other hand, if the ileac stasis be dependent on some other and simpler cause as, for instance, ileocecal sphincter spasm or incompetency of the ileocecal valve, there will be little indication for hazardous surgery.

For several years (since 1910) I[1] have been urging ileocolic valve incompetency as an explanation of a large share of these cases of ileac stasis. In September, 1912, I reported a series of 200 gastro-intestinal cases,[2] most of the patients being constipated, in which 33, or 1 in 6, showed ileocecal valve incompetency when tested by the bismuth enema. In August, 1913, I reported a much larger series of 1,500 persons,[3] tested by means of the bismuth enema, in which nearly 250, or again 1 in 6, showed ileocolic valve incompetency. It should be emphasized that this

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* Read before the Section on Pathology and Physiology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Case, James T.: Proc. Am. Roentgen-Ray Soc., 191.

[2] Case, James T.: Tr. Am. Roentgen-Ray Soc., September, 1912.

[3] Case, James T.: Proc. XVII. Internat. Cong. of Med., Section on Radiology, London, August, 1913; also in Med. Rec., March 7, 1914.

large series of patients were all suffering from gastrointestinal symptoms and most of them were seeking relief from constipation. I have now found more than 500 cases of ileocolic valve incompetency, the frequency of occurrence remaining about 1 in 6 of the cases examined.

The anatomists describe the ileocolic valve as formed by partial inversion or telescoping of the ileum into the cecum. The end of the small intestine is invaginated through the wall of the large bowel, carrying with it certain layers of that wall which project into the cecum as two folds, lying, respectively, above and below its orifice and constituting the two segments of the ileocecal valve. The peritoneum and the longitudinal muscular fibers of the bowel do not take part in this infolding, but are stretched tightly across the crease produced on the exterior by the inversion, thus serving to preserve the fold and the formation of the valve. According to Cunningham, whose description has just been given, the efficiency of the ileocolic valve is largely due to the oblique manner in which the ileum enters or invaginates the cecum, and he states that, in the great majority of instances, when in position within the body, the ileum is perfectly protected from a return of the cecal contents. In fact, anatomists are almost unanimous in thus considering the normal ileocolic junction a barrier against a reflux of cecal contents.

According to Arthur Keith[4] there are muscular fibers situated directly at the ileocolic orifice which are evidently designed to secure that orifice from reflux from the cecum. In addition to the sphincter action of the circular muscles included in the valve itself, the last few centimeters of the terminal ileum present a distinct thickening of the circular muscular coat which seems to be endowed with a special tonic function; it serves as a sphincter for the terminal part of the ileum. This sphincter relaxes in front of the peristaltic wave, allowing the passage of food into the colon, but, on the other hand, it contracts, as a rule, against any regurgitation which might be caused by contractions in the colon. In marked contrast to the rest of the bowel in its relation to the central nervous system, the ileocolic sphincter is not affected by vagus stimulation. According to Elliott, stimulation of the splanchnic nerves causes complete relaxation of the terminal ileum and produces a strong contraction of the ileocolic sphincter. These statements are based on the current teachings relating to the anatomy and physiology of the ileocolic junction.

It thus appears that the ileocolic junction is possessed of a double function, namely: (1) a sphincter action which controls the passage of ingested food from the ileum into the colon and tends to protect the ileum from a reflux of cecal contents; (2) a valve action which is probably purely mechanical, guarding against reflux back into the ileum. Much of the force of the arguments relating to ileocolic valve incompetency as a factor in the causation of ileac stasis hinges on the determination of whether or not the ileocolic valve is normally competent.

Most anatomists and physiologists have thus far agreed that the valve is normally competent. The work of Cannon and others on antiperistalsis adds importance to the conception of normal ileocolic valve competency. Our present-day conceptions of the functions of the ileum and of the colon point to the need of such a barrier. My Roentgen-ray studies on colonic peristalsis and antiperistalsis confirm, almost to the minutest detail, Cannon's deductions from Roentgen-ray observations on animals.

Bull,[5] in 1878, after a careful series of experiments, stated his belief that, in the living body, fluid could not be forced beyond the ileocolic valve, but when the bowel was overdistended by air the valve was rendered incompetent and the air entered the small intestine. Dawson,[6] in 1885, experimenting on the cadaver, concluded that the ileocecal valve, when normal, effectually guards the small intestine from gas and fluid from below. Ziemssen[7] recommended inflation of the rectum as a means of diagnosis and treatment by "special procedure," the patient being placed under anesthesia. He states that ordinarily the small intestine is closed to the return of material from the cecum by the ileocolic valve, but under deep chloroform anesthesia this resistance is decreased and fluid can be forced into the small intestine. Heschl,[8] after a number of experiments, agreed with Ziemssen as to the normal barrier function of the valve.

On the other hand, a few observers, such as Cantani,[9] firmly believed that the ileocolic valve was permeable to fluid injections and suggested that the small intestine be utilized in cases of rectal alimentation. In one instance in which he treated acute bowel obstruction by injection of oil, half an hour later a part of the oil was vomited. Ziemssen records a similar case in which a fistulous connection between the colon and the stomach was suspected because the patient vomited oil shortly after an oil enema. Hemmeter, Church, and Gruetzner[10] have all conducted experimental work which supports the idea that, in certain cases at least, the ileocolic valve permits the reflux of material from the colon. Yet Boyd[10] makes the statement that the reflux of fluid through the ileocolic valve cannot, in every case, be expected, and that he has frequently failed to find insoluble substances, such as charcoal, in the gastric contents, in cases in which charcoal had been added to the nutrient enemas.

Illoway[11] reports four cases of intestinal obstruction treated by forcing water past the ileocecal valve, with recovery in three cases. In this connection it is proper to refer to the experiments of Senn[12] who, discussing the use of rectal injections in overcoming bowel obstruction due to invagination, concluded that, when the obstruction is located beyond the ileocolic valve, no reliance can be placed on this method. Senn based this statement on carefully conducted experiments on animals in which fluid was forced beyond the ileocecal valve. In two cases post-mortem examination revealed longitudinal lacerations of the muscular coat of the rectum. A third animal died immediately after the experiment from the effects of the injection. Further, but less crucial, experiments were carried on in man. Senn concluded that "the forcible injection of water beyond the ileocolic valve must therefore be recognized as a dangerous expedient and should never be resorted to."

Senn further states, however, that, in the healthy adult, the competency of the ileocolic valve is overcome by rectal inflation under a pressure of from

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[4] Keith, Arthur: Proc. Roy. Soc. Med., April, 1913 (supplement).

[5] Bull: Virchow's Jahresbericht, 1878, ii, 205.

[6] Dawson: Lancet-Clinic, Feb. 21, 1885.

[7] Ziemssen, quoted by N. Senn: Experimental Surgery, 1889.

[8] Heschl: Zur Mechanik diastaltischen Darmperforationen, Wien. med. Wchnschr., 1881, No. 1.

[9] Cantani: Virchow's Jahresbericht, 1879, ii, 180.

[10] Quoted in Sutherland's System of Diet and Dietetics, 1908, p. 287.

[11] Illoway: Am. Jour. Med. Sc., xli, 168.

[12] Senn: Experimental Surgery, 1889.

1½ to 2¼ pounds, and that this amount of pressure is not sufficient to injure the bowel. Behrens agrees with Senn in this statement. The incompetency of the valve is caused in cases of overdistention by a lateral and longitudinal distention of the cecum which mechanically separates the margins of the valve.

In 1897, Max Hertz[13] of Vienna, while practicing abdominal massage on a patient for abdominal pains, observed peculiar symptoms, which after further study on other cases, led him to describe a symptom-complex of insufficiency of the ileocecal valve. In 1910, and on numerous occasions since, I have demonstrated, roentgenologically, the retrograde filling of the ileum after bismuth clysmas. Holzknecht and Singer,[14] in 1911, mentioned the relatively frequent occurrence of ileocecal valve incompetency in connection with chronic obstipation. In 1912, Groedel[15] reported insufficiency of the ileocecal valve and submitted roentgenologic evidence. In 1913, Groedel[16] continued his discussion of ileocecal valve incompetency and there appeared papers by Dietlen,[17] Kellogg,[18] Reider, Schwarz,[19] Katsch[20] and myself.[21]

From certain quarters, however, have come expressions of doubt as to the serious significance of ileocecal valve incompetency, and skepticism has been expressed concerning the normal competency of the valve. I therefore wish to tabulate at some length a series of findings, most of them roentgenologic, which seem to indicate that the ileocecal valve is normally competent, protecting the ileum from a reflux of cecal contents.

1. The ileocecal valve is almost universally present in vertebrate animals (Kellogg[18]). I have found the ileocolic valve of the dog and of the pig competent, withstanding enormous distention of the colon by gas. The following surgical operation on a dog is submitted as further evidence of the competency of the ileocolic valve, at least, in the dog. The pelvic colon and the ileum were so divided and reinserted that the course of the food was from the ileum into the descending colon, then through the transverse, the ascending, and through the ileocolic valve and the last 10 inches of the ileum into the pelvic colon and rectum. Dr. D. B. Phemister, who performed the operation, reported that the dog died of intestinal obstruction thirty-six hours later, intestinal contents having accumulated on the distal side of the ileocolic valve, which remained thoroughly competent.

2. A young man was given a silk string 9 meters long, one end of which he swallowed. At the end of twelve hours, the string had transversed the entire gastro-intestinal tract. By means of the bismuth enema, I tested the valve competency on two separate occasions before introducing the thread, and again after the thread was in place, and found that the valve was thoroughly competent. Then, for the purpose of an experiment on electrical stimulation of the bowel, the thread being used as a guide, a metal electrode was introduced as far as the upper end of the descending colon, incidentally considerable traction being made on the thread in an unsuccessful effort to pass the sound around the splenic flexure. Roentgenograms made a few moments later showed the terminal ileum filled for a considerable distance. This was attributed to traction on the thread, rendering it taut in the region of the valve, producing temporary incompetency. After the experiment was concluded and the thread withdrawn, another bismuth enema was injected, and the valve was again found to be competent.

3. In a certain number of cases, following the injection of a bismuth enema, the head of the bismuth column will pass the ileocecal valve and fill the terminal ileum for a varying distance. As already mentioned, I have found ileocolic valve incompetency in about one-sixth of my bismuth cases. This statement is based on the roentgenoscopic examination of more than 3,000 persons (June, 1914), most of them constipated, and all suffering from gastro-intestinal disturbances. Dietlen,[17] in 100 cases, found 22 in which the bismuth clysma showed ileocecal valve incompetency, 1 to 5. Holzknecht and Singer[14] found 3 cases of valve incompetency out of 15 cases examined, or 1 in 5. On the other hand, Dietlen observed insufficiency of the valve in only one of the normal cases which he examined during a period of several years. This agrees with my experience in examination of a number of presumably normal persons.

The method of testing the competency of the valve is the following: The patient should lie supine on the horizontal fluoroscopic table. It is not necessary to introduce the rectal point, or colon tube, more than 1 or 2 inches. The container should be placed not higher than two feet above the patient and the barium or bismuth enema allowed to flow by gravity, the course of the bismuth column being watched fluoroscopically. Ordinarily 1,200 c.c. of the barium enema at 100 F. will suffice to fill the colon. It is important that a uniform technic be followed. I insist on seeing, by means of the fluoroscope, that the cecum is well filled. Massage of the abdomen over the shadow of the cecum is practiced in the antiperistaltic direction. Still further to insure complete filling of the cecum, the patient is sometimes asked to lie on the right side for ten or fifteen minutes after the injection of bismuth, and a second examination is made when the patient returns to the table after evacuating the colon. The roentgenograms are made with the patient lying prone, plate anterior, rather than lying supine, plate anterior. In the latter position "saddling" of the ileum over the iliopectineal line may lead to confusion. In marked cases of ileocolic valve insufficiency, however, there is never any difficulty in recognizing the terminal ileum.

4. When the valve is once found incompetent it has been possible to demonstrate incompetency during succeeding tests. I have tested the valve a second time in more than fifty cases and on numerous occasions, a third time. The incompetency is seen to be a constant phenomenon in all cases in which it is once seen.

5. In preparation for the enema test, thorough preliminary cleansing bowel-flushings are ordered two hours before the bismuth test. Every once in a while, a patient complains bitterly that the cleansing enemas make her ill. Patients find difficulty in describing their feelings accurately; it seems to be a peculiar, sickening sensation accompanied by abdominal distress and nausea. Almost invariably it is found in these cases that the bismuth enema ascends

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[13] Hertz, Max: Wien. med. Wchnschr., 1897, Nos. 36 and 37.
[14] Holzknecht and Singer: München. med. Wchnschr., 1911, No. 48.
[15] Groedel: Verhandl. d. deutsch. Roentgen Gesellsch., 1912, viii, 56.
[16] Groedel: Fortsch. a. d. Geb. d. Roentgenstr., 1913, xx, No. 2.
[17] Dietlen: Fortschr. a. d. Geb. d. Roentgenstr., 1913, xxi, 23.
[18] Kellogg: Med. Rec., June 21, 1913.
[19] Schwarz: Die klinische Roentgendiagnostik des Dickdarmes, Berlin, 1914.
[20] Katsch: Fortsch. a. d. Geb. d. Roentgenstr., 1913, xxi, 177.
[21] Case, James T.: Proc. Am. Roentgen-Ray Soc., 1914; New York Academy of Medicine, Jan. 15, 1914.

a considerable distance into the terminal ileum, which seems to be wider than usual.

6. A still more convincing evidence of ileocecal valve incompetency, at least to me, is the reflux of ingested bismuth from the colon into the ileum. I have observed this reflux of ingested bismuth in more than seventy cases. For example, the terminal ileum is seen to be empty at the tenth or twelfth hour following the bismuth meal but at the twenty-sixth hour the terminal ileum is again filled with bismuth though no bismuth has been taken in the interim. Roentgenoscopic examination for this purpose must be conducted with the patient horizontal, so that accurate visualized palpation may be practiced under the fluorescent screen. Often, by massage in the antiperistaltic direction, bismuth ingesta may be forced back into the ileum from the cecum. Such cases invariably show extreme incompetency to the enema.

7. The literature concerning rectal alimentation contains the statement that if the nutriment be given in saline solution it will be more likely to pass the ileocecal valve. In order to test the possible influence of saline solution in testing the ileocecal valve by means of the bismuth enema in a series of fifty colon injections, I added enough salt to the clysma to equal normal saline solution. Comparing this series of cases with the fifty preceding and the fifty succeeding cases in which colon injections were made without salt, there was no difference in the frequency of ileocolic valve incompetencies. Several experiments were made in testing the influence of the composition of the enema. It was found that when barium sulphate, bismuth oxychlorid or bismuth subcarbonate was used in a gummy suspension in water, with or without saline solution, and in buttermilk suspension with or without the addition of salt, a constant proportion of cases, about 1 in 6, of ileocecal valve incompetency, was observed.

It seems to be a current opinion that rectal alimentation is, on the whole, unsatisfactory, although there are enough cases reported of successful rectal alimentation to warrant the continuance of the practice. In the light of our present knowledge concerning ileocecal valve incompetency, it seems to me reasonable to presume that those cases in which rectal alimentation has proved successful are instances of ileocecal valve incompetency.

8. To me one of the strongest evidences in favor of the normal competency of the ileocolic valve is the fact that when it is incompetent, the competency may be restored by a simple surgical procedure. Kellogg, agreeing with me that the ileocolic valve incompetency must be an important factor in the production of ileac stasis, devised a simple but successful operation for restoring the competency of the ileocolic valve. I have already reported postoperative studies on more than one hundred cases in which this operation for restoration of the ileocolic valve competency has been performed. With only three or four exceptions, the Roentgen-ray diagnosis of ileocolic valve incompetency was confirmed at operation, and the valve competency was restored by the simple operation above mentioned. That the competency was restored was proved, not only by testing the valve *in situ* before the abdomen was closed, but later by roentgenologic tests. Although, in several instances, more than a year and a half had elapsed since the operation was performed, in only three or four cases out of the hundred did subsequent roentgenoscopy find the valve incompetent.

The effect of the operation on the emptying-time of the ileum has also been tested by the bismuth meal, but thus far no evidence has been secured which would lead me to believe that the operation has caused the slightest interference with the passage of ingested food from the ileum into the colon. On the contrary, the emptying-time of the ileum, which before the operation was in every single instance prolonged, has been definitely shortened, nearly always within eight hours. Emphasis should be laid on the fact that the operation for repair of the incompetent valve has been done, in by far the majority of cases referred to, in connection with some other operation which required opening of the abdominal cavity.

In a few instances in which the ileocolic valve had appeared to be competent to the enema, at subsequent operation the competency of the valve appeared to be open to question, at least in relation to gas, since slight pressure on the cecum was found sufficient to cause a reflux into the ileum after the latter had been thoroughly emptied. In accounting for these cases, I have borne in mind the experimental evidence submitted by Ziemssen, who found that, under deep chloroform anesthesia, the resistance of the valve to reflux from the colon was decreased and fluid could be forced into the small intestine. I have, therefore, assumed that, in these cases, the valve itself was really incompetent, even at the time of the enema; but with the patient awake and the bowel tone normal, the activity of the sphincteric mechanism was sufficient to prevent a reflux from the cecum into the small intestine, even though the valve lips did not closely approximate. Further, at operation, the test of the valve competency is usually made with gas and not fluid. The experiments of Senn and others would indicate that one can overcome the competency of the ileocolic valve more easily with air than with fluid, especially when the patient is anesthetized.

9. Another significant observation is made in connection with surgical operation in cases in which ileocolic valve incompetency has been demonstrated roentgenologically. At operation the surgeon often finds the small bowel filled with gas to a very disturbing degree in spite of the careful preoperative preparation, whereas in cases in which the valve is competent the small intestine is collapsed.

10. Still another evidence of normal valve competency is found in the fact that it is possible in the operation of ileosigmoidostomy to construct an artificial ileocolic valve which will stand the test of postoperative roentgenologic studies. The operation does not differ from the ordinary end-to-side anastomosis except that there is a distance of 2 or 3 cm. measured along the surface of the ileum, between the inner and the outer suture-lines. The result is an inversion of the ileum into the colon for about half an inch, forming a circular valve-like fold, which acts as an efficient valve. I have made such postoperative studies in twelve patients thus operated on by Kellogg in which roentgenoscopic tests have proved the competency of the artificial ileocolic valve.

11. At operation, cases of ileocecal valve incompetency show definite deviations from the normal anatomic structure. The crease marking the normal invagination is obliterated; the ileum is pulled out of its cecal pocket; the last inch or two is dilated into a trumpet-shaped sac, which Kellogg has found at

operation to have a diameter of from 5 to 7 cm. instead of the normal 3 cm. Kellogg has also called attention to a thinning of the walls of the terminal ileum often seen in marked cases of stasis.

12. Post-mortem studies show a great predominance of competent valves. Surely the only function persisting in the cadaver is a mechanical action, yet Kraus in one hundred and fifty necropsies after death from various causes, found the ileocolic valve competent in all but twelve. The reports of a few other pathologists who have published their observations, agree closely with this statement.

In the foregoing pages evidence is cited which, it seems to me, demonstrates the fact that the ileocecal valve is normally competent and that the competency is due to an action of the valve lips which is largely, if not entirely, mechanical. This evidence may be summarized as follows:

1. The ileocecal valve is almost universally present in vertebrate animals; and, at least, in the dog, pig, and cat, the valve is competent to the enema, withstanding enormous distention of the colon by fluid and gas.

2. By means of a string passed through the alimentary canal traction may be made on the valve lips, producing temporary incompetency.

3. In about one-sixth of three thousand persons, most of them constipated and all suffering from gastro-intestinal disturbances, the bismuth enema passed the ileocecal valve and filled the terminal ileum for varying distances.

4. The valve incompetency thus determined is a constant phenomenon in those cases.

5. Patients with incompetency of the ileocecal valve describe characteristic disagreeable symptoms apparently due to passage of the enema into the small intestine.

6. In the marked cases there is also observed a reflux of ingested bismuth from the colon back into the ileum.

7. The occurrence of the incompetency is, to a large degree at least, independent of the temperature or composition of the opaque enema.

8. The incompetent ileocolic valve may be restored to competency by a simple surgical procedure, the competency persisting in some cases at least a year and a half.

9. In operation on patients with incompetent ileocolic valve the small bowel is found filled with gas to a very disturbing degree.

10. It is possible in the operation of ileosigmoidostomy to construct an efficient artificial ileocolic valve which will successfully act as a barrier against reflux from the colon.

11. Definite deviations from the normal anatomic structure are found at operation on cases of ileocecal valve incompetency.

12. Post-mortem studies show the ileocolic valve to be competent in the great majority of cases.

## ABSTRACT OF DISCUSSION

Dr. Lewis Gregory Cole, New York: In 1902 I first recognized a case of ileocecal insufficiency. Since then I have observed it in about the same proportion of cases that Dr. Case has reported. It occurs in varying degrees. In some cases it will only ascend about 6 inches, and in others will extend all the way through the intestines to the pyloric sphincter. Therefore, there can be no doubt that ileocecal insufficiency occurs frequently. The important question is whether or not it is pathologic. I have tried all kinds of arguments to interest surgeons and physicians in this subject, but the most effective is to ask whether or not they would expect symptoms if they were habitually fed the contents of their colon, even though it were administered through a stomach-tube. When the putrid feces from the colon pass into the small intestine, which is relatively sterile and composed of a highly absorbing membrane, one would certainly expect symptoms.

Dr. Walter B. Cannon, Boston: Dr. Case's work has interested me particularly because of earlier work which was done on lower animals. Attempts were made repeatedly in animals to press the material back into the small intestine from the colon, and in spite of repeated pressure it was impossible to cause this material to return to the small intestine once it had got through the ileocolic valve. Nevertheless, in a paper on some work done in 1901, it was shown that material injected into the colon might go back into the small intestine, and roentgenograms were taken at that time showing material, introduced into the large intestine through the rectum, that had gone back and filled a considerable part of the small intestine. The most significant part of the work which Dr. Case has reported was that in which he noted that material which had normally passed from the small intestine into the large, so that the small intestine was quite free, was found later back in the small intestine. This observation seems to offer strong opposition to the argument that material coming normally through the small intestine into the colon is different from that introduced per rectum and, therefore, is treated by the ileocolic valve differently from injected material. The mechanism of the return to the small intestine is, I think, a rather interesting one. In lower animals there is naturally a backward movement by the reversed peristalsis or anastalsis of the colon. Does Dr. Case know the mode of this return in human beings? Of course there are well-known instances of attempts by surgeons to keep material from escaping through an opening in the cecum, by uniting the small intestine with the distal colon. The material continued to escape, thus indicating there may be a reverse movement of material through the large intestine. It seems possible, therefore, that sufficient pressure might be developed in the large intestine to carry this material back through the many loops of the small intestine.

Prof. A. J. Carlson, Chicago: There are severe symptoms that we would expect to follow the injection of fecal matter into the stomach. Cats' or dogs' feces diluted to pass through a stomach-tube, of which material 100 c.c. was given each day or every other day for two or three months, has produced no results whatsoever in any of our cats as evidenced in the general metabolism or general behavior of the animals. Does this mean that the same result would be obtained in man? It is possible that fecal material coming into the small intestine from the large intestine without passing the stomach is more toxic than if introduced by the stomach.

Dr. Allan C. Eustis, New Orleans: It is generally accepted that feces or even their extract are highly toxic when introduced into the body. Some stools are more toxic than others, depending on flora and mediums, and the body has the power of breaking up these poisons and rendering them inert. The liver is especially active in this respect, but the heart-muscle, uterus and even subcutaneous tissues also possess this power. Dale has shown that if parahydroxyphenylethylamin is perfused through the liver of a dog, it is broken up and phenylacetic acid is formed. This amin, which is formed by the putrefaction of tyrosin, is capable of raising systolic blood-pressure from 110 to 260, when introduced into the vein of a dog, while a like action can be demonstrated in man. This protective power of the liver against intestinal poisons explains the apparent inconsistency in the anatomic and clinical findings in many cases of intestinal stasis. Patients with a very heavy indicanuria and evident intestinal stasis may present no subjective symptoms, owing to the fact that the intestinal poisons are detoxicated by the liver; on the other hand, some patients will have marked subjective symptoms with very little demonstrable abnormality of the gastro-intestinal canal. It is the latter class of cases that are most readily handled along dietetic and hygienic lines, and to which I believe most of our cases of bronchial asthma belong. As I have shown in several communications, histidin on putrefaction yields a toxin which is capable of producing violent bronchial spasm, having been first discovered by Dale while seeking the active principle of ergot, and which he identified as beta-imidazolylethylamin. The lethal dose of this amin to a 300 gm. guinea-pig is 0.5 mg., intravenously. I have found that a 1 : 1000 solution of beta-imidazolylethylamin hydrochlorid, if macerated with the fresh liver of the turkey-buzzard (chosen because of its well-known resistance to putrid meat) and allowed to incubate at 37 degrees C. (98.6 F.) for four hours is non-toxic when introduced intravenously into a guinea-pig. Evidently, there is some ferment in the liver of the turkey-buzzard which is capable of splitting up this amin, for all precautions were taken for thorough asepsis, incubation was conducted under toluene, heat destroys the action and it does not take place in the cold. It may be assumed that the asthmatic individual has lost the power of detoxicating this particular amin, which is amply borne out by my clinical experience. Dr. Case has demonstrated that a patent ileocecal valve will cause intestinal stasis, and I do not think it was his intention to claim this anatomic variation as the cause in all cases, but I wish to impress the importance of considering the physiologic defences of the body to intestinal poisons before resorting to surgery to correct an anatomic abnormality.

Dr. Seymour Basch, New York: Dr. Case in demonstrating his cases made a statement which I wish to controvert, namely, that this condition, unless remedied, is permanent. That is to say, in each patient in whom he finds incompetency of the ileocecal valve there is no spontaneous recovery. A patient was referred to me by a surgeon with a question of the necessity of an operation, because she had signs which pointed to some obstruction at the sigmoid flexure. In the course of our examination we gave the patient a colon enema and found she had a very long intestine low down in the pelvis, but no sign of any obstruction anywhere or ileocecal incompetency. This patient was placed on the usual anticonstipation coarse diet and treatment and massage was given the bowels and she has done very well. She has gained, in two years, over 20 pounds, her bowels are regular, and she feels well. In order to complete our study we gave her another colon enema two years later, and found that the muscles of her abdomen were competent to hold up the intestine. Just previous to that, however, I had heard Dr. Case at the County Medical Society in New York, and in going over the plates in my case I found that the second plate showed a marked incompetency of the ileocecal valve according to Dr. Case's outline. In the first plate no such thing appeared, but at the time of the second plate the patient was clinically very much better. We went over the case, but we found it impossible to understand just why a patient should show incompetency when clinically well and none at all during the height of her illness. It shows that we should not hurry our patients into an operation even if we find conditions that apparently point to surgical necessity. We should try common-sense measures first.

Dr. E. C. Rosenow, Chicago: Did any patients in whom Dr. Case noted incompetency of the ileocecal valve have arthritis deformans?

Dr. George E. Pfahler, Philadelphia: I have seen a number of cases in which arthritis deformans is associated with ileocecal valve incompetency.

Dr. Thomas A. Groover, Washington: Has Dr. Case any theories as to the cause of this condition? Is it congenital or acquired? Has he made any studies of infants to see if the condition is present in infancy? A large proportion of the cases which have presented this condition, in my experience, have been in those persons who have been in the habit of repeatedly taking large enemas with a great deal of pressure. Has he anything to say about this as a causative factor?

Dr. J. T. Case, Battle Creek, Mich.: The pathologic significance of ileac stasis due to ileocecal-valve incompetency I did not attempt to discuss at length here. I tried to confine my remarks to the one anatomic and physiologic question, whether or not the normal ileocecal valve was an efficient barrier against reflux from the ileum. The pathologic significance of ileal stasis is an intricate problem and many phases of it have been touched on. Without discussing whether or not indicanuria is a definite evidence of intestinal stasis, I may state that I have tabulated one hundred cases in which the ileocolic valve was found competent, and another hundred cases in which it was incompetent; one could see at a glance at the indicanuria values, which cases presented the condition under consideration. The patients with incompetent valve presented indicanuria in the majority of cases, whereas the patients in whom the valve was competent rarely showed a marked indicanuria. What I have tried to bring out is that the ileocecal valve can be rendered competent on the operating-table. An efficient competent valve can be made in ten minutes by the surgeon, and I consider that this fact tends to prove that the valve is normally competent. As Dr. Cannon has mentioned, one of the most convincing arguments as to the normal competency of the ileocecal valve is the fact that in a large number of cases I have observed a reflux of ingested food from the colon into the ileum. Antiperistalsis surely is an important factor in the production of stasis in the ileum, through incompetency of the valve. It is well known through Cannon's work that, in cases of obstruction in the distal colon, there is an exaggeration of the normal antiperistaltic influence in the proximal colon. This is exemplified in gangrene of the cecum recently seen in a case of malignant obstruction of the sigmoid colon. Exaggerated antiperistalsis is also seen very commonly associated with spasticity of the left half of the colon, especially the iliac and pelvic colon, with resulting functional hindrance to the onward peristalsis through that portion of the bowel. Most of our cases of ileocecal-valve incompetency have been associated with chronic colonic stasis with spasticity and adhesions of the iliac and pelvic colon—what the Germans have called "spastic obstipation." I was much interested in Dr. Basch's case, and should like to know the details which must have been followed out in order to make sure that the test of the valve competency was a thorough-going one. In all our cases we have insisted on a rigid routine, including careful cleansing of the colon by repeated enemas two or three hours before the barium-enema test; careful massage over the asending colon and cecum in the antiperistaltic direction during the injection of the enema; screen observations during the giving of the enema to make sure the cecum is well filled, and the employment of sufficient pressure to distend the cecum. I have never yet seen a case of incompetency in which the surgeons have not been able to demonstrate the incompetency at operation. I certainly agree most emphatically with what Dr. Basch has said about the importance of a thorough trial of non-surgical measures. Out of five hundred or more cases of incompetency of the ileocolic valve, only about one hundred have been operated on for repair of the valve, and many of these repairs were done in connection with other operations requiring abdominal section. There is a good field for further research in this matter in children's clinics. My observations on children have been limited to relatively few. As to the cases of arthritis, I can agree that I have seen a good many of them in which it seemed that the intestinal stasis was an important factor in the etiology.

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**Peril of Suggestion.**—To make people feel better is not despicable. The danger lies in the fact that one is liable to be satisfied with making people feel well instead of making them be well. It should not be a great danger. We ought to be able to trust ourselves to diagnose scientifically and to treat rationally, even if we have an easy power of anesthesis. We do not give morphin in every case of pain; no more, then, would we dull every aching sensorium with suggestion. —*Med. Press and Circular.*

# THE TREATMENT OF CHOLERA BY TRANSFUSION OF SALINE SOLUTION*

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To the general physician practicing medicine in the United States, Asiatic cholera seems like one of those rare diseases only of academic interest. To one, however, who is practicing in an uncivilized and overcrowded city, this dread disease is a genuine reality.

Cholera had not appeared in Canton, except sporadically, for more than ten years; but in the summer of 1913 an epidemic of moderate extent and great severity spread over the city. The southern section was first affected and it was here that it first came under our notice among the patients of the John G. Kerr Hospital for the Insane. This institution is located on very low land, on the banks of a canal which runs through a large section of the city. This canal receives most of the drainage from the streets of this section of the city. On account of recent heavy rains the water of the river was higher than usual, and this of course affected the waters of the canal, causing them to flood the campus of the hospital during the high tide. To prevent the insane patients, who were at large within the compound, from drinking this water was impossible and thus the disease spread.

Specimens of the dejecta were sent to a Chinese bacteriologist who was trained in Hongkong and he demonstrated the presence of the specific spirillum of Asiatic cholera.

As indicated above, the disease was very virulent, many patients passing away but three or four hours after the onset of symptoms. Other patients lived for one or more days, dying of exhaustion or some later complication. The symptoms were quite typical, with an initial diarrhea becoming more profuse until the typical rice-water stools appeared. Prostration was extreme, passing into shock and death. In the more favorable cases there was reaction with return of body temperature and recovery or possibly death from renal complications.

The insane hospital being equipped only for the treatment of mental diseases, there were none of the ordinary facilities for the proper treatment of a disease such as cholera. The patients were isolated in a crude building known as a mat-shed. This building is made by erecting a framework of bamboo poles. The roof and sides are covered with the dried leaves of the fan palm. Rough and uneven thin boards are laid to make a floor. The shed was divided into two compartments by mats which were hung up in the middle. The men were placed on one side and the women on the other. There were no trained nurses of any kind, but only common workmen or coolies. It was therefore thought best not to put the patients on raised beds, but broad boards were laid on the floor and the patients were placed on these. It may be imagined how difficult was the attendance on patients thus placed on the floor. The liquid stools and the vomitus constantly being ejected by the patients ran off of the bedboards and so onto the floor where it escaped through the cracks between the boards to the ground below. The greatest number of patients under treatment in the mat-shed at any one time was fourteen, in all stages from that of beginning diarrhea to reaction or death. After reaction had occurred the patients were removed to another and more substantial building.

At the beginning of the epidemic, subcutaneous injections of saline solution were administered with little if any effect. Later, apparatus for giving intravenous transfusions was obtained, and this method of administering saline solution was employed in all but the very mildest cases. The materials used for the operation were unrefined raw salt, needle used for giving antitoxin injections, tin dipper, enamel-ware funnel, rubber tubing, brass tin holding over 2 pints (used for giving enemas ordinarily), native iron rice-pot, and 5-gallon kerosene tin.

The salt was dissolved in river-water or cistern-water, a solution of about 0.65 per cent. being employed. This was boiled on the Chinese wind lamp in the kerosene tin or the iron pot for not less than fifteen minutes. A rather heavy muddy precipitate formed during the boiling and continued to form while cooling. When ready for use this solution was again warmed or mixed with a hot solution to bring it to the proper temperature. It was then filtered by placing a plug of sterile cotton in the neck of the funnel.

On account of the lack of trained assistants and because of the fact that the patients were almost all demented, tossing about on the floor, there were many difficulties encountered while transfusing several pints of liquid into each patient. The filtered saline solution was placed in the brass can which was attached to an upright pole. The air was expelled from the attached rubber tube. Not far from the needle end this tube was interrupted by inserting a short piece of glass tubing. In this way the shorter rubber tube with cannula attached could be separately boiled for each patient.

There was no adequate means of boiling the instruments, which were simply dipped into a solution of camphor and phenol (carbolic acid). A strong solution of compound solution of cresol was kept at hand and the operators' hands were frequently dipped into this. The first transfusion was usually given in the veins of the left arm and subsequent injections were made into the veins of the right arm, foot or leg. By raising and lowering the tin the rate of flow could be regulated with considerable accuracy and the temperature of the water emerging from the cannula increased or lowered. The temperature was as a rule, however, altered by adding more cold or hot solution to that already in the tin. By using a long rubber tubing the temperature could be maintained at about 70 C. (153 F.) so that by the time it reached the vein it was at the proper temperature. It was noted that by pressure on the skin, immediately over the point of the cannula, one could readily feel the solution running into the vein, and this was of great assistance in determining the rate of flow.

The amount of solution administered to any one patient varied from 6 to 10 liters (quarts). During the transfusion the patients were as carefully watched as circumstances permitted. As a rule the injection was continued until the flow of water from mouth and rectum indicated the saturation of the circulatory system. By this time the pulse would be full, all muscular cramps would have ceased and the patient would express himself as feeling comparatively comfortable. Not infrequently before the transfusion was completed the patient was seized with a severe chill lasting from fifteen minutes to half an hour. Some patients were filled with fluid even beyond their normal body-weight without any signs of discomfort or embarrassment to pulse or respiration. In spite of the crude methods of performing the operation, there was no evidence in any case of septicemia, and no symptoms arising from the entrance of air into the veins were observed, although the strictest precautions against this contingency were not always observed.

Except for the transfusion of saline solution there was practically no treatment given to the patients besides the administration of dilute sulphuric acid, after the period of shock had passed and vomiting had ceased. Then milk was cautiously given at first, followed later by congee and soups. Cases of uremia, the most fatal of the complications, were treated with diuretics. Some of the violently insane were covered with blankets and placed in a cage. They were placed on a brick pavement exposed to the direct rays of the sun. The head was carefully shaded with an umbrella or screen. The hot August sun of Canton proved to be quite sufficient to cause a profuse sweat.

The accompanying tables were prepared by Dr. Hofmann, showing the results of treatment of the insane patients at the John G. Kerr Refuge during the epidemic of 1913.

TABLE 1.—RESULTS OF TREATMENT OF INSANE PATIENTS

| Hospital No. | Sex * | Age | No. of Transfusions | Mental Diagnosis | Result |
|---|---|---|---|---|---|
| 2561 | ♂ | 42 | 1 | General paresis | Recovery |
| 2542 | ♂ | 25 | 1 | Depression? | Recovery |
| 1899 | ♂ | 24 | 1 | Dementia praecox (hebephrenic) | Recovery |
| 2572 | ♂ | 38 | 1 | Dementia praecox (hebephrenic) | Recovery |
| 619 | ♂ | 23 | 1 | Epilepsy (imbecile) | Recovery |
| 2036 | ♂ | 36 | 1 | Dementia praecox (hebephrenic) | Recovery |
| 2647 | ♂ | 30 | 1 | Dementia praecox (hebephrenic) | Recovery |
| 941 | ♂ | 38 | 2 | Dementia praecox (hebephrenic) | Recovery |
| 1699 | ♂ | 33 | 2 | Dementia praecox (hebephrenic) | Recovery |
| 2112 | ♂ | 43 | 3 | Not diagnosed | Recovered (died later of dysentery) |
| 2620 | ♀ | 18 | 1 | Manic depressive (manic) | Recovery |
| 2600 | ♀ | 26 | 1 | Manic depressive (manic) | Recovery |
| 1969 | ♀ | 40 | 1 | Manic depressive (manic) | Recovery |
| 2406 | ♀ | 28 | 1 | Dementia praecox (hebephrenic) | Recovery |
| 2327 | ♀ | 24 | 1 | Manic depressive (manic) | Recovery |
| 2381 | ♀ | 48 | 1 | Manic depressive (manic) | Recovery |
| 1842 | ♀ | 23 | 2 | Manic depressive (manic) | Recovery |
| 2373 | ♀ | 17 | 2 | Dementia praecox | Recovery |
| 1707 | ♀ | 60 | 3 | Senility | Recovery |
| Servant | ♀ | 40 | 2 | Sane | Recovery |
| 2670 | ♂ | 40 | 2 | General paresis | Death |
| 2635 | ♂ | 39 | 2 | Exhaustive psychosis | Death |
| 1499 | ♂ | 50 | 2 | Dementia praecox (catatonic) | Death |
| 1765 | ♂ | 45 | 2 | Alcoholic insanity | Death |
| 2652 | ♀ | 50 | 4 | Melancholia | Death |
| 2537 | ♀ | 25 | 2 | Manic depressive insanity | Death |
| 2499 | ♀ | 28 | 2 | Manic depressive insanity | Death |
| 2625 | ♂ | 30 | 0 | Dementia praecox (hebephrenic) | Recovery |
| 2611 | ♂ | 33 | 0 | Epilepsy | Recovery |
| 2134 | ♂ | 50 | 0 | General paresis | Recovery |
| 2652 | ♂ | 37 | 0 | General paresis | Recovery |
| 1437 | ♂ | 40 | 0 | Dementia praecox (hebephrenic) | Recovery |
| 2311 | ♀ | 20 | 0 | Dementia praecox (hebephrenic) | Recovery |
| 2123 | ♂ | 23 | 0 | Dementia praecox (hebephrenic) | Death |
| 1949 | ♂ | 46 | 0 | General paresis | Death |
| 1700 | ♂ | 12 | 0 | Idiocy | Death |
| 2616 | ♂ | 25 | 0 | Dementia praecox (hebephrenic) | Death |
| 2570 | ♂ | 45 | 0 | Involuntary melancholia | Death |
| 2129 | ♂ | 40 | 0 | General paresis | Death |
| 1610 | ♂ | 40 | 0 | Dementia praecox (hebephrenic) | Death |
| 2005 | ♂ | 40 | 0 | Dementia praecox (hebephrenic) | Death |
| 2018 | ♀ | 40 | 0 | Manic depressive (manic) | Death |
| 2046 | ♀ | 27 | 0 | Dementia praecox (hebephrenic) | Death |
| 1725 | ♀ | 50 | 0 | Senility | Death |

* In this column ♂ indicates male and ♀ female.

Of the men who were transfused and died, one was an alcoholic aged 45, one a dementia praecox patient aged 50. In both of these cases death was caused by collapse. A second transfusion was given but was too late, the delay being caused by a severe typhoon and the flooding of the compound. Another patient, aged 39, suffered from exhaustive psychosis, and was very weak. He died of exhaustion without symptoms of uremia, fever or collapse. Another patient, aged 40, was in the last stages of general paresis. He lived for ten days and had no signs of uremia, fever or collapse.

Of the women who died and were transfused, one, aged 40, had melancholia. She was transfused four times but died of uremia on the fifth day. One had manic depressive insanity of the manic type. She was aged 25, received two transfusions and died of uremia on the fifth day. A third patient, aged 28, had manic depressive insanity of the depressive type, and died of uremia on the fourth day in spite of two transfusions.

TABLE 2.—SUMMARY OF ALL CHOLERA CASES UNDER TREATMENT

| | Recovered | | Died | | Total |
|---|---|---|---|---|---|
| | Male | Female | Male | Female | Cases |
| Transfused ...... | 10 | 10 | 4 | 3 | 27 |
| Not transfused.... | 5 | 1 | 8 | 3 | 17 |
| Grand totals....... | 15 | 11 | 12 | 6 | 44 |

Thus of the twenty-seven patients who were transfused, 74 per cent. recovered and 26 per cent. died. Of the seventeen patients who were not transfused 35 per cent. recovered and 65 per cent. died. Some of these non-transfused cases were purposely not transfused because of the mild nature of the attack.

The epidemic of cholera was pretty general throughout Canton, and a number of cases were seen in various parts of the city. The treatment of these patients was more carefully carried out because of better facilities. The treatment recommended by Leonard Rogers of India was followed closely. A sphygmomanometer was found of great service, the Nicholson instrument being employed. If the blood-pressure fell below 70 mm. and the pulse became feeble, further infusions of saline solution were indicated. If in spite of treatment the pressure continued below 95 mm. and the action of the kidneys was scant, a fatal prognosis was justifiable.

Case 1.—Mr. P. L. Y., teacher, aged 25. Symptoms of cholera developed on a Sunday night. At 2 a. m. severe diarrhea and vomiting had set in. Chinese remedies were administered until early Tuesday morning. At that time the patient was seen for the first time. Pulse at the wrist was not palpable. There were severe cramps in the muscles of the legs, and the patient was semiconscious with frequent evacuations from the bowels and mouth. About 3 pints of normal saline solution were administered in the left arm and a nurse was placed in charge of the patient. High enemas of normal saline solution were given every two to four hours. Potassium permanganate solution was given freely as a beverage (0.2 to 0.3 gm. to 500 c.c. of water). On Wednesday no urine was voided, but the vomiting ceased and the stools became of firmer consistency and of a greenish color (the effect of the large draughts of permanganate). Saline solution was again given in the vein of the leg. On Thursday a few drops of urine were voided. Saline solution was again given intravenously, but the blood-pressure failed to be maintained. Cups were applied to the loins but the patient gradually became uremic, another transfusion was without avail, and death occurred early Friday morning.

Case 2.—Man, aged 28, brought to the Kung Ye Hospital five or six hours after the onset of diarrhea and vomiting. The pulse was very feeble but perceptible. Four pints of normal saline solution were injected intravenously. There ensued a very violent chill lasting over half an hour. The patient got up and walked out to his sedan-chair thinking apparently that he was about to die. Permanganate solution was prescribed. The chill continued for some time after the patient had left the hospital. The next morning, seen at his home, the patient still had some diarrhea, there was no vomiting and the blood-pressure was over 100 mm. Rectal enemas were prescribed. The last visit was made four days later. Stools were normal and there was free excretion of urine and the patient had a fair appetite.

Case 3.—Man, aged 21, student at the Kung Ye Medical College. Patient had two loose stools following his midday meal. At 4 p. m. he vomited. He was first seen at 8 p. m. with persistent vomiting and but little prostration. Bismuth was given by mouth. At 12:30 a. m. the vomiting persisted and there was a diarrhea with rice-water stools. The pulse was very feeble but palpable. Normal saline solution, about 2 pints, was administered intravenously, until there was considerable oppression in the region of the heart. After half an hour there was a severe chill lasting for an hour. Permanganate solution was given. Patient remained in the hospital four or five days. Recovery was uneventful.

Case 4.—Mrs. K., aged 24, was taken ill at 4 p. m. with severe vomiting and diarrhea. She was brought to the Kung Ye Hospital the next day at 2 p. m.; the pulse was very weak. Saline solution was administered intravenously. She was not seen again but was reported to have recovered three days later.

A number of other patients were seen either in their homes or in the hospital. One was brought to the hospital *in extremis.* No treatment was given. Several patients were seen in their homes, cyanosed, extremities cold, pulse impalpable and paient semiconscious. All these died a few hours after they were seen.

Canton Christian College—John G. Kerr Hospital for the Insane.

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# DUODENAL ULCER *

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AND
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In an article on perforating duodenal ulcer, in which he advises gastro-enterostomy in all cases of perforation, Deaver[1] says in conclusion:

> While gastro-enterostomy does not compare in importance with closure of the perforation in gastric or duodenal ulcers, it is nevertheless a factor of first magnitude in the immediate cure and ultimate result.

Ochsner, Mayo, Coffey, MacKenzie, Babcock and Sutton, who took part in the discussion, differ in certain particulars, but for the most part agree with Deaver's conclusion. This position was so contrary to our experience of about twenty cases, some of which have been reported,[2] that we determined on an experimental investigation of the subject.

At first thought an almost unsurmountable difficulty is presented, namely, to produce a chronic ulcer in the animal. On further consideration, however, if it be impossible to produce contraction in a normal duodenum no matter how much is excised, the production of an ulcer need not enter into the problem. In other words, if it be impossible to produce stricture of the duodenum without ulceration, then if the ulcer is excised, leaving nothing but normal tissue in closing the duodenum, the stricture is impossible. This work of course applies only to the acute perforations, not to the chronic ones with a large mass of indurated tissues around them.

The first work of this kind of which we have found any record is that done by Dr. Elliott of New York. In his work he used cats, and was unable to produce stricture regardless of the amount of tissue excised. In our work we used dogs, which were better, but not ideal, because of the thickness of the duodenum. A number of experiments were done, one of which is selected as illustrative.

Dog 6.—Weight, 18 pounds. Operation, Oct. 31, 1913. Dr. J. L. Butsch, assisted by Dr. John Evans. Under morphin and ether anesthesia the duodenum was exposed and a strip 3.5 by 1.5 cm. in size was removed, just beyond the pylorus. When closed only the finest probe could be passed through the lumen. The animal recovered, and was able to eat the usual food without difficulty. Three weeks later the abdomen was reopened, and while the duodenum was still contracted, it had increased to one-third its normal size. March 23, 1914 (142 days after the first operation) the abdomen was again opened and the specimen removed. The lumen of the duodenum was about two-thirds its normal size.

This experiment is fairly typical of all the others, although several complications were more or less frequent. A few dogs died from peritonitis. In nearly all, the omentum was more or less adherent to the duodenum. Many of the animals lost weight, although there was no vomiting in any of them.

As a result of this work, we began to suspect that it was impossible to produce a stricture of any tubular passage in the body, without ulceration. We tried it out in the ileum, and found that almost invariably obstruction took place from outside the lumen, because of the omentum becoming adherent.

Dog 22.—Weight, 25 pounds. Operation, Dec. 9, 1913. Dr. Butsch and Dr. Evans. Under ether anesthesia the duodenum was exposed, and 5 by 2 cm. was excised. Necropsy Dec. 25, 1913. Many adhesions were found between the intestine and omentum, and almost complete obstruction was present. The intestine was dilated proximal to the operative field. In other experiments we found it impossible to prevent this complication.

In all the dogs operated on, we were unable to produce permanent contraction of the duodenum. This we believe to be fairly conclusive evidence, that if one excises the ulcer, accurate closure of normal tissues cannot produce permanent obstruction. From this experimental work, we would offer the following suggestions.

1. It is impossible to produce obstruction in a dog, no matter how much of the wall is excised.
2. Probably it is impossible to produce obstruction to any tubular passage excepting by the contraction of scar tissue, or adhesions outside of the lumen.
3. Gastro-enterostomy is contra-indicated in acute perforating ulcers, when the ulcer can be readily excised, because if excision of all scar tissue is thoroughly done, a stricture cannot occur.
4. Clinically we have practiced excision of the ulcer in all cases of perforating duodenal ulcer, without gastro-enterostomy, and in no case has obstruction occurred.
5. While the lumen is not restored to its full size in dogs, the character of the human intestine is such that we believe complete restoration ultimately does ensue.

430 Delaware Avenue.

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* This work was done in the Experimental Laboratory of the University of Buffalo.

[1] Deaver, John B.: Posterior Gastrojejunostomy in Acute Perforative Ulcer of the Stomach and Duodenum, The Journal A. M. A., July 12, 1913, p. 75.

[2] McGuire, Edgar R.: Buffalo Med. Jour., June 2, 1912.

# THE DUCK AS A PREVENTIVE AGAINST MALARIA AND YELLOW FEVER

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The duck is one of the greatest known enemies of the mosquito, and therefore of yellow fever and malaria. It has possibly one of the widest geographical ranges of any of the birds. It is even found in the Arctic and Antarctic regions; also in Australia, where bird life is so peculiar.

After trying the ability of fish to devour larvae and pupae of mosquitoes, with varied success, I built two dams near together on the same stream, so that each would have the same environment for the breeding of mosquitoes. Each covered nearly 1,400 square feet. In one, twenty mallard ducks, *Anas platyrhynchos,* were permitted to feed, while the other was entirely protected from water fowl, but well stocked with goldfish, *Carassius auratus,* variety *americanus.*

The one in which the ducks fed was for several months entirely free from mosquitoes, while the pond protected from ducks and stocked with fish was swarming with young insects in different cycles of life.

To the infested pond ten well-fed mallard ducks, *Anas platyrhynchos,* were then admitted, and as they entered the pond they were first attracted by the larval bactrachians, tadpoles. They, however, soon recognized the presence of larvae and pupae of the mosquito and immediately turned their attention to these, ravenously devouring them in preference to any other foodstuff present. At the end of twenty-four hours no pupae were to be found and in forty-eight hours only a few small larvae survived. The motion of the water, made by the ducks, of course drowned some of the insects—what proportion cannot be estimated.

For some years I have been using ducks to keep down mosquitoes in swamps that would have been very expensive to drain, but I never fully appreciated the high degree of efficiency of the duck as a destroyer of mosquito life until the foregoing test was made.

In the work of Howard, Dyar and Knab, entitled "Mosquitoes of North and Central America and the West Indies," will be found[1] an essay on the destruction of the mosquito and house-fly by Mr. William Beutenmueller, who expresses the opinion that aquatic birds could be used for the purpose of destroying mosquito larvae.

Mr. William Lockwood of Boston, an artist, who made a hobby of raising aquatic fowl, also expresses an opinion that the spoonbilled duck is particularly adapted to the destruction of mosquito larvae resting on the surface of the water.

Mr. McAtee of the Biological Survey found mosquitoes in the gizzard of the mallard duck. While other birds, fish, spiders, bactrachians, arthropods and reptiles are all enemies of the mosquito, none of them have the wide geographical range and the capacity of devouring large numbers of the larvae and pupae on land and water as the duck.

Ducks can be used in ponds, swamps, both open and in jungles, and can be driven from place to place. Not only can they be generally used to keep down mosquito life but they also furnish a delicious and valuable foodstuff.

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[1] Howard, L. O.; Dyar, H. G., and Knab, Frederick: Mosquitoes of North and Central America and the West Indies, Washington, Carnegie Institution, 1913, i, 178.

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# THE SUCCESSFUL ISOLATION OF ERGOTININ CRYSTALS FROM CERTAIN ORGANS IN A CASE OF ACUTE ERGOT POISONING *

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We report the first successful isolation of an alkaloid of ergot from the organs in a case of acute ergotism. Hitherto the toxicologist had to rely on the physical properties of this fungus for its identification. Therefore, in those cases in which pharmaceutical preparations of the fungus have been used, it has been impossible to identify the drug. Dragendorff,[1] for example, found it impossible to identify ergot by the isolation of any of its constituents from animal tissues. Blythe[2] says that "there has been no experience in the separation of the constituents of ergot from the organs of the body, [but] an attempt might be made by Dragendorff's process, but success is doubtful." Mann[3] states that "it is practically impossible to separate ergot from the tissues so as to identify it." We, however, have been successful in isolating "ergotinin" by the use of Dragendorff's process.

Thanks to George Barger and his collaborators, our knowledge of the alkaloids of ergot is rapidly becoming complete.[4]

We were recently called to perform a necropsy in a case of sudden death under suspicious circumstances. Through the kindness of the attending physicians, Drs. J. H. Love and J. C. Edgar, we are able to give the following history of the case:

Dr. Love was called on the twelfth of the month to attend a young girl who suddenly became ill, about one hour after supper. He found her cyanotic, with rapid pulse, and she had vomited about two quarts of material looking like food remnants. After stimulation the patient recovered and he thought she had suffered from an acute gastritis.[5] Eleven days later, about the same time in the evening, he was called to attend the same girl, and found her in a serious condition. She was unconscious, had no control of the bowels, and the urine was suppressed. Clonic convulsions occurred and on palpation of the abdomen he could feel the uterus contracting. This contraction was also noted visually. The stools were bloody and contained pieces of the mucous memgrane of the intestine. Nine hours before death the temperature rose to 103 F., and nineteen hours after he was first called the patient died without regaining consciousness.

On necrospsy a pregnancy was found and the whole gastroenteric tract was the seat of an intense inflammation. The mucous membrane of the small and large intestines was covered with a layer of blood, and the membrane was full of punctate hemorrhages. The kidneys, stomach, small and large intestines, and liver were taken for toxicologic examination.

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* From the Biochemical Laboratory of the Western Pennsylvania Hospital.

[1] Dragendorff: Ermittelung von Giften, Göttingen, 1895, p. 294.

[2] Blythe: Poisons, Their Effects and Detection, London, 1906, p. 465.

[3] Mann: Forensic Medicine and Toxicology, Philadelphia, 1893, p. 599.

[4] For Description and History of the Alkaloids of Ergot see the following:
Henry: The Alkaloids, Philadelphia, 1913, p. 383.
Barger, in Allen's Commercial Organic Analysis, Philadelphia, 1913, vii, 16.
Barger and Dale: Biochem. Jour., 1907, ii, 240.
Active Principles of Ergot, editorial, The Journal A. M. A., June 20, 1914, p. 1969.

[5] For reports of cases of acute ergot poisoning see:
Davidson: Lancet, London, 1882, ii, 526.
Oldright: Canadian Med. Jour., 1870, vi, 404.
Meadows: Med. Times and Gaz., 1879, ii, 397.
Hulme: Med. News, 1877, li, 538.
Debierre: Bull. de therap., cvi, 52.

Portions of these organs were examined for poison by Dragendorff's process as described by Witthaus.[6] It was found that the residue left by chloroform from an acid solution of the extract of these organs (Residue 3) was of a crystalline nature. The residue obtained by the extraction of the acid aqueous liquid with ether (Residue 4) was also crystalline.[7] These crystals[8] of both the residues were of the shape of long needles, the sides of which were not quite parallel and the ends replaced by a pair of faces. These crystals were readily soluble in chloroform, dissolved in acetone, and were sparingly soluble in ether and also in alcohol. A precipitate was obtained with Mayer's reagent and with iodin solution. When dissolved in ether and a few drops of sulphuric acid was added a transient orange color formed, changing to blue. A solution in sulphuric acid on addition of dry ferric chlorid gave an orange tint changing to crimson, green and blue. When placed in a bath previously heated to 210, they melted at 231.

Prof. George Barger of England was kind enough to send us preparations of ergotinin prepared by himself. On comparing these crystals with those which we obtained from certain organs in this case of acute ergot poisoning, we have found them to agree in all particulars.

5737 Forbes Street—Park Building.

## New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

**DOSAGE FORMS OF ACCEPTED ARTICLES.**—The following dosage forms of accepted articles have been accepted for inclusion with New and Nonofficial Remedies:

*Hypodermic Tablets of Emetine Hydrochloride, Mulford.*—Each tablet contains emetine hydrochloride, 0.016 Gm. Prepared by H. K. Mulford Co., Philadelphia.

**ACNE VACCINE.**—(See N. N. R., 1914, p. 246).

E. R. Squibb and Sons, New York.

*Acne Vaccine.*—Marketed in boxes of 4 syringes containing 25, 50, 100 and 200 million killed bacilli. Also in boxes of 2 syringes containing 50 and 200 million killed bacilli; boxes of 6 ampoules containing 10, 25, 50, 100, 200 and 500 million killed bacilli, with a syringe; and boxes of 2 ampoules containing 50 and 200 million killed bacilli, with a syringe.

**BACILLUS COLI VACCINE.**—(See N. N. R., 1914, p. 247).

E. R. Squibb and Sons, New York.

*Bacillus Coli Communis Vaccine.*—Marketed in boxes of 4 syringes containing 100, 200, 500 and 1,000 million killed bacilli. Also boxes of 2 syringes containing 100 and 500 million killed bacilli and boxes of 2 ampoules containing 100 and 500 million killed bacilli, with a syringe.

**BACILLUS OF BORDET-GENGOU VACCINE.**—(See N. N. R., 1914, p. 247).

E. R. Squibb and Sons, New York.

*Bacillus Pertussis Vaccine.*—Marketed in boxes of 4 syringes containing 25, 50, 100 and 200 million killed bacilli. Also boxes of 2 syringes containing 50 and 200 million killed bacilli; boxes of 6 ampoules containing 25, 50, 100, 200, 300 and 500 million killed bacilli, with a syringe; and boxes of 2 ampoules containing 50 and 200 million killed bacilli, with a syringe.

**BACILLUS PYOCYANEUS VACCINE.**—(See N. N. R., 1914, p. 249).

E. R. Squibb and Sons, New York.

*Pyocyaneus Vaccine.*—Marketed in boxes of 4 syringes containing 100, 200, 500 and 1,000 million killed bacilli. Also in boxes of 2 syringes containing 100 and 500 million killed bacilli.

**GONOCOCCUS VACCINE.**—(See N. N. R., 1914, p. 250).

E. R. Squibb and Sons, New York.

*Gonococcus Vaccine.*—Marketed in boxes of 4 syringes containing 100, 200, 350 and 500 million killed gonococci. Also in boxes of 2 syringes containing 100 and 500 million killed gonococci; boxes of 6 ampoules containing 50, 100, 150, 350, 500 and 1,000 million killed gonococci, with a syringe; and boxes of 2 ampoules containing 100 and 500 million killed gonococci, with a syringe.

## Therapeutics

### PREVENTION IS GREATER THAN CURE

*(Continued from page 1113)*

### II

### HEAT AND INFANTS

The death-rate from diarrheal diseases is twice as great in summer as in winter. Short-lived high temperature may cause some heat deaths of infants, but does not much affect the death-rate from gastro-intestinal disturbances, unless it should cause an unfavorable turn during an acute attack of the trouble. On the other hand, continued excessive heat does cause an increase in the death-rate from diarrheal diseases in infants, although the heat alone is not the only factor. Germs that cause intestinal disturbances seem to grow better in hot weather, although hot weather, if causing an increased temperature in the child, seems to lower the tolerance to starchy foods.[1]

Hence the prevention of these disturbances and the saving of life will be caused by shady verandas, roof-gardens, trees, parks, seashore resorts and cool evening country air.

Previous knowledge has recently been confirmed[2] that more than one-half of the deaths of children under 1 year of age are due to disorders of nutrition, and about 75 per cent. of these deaths occur during the first three months of life. These statistical facts, together with the disturbances caused by the heat of summer, emphasize the advisability, if not the necessity, of a mother nursing her baby during the first year of its life, as the mother's milk is ordinarily the safest food that the child can receive.

### INFANT AND SCHOOL HYGIENE

Success in the work which this heading represents has been shown by the splendid reduction of deaths in young children in cities properly utilizing the knowledge of medical science and sanitation which we now possess. In some cities there has been a diminution of more than two-thirds of the deaths from contagious diseases and of more than one-third of the deaths from diarrheal and respiratory diseases of young children.

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[6] Witthaus and Becker: Medical Jurisprudence, Forensic Medicine and Toxicology, New York, 1911, iv, 157.

[7] In his description of Dragendorff's process, Witthaus mentions that ergotinin may appear in traces in Residue 3, and that the larger portion would be found in Residue 4.

[8] The crystals in Residue 3 were tinged with a yellow color, while those in Residue 4 were colorless.

[1] Zahorsky, J.: Am. Jour. Dis. Child., November, 1913, p. 318.

[2] Supplement 16, U. S. Pub. Health Rep., June 19, 1914.

The foundation of these splendid results, which should be studied and inaugurated in all communities, are: measures for the purification and proper refrigeration of milk; instruction in the proper preparation of milk as a food for infants; the house visits of trained nurses; the babies' aid, and mothers' aid societies; school inspection; school hygiene (good light, aided by the proper color tints of walls and ceilings, proper desks and chairs, rest and exercise periods); play-grounds; open-air schools; segregation of defective from normal children, etc.

It is not the purpose in these articles to discuss in detail these great problems, but only to suggest that those interested, and those who should be interested on account of their official positions, should read and study the statistics already published. It is desired to urge the necessity of careful, skilled school inspection and to urge on school boards that proper light saves eyes; that proper desks and chairs prevent scoliosis and other deformities; that good ventilation prevents respiratory troubles; that clean books, pencils, desks and chairs prevent eye, nose and throat inflammations, to say nothing of the contagious diseases; that proper rest periods save the child's brain from tire; that good, well-paid teachers promote education with a minimum amount of brain fatigue in the child and cause the child to cooperate with, and not combat, the instruction offered. Also, means must be inaugurated to feed underfed children.

The necessity of school inspection is readily shown by quoting Allport's[3] figures, viz.:

> There are in the public schools in this country 20 million children, and 75 per cent. of these are suffering from some defect that can be cured, or at least ameliorated; 500,000 of these children have heart lesions; 1,000,000 have spinal curvature or other defect; 1,000,000 have tuberculosis; 1,000,000 have defective hearing; 5,000,000, or 25 per cent., have defective vision; 5,000,000, or 25 per cent., are underfed or wrongly fed; 6,000,000, about 30 per cent., need operations on the tonsils or adenoids, and 10,000,000, or 50 per cent., have defective teeth.

Skilled school inspection probably reduces the deaths from contagious disease by 50 per cent., and perhaps the total number of contagious-disease cases by 75 or 80 per cent. Also, the improved hygiene of schools and the improvement in health caused by the correction of defects discovered by medical inspection must greatly reduce the instances of contagious disease.

The value of regulated and supervised calisthenic exercises for schoolchildren is great. These should teach correct standing, correct walking, correct breathing and such muscle exercises as will develop all parts of the body symmetrically. Dancing under a skilled teacher is valuable exercise, if not too long continued, or if it does not add one more preventive of the child's enjoying good out-door play and walks.

The dance craze of this age is deplorable. The harm done sexually, neurotically and physically to youth and young adults is terrible to contemplate. The harm done to old men and women is ridiculously unnecessary.

Skilled, corrective muscle exercises to remedy defects in deformed children are necessary to prevent the deformity becoming permanent, and it is a crime to neglect such treatment.

More detailed suggestions for school inspection will be presented later.

### AIR

There has been a good deal of misunderstanding as to what constitutes impure air. There is always in the ordinary respired air of buildings and houses too little carbonic acid gas to do any harm to an individual. Also, a varying content of oxygen, within ordinary limits, is not an important factor in the effect of the air on human beings. It is only heat and extra moisture in confined, respired air that is depressing. Also, stagnant air is more depressing than air in motion, even when it is of the same constituency. Of course, dust-laden air is always injurious. In artificial ventilation in hospitals, schoolrooms and auditoriums screening from outside dust and vacuum-cleaning from inside dust are essential; in fact, stagnant dust is bad and moving dust is worse.

Too great heat is often maintained in winter in schoolrooms and hospital wards, especially in those for children. Also a great variation of day and night temperature in hospital wards is not advisable. While dry air is not necessarily unhealthful, as noted in high altitudes, deserts, plains, etc., still a normally regulated moisture should pervade hospital wards and operating-rooms, which latter are generally too dry, unless steam sterilizers are in use. Schoolrooms not overheated will probably be normally moist from outside air.

One great disadvantage of stagnant, overheated, overmoist air seems to be its effect on the skin. The skin cannot normally breathe, so to speak; moisture remains on its surface, the skin glands cease to properly act, and the surface circulation and heat elimination are interfered with and the person feels depressed, metabolism is impaired, the appetite fails and loss of nutrition occurs. Everyone realizes the refreshment felt when a window is suddenly opened in a stagnant room. Hence the danger to health in a school, factory or store where the air is stagnant, dusty, overmoist or overheated.

The value of the open-air treatment of many diseases has been incontrovertibly demonstrated. Overheated rooms are bad for the sick, and especially bad for sick babies. An infant may have his body temperature raised by a continued sojourn in an overheated room or by being long subjected to summer heat, at 85 F. or over.

### BAD HABITS OF CHILDHOOD

It is only necessary here to name some of the habits that are subversive of the future good health of the child. The physician should be alert to these causes of poor health and nervousness in children, and if he is, proper preventive or corrective treatment will be inaugurated. These bad habits that should be watched for are masturbation, thumb- and finger-sucking or sucking the pacifier (said by some eminent pediatrists to promote the development of adenoids), nail biting, imitation movements or habit-spasms and dirt-eating or other objectionable eating habits.

The various local causes of masturbation and of bed-wetting must not be forgotten. The eradication of such causes sometimes cures the condition like magic.

*(To be continued)*

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[3] Allport: Arch. Pediat., June, 1913.

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SATURDAY, OCTOBER 3, 1914

## MUSCULAR WORK AND EFFICIENCY

The mechanical efficiency of the human organism as a muscular machine and the conditions which modify or control it are topics that appeal to different persons from different points of view. The employer of labor, the athlete, the physiologist and the physician are interested in the human body, each in relation to that aspect of muscular performance which concerns his own immediate requirements. In one group of cases it is the desire to promote the working capacity of man by suitable diet in which economic considerations may or may not play a part. Scientific management in business has to-day begun to encompass even such once derided details as the feeding of the employed and the careful regulation of the hygienic aspects of their work. Other groups are interested in the maximum possibilities of the human mechanism and in such questions as the relation of training and whatever this implies to the capacity for muscular performance. In the medical world it is usually the restoration of a depleted function that demands attention. In all of the instances cited it becomes desirable, if not actually necessary, to start from some standard — to refer to some norm whereby the deviation from the usual course of physiologic behavior may be estimated.

The Boston Nutrition Laboratory of the Carnegie Institution of Washington has brought together in considerable detail the important observations already ascertained by careful investigation of the subject of muscular work, many of them determined or verified anew by the researches conducted in this scientific establishment.[1] Much of interest in the subject is not new; but when we recall the wide divergence of opinion still existing with regard to the underlying principles of muscular work, the deficiency in our knowledge of the relation of diet and training to it and the widely differing assertions as to the best practices to be followed, it may not be amiss to review briefly some of the admitted fundamental facts which may be regarded as definitely established.

When muscular work is performed by the human body, the consumption of fuel either from food or from body material is greatly increased. The character of the supply available for this purpose may vary somewhat with the existing conditions. The amount of protein present is ample to provide for all drains on nitrogenous material during rest or short periods of work. Similarly, in a well-nourished man there is a practically unlimited supply of fat. It is the supply of carbohydrate which is comparatively restricted and liable to be somewhat easily depleted. For some years we have been taught that, contrary to the older beliefs, the character of protein metabolism is unchanged by muscular activity. It has become evident that under ordinary circumstances the power to accomplish muscular work is not derived from destruction of protein, but from the combustion of the non-nitrogenous nutrients. There seems to be little difference in the efficiency of the body as a machine, whether fats or carbohydrates are used as fuel. Inasmuch as the storage of carbohydrate is apparently depleted easily by excessive work, it appears as if this type of foodstuff were used in preference to any other by the contractile tissues.

Reasoning that the ideal conditions for a study of the question as to whether or not there is a selective combustion of carbohydrate material during severe muscular work would obtain after the subject had abstained from food for twelve to fifteen hours, that is, when there was a relatively large supply of body-protein, and a relatively small supply of body-glycogen, Benedict and Cathcart have reinvestigated it from this point of view. If, under these conditions, a selective combustion took place, the supply of body-glycogen would be rapidly depleted and this would be indicated by the respiratory quotient. Although the evidence in all of the experiments cited is strikingly in favor of the view that during periods of muscular work there is an increased draft on carbohydrate material in the body, the data by no means indicate that the muscular work is performed exclusively by the combustion of carbohydrate.

The foregoing has raised the inquiry as to the probable amount of carbohydrate stored in the human body. The calculations made from fragmentary analyses of tissues, as well as indirect evidence secured from the new experiments on muscular work, suggest not far from 400 gm. (less than a pound) as a normal figure. This is by no means enough to perform a vigorous muscular task such as was undertaken by one of the subjects of the Nutrition Laboratory, who accomplished, on a stationary bicycle, work equivalent to a "century run" of 100 miles before breakfast, a remarkable evidence of staying-power in man. In this connection we may note some of the newer data on the mechanical efficiency of man, that is, the relationship between the energy consumption and the output of work. The highest value observed, in the case of the bicycle-rider referred to above, was 41 per cent., an exceptionally high figure. The average efficiency for a large number of experiments was 30 per cent. It does not vary greatly with different subjects. These data considered in conjunction with the usual muscular accomplishment there reported give substantial evidence of the superior functioning of the human mechanism.

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[1] Benedict, F. G., and Cathcart, E. P.: Muscular Work: A Metabolic Study with Special Reference to the Efficiency of the Human Body as a Machine, Carnegie Institution of Washington, Pub. No. 187, 1913, p. 176.

Another observation, on the bearing of which we have commented in the past,[2] was that the pulse-rate even during severe muscular work, very closely follows the amount of the energy output — an observation that is fully in accord with the values secured with normal resting subjects which show that the pulse-rate and the total metabolism are intimately related. Although with the cessation of work the pulse falls rapidly, there is a distinct tendency for the rate to stop at a much higher level than before the work is undertaken. The long-continued rapidity of respiration and heart-beat after exercise, as, for instance, after running, is familiar evidence that the intense metabolism incidental to active muscular work does not instantly disappear with the cessation of the work. This after-effect of muscular work indicating the persistence of a distinctly higher metabolism for some time must be taken cognizance of in the future consideration of the physiology of exercise.

## COOPERATION IN PUBLIC HEALTH ADMINISTRATION IN THE SMALL COMMUNITY

The limitations and inefficiency of the health office of the small community are recognized by public health workers and this probably constitutes one of the greatest single obstacles to the general advancement of the public health movement. The strategic importance of the local health office in the warfare on disease must be obvious. With an inefficient administration at this point the citizens are at all times exposed to the danger of attack and are deprived of that protection which modern sanitary science is enabled to throw about them. So far as rural health conditions in many sections of our country are concerned, the scientific work of the last quarter of a century might as well have never been done. This condition is fundamentally due to two facts: First, the science of public health is a complex of specialties, to be mastered, even in principle, only by an expert with years of training and to be efficiently administered, in its various branches, only by a group of trained workers under such expert supervision; second, a small community cannot financially afford the services of such a staff. The situation has one redeeming feature: the small town which cannot afford a trained staff requires but little of the time of each of its members, so that cooperation among towns is plainly indicated. The minimum group for a complete and efficient health office is necessarily a complete, though diminutive, city office and cannot be farther subdivided. If this group be too large for the needs and financial resources of the small unit of population, there remains the necessity of broadening the territory.

With a view to the overcoming of these deficiencies in the health work of small communities, and in an endeavor to find a practical solution of the difficulties, an experiment in cooperative public health administration was undertaken under the auspices of the Department of Biology of the Massachusetts Institute of Technology. This important work was under the immediate supervision of Prof. Earle B. Phelps of the Hygienic Laboratory, U. S. Public Health Service, but at that time on the faculty of the institute. The report of the work has just appeared as a publication of the Public Health Service,[1] and for those interested in the improvement of the health affairs of small urban and rural communities will be a most illuminating document. A staff, comprising an administrative officer, a secretary and bacteriologist, a plumbing and sanitary inspector and an assistant inspector with the necessary clerks, and with special assistants for certain special work, was first organized. The services of the staff were offered to several communities, which were invited to enter into a contract with the organization for one year. The towns of Wellesley, Belmont, Framingham, Needham, Weston, Canton and Winchester, and the city of Melrose accepted this proposition, the three last named for milk inspection only. Headquarters were established in Wellesley with a fully equipped office and laboratory, while the telephone and an automobile and motorcycle provided rapid communication between the various centers of activity.

Especial attention was given to the milk supply and to the rapid handling of laboratory diagnostic work. Small portable incubators were located at the various centers, so that diphtheria cultures deposited any time before midnight were in a condition to be examined and reported on early the next day. Particular emphasis was laid on the importance of studying each case of contagious disease as to its origin and, especially in the diphtheria work, this policy led to results of immediate and demonstrable value.

In the milk work reliance was placed wholly on a campaign of publicity, coupled with a helpful attitude toward the milk men who desired the assistance of the office in the improvement of their supplies. Monthly reports, chemical and bacteriologic, were published in the daily press. Fly and mosquito exterminating campaigns were organized in several of the towns. Special attention was given to the sanitary inspection of markets and shops and to the general sanitary improvement of the town as a whole in matters of drainage, fly-breeding conditions, and general cleanliness.

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[2] The Circulation and Muscular Efficiency, Current Comment, The Journal A. M. A., Sept. 13, 1913, p. 874.

[1] U. S. Pub. Health Rep., Sept. 25, 1914.

The most interesting feature of the work, next to its promptness and thoroughness, is the very low cost at which it was carried out. Exclusive of plumbing inspection, which is not properly a board of health function, the total cost of the work was 19 cents per capita per annum. The total population served was 62,000 persons, 32,000 of whom received only the milk inspection service. The work which was begun as a practical experiment in the science of public health administration has been continued by the towns interested on a considerably enlarged basis with a sufficient appropriation to make it self-supporting and, what is more important than all else, with the cordial support and backing of an enlightened public opinion.

The great value of the report is to show, in a convincing way, that the problem of providing for the health work of small communities can be taken care of in a feasible and satisfactory way at a reasonable cost. It is hoped that other communities will take up this movement.

## AN EXPLANATION OF LIPEMIA

The occurrence of fats or lipoid substances in the blood to a degree which renders the serum more distinctly cloudy or milky than usual may have either a normal or a pathologic import. The various manifestations of lipemia cannot at present be interpreted or explained on a single basis applicable to all the known instances. After a meal rich in fat, when the thoracic duct is pouring a creamy chyle into the blood-stream, the serum may give evidence of a very pronounced lipemia because the fats are being contributed to the circulation more rapidly than they can be withdrawn from it into the storage depots. A temporary accumulation in the blood thus takes place. This is not observed in all individuals alike, however; for there are species, like the rabbit, in which a physiologic lipemia of dietary origin rarely if ever takes place. In health the disposal of the fat keeps pace in such animals with its contribution to the blood-current, with a nicety of regulation reminding one of the adjustments in regard to the content of blood-sugar. The lipemia observed in other species after feeding is transitory at most.

Under a variety of pathologic conditions a pronounced lipemia may arise often independently of the food intake. Increased fat content of the body is observed quite regularly in starvation, in different forms of anemias and cachexias, in diabetes and particularly in severer stages of the disease, in chronic alcoholism, after prolonged narcosis, and in certain kinds of intoxications. In all of these conditions the inanition factor, leading to a transport of fat in the body, may come into play.

What is the cause of these lipemic states? A lack of oxidative capacity on the part of the abnormal organism was at one time suggested in explanation. Decreased oxidation in the body is among the physiologic rarities and can scarcely be held to account for the lipemic alterations in the blood, particularly in view of our ignorance as to the way in which fat is catabolized in the organism. Again, it was customary to assume that the fat in lipemia arises partly from the food, partly from fatty degeneration of the cells of the blood, the vessel walls and the viscera. The newer views regarding fatty infiltration versus degeneration give no support to such hypotheses.

Turning to probabilities more likely in the present state of our knowledge of fat metabolism, it is conceivable that, in lipemias not attributable to undue fat intake, fat is discharged into the circulating blood from some endogenous source at a rate far exceeding its subsequent removal therefrom. If this were the case, then the storage places ought soon to be emptied of their reserves of fat. As a matter of fact, this is not always the case in lipemia. We are thus left with a final hypothesis that the fat is dammed up, as it were, in some way in the blood and cannot escape either back into the tissues or to the usual seats of its destruction. In other words, it may be that pathologic lipemia results because the blood has lost its lipolytic power so that the fat is no longer converted into forms that can traverse the capillary walls to the places where it is normally consumed.

The existence of fat-hydrolyzing enzymes — lipases or esterases—in the blood has been alternately affirmed and denied, but must at present be looked on as demonstrated.[1] The researches of Sakai[2] render it probable, to say the least, that an abnormal decrease in the serum lipase is one of the factors, if not actually the decisive one, in accounting for the inability of the blood to get rid of its fat in certain forms of pathologic lipemia. This can be brought about, for example, by repeated hemorrhage in rabbits. The anemia thus produced has been demonstrated by Boggs and Morris[3] to be attended with a milky turbidity of the blood-serum sufficient in some cases to alter the appearance of the entire blood noticeably. The diminished content of serum lipase usually precedes the appearance of the visible enrichment in circulating fat. According to Sakai, two agencies are accordingly involved in the genesis of a lipemia. One is the factor which furnishes the fat. This may be endogenous and derived from fat transport out of the tissues, or exogenous and of dietary origin. The other factor leading to a prolonged lipemia, in contrast with the transitory types accounted for by dietary considerations, involves the inability of fat that has reached the blood-serum to leave it. It is this significant feature of fat stagnation which the lack of lipolytic enzyme in the blood is now believed to explain.

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[1] Rona and Michaelis: Biochem. Ztschr., 1911, xxxi, 345; xxxiii, 413. Davidsohn: Ibid., 1913, xlix, 249. Izar: Ibid., 1912, xl, 390. Bauer: Wien. klin. Wchnschr., 1912, No. 37, p. 1376.

[2] Sakai, S.: Zur Pathogenese der Lipämie, Biochem. Ztschr., 1914, lxii, 387.

[3] Boggs and Morris: Jour. Exper. Med., 1909, xi, 553.

Chemical examination of the fatty material present in the blood in some of the experimental types of lipemia has shown that the increase in fats is attended with augmentation of the cholesterol present, though the latter is never increased to the same extent that the fats proper are. Cholesteremia has been described to occur under various conditions; but Sakai believes that the increase of cholesterol in lipemia is a secondary consequence, attributable perhaps to the ready solubility of cholesterol in fats and the ease whereby it forms esters with fatty acids. Despite the accompaniment of fat and lipoid in certain lipemias, the possibility of cholesteremia without noteworthy lipemia still remains.

## THE OHIO STATE UNIVERSITY, MEDICAL EDUCATION AND FADS

A year and a half ago, by legislative enactment, the trustees of the Ohio State University were authorized to create "a college of medicine." In accordance with that authority they accepted as a gift the valuable properties of the Starling-Ohio Medical College, of Columbus, a well-equipped and well-established Class A institution. Plans were made to provide additional financial support and announcements were published that this fall and a year hence the entrance requirements would be increased, respectively, to one year and two years of collegiate work. Thus far the trustees had acted with unquestioned and commendable caution.

Then to the surprise of many friends of the university, the trustees proceeded to create a homeopathic medical college. Had this been done with a careful regard for educational standards and provision for equipment and for clinical material equal to that which was used in creating the college of medicine, there would have been less room for criticism; but for the homeopathic college, instead of having a high-grade, thoroughly equipped institution to start with, this new venture was begun by taking over what there was left of the Cleveland-Pulte Medical College of Cleveland, a Class C institution reported to be not recognized by the licensing boards of at least twenty-seven states! Even the friends of that institution had considered its future as hopeless. Then, instead of requiring a year of collegiate work for entrance to this homeopathic college, it is announced that only a high-school education is to be required, notwithstanding the fact that these students will be taught for the first two years the same subjects, in the same classes and by the same teachers as the students in the college of medicine. It is also a strange announcement that, for each of these first two years, the students enrolling in the homeopathic college are to be charged only $125, while those entering the college of medicine are to pay $150. Again, whereas, the clinical material for the college of medicine includes the facilities provided by two large hospitals having a total of over three hundred beds, besides such facilities as are obtainable in several other hospitals and in two large dispensaries, for the homeopathic college, it appears that the only provision is an old, abandoned dormitory, no patients as yet being in evidence.

If a homeopathic college was to be started, why was not the same excellence of equipment provided as for the college of medicine; why the inadequate provision for clinical instruction; why the smaller fees charged and especially, why the lower entrance qualifications demanded? Was the opening of a homeopathic college of such extreme importance as to warrant these wide variations? Why is it that lower entrance qualifications have for several years been granted for homeopathic students by the University of Michigan and are now granted by the Ohio State University?

The most surprising action of the trustees, however, was the creation of a school of optometry, thus giving the university's name to what, in common practice, has all the earmarks of another fad in drugless therapy. Here again, the objection is not so much to the teaching of courses in optometry, as to the lowering of entrance standards and to the misleading and unwarranted dignity given to an unprofessional occupation by expanding such courses into a special "school." Of course, those who are to fit eye-glasses need to have a knowledge of physics and of refraction, but that is no reason why such students should be admitted to college courses after only two years of high-school education. Nor is it a reason why the university should encourage a school the "graduates" of which, if the customary practice is followed, and regardless of their limited training, will pose as "specialists" in all the diseases of the eye!

If the Ohio State University is going to establish any "school" having such low entrance requirements,[1] why stop with optometry? Why not start a school of osteopathy, which is a much older system and has been more thoroughly advertised than optometry? Why not start also a "school" of chiropractic, a "school" of physcultopathy, a "school" of nahprapathy and others for each of the endless lot of "sects" and "systems" which are claiming exemption from fair educational standards? One is surely as worthy of such dignity as another. If educational standards are to be lowered for one, why not for all? This is indeed a serious matter, and it is high time that even politicians should be brought to realize that medicine is now a science and that science knows neither isms nor schools.

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[1] A "school," according to the common understanding of educators, and according to a definition adopted by the Association of American Universities, is a part of a university, for admission to which two years of collegiate work are required.

Meanwhile, it is understood that this "recognition" by the Ohio State University is to be made great use of by the optometrists of Ohio in their efforts to secure the passage of legislation giving them a special licensing board and special exemption from the provisions of the medical practice act. It is a question whether the same influences which seem to have prevailed with the trustees of the Ohio State University will also succeed in breaking down the laws which thus far have provided the same educational qualifications for all who are to practice the healing art. If they do succeed, then the only barrier which stands between the sick and suffering people of that state and the hordes of illiterate and incompetent would-be-practitioners will be thrown down. We are not willing to believe that the people of Ohio will ever permit such a misfortune to happen. Surely, they are as much entitled to protection against uneducated physicians as are those of any other state.

## THE RELATION BETWEEN THE COLOR OF THE BODY-FAT AND THE BREED OF CATTLE

The demonstration of the origin of the characteristic yellow colors which are found in milk-fat, the corpus luteum, etc.,[1] brings a reminder that it is not uncommon to find the body-fat of cows, especially of the Jersey and Guernsey breeds, characterized by a very high yellow color. This has led to the belief that this phenomenon is characteristic of only those breeds. As a matter of fact, butchers and the consumers also look with disfavor on beef from these animals on account of the high color of the fat. Palmer and Eckles[2] have shown that the color of the body-fat of Jersey cows is as much dependent on the food as is the color of the milk-fat. In studying the normal breed relations, the popular opinion that the body-fat of Jersey cows is normally characterized by a higher yellow color than Holstein cows has been at least partially confirmed by experimental study, although it was found that Holstein cows may also possess high-colored body-fat. At least, there seems to be more breed characteristic in this respect than in the case of the pigmentation of the milk-fat. Palmer and Eckles assure us that there is no foundation for the belief that beef has a lower value because its fat has a high color. If this pigment is the same as is demanded by the consumer for butter, why, they ask, should not beef with high-colored fat also be more desirable? It is recognized, of course, that some of the unfavorable attitude toward beef with highly colored fat arises partially from the fact that it indicates that the beef probably came from a dairy cow.

When there is need of fat either for combustion or for milk production, and an adequate amount is not furnished preformed in the ration, this nutrient is mobilized from the storage depots in the organism. Here not only fats, but also ingested lipochromes may become deposited. The normally high color of the body-fat of Jersey cows, and also of Guernsey cows explains why cows of these breeds often appear to be producing well-colored butter on a ration deficient in carotin and xanthophylls. When cows whose body-fat has a high yellow color are put on a ration deficient in carotin and xanthophylls, and also, as is usually the case with such rations, deficient in food-value, the body-fat is called on to furnish energy for the animal and also in many cases to supplement the food digestion products in the production of milk-fat. It is readily seen that in such cases an important source is opened up for pigments for the milk-fat. The importance of this source would depend on the amount of highly colored body-fat available for the needs of the body, and on the rapidity with which it would be used up.

It is interesting to note that the skin secretion of Jersey (and Guernsey) cows is often characterized by a more or less yellow color. This is considered by the breeders of these cattle to indicate their ability to secrete yellow milk-fat. The yellow skin pigment is sometimes very abundant in the waxy secretions in the ears of these animals. The pigments which characterize the skin secretions of the Jersey breed are the same pigments that are found in the milk-fat and body-fat. This characteristic is by no means indicative of the ability of the breeds to secrete yellow milk-fat under all conditions. The only indication of this is whether the food contains an abundance of carotin and xanthophylls.

The color of butter, that is, milk-fat, has been the subject of much misconception in relation to the supposed dietary value of the product. Americans are at length learning to enjoy butter independently of a "high" color or a liberal admixture of salt, neither of which is apparently essential to the fat itself. Palmer and Eckles remind us that the yellow body-fat of Jersey and Guernsey cows should not be a point against the use of these animals for beef. The pigments here are the same as those for which the consumer will pay a higher price when present in butter.

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**A Point Sometimes Forgotten.**—We cannot possibly tell whether a treatment is good or bad unless we know what is the natural course of the disease. Over and over again good results are ascribed to treatment quite unjustly; the patient has got well because in the natural course of the disease he would do so; treatment has had nothing to do with it.—W. Hale White, *Lancet.*

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[1] The Natural Yellow Pigments Occurring in the Body, editorial, The Journal A. M. A., Sept. 12, 1914, p. 948.

[2] Palmer, L. S., and Eckles, C. H.: Carotin—The Principal Natural Yellow Pigment of Milk-Fat: Its Relations to Plant Carotin and the Carotin of the Body-Fat, Corpus Luteum and Blood Serum. I. The Chemical and Physiological Relation of the Pigments of Milk-Fat to the Carotin and Xanthophylls of Green Plants. II. The Pigments of the Body-Fat, Corpus Luteum and Skin Secretions of the Cow, Jour. Biol. Chem., 1914, xvii, 191.

# Current Comment

## SUCH IS "LIFE"

*Life,* as most of our readers know, is a bright and interesting humorous weekly published in New York City. To physicians *Life* is of interest because of its systematic blackguarding of the medical profession. Anything medical makes the editor of *Life* see red, and much talent has been utilized by *Life* to discredit the triumphs of modern medicine and to support the various organizations that make a profitable business of opposing scientific medicine. For some years *Life* has acted as the unofficial organ of the antivivisectionists, and no libel on the humanitarianism of medical men has been too gross for *Life* to give it publicity. *Life's* reactionary attitude in matters affecting public health is further emphasized by some of its advertisements. The dangerous and fraudulent acetanilid preparation "Bromo-Seltzer" has, for a consideration, been heralded through the pages of *Life* as a "cure" for headache; the corpulent readers of *Life* have been urged to take "Fat-Off," a worthless and fraudulent nostrum, sold as an obesity cure and characterized by the government chemists as a "paste made of soap and water" in the proportions of one of the former to nine of the latter; "Odorono," exposed in The Journal, Jan. 3, 1914; and the fraudulent "Morley Ear Phone" (see The Journal, Nov. 22, 1913) are both given space in recent issues of *Life;* the current number contains a half-page advertisement of "Buffalo Lithia Springs Water" (one dose of lithium to every 200,000 gallons of water) recommending it for "Bright's disease, renal calculi, stone in the bladder, albuminuria, rheumatism and gout." For further advertising frauds given space in *Life* see the Propaganda department of this issue. All this is by the way. The reason for this comment is to bring before our readers a letter recently written to *Life* by a layman, Mr. Charles H. Fahs of Madison, N. J. Mr. Fahs wrote:

> "Dear *Life:* You take your fling, and you must. That's your mission. But listen!
>
> "When Death first struck near me I was but 4 years old, and it was my little sister that went—spinal meningitis. Serum therapy was yet to be. Last year my only boy lay in convulsions—spinal meningitis. A fast auto ride to a Brooklyn hospital. Antimeningitis serum used. Not another convulsion thereafter. I thanked God for Simon Flexner and his ilk and took courage. What would you have done? How would you have felt?
>
> "When Death struck near me the second time it was a baby brother that went—diphtheritic sore throat. Antitoxins were unheard of as yet. When I took my family abroad for a winter three years ago, I felt easier when I discovered that the German town we had chosen for our stay had a high-grade laboratory where the diphtheria antitoxin had been developed. How would you have felt?
>
> "When Death struck near me the third time, again it was a younger brother who was claimed—infection following vaccination against small-pox which was active near by. We learned later that the alleged doctor who did the vaccinating had neither legal nor moral right to hang out a shingle, and bitterness was in my heart. Two years ago I was about to start for a long journey through Asia where small-pox was to be met with on every highway. In spite of sad memories, I had myself vaccinated before I sailed. What would you have done?
>
> "During the Spanish War I saw Death when its name was Legion. A score of times on a single afternoon I heard the muffled drums and saw the reversed arms as the melancholy processions left the fever hospitals. Inoculation for typhoid was unknown. On that far Eastern trip of two years ago I was to face possible typhoid infection at almost every meal time. I was inoculated for typhoid before I started. What would you have done?
>
> "Seven years ago, physically undone, I lay in a hospital while capable and faithful physicians sought to ascertain the obscure cause of it all. Finally I was asked whether I was willing to undergo the tuberculin test (hypodermic) for diagnostic purposes. I consented. The reaction was severe, but it pointed the way, and the subsequent treatment for tuberculous peritonitis brought me back to health. Would you have consented?
>
> "As a lonesome boy on the farm I had a collie as a servant, companion and pet. Because of disease he had to be shot, and my heart was broken. Never have I had a pet since. But I have children, and I am willing for all the dogs and cats and guinea-pigs to be sacrificed if these precious ones can be better protected against the hostile microbes of various kinds, that have cost my home the life of one child and severe if not desperate illnesses for each of the other three within a single year.
>
> "The profession of medicine has not succeeded in isolating itself entirely from carelessness, inefficiency, selfishness, or even from hardness of heart with respect to suffering on the part of animals or folks, but I know too many physicians of a noble type, men of high worth in head and hand and heart, to subscribe to any broad indictment of the profession's personnel or processes.
>
> "In a word, *Life,* I think you're honest, but I don't think you're fair."

The letter, however, was not published in *Life* but was returned to Mr. Fahs as "not available." Presumably it was not "funny" enough. It appeared in *The Journal of the Outdoor Life* for September.

## PUBLIC SCHOOL COURSES FOR ADULTS IN HEALTH PRESERVATION

The popular conception of what constitutes education is growing and our ideas as to the usefulness and effectiveness of our public school system are continually broadening. The latest idea comes from Rochester, New York, where the Board of Education, in response to a petition signed by three thousand citizens of Rochester, has instituted in the public schools a course of instruction for adults, to be given outside of school hours, by which one may learn, in the language of the announcement, what diseases are preventable, how the body can be made better able to resist disease, how to nurse scientifically when home nursing is necessary, how to observe and report symptoms to the doctor, what to do in emergencies and (quite as important) when to do nothing until the doctor arrives, what food is proper for the sick and how to prepare it, how to care for children and how to make the aged comfortable. This course, instituted in an experimental fashion last winter, is to be repeated during the coming year. The motto adopted by those in charge might well be made the battle cry of the entire educational movement for better public-health conditions: "Applied knowledge is the only known way for preventing and curing sickness." The announcement states that the ultimate object is to obtain for every one the longest possible period of the greatest possible usefulness and enjoyment. "Live a Little Longer"— the title of the leaflet containing the announcement — is simply a graphic and epigrammatic way of emphasizing the same idea. The recognition by the Rochester Board of Education that it has a duty and responsibility, not only to schoolchildren, but also to the entire community, and that the most important subject it can teach is how to keep well, sets a new and high standard for other boards of education.

### PREVENTING TYPHOID FEVER

The Kentucky State Board of Health is doing some effective work in educating the public of that state regarding health matters. The last number of its *Bulletin* received is devoted to the prevention of typhoid fever. Accompanying the *Bulletin* is a large poster, setting forth the advantages of vaccination for typhoid fever, and enumerating over 270,000 vaccinations which were without harmful results and with enormous reduction in the sick rate. The statistics cover the experience of the United States Army, the British Army in India, and the Japanese Army, and include other data regarding the effectiveness of the use of typhoid vaccination. This poster is an example of some of the efficient methods of publicity now being used by modern health officials. While the *Bulletin* may be read by scores, this large and attractive poster will be read by thousands, and is bound to be of service.

## *Medical News*

### CALIFORNIA

**Personal.**—Dr. Aaron S. Green, San Francisco, has returned from a trip around the world.

**European Travelers.**—Dr. Gustavus C. Simmons, Sacramento, has reached Paris on his way home.——Drs. Manuel M. Enos, Oakland, and Henry Horn, San Francisco, have returned from abroad.

### COLORADO

**Personal.**—Dr. Oscar J. Pfeiffer, Denver, and Dr. and Mrs. William A. Kickland, Fort Collins, have returned from abroad.——Dr. Ray L. Drinkwater, has been appointed secretary of the Denver Municipal Clinic to succeed Dr. Asa Z. Hall, resigned.

**Health Seekers' Bureau Established.**—A health seekers' bureau which will give free advice and information to newcoming tuberculosis patients, has been established by the Visiting Nurses' Association of Denver with offices in the Temple Court Building. The bureau will be open for free consultation from 9:30 to 11:00 on Monday and Thursday mornings.

**State Association Meeting.**—The annual meeting of the Colorado State Medical Association in Boulder, September 8 to 10, was the largest in the history of the organization. Resolutions advancing a law establishing a public health commission, and closer cooperation between physicians and druggists in restricting the sale of dangerous drugs, were adopted. The following officers were elected: president, Dr. George B. Packard, Denver; vice-president, Dr. Ella A. Mead Greeley; secretary, Dr. Crum Epler, Pueblo; treasurer, Dr. William A. Sedwick, Denver; and councilors, Drs. James A. Matlack, Longmont and Edgar Hadley of Telluride.

### CONNECTICUT

**Personal.**—Dr. Owen O'Neill, Willimantic and Dr. and Mrs. Edward W. Smith, Meriden, have returned from abroad.

**Infirmary Accepted.**—At the weekly meeting of the State Tuberculosis Commission held in Shelton, the new infirmary erected at a cost of $25,000 was formally accepted from the contractor.

**Wants Medical Inspection.**—The town school committee of Danbury has voted to ask the town board of finance for an additional appropriation of $1,500 for the establishment of a system of medical inspection in the schools of the town.

### ILLINOIS

**Personal.**—Dr. Edmund G. Sugg, Leland, sailed from Seattle September 26 for Shanghai, China, where he will be in the employ of the Chinese government.——Dr. and Mrs. Burdettee E. LaDue, Ottawa, have returned from abroad.

**Hospital Buys Property.**—A piece of property, 109 x 125 feet in extent at Wisconsin Avenue and Monroe Street has been purchased by the Oak Park Hospital and Training School for Nurses of the Sisters of Misericorde, for a nominal consideration.

#### Chicago

**Housing Conditions in Evanston.**—In a meeting of the Evanston Tuberculosis Society, held recently, the question of housing conditions in Evanston was considered; and it was urged that the society bring the situation before the city council.

**Infantile Paralysis on North Shore.**—Infantile paralysis has been frequent along the north shore. Four cases are reported in Highland Park, five in Waukegan, and one has occurred at Grays Lake. The authorities have stated that if new cases continue to occur schools will be closed as well as picture houses.

### INDIANA

**Personal.**—Dr. Frank L. Sharrer, Francesville, has been appointed chief surgeon of the Guthrie, Okla., City Hospital.——Dr. Arthur E. Guedel has been appointed superintendent of the Protestant Deaconess Hospital, Indianapolis, to succeed Dr. A. L. Marshall. Dr. Marshall has resigned in order to enter the practice of the eye, ear and throat in Indianapolis.

**Tristate Colored Association Formed.**—On September 9, at Indianapolis, representatives of the colored physicians, dentists and pharmacists of Indiana, Ohio and Kentucky, formed a tristate association and elected the following officers: Dr. William A. Method, Columbus, president; Dr. William J. Woodlin, also of Columbus, Ohio, vice-president; Dr. Henry W. Armistead, Indianapolis, secretary, and Dr. Abram L. Cabell, Terre Haute, Ind., treasurer. The first regular meeting will be held at Columbus, Ohio, next July.

**State Society Meets.**—The Indiana State Medical Association met at Lafayette, Ind., September 23, 24 and 25. The following officers were elected: president, Dr. Frank B. Wynn, Indianapolis; first vice-president, Dr. Edgar R. Cox, Kokomo; second vice-president, Dr. Spencer W. Smith, Wabash; third vice-president, Dr. W. J. Malloy, Muncie; secretary, Dr. Charles N. Combs, Terre Haute; treasurer, Dr. David W. Stevenson, Richmond; delegates to the American Medical Association, Dr. Charles H. Good, Huntington, and Dr. Miles F. Porter, Fort Wayne; alternates, Dr. Charles A. White, Danville, and Dr. Anexamander M. Hayden, Evansville. Indianapolis was chosen for the next meeting. A recommendation was made to the governor and the state legislature, that a commission of experts be appointed to codify the laws of the state, concerning health, on sale of drugs and other similar measures. A grant of $200 was made to the pathological exhibit to be used for prizes each year.

**Plans for Disease-Prevention Day.**—Great plans are being made for Disease-Prevention Day, October 2. One of the important features will be a parade containing numerous floats illustrating graphically the various phases of disease prevention. In the evening a mass meeting will be held. All the business houses have promised window space to disease-prevention exhibits, and in newspaper advertising many of the department stores are pointing out the various ways in which health is conserved in their buildings. Not only in Indianapolis, but also in the small towns of the state, programs are being planned. The feature event in Terre Haute will be a monster parade with drill teams from every city school, floats from the various business houses, several bands, civic organizations and military divisions. The schoolchildren will carry banners on which will be printed rules on health and disease prevention. The newspapers of the various towns and villages are all publishing many editorials devoted to the subject of health. Thus it is stated by the Huntington *Herald:* "We believe that home making should be regarded as a profession, that right living should be the fourth "R" in education; that health is the duty and business of every individual." Among mottos which are recommended are "All for Health—Health for All" and "Know Your City."

### IOWA

**Small-Pox Bulletin Issued.**—The Iowa State Board of Health is sending out a special bulletin on small-pox to county auditors and superintendents for free distribution among the people. Copies can also be obtained by addressing the secretary, Dr. Guilford H. Sumner, State Board of Health Office, Des Moines, Iowa.

### LOUISIANA

**New House Officers in Charity Hospital of New Orleans.**—On recommendation of Superintendent Wilkins, Dr. Adolph Jacobs and Dr. Warren Scott were elected house officers for the coming year, and Dr. Fernandez admitting physician.

**School of Tropical Medicine.**—Dr. William H. Seemann, bacteriologist of the State and City Board of Health, has been elected dean of the Tulane University School of Hygiene and Tropical Medicine. He succeeds Dr. Creighton Wellman who resigned a year ago.

**Personal.**—Dr. Gustav Mann of Tulane University Undergraduate and Dr. Charles L. Chassaignac of the Post Graduate School have recently returned from Europe.——Dr. Otto Joachim has been detained in Germany and is serving in the Military Hospital in Landau.——The United States Public Health officers on plague duty in New Orleans entertained their friends of the medical profession at mess, Galatoire's Restaurant on Sept. 18, 1914.

### MARYLAND

**Personal.**—Dr. William C. Gorgas and Miss Mabel Boardman, president of the Red Cross, were the chief speakers at a meeting of the Red Cross Society, which was held in the City Hall, Baltimore, on September 23. Dr. Thomas Buckler has returned to Baltimore from a tour of Europe.

**Report of Medical Inspectors of Schools.**—The medical inspectors of schools found 13,353 pupils in the public schools suffering from physical defects last year, according to the annual report of the Health Department. It is stated that 4,437 were cured and 3,129 improved, while 5,189 were not improved by treatment. Nearly 3,000 children in the parochial schools were found with various defects. Of this number 921 were cured and 527 improved, while 1,619 were unimproved.

### MINNESOTA

**Investigation Causes Transfer of Patients.**—As the result, it is said, of an investigation of the Hastings State Hospital, held in August last with especial reference to patients afflicted with tuberculosis, six tuberculous patients have been transferred from that institution to the St. Peter State Hospital.

**Transferred to New Hospital.**—Tuberculosis patients are being transferred by the board of control into the new Tuberculosis Hospital on the grounds of the City and County Hospital, St. Paul. Fifty of the hundred beds in the new hospital will be occupied at once and the remainder held in reserve. The institution at Cuenca will be held open, and the state will probably continue to send patients of tuberculosis to the State Sanatorium at Walker.

**Tag Day for Preventorium.**—Tag day will be held in St. Paul, October 1 and the proceeds, instead of being devoted to the general work of the campaign against tuberculosis, will be appropriated to the establishment of a children's preventorium in St. Paul, an institution where children from families in which tuberculosis exists or living under conditions predisposing to tuberculosis, may be given outings in the summer and the privilege of the fresh-air school in the winter. It is announced that $5,000 will be sufficient to start the project.

### MISSOURI

**Missouri Physicians Abroad.**—Dr. Joseph E. Sawtell, Kansas City, has reached London on his way home.——Dr. James W. Heddens, St. Joseph, is in London and expects to reach home early this month.——Drs. Floyd H. Spencer and Joseph J. Bansbach, St. Joseph, and Dr. and Mrs. Edward G. Blair, Kansas City, have returned from Europe.

**Laboratory for St. Joseph.**—At the Missouri Conference of the Methodist Episcopal Church, South, plans suggested by Dr. Daniel Morton for a medical research laboratory to be maintained in St. Joseph by the church, were adopted. It is thought that $25,000 will be sufficient to insure the establishment and successful maintenance of the institution.

**New Emergency Hospital at St. Joseph.**—The city council September 14, decided to convert the old pesthouse into an emergency hospital and to erect a smaller building for a pesthouse near by. Ordinances have been introduced appropriating $2,000 for remodeling the old pesthouse into an emergency hospital and $2,500 for building the new pesthouse.

**Personal.**—Dr. William J. Frick has been elected president of the medical staff of the Kansas City General Hospital.——Dr. Clarence P. Pickett, Trenton, has resigned as physician of Grundy County.——Dr. George Halley, for many years a prominent surgeon of Kansas City and who retired from practice three years ago, celebrated his seventy-fifth birthday anniversary, September 11.——Dr. Howard Hill has resigned from the surgical staff of the Kansas City General Hospital.

**Banquets to Physicians.**—Sixty-one members of the new staff of the Kansas City General Hospital were the guests at a dinner September 17 of the hospital and health board. Thomas M. Finn, president of the board, officiated as toastmaster.——About one hundred physicians of St. Joseph were the guests of Dr. Charles R. Woodson at the Woodson Sanitarium at a dinner which marked the first fall session of the Buchanan County Medical Society. Dr. Joseph J. Bansbach presided.

#### St. Louis

**Personal.**—Dr. Solomon A. Weintraub has returned after a year abroad during the last month of which he was in charge of a military hospital at Königsberg, Germany.——By the will of Dr. Martin Hayward Post, a bequest of $30,000 was made to his widow in lieu of dower rights.——Dr. Charles H. Eyermann has succeeded Dr. Ralph A. Kinsella, resigned, as chief resident physician of the City Hospital.

### NEBRASKA

**Personal.**—Dr. Nelle G. Carr Deffenbaugh has resigned as superintendent of the Kearney Tuberculosis Hospital and will be succeeded on November 1, by Dr. Edwin R. Van der Slice, at present assistant superintendent of the Tuberculosis Sanatorium at Mt. Alto, Pa.——Dr. Paul A. De Ogny has been appointed local surgeon for the Burlington system at Milford.——Dr. W. C. Purviance, who has been for six years in Corea as a medical missionary in charge of the Presbyterian Hospital, has located in Beatrice for practice.——Dr. Rachel A. Watkins, York; Dr. and Mrs. August F. Jonas, Omaha, and Dr. and Mrs. Elmer R. Porter and two children, Omaha, have returned from abroad.

### NEW YORK

#### New York City

**Personal.**—Dr. and Mrs. John A. Fordyce and Dr. John R. Dickson have returned from Europe.——Among the surgeons who sailed for France on September 26 on the staff of the American Ambulance Hospital are Dr. Richard Derby and Dr. Joseph P. Hoguet.——Dr. and Mrs. Leonard A. Dessar have returned from Europe.——Dr. Robert W. Hinds of Buffalo has been appointed to take charge of one of the units of the American Red Cross which is assigned to England.

**Physicians Must Register with Department of Health.**—In the city of New York the Sanitary Code, Section 160, makes it mandatory for all physicians practicing within the city limits to register at the office of the Bureau of Records of the Department of Health in the borough in which they intend to practice. To do this the physician must present his license to practice medicine or the county clerk's certificate. No certificate of death, birth or still-birth will be accepted from a physician who is not registered in the Department of Health.

### NORTH CAROLINA

**One Sixteenth Disqualifies.**—The supreme court of the state, in the case of Johnston vs. Wilson County School Board, holds that an admixture of one-sixteenth of negro blood is sufficient to disqualify a child for admission to a school for white children in the state.

**Extension of Hookworm Campaign.**—The hookworm bureau of the State Board of Health has added to its force Dr. W. H. Kibler of Morgantown who is to begin work at Mount Pleasant, Nash County. His work will supplement but not supersede that of Dr. M. E. Champion at Red Oak in the same county. Similar work is being done at Salemburg, Sampson County; Wrightsboro, New Hannibal County; Hallsboro, Columbus County, and Philadelphus, Robeson County. Satisfactory reports are received from all these communities and the work in some is nearing completion.

**Progress on the Work of the Rockefeller Hookworm Commission.**—Encouraging results are reported by Dr. M. E. Champion in charge of the dispensatory at Red Oak, Nash County. Over one thousand persons have been examined and 26 per cent. found infected. The percentage of whites infected is greater than that of the colored. All are ready to cooperate enthusiastically in eradicating the disease.——Dr. W. H. Kibler, Morganton, has taken charge of the community health work of Mt. Pleasant, under the supervision of the hookworm department of the State Board of Health.

**Memorial Tablet Presented.**—The Medical Society of the State of North Carolina presented a bronze tablet in memory of Dr. P. L. Murphy, for twenty-five years superintendent of the Morganton State Hospital, to that institution, September 19. Dr. John McCampbell, superintendent of the institution, accepted the gift in behalf of the hospital staff. Under the bust of the deceased in bas relief is the legened—"To the memory of Patrick Livingston Murphy, 1848-1907. The beloved physician and gifted alienist who organized this hospital and who was the superintendent for the first twenty-five years of its existence, in January, 1883, until his death Sept. 11, 1907."

### OHIO

**Personal.**—Dr. John M. Withrow has resigned as a member of the board of hospital commissioners for the building of the new general hospital.

**Municipal Research Expert Visits Dayton's Health Department.**—L. G. Lindholm of the New York Bureau of Municipal Research visited Health Officer Light recently and conferred with him concerning various problems confronting the local department. He expressed a favorable opinion of the various public health activities and especially of the work of the Visiting Nurses' Association.

**Cleveland School Authorities War on Disease.**—Dr. E. A. Peterson, director of medical inspection in the public schools, has launched a campaign to restrict communicable diseases. Fifteen physicians and twenty-one nurses began work on September 15. Every boy and girl in the elementary grades will undergo a complete physical examination and records will be kept on a card-index file. Especial attention will be given to the restriction of communicable diseases.

**County Commissioners Cannot Provide Public Comfort Stations.**—In a recent ruling Attorney-General Hogan held that county commissioners in Ohio cannot install comfort stations for the use of the general public. He holds that only such toilet accessories may be provided as are necessary for official use by county officers in county buildings. A movement has been on foot in several counties to build comfort stations for the general public. The law in this respect should be amended.

**Military Surgeons Meet.**—The annual meeting of the Association of Military Surgeonse of the United States to be held in Cincinnati during the week, September 29 to October 2, inclusive, presented a program of unusual excellence. A number of semipublic meetings were arranged: a reception to Surgeon-General William C. Gorgas on the evening of September 29; a public meeting of the association on September 30, at which the insignia of the association was to be presented to visiting delegates, and at which addresses were to be made by the mayor of the city, the governor of the state, the president of the local academy of medicine, Dr. Allen B. Thrasher, and others. On the afternoon of October 1, a visit was arranged to the new Cincinnati General Hospital, followed by an inspection of the First Field Hospital, Medical Department, Ohio National Guard, at the Zoological Garden and supper at the garden. Dr. Rufus B. Hall is chairman of the reception committee. A banquet was also tendered General Gorgas on the evening of September 28.

### PENNSYLVANIA

**Official Bulletin of Health.**—Director James F. Edwards of the Department of Public Health of Pittsburgh, has begun the issue of a monthly bulletin known as *"The City's Health,"* the first issue of which appeared this month and is devoted to the care of babies.

**Personal.**—Dr. Olin K. McGarrah, Altoona, has been appointed medical inspector for the Department of Commerce and Labor for Altoona and Juniata, Blair County.——Dr. Thomas H. A. Stites, Scranton, chief inspector of dispensaries of the State Board of Health, has been appointed medical director of the new State Sanatorium, Hamburg.——Dr. Karl Schäffle has succeeded Dr. Stites as inspector of dispensaries.

**Meeting of State Medical Society.**—The meeting of the Medical Society of the State of Pennsylvania held in the Carnegie Institute, Pittsburgh, September 21-24, was attended by over a thousand members. The secretary reported a net increase during the past year of 499 members. The well balanced scientific program commanded the interest of specialist and general practitioner. Numerous clinics were conducted at the local hospitals preceding and following the scientific meetings. The commercial exhibit, with the registration bureau, was housed in the foyer of the Carnegie Music Hall. Here, too, was the scientific exhibit where the University of Pittsburgh showed charts and drawings made by students, together with pathologic specimens from the university's museum.

A public meeting was held on the evening of the 22d, at which Prof. L. O. Howard, Washington, D. C., gave a stereopticon lecture on "Some Insects that Carry Disease"; and on the following afternoon an open meeting for women was conducted by the Committee on Public Health Work Among Women. The ninth annual banquet and conference of secretaries of county societies was held at the University Club on the evening of September 22.

Dr. John B. McAlister, Harrisburg, was elected president.

### TENNESSEE

**Personal.**—Drs. Eugene M. Holder, Otis S. Warr and Herbert T. Brooks, Memphis, have returned from abroad.

**Pellagra Survey.**—Dr. Blackburn G. Tucker, Nashville, who has just completed the sanitary survey of the tenth civil district, has found in one community forty-two actual cases of pellagra, seventeen in males and twenty-five in females, and eight suspicious cases. Poor food-supply and bad hygiene were found present wherever the infection was heaviest. All the patients were white.

### TEXAS

**Personal.**—Dr. and Mrs. Edward H. Cary, Dallas, and Dr. J. Bedford Shelmire, Dallas, have returned from abroad.

**Campaign against Hookworm.**—The campaign against hookworm will be begun about October 1. Every schoolchild in the county will be examined and treatment will be furnished free at four depots in the county—September 5 marked the end of the campaign against hookworm in Bell County. The state hookworm commission made 200 examinations, but found only one case.

**Field Work against the Hookworm.**—Dr. E. M. Outlaw of Palestine has been appointed field director of the hookworm commission to succeed Dr. O. H. Judkins, who resigned to take charge of the health-administration train of the State Board of Health. Dr. Outlaw will extend the campaign in Nacogdoches County another week, making it close about October 1. Of 564 children of school age examined within the county, 332, or nearly 59 per cent., were found infected. The general percentage of infection is about 34 and that in the smaller Mexican population over 90.

### UTAH

**Home from Abroad.**—Dr. Richard A. Pearse, Brigham; Dr. and Mrs. Fred W. Taylor, Provo; Dr. and Mrs. Andrew J. Hosmer, Salt Lake City; Dr. and Mrs. Ezra C. Rich and family and Dr. and Mrs. Le Roy Pugmire, Ogden, have returned from abroad.

**Roof Garden Sanatorium.**—Dr. Crayton C. Snyder, physician of Salt Lake County, has opened an open-air tuberculosis ward on the roof of the Salt Lake County Hospital. He has caused two tents to be erected on the roof which will accommodate about twenty patients and there is still sufficient space for putting up tents for ten additional patients. A bathroom and a diet kitchen have also been established on the roof of the hospital.

### VIRGINIA

**Hospital Opened.**—The New King's Daughters' Hospital at Portsmith was formally opened, September 10.

**Personal.**—Dr. Edward E. Feild, Norfolk, has returned from abroad.——Dr. Powhatan S. Chenk has received a strong endorsement from the Norfolk Medical Association for renomination as health commissioner of the State.

**To Study State Hospitals.**—Dr. Henry W. Dew, Lynchburg, a member of the State Epileptic Board and V. S. Stevenson, Toano, chairman of the board of Eastern State Hospital, Williamsburg, have been commissioned by the General State Hospital Board to make a tour of inspection of state hospitals in New York, New Jersey, Pennsylvania, Indiana, Illinois and Ohio, making a report of their observations to the general board, on their return.

**Bacteriologist Wanted.**—The board of health of Richmond desires a man to fill the position of city bacteriologist at a salary of $2,000 a year, to fill the vacancy caused by the resignation of Aubrey H. Straus who became a member of the faculty of the Medical College of Virginia.

**New Society Organized.**—Physicians of Dinwiddie County and Petersburg met in Petersburg September 15, organized the Dinwiddie County Medical Society, a component part of the Medical Society of Virginia, and elected the following officers: president, Dr. William C. Powell, Petersburg; vice-president, Dr. Edward W. Perkins, Reams; secretary, Dr. Leverette S. Early, Petersburg; and treasurer, Dr. Charles S. Dodd, Petersburg.

## GENERAL

**Congress Postponed.**—The meeting of the Fourth International Congress on Home Education and the eighth annual meeting of the American School Hygiène Association, scheduled to be held in Philadelphia the last week in September, have been postponed on account of war conditions abroad. The next meeting of the American School Hygiene Association will be held early in 1915.

**Ophthalmologists to Meet.**—The nineteenth annual meeting of the American Academy of Ophthalmology and Otolaryngology will be held in Boston, October 19 to 21, with headquarters at the Hotel Copley-Plaza, under the presidency of Dr. James M. Ray, Louisville, Ky. Prof. Harvey Cushing of Harvard Medical School will be the guest of honor of the academy and will deliver an oration on "Perimetric Deviations Associated with Pituitary Lesions."

**Obstetricians and Gynecologists Meet.**—The American Association of Obstetricians and Gynecologists held its twenty-seventh annual meeting at Buffalo, September 15 to 17, and elected the following officers: president, Dr. Charles L. Bonifield, Cincinnati; vice-presidents, Drs. Asa B. Davis, New York City, and K. I. Sanes, Pittsburgh; secretary, Dr. E. Gustav Zinke, Cincinnati (reelected); treasurer, Herman E. Hayd, Buffalo; and executive council, Drs. John W. Keefe, Providence, R. I.; Xavier O. Werder, Pittsburgh; Miles F. Porter, Fort Wayne, Ind.; Louis Frank, Louisville, Ky.; Charles N. Smith, Toledo, Ohio, and Hugo O. Pantzer, Indianapolis.

**Plague in New Orleans.**—Since the last report of bubonic plague published in The Journal for September 26, the following human cases have been found:

No. 26, Clernerice Alexander, colored female, 824 Burgundy street, age 40, who became sick September 21, with a right femoral bubo.

No. 27, John J. Vath, white male, baker, 1463 Bourbon street, became sick September 20 with septicemic type, and died September 22.

No. 28, Mrs. Schuler, white female, age 18, 910 Elysian Fields avenue, became sick September 21 with right femoral bubo.

One hundred and thirty-seven rodent cases were discovered up to September 24. For the week ended September 19, 89 vessels had been fumigated, and 3,785 freight cars inspected. Six freight cars were condemned, and 2,081 were rat-proofed, 8,852 rats were trapped. 5,712 rats were examined of 8,782 which were received at the laboratory. The total number of rats captured up to September 19 is 88,395, of which 74,307 have been examined.

**Southern Health Exhibition.**—In connection with the annual meeting of the American Public Health Association to be held in Jacksonville, Fla., November 30 to December 5, there will be held a Southern Health Exhibition from November 27 to December 6. Plans have been under way for the last six months for this exhibition and a large amount of material has been promised. The exhibition will include material covering a wide range of subjects pertaining to health conservation and will comprise the work of the state and municipal boards of health and private and semi-public organizations throughout the entire South. Such phases of health conservation work as rural sanitation, typhoid fever, hookworm, pellagra, malaria, school medical inspection, infant and child hygiene, midwifery, vital statistics, milk- and water-supplies, food and drug inspection, habit-forming drugs, insect carriage of disease, fly eradication, rat extermination, plague prevention and laboratory work, together with modern sanitary apparatus will be covered by this exhibition.

**Missouri Valley Physicians Meet.**—The Medical Society of the Missouri Valley held its twenty-seventh annual meeting at Colfax, Iowa, September 17 and 18, under the presidency of Dr. Flavel B. Tiffany, Kansas City. In addition to the papers presented by members of the society, a number of invited guests were present; among these were Dr. Robert H. Babcock, Chicago, who discussed the various forms of streptococcus and endocarditis, illustrated by specimens; Dr. Campbell P. Howard, Iowa City, who spoke on the diagnosis of mediastinal tumors; Dr. Julius P. Sedgwick, Minneapolis, who demonstrated the use of the Roentgen ray in the diagnosis of diseases of childhood and Dr. John W. Flinn, Prescott, Ariz., who spoke on the recent management of tuberculosis, the keynote being prolonged rest in an outdoor tent. The following officers were elected: president, Dr. Granville N. Ryan, Des Moines, Iowa; vice-presidents, Drs. Albert E. King, Blockton, Iowa, and Joseph C. Waterman, Burke, S. Dak.; secretary, Dr. Charles Wood Fassett, St. Joseph, Mo. (reelected); treasurer, Dr. Oliver C. Gebhart, St. Joseph, Mo. (reelected). The society will hold its spring meeting at Omaha, in March, 1915.

## FOREIGN

**Memorial to German Physicians.**—A large marble bust of Friedrich v. Recklinghausen was recently unveiled in the garden of the University Institute of Pathology at Strasburg, of which he was the founder and where he made many of his important discoveries.——A memorial has just been erected in the grounds of the hospital at Munich in honor of Friedrich Bezold, professor of diseases of the ear from 1877 until his death in 1908.

**The Riberi Prize.**—The Academy of Medicine at Turin, Italy, calls attention anew to the large prize, $4,000, which it awards every five years for the best work or discovery in the field of the medical sciences in the interim. Competing articles must be received before Dec. 13, 1916. Published works or manuscripts can be entered in competition but they must be in Italian, French or Latin. For further particulars address the Segretario generale della R. Accademia di Medicina, 81 rue de Po, Turin, Italy.

## CANADA

**Hospital News.**—A hospital is to be built at New Waterford, N. S., by the Dominion Coal Company. The cost is to be $70,000, and when built the hospital will be maintained by the town of New Waterford.——Kenora, Ontario, has made a grant of $2,000 to the Royal Jubilee Hospital and another of $1,000 to St. Joseph's Hospital, both of that town.——Medicine Hat General Hospital (Sask.) has fitted up a house adjoining the hospital as a tuberculosis annex.——In the Royal Victoria Hospital, Montreal, with a service of thirty beds in gynecology, in the last ten years, ninety-four cases of puerperal infection have been admitted; of these, twenty-nine died, a mortality of 30 per cent. During this period of ten years in the same service, 1,553 major operations were performed, with only thirty-seven deaths.

**Personals.**—Dr. A. Gordon Rice, Toronto, has been appointed divisional surgeon in Ontario for the Grand Trunk Railway, succeeding the late Dr. Bruce L. Riordan, whose partner he was for a number of years.——Colonel Carleton Jones, director-general of the Canadian medical military services, has gone with Canada's first contingent in command of the hospital and ambulance sections.——Dr. W. J. Cooke, Sudbury, Ont., who has been doing graduate work in a London, England, hospital, finding his services not wanted by the war office to whom he had offered them, has sailed on the *Muritania* as ship surgeon.——Dr. George W. Badgerow, dean of the Golden Square Hospital, London, England, has sailed for England after spending a month visiting his parents in Toronto.

**The Canadian Medical Protective Association.**—This organization started in Winnipeg in 1901 is proving to be a valuable factor in the prevention of irritating, foundationless suits for alleged malpractice in Canada. The annual report has just been issued and shows substantial assets amounting to bonds valued at $6,180, a first mortgage of $3,300, and a cash balance in the bank of about $1,000. The council's report for the year ending June 30, 1914, shows that one action was actually disposed of by judgment during the year. It was a case of alleged injury from vaccination which was ordered by the health officer of Hamilton during an epidemic in that city. The member of the association was employed by the medical officer of health to vaccinate the various employees in several large industrial establishments. The case was dismissed without trial, being of a frivolous nature. Another action hangs over a British Columbia member for two years but it is thought that it will be abandoned. Seven or eight other cases have occurred in which actions were threatened but not one proceeded with; and there are no outstanding claims against the Association. The association has practically put an end to frivolous actions against members for the purpose of extorting a settlement in order to avoid publicity. Dr. Robert W. Powell, Ottawa, was reelected president, and Dr. J. Fenton Argue, Ottawa, reelected secretary-treasurer.

## WAR NOTES

**American Information on Red Cross Work.**—There are 171 surgeons and nurses of the American Red Cross who have arrived in Europe for service in the war. Until further contributions are received a greater number cannot be maintained. Surgeons desiring to go should address their applications to the Medical Bureau of the American Red Cross, Washington, D. C., with such letters of reference as they may have. Young men, well recommended, who can stand the severe campaign will be selected.

**Alcohol Forbidden in the German Army.**—Strict orders were issued at the time of the mobilization of the army that no one should offer or sell to any of the troops any alcoholic drink. The sale of liquor of any kind at the stations was forbidden. A Munich exchange remarks that in 1870 floods of beer were offered to the troops passing through the city on their way to the front and discipline suffered thereby in many instances; the present orderly mobilization, it adds, shows a marked contrast in this respect.

**Treatment of Sore Feet.**—The British Red Cross Association has issued a leaflet giving directions for the prevention and treatment of sore feet in troops:

1. Feet should be washed with soap and water, and very gently dried—not rubbed.
2. Dab with methylated spirit on cotton wool, except where the skin is broken.
3. When dry, dust with powder composed of equal parts of starch and boracic powder or fuller's earth.
4. Bandage with clean bandage, preferably of domette, not too light—or else put on clean socks. All dirty socks should be washed and dried before use.
5. Reddened skin or recent blisters should be protected by strips of strapping.
6. All corns should be protected by strapping. Open sores require surgical advice, and this should be sought whenever possible, especially if the surrounding redness of the foot is extending.
7. Toenails should be cut short.
8. Hard boots should be well greased—mutton fat is the best. They should be well dusted inside with starch and boracic powder.

**Scarcity of Drugs in England.**—The *Lancet* states that already the scarcity of foreign manufactured drugs is being noticed in England. Although no instances appear to be reported as yet of the inability to procure small quantities of commonly prescribed German products, the scarcity in the central market must in course of time result in pharmacists being unable to replenish their depleted stocks. Acetylsalicylic acid is about five times the value quoted before the war, and most other coal-tar products have advanced seriously in price. Chloral hydrate has trebled in value, cocain has doubled; and the salicylates are also much higher. Some British firms have already begun the manufacture of chemical products previously obtained from Germany. It is understood, the *Lancet* states, that an English house is prepared to manufacture the organic compounds of arsenic. The effect of the war is not felt solely in manufactured products as many of the most important vegetable drugs are produced in Belgium, Germany and France; and the new crops: chamomile, arnica, belladonna, digitalis, gentian, colchicum and others were awaiting harvest when the call to arms removed laborers from the fields.

**Staff and Equipment of Red Cross Vessel.**—The ship "Red Cross" concerning which previous information has been offered, has sailed. Among its equipment were included 3,500 bales of absorbent and bleached cotton, 389,000 yards of gauze, 15,000 pounds of bandages, about 2,000 gallons of chloroform and ether, 10,000 stretchers; and a large quantity of other surgical supplies.

On the Greek ship, which sailed from New York September 9 for Salonica, Greece, was a hospital unit destined for Nish, Servia, which also carried many supplies.

The ten units aboard the "Red Cross" will be distributed among England, France, Belgium, Germany, Austria and Russia. The following is a schedule of the various units with brief biographies of the men composing them:

Unit "A" Director—Dr. Reynold M. Kirby-Smith, Health officer of Sewanee, Tenn., and former captain in the Medical Corps, U. S. Army. A graduate of the University of the South at Sewanee, in 1895. His first assistant will be Dr. John A. C. Colston, a member of the surgical staff of Johns Hopkins Hospital; and a graduate of Johns Hopkins University in 1911. His second assistant will be Dr. M. H. Todd, a graduate of Johns Hopkins University in 1913, formerly member surgical staff of Johns Hopkins Hospital.

Unit "B" Director—Dr. Roades Fayerweather. He is an instructor in orthopedic surgery at Johns Hopkins Hospital, and graduated from the medical school in 1913. His first assistant will be Dr. Lewis C. Spencer, assistant resident surgeon in Johns Hopkins Hospital. His second assistant will be Dr. H. R. Slack, who graduated from the Johns Hopkins Medical School in 1912, and has since served on the surgical staff of the hospital.

Unit "C".—The director of this unit is Dr. William S. Magill, a graduate of the Université de Paris in 1894 and a member of the Medical Reserve Corps, U. S. A. His assistants are Dr. Philip Newton, Washington, D. C., a graduate of the Georgetown Medical School, 1910, and assistant professor of anatomy; and Dr. Paul H. Zinkhan, a graduate of the same medical college.

Unit "D".—The director is Dr. Robert W. Hinds of Buffalo, N. Y., a graduate of Harvard University in 1910, and a member of the medical corps of the national guard of New York. His assistants are Dr. Fred W. Eastman, a graduate of Columbia University, and surgical intern of the Harlem Hospital; and Dr. Henry M. Shaw, graduate of the Johns Hopkins Medical School, and intern in the hospital.

Unit "E".—The director of Unit "E" is Dr. Charles MacDonald of Salem, N. J., a graduate of Columbia University, and house surgeon of St. Johns Hospital, New York City. His first assistant, Dr. Russell A. Jewitt, of Cleveland, O., is a graduate of Western Reserve Medical School, and his second assistant, Dr. John C. Miller of Shenandoah, Pa., is graduate of Jefferson Medical College at Philadelphia, with five years' medical experience.

Unit "F".—The director, Dr. Howard W. Beal, Worcester, Mass., is a graduate of the Harvard Medical School in 1898. He formerly held a commission in the medical corps of the army, which he resigned in 1903. His assistants are Dr. V. N. Leonard, a graduate of Yale, and of the Johns Hopkins Medical School in 1911, and Dr. William T. Fitsimmons, graduate of Kansas State University, and Resident Surgeon of Roosevelt Hospital, New York City. As director of Unit "G" Dr. Bial F. Bradbury, of Norway, Me., was selected. He is a graduate of the Southern Medical College of Atlanta, Ga., in 1882, and has been for the past twenty-six years in the national guard of the state, occupying a position of chief surgeon with the rank of lieutenant-colonel. His first assistant, Dr. R. H. Newman, Knoxville, Tenn., is a graduate of the University of Louisville, and surgeon for the Louisville & Nashville R. R. and the Southern R. R., and captain of the medical corps, N. G., of Tennessee. His second assistant, Dr. John Lancer, is a graduate of Columbia University Medical School in 1905, with surgical experience as intern in the St. Francis Hospital, the New York Lying-In Hospital; also pediatrician at the Fordham University Clinic, New York.

Unit "H".—Dr. Edward H. Egbert, Washington, D. C., is director of this unit. He is a graduate of Dartmouth Medical School, and Baltimore Medical College in 1903. His assistants are Dr. Brown S. McClintic, Peru, Ind., and Dr. Arthur M. Zinkhan, Washington, D. C.

Unit "I".—Dr. Charles H. Sanders, a graduate of Georgetown University Medical School has been selected as director of this unit. His assistants are Dr. J. F. Spearman, graduate of the College of Physicians and Surgeons of Baltimore; Dr. Grover A. C. Stem, Washington, D. C.

Unit "K".—Dr. Cary A. Snoddy is director; his assistants are Dr. Fred G. Benton, New York City; and Dr. Walcott Denison, graduate of Washington University, St. Louis, Mo.

In the "Servian Unit" the director is Dr. Edward W. Ryan, who has served for the past two years with the American and Mexican Red Cross Societies. His assistants are Drs. James C. Donovan and William P. Ahern, all are graduates of Fordham University Medical School, New York.

## LONDON LETTER

London, Sept. 16, 1914.

### The War

A scheme has been devised whereby free medical attendance with medicine and appliances will be provided dependents of soldiers and sailors serving with the colors who need relief. The scheme originated in a proposal made by the British Medical Association and the Pharmaceutical Society. They offered to the government the cooperation of their professions for providing these dependents with free medical attendance and medicines and appliances at cost. The executive committee of the Prince of Wales' Fund (a fund now amounting to over $100,000 subscribed in response to an appeal by the prince for the relief of distress consequent on the war) has decided to defray the cost of medicines and appliances. On the initiative of the British Medical Association physicians throughout the country have agreed to undertake the work of those who have abandoned their practices for military service and to conserve them until their return. These are only examples of the general spirit of patriotism evoked in all classes by this titanic struggle. Elaborate arrangements have been made by the admiralty for dealing with sick and wounded from the fleet. They are adapted to meet the emergency of a general action and also the needs of single vessels which may suffer in minor engagements. The British navy has eight hospital ships, of which five are in home waters. Their duty will be to collect the wounded from any general action. They carry a full complement of medical officers and dressers. They will convey the wounded to the large naval hospitals where the staff of medical officers is reinforced by civilian consultants. Should any pressure arise in the hospitals, convalescents will be transferred as quickly as possible to homes or inland hospitals.

### Sir William Osler on Military Hygiene

Addressing officers and men in a military camp on the prevention of disease in active service, Sir William Osler remarked that formerly it had been said that an army marched on its belly; now it marched on its brains. Only by utilizing fully existing knowledge in all grades, from the commander-in-chief to private, was the maximum success obtainable. Bacilli were a more important enemy than bullets. In the South African War the former were responsible for 14,000 deaths, the latter for only 8,000. So far only one great war had been waged with the weapons of science against these unseen foes. The Japanese went into the Russian campaign prepared as fully against bacilli as bullets, and their percentage of deaths from disease was the lowest recorded. We were not likely to have to fight three of the greatest scourges of armies—typhus, malaria and cholera, though the possibility of the last had to be considered. But there remained dysentery, pneumonia and typhoid. Dysentery could be prevented only by boiling water. Pneumonia was much more difficult to prevent. Coughs and colds should not be neglected. The exhaustion produced by long marches, by exposure to wet and cold, and by wounds lowered the resistance of the body so that the pneumococci could attack the lungs. Above all others typhoid was the most fatal disease in modern warfare. Over and over again it had killed thousands before they reached the fighting line. In the South African War it killed more than the bullets of the Boers. Osler advised his hearers to take advantage of inoculation to protect them against this disease. In the British army, unlike foreign ones, inoculation is voluntary.

## PARIS LETTER

*(Delayed in transmission)*

Paris, Sept. 17, 1914.

### The Census and Provisioning of Paris

At this writing the German Army, which a few days ago was still threatening Paris, has withdrawn considerably. Notwithstanding, the military authorities, in whose hands all powers have been concentrated since the very beginning of the war, has judged it prudent to count the present population in preparation for a possible siege of Paris and of the placing of the population on rations which might be made necessary by blockade. It is interesting to note that in the questionnaire addressed to each household is a special inquiry with regard to persons requiring a special diet, that is, infants under 15 months of age and invalids requiring certain foods.

The results of the census indicate that the number of households in the city is about 887,267, representing 2,006,786 persons. In 1911 the figures for the quinquennial census were about 1,123,634 households, or about 2,833,351 persons. There has thus been a diminution of about 30 per cent., and this decrease has continued, for there have been a number of departures recently. Under these conditions, it may be seen that Paris can be provisioned without great difficulty. Up to the present the capital has not had to suffer in this respect. Even as to milk, neither children nor invalids have at any time been deprived of this necessary food, and the supply has always been sufficient so that even adults can use the amount of milk to which they have been accustomed. Still, just now, the military operations going on in several dairy regions render commercial traffic very difficult when they come near the city. In spite of the sudden changes of railroad timetables, necessitated by army movements, however, and in spite of the necessity for relegating to the second place everything which is not directly connected with measures of national defense, the milk-dealers appear to be able to supply the needs of the population of Paris. The milk, though it arrives later than under ordinary circumstances and at very irregular intervals, is received in sufficient quantity. In view of the delay in delivery, the dealers recommend their customers to boil each evening all the milk which they may need to use next day before the arrival of the next supply.

### The War and University Life

The council of the Université de Paris has just met under the presidency of M. Liard, vice-rector of the Académie de Paris. It has taken measures for the opening examinations in October and for the resumption of lectures in the various departments of the university the beginning of November.

### The War and Public Hygiene

The prefect of the Seine has just posted on the walls of Paris large notices enjoining on the owners of buildings the measures of cleanliness and hygiene necessary to protect the public health, such as the emptying of cess-pools, the removal of rubbish, the burning of refuse, the cleanliness of courts and stairways, the emptying of stagnant water, etc.

It is regrettable indeed that under such serious circumstances as the present, unscrupulous persons do not hesitate to exploit public credulity by their brazen advertisements. Thus, everywhere among the official notices are seen small posters headed "Public Hygiene" and as a subheading "To Avoid Epidemics." The poster begins by recommending a series of precautions having to do with personal cleanliness, avoidance of alcoholic excesses, etc. Then comes the following advice: "Drink only water in which has been dissolved a packet of LITHINES of Dr. X. . . . Water thus prepared is a healthful, economical and slightly effervescent mineral water. . . ."

### The Mustering into the Army of Men who Have Regained Their Health After Being Invalided Out

M. Millerand, minister of War, has just addressed to the president of the republic a report on the subject of exemptions from military service. According to the present regulations, former soldiers who have been invalided out are definitely released from all military obligations, whatever their age or state of health. It is the same with regard to young men who have been exempted from military service by examining boards. Statistics show that the number of young Frenchmen who are thus lost to the national defense is considerable, taking into account the whole country. While some of them are really unfit for armed service, the physical condition of others has improved since they were examined and dismissed or exempted from service. Not to take into account at the present crisis those who are now fit for service would be negligent in the extreme. A law passed last year requires young men exempted from service to present themselves for examination (1) at the time when they would pass into the reserve of the active army (at the age of 24); (2) five years afterward; (3) at the time when they should pass into the territorial army (at the age of 34). Those who at any one of these examinations seem fit for military service are immediately subject to the obligations of the class to which they belong by age. Carrying out this idea, the minister of war has required all exempted and invalided men to undergo medical examination. It is to be presumed that many of them will be found capable of taking part in the defense of the country.

## BERLIN LETTER

*(Delayed in transmission)*

Berlin, Sept. 5, 1914.

### The War

Among the efforts for mutual aid which are being carried on by physicians may be mentioned the lectures on military medicine. Such lectures have been held especially in Berlin under the auspices of the medical department of the army. One of the most notable was given by Wassermann, who even before the war bore the title of general staff surgeon. He spoke on the combating of epidemics in time of war. The general importance of this address justifies a somewhat extensive reproduction.

#### PROPHYLAXIS OF EPIDEMICS

In view of the probability of the introduction of plague, small-pox, cholera, epidemic typhus, and dysentery from Russia and of the fact that typhoid is epidemic on the eastern frontier of France and in Belgium, special precautionary measures have been taken. The army is accompanied by consulting hygienists from the ranks of our best university instructors and by a whole staff of bacteriologically trained army surgeons. Moreover, the base hospitals have portable bacteriologic laboratories and there are also available for investigations the Berlin Institute for Infectious Diseases, the laboratory of the Kaiser Wilhelm Academy and the Imperial Health Office. The most important thing in controlling an epidemic is the discovery of early cases, not only persons who are clinically sick, but more especially the so-called germ carriers. These are the most dangerous because they are not confined to bed and may infect their environment. They must be kept under constant bacteriologic supervision as also the sick that are received from Belgium and France, who, although they have been vaccinated against typhoid, may still be germ carriers.

In western Germany our population has been made nearly free from contagious diseases through the organized antityphoid campaign with the aid of the institutions at Celsenkirchen and Saarbrücken. However, should typhoid appear in the army from contact with the French, the patients must not be sent to the rear but must be isolated. The isolation rooms in the hospitals must be protected with gauze or wire netting at the windows from the access of flies and mosquitoes, as experience has shown that these are likely to convey disease germs to foodstuffs. The same care must be used in regard to the latrines, and no stagnant water must be permitted in the neighborhood of the hospital. If the pools cannot be drained they should be sprayed with crude petroleum. Especial care must be taken of drinking water, and the so-called good spring water should be strenuously avoided and only deep water obtained through a well, or boiled water should be used. If necessary, water should be sterilized by the sterilizing apparatus which is carried with the troop. In the same way supervision of the help and cooks, especially the women, should be exercised as epidemics have been known to arise from bacilli carriers, even from women potato-peelers, although they were not sick. The sterilization should be carried out by steam, or chemical disinfectants, of which a soap-cresol solution is most to be recommended. This can be prepared extemporaneously by mixing with 950 c.c. of hot water, 25 gm. of soft potassium soap and 25 gm. of a 10 per cent. solution of crude phenol (carbolic acid). Milk of lime is to be recommended for the same purpose.

### VACCINATION AGAINST TYPHOID AND CHOLERA

In addition to these measures, protective vaccination is to be recommended in threatened typhoid and in cholera, and this should be done in all troops which enter a marshy region. Typhoid vaccination should be made in the neighborhood of the clavicle, never in the arm or the back, lest the use of the gun be interfered with, or the soldier cannot lie down comfortably, for typhoid vaccination sometimes produces severe reactions. For this reason it is preferable to make the injection near evening. Five-tenths c.c. is first injected and after seven days 1 c.c., and if necessary a third injection is made. Naturally nurses should also be injected. In cholera at least two injections should be made, beginning with 0.5 c.c. and after six days 1 c.c. The reaction is slighter than with typhoid. In dysentery the feces and blood should be examined to determine the nature of the disease.

### PLAGUE, TYPHUS, RELAPSING FEVER AND MENINGITIS

Plague requires the greatest care, the pneumonic form being the most dangerous, the bubonic form less menacing. In every case of pneumonia, pulmonary plague should be borne in mind, for the course of this disease in the first few days is just like that of pneumonia. Cases of typhus should be isolated and the barracks placed at a distance from the rest of the hospital. The windows and doors must be kept open night and day, winter or summer, as it is only by diluting the unknown virus with fresh air that physicians and nurses can escape cantagion. If this precaution is neglected, infection is inevitable. Relapsing fever is efficiently treated with salvarsan, and cerebrospinal meningitis with the antimeningitic serum.

### Health of Troops at the Front

Reports from the firing line show that our surgeons have been on duty with the same unremitting activity as our soldiers, as is easy to understand. According to a communication from a young colleague, he has in the last few days at times been in the saddle for thirteen hours and then worked for the same length of time in the hospital. The health of our troops is characterized as good by an official report of the chief of the medical service in the field. So far no epidemics have arisen. To be sure, a part of our troops are in a hostile country which has not enjoyed the same hygienic advantages as our home country, and whose inhabitants are many of them carriers of the germs of infection, but the extensive foresight of the German military organization is effective against even these obstacles. Vaccination has been strictly enforced and if necessary will be carried out among the hostile inhabitants. Apparatus for examinations for typhoid, cholera and dysentery, and vaccination material are carried with the army. Expert hygienists are found in the ranks of our army surgeons. In our own country there is no notable increase of infectious diseases. In this respect the prisoners of war are carefully watched. The wounds received in the regular course of war show a good tendency toward healing. The German first treatment, especially the German first-aid bandage, are showing good results. The bandages applied at the front remained in good position during the transportation to the rear.

## Marriages

Ellen Bradford Murray, M.D., Ypsilanti, Mich., and Edward F. Brown of Marlboro, Mass., September 19.

Paul Guthrie Moore, M.D., Cleveland, Ohio, to Miss Henrietta Louise Mallory of Sarnia, Ont., September 16.

Aaron C. Conaway, M.D., Marshalltown, Iowa, to Miss Rhea Ireland Butler of Chicago, September 26.

John Quincy Newell, M.D., Jennings, Okla., to Mrs. Bacon of Oklahoma City, Okla., September 10.

Charles Judson Brunson, M.D., Adamson, Okla., to Mrs. Emily J. Reese, McAlester, Okla., recently.

Vincent J. Mulvehill, M.D., Carrolltown, Pa., to Miss Delrose Williams of Altoona, Pa., recently.

Charles H. MacPherson, M.D., to Miss Lora Frances Anderson, both of Modesto, Ill., recently.

Hada M. Burkhart, M.D., Rock Island, Ill., and Martin R. Carlson of Moline, Ill., September 17.

Lawrence Tyler Post, M.D., Baltimore, Md., to Miss Helen Sharp of Cranford, N. J., September 7.

Louis George Hoffman, M.D., to Miss Cora Hazel Bryan, both of Chicago, September 15.

Cleo Earl Weaver, M.D., to Miss Pearl Hendry, both of LaBelle, Fla., September 15.

## Deaths

**John Lanson Adams, M.D.** College of Physicians and Surgeons in the City of New York, 1886; a Fellow of the American Medical Association; a member of the American Laryngological, Rhinological and Otological Society, American Ophthalmological Society, American Otological and New York Otological Society; attending surgeon to the New York Eye and Ear Infirmary, Bloomingdale Clinic and West Side German Dispensary, consulting ophthalmologist and otologist to the New York Hospital, Lying-in Asylum, Manhattan State Hospital and New York Nose, Throat and Lung Hospital; one of the most prominent specialists on diseases of the eye, ear, nose and throat of the United States; was instantly killed, September 25, by an accidental fall from a fourth-story window of his house in New York City, aged 54.

**John C. Fleming, M.D.** Jefferson Medical College, 1871; a member of the staff of the Mercy Hospital, Burlington, Ia.; formerly city health officer and city physician of Burlington, physician of Des Moines County and local surgeon for the Burlington System, died suddenly from cerebral hemorrhage, while making a professional call in that city, September 15, aged 65.

**Ernest Saxl, M.D.** K. K. Deutsche Karl-Ferdinand-Universität, Prague, Bohemia, 1893; a Fellow of the American Medical Association; professor of clinical ophthalmology in the American Medical College, St. Louis; a well-known oculist and musical expert of St. Louis; died in his apartment in that city, September 11, from hemorrhage of the lungs, aged 36.

**John Andrew O'Keefe, M.D.** Long Island College Hospital, Brooklyn, 1884; a Fellow of the American Medical Association; medical examiner of Providence County, R. I., and for twenty years a medical officer of the Rhode Island Militia; died suddenly in his office in Providence, September 14, from heart disease, aged 51.

**Walter Frederick McCabe, M.D.** College of Physicians and Surgeons in the City of New York, 1895; a member of the Minnesota State Medical Association and well known as a roentgenologist of Duluth; died at his home in that city, September 11, from long-standing disease of the spinal cord, aged 50.

**Edward Tyler Doty, M.D.** University of Michigan, Ann Arbor, 1870; a member of the Missouri State Medical Association and once president of the Joplin and Jasper County medical societies; a veteran of the Civil War; died at his home in Anderson, Mo., September 13, from gastritis, aged 70.

**Bernard E. McShane, M.D.** College of Physicians and Surgeons, Chicago, 1895; a member of the Kansas Medical Society and a practitioner of Alton, Kans.; but later a resident of Riverside, Cal.; died at the home of his sister in Milwaukee, Wis., September 18, aged 43.

**John McGraw Woodbury, M.D.** Bellevue Hospital Medical College, New York City, 1881; under two administrations, street cleaning commissioner of New York City; physician and surgeon, sanitary inspector and organizer of the first board of health of Ponce, Porto Rico during the Spanish-American War in which he served on the staff of Major General James H. Wilson; died at his home in Southampton, Long Island, N. Y., September 24.

**John Hess Burkett, M.D.** Miami Medical College, Cincinnati, 1871; a member of the Medical Society of the State of Pennsylvania and for many years president of the Robinson Township, Allegheny County, Pa., school board, township auditor and justice of the peace; died at his home near Carnegie, Pa., September 16, aged 74.

**Robert Brown Johnson, M.D.** Medical College of the State of South Carolina, Charleston, 1847; a Confederate veteran; for nearly half a century a practitioner of Mississippi and since 1900 a resident of Kosciusko, Miss.; died in a hospital in Camden, S. C., September 3, aged 89.

**Adolphus G. Wood, M.D.** College of Physicians and Surgeons, Keokuk, Ia., 1859; at one time postmaster of Walkersville, Mo.; president of the National Bank of Lentner, Mo.; and a prominent practitioner and citizen of that place; died at his home, September 6, aged 83.

**Archibald Dann, M.D.** University of Pennsylvania, Philadelphia, 1866; formerly a member of the staff of the Rochester General Hospital and of the consulting staff of the Rochester State Hospital; died at his home in Rochester, N. Y., September 6, aged 69.

**Edwin Kindle Williams, M.D.** College of Physicians and Surgeons, Baltimore, Md., 1883; a member and once first vice-president of the Arkansas Medical Society; died at his home in Arkadelphia, Ark., September 11, from pneumonia, aged 50.

**George W. Robb, M.D.** Detroit College of Medicine and Surgery, Detroit, Mich., 1894; a Fellow of the American Medical Association; died at his home in Flushing, Mich., September 14, from pernicious anemia, aged 58.

**Albert E. Brandt, M.D.** Pulte Medical College, Cincinnati, 1878; of Harrisburg, Pa.; a veteran of the Civil War; died at the home of his granddaughter in Mechanicsburg, Pa., September 7, from heart disease, aged 78.

**Ashael H. Alderman, M.D.** National Homeopathic Medical College, Washington, D. C., 1895; a veteran of the Civil War; died at his home in Washington, D. C., September 13, from heart disease, aged 71.

**Stephen Henry Hussey, M.D.** Medical College of Ohio, Cincinnati, 1887; formerly of Bowersville, Ohio; was found dead in his room in the Lexington Hotel, Chicago, September 15, from heart disease, aged 63.

**John C. Barker, M.D.** University of Louisville, Ky., 1893; a member of the Kentucky State Medical Association; died at his home in Hustonville, Ky., September 10, from nephritis.

**John Eaton Burris, M.D.** Eclectic Medical College of the City of New York, 1876; a veteran of the Civil War; died at his home in New York City, September 10, aged 68.

**John T. Nolan, M.D.** Jefferson Medical College, 1908; since 1912 a medical inspector of the city schools of Philadelphia; died at his home in that city, August 27, aged 28.

**Arrillis Irving Griffith, M.D.** Kentucky School of Medicine, Louisville, 1881; formerly of Stoutsville, Mo.; died at his home in Toledo, Ohio, September 3, aged 71.

**Samuel T. Rawlins, M.D.** Cincinnati College of Medicine and Surgery; 1873; a Confederate veteran; died at his home in Georgetown, Ky., September 4, aged 73.

**Eugene Nesbit Freeman, M.D.** Vanderbilt University, Nashville, Tenn., 1885; of Grafton, Cal; died at Knights' Landing, Cal., August 22, aged 53.

**John Harry Lane, M.D.** Washington University, St. Louis, 1876; died at his home in Medora, Ill., September 7, from heart disease, aged 70.

**John W. Hogg, M.D.** Medical College of Georgia, Augusta, 1877; was found dead in bed at his home in Senoia, Ga., September 8, aged 62.

**August B. Bunsen, M.D.** University of Heidelberg, Germany, 1853; died at his home in Freeport, Ill., September 3, aged 84.

**Fred Henry Huning, M.D.** Bellevue Hospital Medical College, 1896; died at his home in Ventura, Cal., June 27, aged 43.

**William N. Brickey** (license Arkansas, 1903) died at his home in Little Rock, Ark., August 31, aged 60.

# *The Propaganda for Reform*

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

## G. H. BRINKLER—"FOOD EXPERT" *

### A Quack Against Whom the Federal Authorities have Issued a Post-Office Fraud Order

G. H. Brinkler of Washington, D. C., has for some time been advertising as a "food expert" and "food specialist." His business was conducted on the mail-order plan. He sold no foods but purported to sell expert advice on dieting. In effect, Brinkler pretended to treat and cure any disease by prescribing a particular diet for the individual suffering from that disease.

Brinkler is neither a physician, a pharmacist nor a chemist yet, until the federal authorities put him out of business, he obtained money from people for opinions that he expressed on medicine, pharmacy and chemistry. Brinkler, as a quack, sold worthless advice instead of drugs. In the hearings before the Committee on Interstate and Foreign Commerce, Dr. L. F. Kebler, Chief of the Division of Drugs of the Bureau of Chemistry, U. S. Department of Agriculture, referred to the fraudulent business carried on by G. H. Brinkler. Dr. Kebler said:

> "Through published advertisements and otherwise this party enters into correspondence with the sick and the well and by specious promises induces them to purchase letters of advice pertaining to diet. He represents that the advice given in these letters, if followed, will effect a cure of all diseases, including cancer, Bright's disease, diabetes, etc., and that it will bring about and maintain a permanent state of good health."

Dr. Kebler, after quoting a number of extracts from Brinkler's "literature" to illustrate the nature of the claims made by this quack, continued:

> "No one acquainted with the disease or diseased conditions involved would make such representations. According to his own statement, Mr. Brinkler, the promoter of this scheme, is neither a physician, a pharmacist nor a chemist. It would, therefore, appear that these claims and representations are made for the purpose of misleading and deceiving the public."

#### BUTTER THE CAUSE OF DEAFNESS!

Brinkler's advertisements were usually headed "Popular Educational Food Campaign," and were so arranged as to give the impression that Brinkler himself was connected with some department of the government. His claims and statements indicate that the fraudulence of his operations was exceeded only by his ignorance of the subject in which he professed to be a specialist. According to Brinkler, certain foods cause tumors, cough and "catarrh"; too much cream, butter and cheese may produce deafness and discharging ears; some foods "make one Nervous, Shy and Low-Spirited," others produce "the finest quality of Vitality, Electricity, Magnetism or Intelligence."

In his advertising, Brinkler urged that ten cents be sent for his "valuable instructive booklet" entitled, "The New Brainy Diet System." The inference was that this booklet would give valuable advice on diet; as a matter of fact, it was merely an advertising pamphlet devoted to the further exploitation of Brinkler and his alleged system. A large part of the pamphlet consisted of testimonials of the usual type, and those familiar with the literature of quackery will not be surprised to learn that one of the testimonials was from Willard H. Morse, M.D., F.S.Sc. (Lond.), that prolific producer of fake analyses and worthless testimonials. It appeared in the form of a "report" to the "Society of Science, Letters and Arts of London"—a "society" to which many quacks belong, the "fellowship" costing only one guinea ($5.00). "Fellows" of the "society," may append the letters "F.S.Sc. (Lond.)" to their names, and this makes a valuable advertising asset with which to impress the ignorant.

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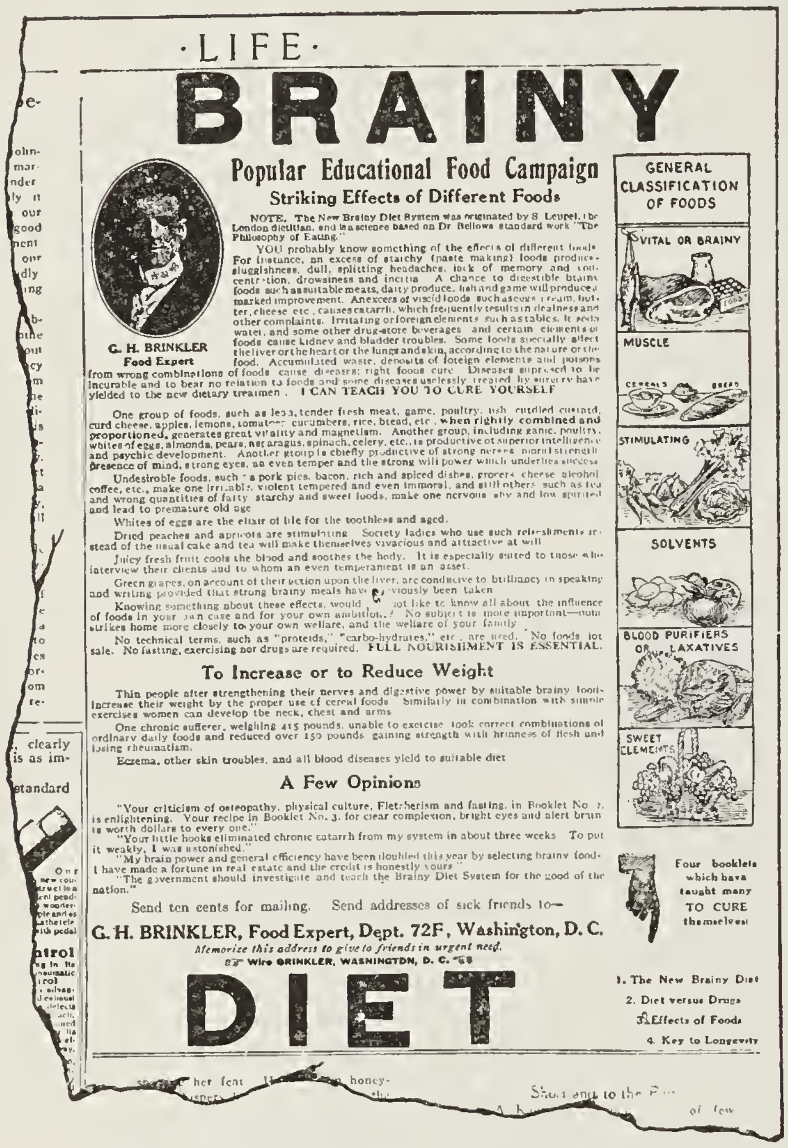
* This article gives in an abbreviated form the Government's case against Brinkler. The matter will be reprinted in pamphlet form (price 4 cents) in greater detail.

In addition to testimonials, Brinkler employed the tactics common to quacks, especially that of attempting to frighten his prospective victims. "REMEMBER MY ADDRESS IN THE HOUR OF APPROACHING DEATH," he grewsomely suggested in large, black-faced type. Every booklet sent out by Brinkler contained a "Question List" blank. This was to be filled out by the recipient and sent back to Brinkler with $1.00. Those who sent the dollar with the filled-out blank received a letter stating that the various ailments described on the blank were due to improper diet. No advice was given, however, as to what constituted correct diet, but Brinkler stated that he would give advice regarding the correct diet to use in the case on the receipt of $40, $60 or $75, as the case might be.


GENERAL CLASSIFICATION OF FOODS
VITAL OR BRAINY
MUSCLE
CEREALS
BREAD
STIMULATING
SOLVENTS
BLOOD PURIFIERS OR LAXATIVES
SWEET ELEMENTS

·LIFE·

BRAINY

Popular Educational Food Campaign

Striking Effects of Different Foods

NOTE. The New Brainy Diet System was originated by S. Leppel, the London dietitian, and is a science based on Dr. Bellows standard work "The Philosophy of Eating."

YOU probably know something of the effects of different foods. For instance, an excess of starchy (paste making) foods produces sluggishness, dull, splitting headaches, lack of memory and concentration, drowsiness and inertia. A change to digestible brainy foods such as suitable meats, dairy produce, fish and game will produce a marked improvement. An excess of viscid foods such as eggs, cream, butter, cheese, etc., causes catarrh, which frequently results in deafness and other complaints. Irritating or foreign elements such as tables, it soda water, and some other drug-store beverages and certain elements of foods cause kidney and bladder troubles. Some foods specially affect the liver or the heart or the lungs and skin, according to the nature of the food. Accumulated waste, deposits of foreign elements and poisons from wrong combinations of foods cause diseases; right foods cure. Diseases supposed to be incurable and to bear no relation to foods and some diseases uselessly treated by surgery have yielded to the new dietary treatment. I CAN TEACH YOU TO CURE YOURSELF

G. H. BRINKLER
Food Expert

One group of foods, such as lean, tender fresh meat, game, poultry, fish, curdled custard, curd cheese, apples, lemons, tomatoes, cucumbers, rice, bread, etc., **when rightly combined and proportioned**, generates great vitality and magnetism. Another group, including game, poultry, whites of eggs, almonds, pears, asparagus, spinach, celery, etc., is productive of superior intelligence and psychic development. Another group is chiefly productive of strong nerves, moral strength, presence of mind, strong eyes, an even temper and the strong will power which underlies success.

Undesirable foods, such as pork pies, bacon, rich and spiced dishes, grocers' cheese, alcohol, coffee, etc., make one irritable, violent tempered and even immoral, and still others, such as tea and wrong quantities of fatty, starchy and sweet foods, make one nervous, shy and low spirited and lead to premature old age.

Whites of eggs are the elixir of life for the toothless and aged.

Dried peaches and apricots are stimulating. Society ladies who use such refreshments instead of the usual cake and tea will make themselves vivacious and attractive at will.

Juicy fresh fruit cools the blood and soothes the body. It is especially suited to those who interview their clients and to whom an even temperament is an asset.

Green grapes, on account of their action upon the liver, are conducive to brilliancy in speaking and writing provided that strong brainy meals have previously been taken.

Knowing something about these effects, would you not like to know all about the influence of foods in your own case and for your own ambition? No subject is more important—none strikes home more closely to your own welfare, and the welfare of your family.

No technical terms, such as "proteids," "carbo-hydrates," etc., are used. No foods for sale. No fasting, exercising nor drugs are required. FULL NOURISHMENT IS ESSENTIAL.

To Increase or to Reduce Weight

Thin people after strengthening their nerves and digestive power by suitable brainy foods increase their weight by the proper use of cereal foods. Similarly in combination with simple exercises women can develop the neck, chest and arms.

One chronic sufferer, weighing 415 pounds, unable to exercise, took correct combinations of ordinary daily foods and reduced over 150 pounds, gaining strength with firmness of flesh and losing rheumatism.

Eczema, other skin troubles, and all blood diseases yield to suitable diet.

A Few Opinions

"Your criticism of osteopathy, physical culture, Fletcherism and fasting, in Booklet No. 2, is enlightening. Your recipe in Booklet No. 3, for clear complexion, bright eyes and alert brain is worth dollars to every one."

"Your little books eliminated chronic catarrh from my system in about three weeks. To put it weakly, I was astonished."

"My brain power and general efficiency have been doubled this year by selecting brainy foods. I have made a fortune in real estate and the credit is honestly yours."

"The government should investigate and teach the Brainy Diet System for the good of the nation."

Send ten cents for mailing. Send addresses of sick friends to—

G. H. BRINKLER, Food Expert, Dept. 72F, Washington, D. C.

*Memorize this address to give to friends in urgent need.*

Wire BRINKLER, WASHINGTON, D. C.

Four booklets which have taught many TO CURE themselves:

1. The New Brainy Diet
2. Diet versus Drugs
3. Effects of Foods
4. Key to Longevity

DIET

A typical advertisement of Quack Brinkler. The original occupied forty-four square inches.

THE GOVERNMENT PROTECTS THE PUBLIC

The investigation of Brinkler's fraudulent business by the government officials is interestingly described in the memorandum addressed to the Postmaster-General by the Solicitor of the Post-Office Department, Judge W. H. Lamar, and recommending the issuance of a fraud order against Brinkler. On May 22, 1914, Brinkler was called on to show cause on or before June 2, 1914, why a fraud order should not be issued against him. A continuance until June 15, 1914, was granted at the request of Brinkler's attorney, Nathan B. Williams of Washington, D. C. On that date, the hearing of the charges commenced and continued for ten days. Attorney Williams was assisted by Fred B. Rhodes, another Washington attorney, who acted as associate counsel for Brinkler. After the hearing, Brinkler was allowed three weeks in which to file a brief which, when filed, was supplemented later by an additional brief and further evidence. The Solicitor for the Post-Office Department reviewed all the evidence and papers in the case and reported the matter in part as follows:

"The business of Mr. Brinkler is conducted through, and by means of, the United States mails. His advertisements appear in a large number of magazines of general circulation, and are all substantially to the same effect."

A typical advertisement was then quoted and attention called to some of the phrases contained in it. The report continues:

"The use of the expressions 'Popular Educational Food Campaign,' 'Official Investigating Committee,' and 'Food Expert,' Dept. 21E, [the 'key number' of the advertisement] Washington, D. C.,' is calculated to lead the reader to believe that the advertiser is connected in some way with the government, and that many persons are induced to remit ten cents for the booklet advertised under this belief is shown by the evidence. The booklet entitled 'The New Brainy Diet System,' which is sent to those induced to remit ten cents to the advertiser, does not contain an exposition of the 'new brainy diet system,' or give the purchaser any practical advice on diet, as the advertisement would lead one to believe, but is made up of matter advertising the system and Brinkler's alleged knowledge and ability. It consists of 48 pages, 28 of which contain nothing but alleged extracts from testimonials."

SOME OF BRINKLER'S CLAIMS

Then followed many quotations from the booklet to show the character of the matter it contained. These are a few of the quotations:

"The many ills flesh is supposed to be 'heir to' are simply the result of malassimilation of food materials, causing rebellion of the organs of the body against overwork in some cases, and insufficient nourishment in others."

"The cure of disease, therefore, lies in correcting the lack of proportionality—restoring the balance—by rearranging the diet so that the unsuitable preponderating elements are reduced and the neglected necessary elements are increased."

"The severest cases of vitiated Blood Diseases, congested organs, any kind of cold, fever, or nervous complaint, etc., can be cured by a judiciously selected diet."

"Gall Stones are dissolved and expelled by correct foods without an operation."

"Appendicitis, which is the result of inflammatory conditions due to wrong foods, is permanently cured by proper foods, without an operation. Urgency instructions by wire when necessary."

"Coughing, expectoration, blood-spitting and night-sweats have been cured within a few weeks in some cases."

"Cancer, which is not a living thing as many suppose, but an accumulation of decomposed matter, the products of unassimilable waste elements which the excretory organs have failed to eliminate and which the person has been unable to turn into healthy tissue—is dissolved, dispersed and expelled downwards through the excretory organs by curative foods.".

"Developing the Voice. There are special foods which will develop the voice when rightly combined and proportioned with other foods to suit the individual, according to the principles of the Brainy Diet System."

"Adults should learn how to control their sexuality by correct foods in daily use."

"Married women should learn how to regulate their families by certain foods in daily use."

The report then continues:

"The 'Official Investigating Committee' referred to in the advertisement and also in the booklet as having 'certified to each case' consists of a number of notaries public whom Mr. Brinkler employed for the purpose of going over the original testimonials and comparing them with the printed extracts therefrom, and the certification, it is admitted by the respondent, was not to the truth of the statement of the testimonials, but only to the fact that such extracts were correct copies of original letters."

SOME CASES

In investigating Brinkler's scheme, the post-office inspectors filled out six symptom-blanks and sent them, each with a dollar, to Brinkler for advice. One of these blanks was sent under the name "F. G. Harris" and described a number of more or less vague symptoms. Brinkler's reply to "Mr. Harris" consisted of a repetition of the symptoms given in the blank, followed by the statement that each condition was the result of improper diet. No suggestions were offered as to what constituted a correct diet in "Harris'" supposed case, but Brinkler offered to "undertake" the "case" for $60—cash in advance. For this amount he promised to send three letters of advice. As the $60 was not sent, Brinkler sent a "follow-up" letter urging again that the money be forwarded, and stating that he was positive that the Brinkler "food system" would "cure your complaints."

Under the name "E. M. Richardson," a symptom-blank was filled out purporting to come from a man who complained of no particular ailment but who declared that he had involuntary emissions about once a month. "Mr. Richardson" was advised that these emissions were caused by improper diet and would be "completely cured on a digestible brainy diet." Brinkler offered to undertake this case "for $50, prepaid."

Another symptom-blank, in the name "Walter Hadsel," was filled out describing symptoms that might have been due to carcinoma of the stomach and which were sufficiently serious to call for prompt and definite action. "Hadsel" was told that his condition was due to improper diet and that Brinkler would take the case for $75, prepaid. Brinkler was "positive that our food system will . . . cure your complaints."

A well-developed case of diabetes in a boy of 15 was described in a symptom-blank filled out under the name "Hamil." "Miss Du Pont" was a supposititious victim who described symptoms that might have been present in a case of serious disease of the uterus. An alleged case of syphilis was described on still another symptom blank under the name "Simcoe." In all of these cases, Brinkler declared that the conditions were due to improper diet and offered to prescribe diets that would cure the complaints, on receipt of the amount demanded. Brinkler asked $75, prepaid, for the "cure" of the 15-year-old diabetic; "Miss Du Pont's" case, he offered to undertake for $50, while in the supposititious case of syphilis described under the name "Simcoe," Brinkler advised that "proper diet" would relieve this condition and offered to take the case for $75. In discussing these various cases, Judge Lamar reported:

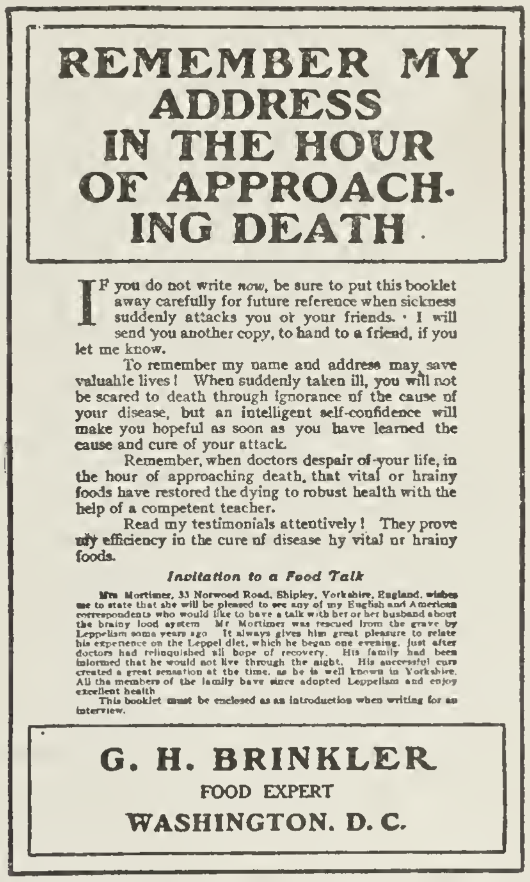
> "In each of the above tests it developed that the 'analysis and comments' on the case for which the $1 was paid consisted substantially of a statement that each symptom given by the remitter was caused by incorrect eating and could be relieved by following a course of diet prescribed by Mr. Brinkler. That this advice is given in response to all symptom blanks, no matter what symptoms are shown, was admitted by the respondents. In other words, the return made to the correspondent for his remittance is merely another advertisement of Mr. Brinkler's system. It is obvious, therefore, that the blank has no function if the course thereafter offered for sale by Mr. Brinkler is not purchased, other than to induce the correspondent to remit one dollar in the belief that he is to obtain therefor an analysis of his particular complaints and advice based thereon, when in fact the respondent intends only to reiterate the claims made for his system in the booklet with which the correspondent is already supplied and to quote a large fee for the practical advice which the correspondent was expected to receive for each remittance theretofore made by him."

At Brinkler's hearing the Post-Office Department had the assistance of some well-known practicing physicians of Washington, D. C. Quoting further:

> "These physicians were shown the symptom blanks sent to Mr. Brinkler by the inspectors and described above, and they agreed that the symptoms therein stated were common to a number of diseased conditions, and that it was impossible to tell from which of these conditions they arose in the cases in question. No evidence was offered by the respondent to controvert this testimony. These physicians testified further to the well-established fact that, as these different conditions required different treatment, in the absence of a diagnosis it was impossible to formulate a correct treatment or to tell whether improper food had caused, or a correct diet would relieve, the symptoms complained of. They also called attention to the fact that nightly emissions about once a month, referred to in several of the cases, were in fact no indication of disease at all, but a normal condition in a healthy man. They also stated that diabetes in a child of 15 was practically incurable and that syphilis was only amenable to drug treatment. The symptoms given in the 'Hadsel' case, they testified, might have arisen from cancer or ulcer of the stomach or a number of causes, and called for a most careful personal examination and treatment. Those given in the 'Du Pont' case would come from fibroid tumor, a polypus, a cancer or endometritis, necessitating also a most careful physical examination and perhaps an operation in order to save the patient's life.
>
> "These doctors also testified that the extracts from the booklet quoted above were misleading and in many instances without foundation in fact whatsoever. This is obvious to any one who had the slightest knowledge of medical science. It is apparent from a consideration of these cases that the purchaser of Mr. Brinkler's treatment is not only defrauded of the purchase price, but is subjected to the risk of grave harm in the postponement of proper treatment until too late.

GIRL CLERKS PRESCRIBE TREATMENT

> "The evidence shows that G. H. Brinkler is not a doctor and has had no education in medical subjects other than that obtained by the average man. Practically all his knowledge of dietetics has been obtained from reading a number of books on the subject and intercourse with others engaged in business similar to his own. He has in his employ a number of girls none of whom have any knowledge of the subject other than what he has told them. He has prepared a so-called 'model book' containing paragraphs applicable to a large number of symptoms. These paragraphs ascribe each symptom to improper food and state in substance that a proper diet will cure or relieve them. He has another 'model book' containing paragraphs prescribing a diet for the relief of all these symptoms, from which the letters sent when the course is purchased are made up. Unless a symptom not covered in these models is given, the correspondence is handled in an automatic way by the girl employees, one of them underlining the symptoms given and another specifying the paragraphs to be copied from the 'model book' in the reply, and so on. The same symptoms always elicit the same reply, regardless of the cause of the symptoms. Every case is accepted, no matter how serious the symptoms may be; and while it was testified that where the prospective said he had cancer, valvular heart trouble or any of a few other critical conditions, the paragraph to the effect that the correspondent 'is not paying for an experiment but a permanent cure' was omitted, yet, if a reply is not received in a short time, another letter goes out in which the sufferer is advised that Mr. Brinkler is positive that his 'food system will give you extra vitality and cure your complaints.'



**REMEMBER MY ADDRESS IN THE HOUR OF APPROACHING DEATH.**

If you do not write *now*, be sure to put this booklet away carefully for future reference when sickness suddenly attacks you or your friends. I will send you another copy, to hand to a friend, if you let me know.

To remember my name and address may save valuable lives! When suddenly taken ill, you will not be scared to death through ignorance of the cause of your disease, but an intelligent self-confidence will make you hopeful as soon as you have learned the cause and cure of your attack.

Remember, when doctors despair of your life, in the hour of approaching death, that vital or brainy foods have restored the dying to robust health with the help of a competent teacher.

Read my testimonials attentively! They prove my efficiency in the cure of disease by vital or brainy foods.

***Invitation to a Food Talk***

Mrs Mortimer, 33 Norwood Road, Shipley, Yorkshire, England, wishes me to state that she will be pleased to see any of my English and American correspondents who would like to have a talk with her or her husband about the brainy food system. Mr Mortimer was rescued from the grave by Leppelism some years ago. It always gives him great pleasure to relate his experience on the Leppel diet, which he began one evening, just after doctors had relinquished all hope of recovery. His family had been informed that he would not live through the night. His successful cure created a great sensation at the time, as he is well known in Yorkshire. All the members of the family have since adopted Leppelism and enjoy excellent health.

This booklet must be enclosed as an introduction when writing for an interview.

**G. H. BRINKLER**
FOOD EXPERT
**WASHINGTON. D. C.**

Frightening the victim is a method classic to quackery. Here is a page (greatly reduced) from one of Brinkler's publications in which he attempts to play on the fears of the reader.

"That wrong eating is a contributory cause in a great many diseases is unquestionable, but it is equally unquestionable that there are other factors; and to pretend to cure all diseases by the methods above described and with an utter ignorance of the cause of the symptoms and a disregard of all factors other than food and drink is to show a reckless disregard for the welfare of the public, and can only be ascribed to a deliberate intention to deceive and defraud. This is clear from the evidence in the case.

### BRINKLER'S CALLOUS INDIFFERENCE

"There are a number of complaints in this case showing that many persons have been defrauded by the respondent. The callous indifference of the promoter of this business to the actual conditions of those induced to correspond with him is well shown in the complaint of Mrs. Norris Williams of Wilkes Barre, Pennsylvania, who was induced by the advertising matter of Mr. Brinkler to telegraph him as follows:

" 'Urgent case; acute pulmonary consumption, four weeks, both lungs. 101 fever. Serious hemorrhage month ago. Slight cough. Patient in bed out of doors. Overgrown boy. Seventeen years, six feet. One hundred forty weight. Intellectual type, athletic clerk. Feeling distention after meals. Some constipation from milk and egg diet. Kidneys all right. Can afford $1.00 a day for food and get anything reasonably cooked. My husband died two months ago consumption so advise most reasonable price for treatment. Wire price collect immediately and I will telegraph money tomorrow. Letter follows.'

"Mr. Brinkler's reply was as follows:

" 'Wire forty dollars for quick relief followed by complete course.'

"Thereupon Mrs. Williams wired $40 for the treatment referred to, and received in reply instructions as to what food should be given to the boy and what food should be withheld from him. Shortly thereafter the boy was taken to a sanatorium and died. Mr. Brinkler was informed of this and of the destitute circumstances in which the mother found herself, and urged to make a refund, which he declined to do.

### TESTIMONIALS (OF COURSE) FOR DEFENSE

"Mr. Brinkler in his defense filed a large number of testimonials, in which the writers allege that they had been cured of a number of different diseases by his treatment, and also produced several witnesses who testified to the same effect. From the evidence in the case, however, I am satisfied either that the cure or relief reported was purely imaginary or that the purchaser of the treatment was deceived into ascribing to this system a recovery due in reality to natural causes, or was misled by temporary relief following a change of diet, or, if the sufferer was actually cured in any case it was necessarily the result of chance, the case being one in which the cause was actually a wrong diet and the diet prescribed being by good fortune a proper one for the case.

"Counsel for respondent have submitted a motion that the case be dismissed on a stipulation to the effect that hereafter Mr. Brinkler will confine himself to the sale of diets for various conditions and will not undertake to treat diseases through the mails. The circumstances of this case are such, however, that I believe the interests of the public can best be served by the issuance of a fraud order, and I therefore recommend that this motion be denied.

### BRINKLER INDICTED

"Mr. Brinkler was, on August 7, indicted by the Federal Grand Jury, sitting at Washington, for using the mails in furtherance of a scheme to defraud, in the conduct of the business described herein, and is now held in the sum of $3,500 for trial.

"The postmaster at Washington reports that Mr. Brinkler receives on an average 252 pieces of mail a day.

"I find that this is a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, in violation of Sections 3929 and 4041 of the Revised Statutes, as amended, and therefore recommend that a fraud order be issued against G. H. Brinkler, at 1322 Rhode Island Avenue, Washington, D. C."

The fraud order was issued August 19, 1914.

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**Organic Differentiation.**—Unity of internal structure combined with a great diversity of external forms is the great principle of organic differentiation.—Hugo de Vries, *Science.*

# Correspondence

## Kelling's Hemolytic Test

*To the Editor:*—It is difficult to criticize your editorials as they usually run, but I am surprised to find in The Journal, Sept. 5, 1914, p. 870, under the caption, "A New Serum Reaction for the Diagnosis of Gastric Carcinoma," an account of the Kelling hemolytic test.

Surely this cannot be a new test, for I have used it for about six years, and have applied the revised technic, using diluted serum and hen's corpuscles in 158 cases of suspected visceral malignant neoplasms and several hundred normal controls within the past two years. You state that further reports on the use of the serum test will be awaited with interest, yet the older technic was applied and reported by Weil, Blumgarten, Crile, Wittemore and others quite a few years ago. Furthermore, a couple of years ago I gave my opinion of the newer technic (diluted serums and alien corpuscles) in a lengthy article to the *Archives of Diagnosis,* October, 1912, which opinion I have not altered during my experience with the 158 cases since examined and checked by operation or subsequent history. In this article I also reviewed the literature to that date. Inasmuch as this has been published, and there have been no observations, so far as I know, tending to gainsay my conclusions, I see no reason to publish it again and thereby present it as a "further report."

You speak of the technic as simple. When properly set up with standard suspensions of hen's corpuscles, properly diluted serums, controls in plenty, with distilled waters, normal salts, various dilutions of normal serums and under strictly aseptic conditions, experience has shown me that the technic is tedious, to say the least, though, of course, less so than the complement-fixation test.

I am certain that all unfavorable reports from Americans are due to the fact that their technic has not been proper. Invariably, the men above mentioned used the older technic. Nor did they adhere strictly to this, some (especially Crile, Johnston, Canning) even going so far as to use the "reverse hemolysis" or destruction of corpuscles from suspected case with healthy serums. The work by Americans was usually stupid and entirely unfair to Kelling. So far as I know, I am the only man in this country who has applied and reported the new technic suggested by Kelling. So long as my results continue so pleasing as they have during the past two years, I shall use the test routinely in my work. Applied and interpreted as I suggested in the above-mentioned article, the test is quite specific.

There is one observation which I would like to note at this point. The hemolytic test cannot be applied to "mailed serums" and any degree of confidence placed in the results. The serum should be iced as soon as drawn and kept perfectly quiet until the test is set up.

In conclusion, the reaction is an old one. Both technics have been tried out by American laboratory workers and recorded in the literature, and are scarcely "simple" as regards their practical application.

B. G. R. Williams, M.D., Paris, Ill.

[Comment.—The title of Kelling's article is *"Blutserumuntersuchungen bei Karzinomatösen mit neuer verbesserte Methode"* (Study of the Blood-Serum in Carcinoma with New Improved Methods). The improvement consists in diluting the serum with 0.85 per cent. salt solution 1:10 and extending the time in the incubator (37 C.) to twenty-four, occasionally to forty hours. These changes, it would seem, make it quite proper to speak of the test as new. A complete review of all the hemolytic tests applied to carcinoma was not indicated. We still hold that further reports of results with Kelling's new method may be awaited with interest, because of the large number of positive results reported by him. Kelling also lays special stress on combining this test with search for occult blood in the feces. If both are positive, the diagnosis of carcinoma becomes highly probable.—Ed.]

### Insurance Companies and Fee Bills

*To the Editor:*—Since the passage of the employees' liability act physicians of Illinois are being flooded by the insurance companies with fee bills which they are requested to sign. These fee bills offer for many things a much lower price than we are accustomed to receiving. Insurance companies almost without exception do not pay the bills presented them without first asking for a reduction.

I wish to call the attention of the profession to the fact that in signing these fee bills they are simply signing away their right to charge a fair price for their services and *in return they get nothing, not even the promise of a single case,* for these fee bills are not sent to one physician in the community, but to many. The proper thing to do is not to sign these fee bills but to render bills in accordance with the established fee bill of the community.

G. W. Boot, M.D., Evanston, Ill.

### National Standard Requirement for Medical Practice

*To the Editor:*—Permit me to voice my approval of your recent editorial endorsing a national standard requirement for medical practice. The national medical board is a long felt want, and its establishment cannot come too soon.

Arthur I. Blau, M.D., New York.

## *Queries and Minor Notes*

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

### VACCINES, SEROBACTERINS AND LACTIC-ACID FERMENTS

*To the Editor:*—When the vaccine peddler visits me I wish not to appear rude to him. I try to give him a patient and respectful hearing. He seems to know all about pathology and gives me wonderfully helpful suggestions. He shows me testimonials from Dr. Tom and Dr. Dick and encouraging reports from Dr. Harry. These communications relate to experience with mixed vaccines in the treatment of "doubtful infections." I notice that most of these doubtful infections are classed as "rheumatism."

I have been reading and investigating some for the last fifteen years, and I do not like to have my line of vision bent through lenses fitted by these enthusiastic philanthropists. After some weeks of special search in the literature from disinterested sources, I find myself in a culdesac of uncertainty in regard to the use of vaccines. I found comfort in a Current Comment in The Journal, Jan. 25, 1913, under the title "The Reductio ad Absurdum of Vaccine Therapy." There is nothing pessimistic in the article, but rather the bringing down to earth of the man who entertains the wild notion that everybody should be vaccinated for every thing that might in the remote future attack him.

I wish to know in particular concerning the principle of sensitized vaccine as elaborated by Besredka during the last seven years. In an editorial in The Journal, Nov. 15, 1913, p. 1814, the use of the sensitized living bacteria as a means of combating infection in the human subject was discussed and condemned.. Now certain dispensers of biologic products have begun to "put upon the market a piece of goods" for which they claim special merit. I refer to the "serobacterins" which differ from the preparation proposed by Besredka only in the one feature of non-viability of the bacteria contained in the commercial product. I should like to know about these serobacterins. There is a most excellent article on the subject of vaccine therapy by Dr. R. M. Pearce in The Journal, Dec. 13, 1913, p. 2115.

Another inquiry I wish to make is concerning the merits of the *Bacillus lactis bulgaricus.* I have noticed some rather convincing reports from various sources, notably in The Journal, July 19, 1913, p. 164, by Dr. Clock of New York. Please inform me if there is merit in the tablet of this bacillus. Tell me if the live culture in tubes is to be preferred in the "implantation method" of treating intestinal infections.

You are aware that the practician in the smaller towns is handicapped in that he is almost driven to the use of hand-me-down preparations sometimes, yet I am sure that we get some benefit from these stock vaccines and other biologic preparations if we study our patients and discriminate.

S. H. Landrum, M.D., Altus, Okla.

Answer.—The editorial cited as condemning the sensitized bacteria whose use is advocated by Besredka bases such condemnation on the supposition that these preparations have not given any results superior to those obtained by the vaccines consisting of dead bacteria which are now on the market. The objection to sensitized living bacteria is that there is always an uncertainty as to the action of living bacteria in the animal body. No danger from this source can be attributed to the serobacterins because they consist of dead bacteria and, so far as is known, can do no more harm than other dead bacteria. In fact, it is claimed that the serobacterins or sensitized dead bacteria are preferable to other vaccines because the toxic products of the bacteria other than the immunizing property have been largely removed. With regard to these preparations it must be said that they are still on trial. Whether or not they will prove superior to the ordinary vaccines remains to be decided in great part by careful clinical observation.

In the last paragraph, Dr. Landrum has struck the keynote of the proper use of biologic preparations. Stock vaccines can do no harm if they are applied after a discriminating study of the patient. In fact, such a discriminating study will greatly limit their use because it will be seen that the stock vaccine rarely fits the case.

With reference to the *Bacillus lactis bulgaricus:* There is a large amount of literature to the effect that the *Bacillus bulgaricus* hinders putrefaction in the intestinal canal. While there may be some question as to a greater success in securing the implantation of this bacillus by administering it in "live cultures," the report of the Council on Pharmacy and Chemistry (The Journal, Dec. 6, 1913, p. 2084) shows that such a culture is likely to reach the consumer in a more active state than one in the form of tablets.

### TOXIC ACTION OF SODIUM CACODYLATE

*To the Editor:*—I have heard that subcutaneous injections of arsenic may cause blindness or other injury to the eye. I am using the cacodylate of soda, Clin Laboratorics, Paris, and I am anxious to know whether there is anything to fear from continuing the treatment too long. Can you give me any information?

Theodore Dunham, M.D., Northeast Harbor, Maine.

Answer.—Sodium cacodylate $(CH_3)\ 2AsO.ONa + H_2O$ is an organic preparation of arsenic in the form of a sodium arsenate in which two molecules of the methyl radical, $CH_3$, have replaced two molecules of hydroxyl, OH, in the arsenic acid. The arsenic is in a firm, organic combination and in the form of arsenic acid. It appears to have no therapeutic action and to be non-toxic so long as it remains in the form of an arsenate. It is slowly reduced by the organism to a compound containing the arsenic in the form of arsenous acid, and in this form the arsenic is therapeutically active and is slightly toxic. The toxicity of sodium cacodylate, however, is so slight that therapeutic doses do not give rise to toxic symptoms. Dawes administered 0.5 gm. to a rabbit weighing about 2,800 gm. without effect, although an injection of 1 gm. to a similar rabbit was fatal (Dawes, S. L., and Jackson, H. C.: Physiologic Action, Elimination and Therapeutic Application of Sodium Cacodylate Used Hypodermatically, The Journal, June 22, 1907, p. 2090.) These doses correspond to about 10 and 20 gm. in man. The toxic action of sodium cacodylate is similar to that of inorganic arsenic. There is nothing in the literature to show that sodium cacodylate has a special action on the eye. The production of blindness by other arsenic compounds, e. g., atoxyl, is well known. In administering cacodylate of sodium there seems to be no need to fear the production of blindness. An odor of garlic may sometimes be observed in the breath or in the urine. The long-continued use of the preparation might give rise to slight symptoms similar to those occurring after the administration of inorganic arsenic, such as puffiness of the lids and redness and smarting of the eye. Sodium cacodylate will be found described in New and Nonofficial Remedies, 1914, p. 42.

### RENEWING RUBBER GOODS

*To the Editor:*—Will you kindly publish a formula for renewing the rubber in soft rubber goods such as catheters, stomach tubes, etc. I have a number that are commencing to show signs of cracking and some of hardening.

R. L. B.

Answer.—We know no method for renewing rubber goods. Suggestions are published from time to time, however, as to the manner in which the life of rubber goods may be prolonged. It has been said that rubber goods kept covered with dry flour or powdered naphthalin in an air-tight receptacle will keep well. Another method is to keep the goods in contact with the vapors of ammonium carbonate. For rubber tubes it is claimed that two coats of a syrupy solution of para rubber in benzine will materially lengthen their life. The following is from the *Druggist's Circular* (September, 1907, p. 600):

"Under ordinary conditions soft rubber goods will often remain unchanged for years; some lots will rapidly deteriorate. Whether this is due to differences beyond the control of the manufacturer or the result of the use of cheap methods, we are not in a position to say. Both causes may operate to lessen the keeping qualities of the goods. Exposure to unusual heat is said to be bad for rubber; whether air at normal temperature exerts any influence, there is a difference of opinion. One should endeavor to buy the best only; and purchases should not be made very far ahead of demand. Keeping the goods in a moderately cool place is probably about the only thing to be done to protect them."

### RECIPE FOR AGAR-AGAR CRACKERS

*To the Editor:*—Is it possible to secure a recipe for agar-agar crackers? I should be grateful if you could tell me how to make them.

A. C. Kirksey, New Rochelle, N. Y.

Answer.—To make agar-agar biscuits it is only necessary to add the fine agar-agar to the flour used in making the biscuits. The amount should be, if possible, sufficient so that a dose (5 grams) may be included in each biscuit.

## *Medical Education and State Boards of Registration*

### COMING EXAMINATIONS

Colorado: Denver, October 6. Sec., Dr. David A. Strickler, Empire Bldg., Denver.

District of Columbia: Washington, October 13-15. Sec., Dr. George C. Ober, 125 B St., S. E., Washington.

Georgia: Atlanta, October 13-15. Sec., Dr. C. T. Nolan, Marietta.

Idaho: Wallace, October 6. Sec., Dr. John F. Schmershall, Jerome.

Illinois: Chicago, October 6-8. Sec., Dr. C. St. Clair Drake, Springfield.

Kansas: Topeka, October 13-15. Sec., Dr. H. A. Dykes, Lebanon.

Louisiana: New Orleans, October 29-31. Sec., Dr. E. L. Leckert, New Orleans.

Michigan: Lansing, October 13-15. Sec., Dr. Beverley D. Harison, 504 Washington Arcade, Detroit.

Minnesota: Minneapolis, October 6-9. Sec., Dr. Thomas McDavitt, Lowry Bldg., St. Paul.

Mississippi: Jackson, October 27-28. Sec., Dr. E. H. Galloway, Jackson.

Montana: Helena, October 6. Sec., Dr. William C. Riddell, Helena.

Nevada: Carson City, November 2, Sec., Dr. S. L. Lee, Carson City.

New Jersey: Trenton, October 20-21. Sec., Dr. H. G. Norton, Trenton.

New Mexico: Santa Fe, October 12. Sec., Dr. W. E. Kaser, East Las Vegas.

Oklahoma: Muskogee, October 6-8. Sec., Dr. John W. Duke, Guthrie.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

West Virginia: Clarksburg, October 13. Sec., Dr. S. L. Jepson, 81 Twelfth St., Wheeling.

### Higher Entrance Standards in Manitoba

The new announcement from the Manitoba Medical College, Winnipeg, says that beginning in 1915, senior matriculation (the equivalent of the twelfth grade course in one of the best four-year high schools) will be required for admission to the five-year medical course. The first year of the latter is devoted chiefly to the sciences, physics, chemistry and biology. The requirement in all the Canadian medical schools, heretofore, has not exceeded junior matriculation or completion of the third year (eleventh grade) of high school work.

### Higher Preliminary Requirements

According to the requirements of the medical practice act of Washington, graduates of 1918 and thereafter who desire to practice medicine in that state must show evidence of having completed at least one year of collegiate work in addition to graduation from an accredited four-year high school or an equivalent education. This requirement applies to all students matriculating this fall—for the session of 1914-1915 and thereafter. There are now twenty-one states which have adopted the requirement of one or two years of collegiate work as the minimum requirement of preliminary education.

### College Requires Intern Year

The announcement just received from the University of California Medical School states that all students matriculating this fall—for the session of 1914-1915 and thereafter—will be required to serve a fifth year as an intern in an approved hospital or in other special work. This is the fifth medical college in this country to adopt this requirement, the others being the University of Minnesota Medical School, Rush Medical College, Leland Stanford Jr. University School of Medicine, and the University of Vermont College of Medicine.

### Illinois May Report

Dr. C. St. Clair Drake, secretary of the Illinois State Board of Health, reports the written examination held at Chicago, May 12-14, 1914. The number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 177, of whom 140 passed and 37 failed. The following colleges were represented:

| College | Year Grad. | Total No. Examined |
|---|---|---|
| PASSED | | |
| Bennett Medical College | (1912) (1913) (1914,31) | 33 |
| Chicago Coll. of Med. and Surg. | (1912,2) (1913,3) (1914,20) | 25 |
| Hahnemann Med. College and Hosp., Chicago | (1910) (1913) | 2 |
| Jenner Medical College | (1914) | 1 |
| Northwestern University | (1913,2) (1914,16) | 18 |
| Rush Medical College | (1902) (1914,34) | 35 |
| University of Illinois | (1913) (1914,18) | 19 |
| University of Louisville | (1907) | 1 |
| University of Michigan, Homeo. Med. College | (1883) | 1 |
| Kansas City Medical College | (1888) | 1 |
| John A. Creighton Medical College | (1913) | 1 |
| University of Tennessee | (1899) | 1 |
| Marquette University | (1913) | 1 |
| National University, Athens | (1908) | 1 |
| FAILED | | |
| Bennett Medical College | (1912) (1913) (1914,2) | 4 |
| Chicago College of Med. and Surg. | (1910) (1911,2) (1913) (1914,6) | 10 |
| College of Med. and Surg. (Physio-Medical) | (1910) | 1 |
| Hahnemann Med. College and Hosp., Chicago | (1912) | 1 |
| Hering Medical College | (1913) | 1 |
| Jenner Medical College | (1912) (1912,2) | 3 |
| National Medical University, Chicago | (1903) (1909) | 2 |
| Northwestern University | (1913) | 3 |
| Rush Medical College | (1914) | 1 |
| University of Illinois | (1912) | 1 |
| Hospital College of Medicine, Louisville | (1904) | 1 |
| Detroit College of Medicine | (1910) | 1 |
| American Medical College | (1912) (1913) | 2 |
| Barnes Medical College | (1910) | 1 |
| St. Louis College of Physicians and Surgeons | (1907) | 1 |
| Meharry Medical College | (1907) (1914) | 2 |
| Royal University, Palermo, Italy | (1911) | 1 |
| University of Zurich, Switzerland | (1911) | 1 |

### Arizona July Report

Dr. John Wix Thomas, secretary of the Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, July 7-8, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 18, of whom 12 passed, including 3 osteopaths, and 6 failed, including 3 osteopaths. The following colleges were represented:

| College | Year Grad. | Per Cent. |
|---|---|---|
| PASSED | | |
| University of Colorado | (1913) | 82.8 |
| Northwestern University | (1904) | 82.1 |
| Rush Medical College | (1906) 78.8; (1913) | 81 |
| University of Maryland | (1914) | 81 |
| Barnes Medical College | (1902) | 77.3 |
| Washington University | (1912) | 84.7 |
| John A. Creighton Medical College | (1905) | 75 |
| University of Pennsylvania | (1898) | 81.6 |
| FAILED | | |
| California Eclectic Medical College | (1912) | 50.6 |
| Baltimore Medical College | (1913) | 67 |
| Jefferson Medical College | (1885) | 63.8 |

# Book Notices

THE EARLY DIAGNOSIS OF TUBERCLE. By Clive Riviere, M.D., F.R.C.P., Physician to Outpatients, City of London Hospital. Cloth. Price, $2. Pp. 260, with 30 illustrations. New York: Oxford University Press, 1914.

This is a highly instructive addition to the literature of tuberculosis. It deals with the recognition of incipient symptoms, chest signs and complications, and considers in minute detail the recognition of the earliest ravages of the disease. The summary after each discussion is helpful in fixing the points in the memory. Exhaustive chapters on special diagnostic tests (especially roentgenography) are great helps. The uses of tuberculin for diagnostic and therapeutic purposes are definitely stated and should be an aid to the general practitioner in confirming other signs and symptoms. Part 2 concerns itself with tuberculosis in children and with infection of the thoracic glands and hilum. The same procedure for proper diagnosis is pursued as in the first part of the book, and some statistics are added as to the occurrence of this lesion, which is perhaps the earliest stage of lung tubercle in childhood. The temperature as a guide to the existence of tubercle is shown to be at fault many times, as averages show a range of temperature in normal children by mouth from 97.4 to 100.5, depending on time of day and age. The conclusion is deduced that a few points must be allowed in childhood both above and below the normal limits for adults; but in all cases we should examine carefully into the cause of temperature fluctuation, such as rest or exercise, atmospheric temperature, rectal or oral, etc. Distinct fever is a valuable indication, but its absence does not exclude tuberculosis. The cutaneous test of von Pirquet is of value in the first two or three years of childhood. The percutaneous test of Moro and Dogono is of less value. The intracutaneous test (Mendel) made into the substance of the skin has the disadvantage of technical difficulty, and the reaction is painful. The subcutaneous test (Escherich) has the advantage that reaction can be obtained in active cases in which the cutaneous test is liable to prove negative. There are many other good features elaborately discussed which space forbids mentioning. All in all, the work is a valuable reference book.

THE SOURCE, CHEMISTRY AND USE OF FOOD PRODUCTS. By E. H. S. Bailey, Ph.D., Professor of Chemistry, University of Kansas. Cloth. Price, $1.60 net. Pp. 517, with 75 illustrations. Philadelphia: P. Blakiston's Son & Co., 1914.

The work of the chemical laboratory of the University of Kansas is generally well known among those interested in the subject. This work by Bailey coming from that laboratory will be found sufficiently complete to serve as a text for students of foods, and will be of aid to every householder in the judgment as to what is suitable and safe. A more general dissemination of the knowledge offered in it would result without doubt in economic betterment and in better nutrition. The plan followed for presenting the various foods and beverages found in the markets of the world is to discuss their source, method of preparation for sale, packing, preserving, shipping, composition, nutritive and dietetic value and use by people of different countries. The book is well illustrated and well prepared.

BLOOD-PRESSURE IN MEDICINE AND SURGERY. A Guide for Students and Practitioners. By Edward H. Goodman, M.D., Associate in Medicine in the University of Pennsylvania. Cloth. Price, $1.50 net. Pp. 226, with illustrations. Philadelphia: Lea & Febiger, 1914.

We have already a number of small treatises on blood-pressure which aim to describe the instruments and their use as well as the physiologic and pathologic variations of the blood-pressure. The work of Goodman is well written and gives the essential details and describes the principles clearly. It will be found very useful to the general practitioner who is finding the sphygmomanometer as necessary as the thermometer or the stethoscope and must have some guide to its use and to the interpretation of its results.

PSYCHANALYSIS: ITS THEORIES AND PRACTICAL APPLICATION. By A. A. Brill, Ph.B., M.D., Chief of the Clinic of Psychiatry, Columbia University Medical School. Second Edition. Cloth. Price, $3 net. Pp. 393. Philadelphia: W. B. Saunders Company, 1913.

This new edition of Brill's well-known book is enlarged by the addition of two chapters, previously published in a medical periodical, and by the insertion of the reports of some new cases and analyzed dreams. It is not the scope of a book review to enter into a critical discussion of the value of this method and who shall apply it, or to take note of the personalities which are being bandied about between adherents and enemies of Freud's school. Thus Brill says: "Our local critics have not changed; they are constantly rehashing what was said abroad, and which was adequately answered long ago. They have not offered a single new idea of their own." It must be confessed that the absolutely unbiased observer will consider this a rather unphilosophic attitude. A year or so ago psychanalysis and Freud were the engaging topic of neurologic convocations. To-day, while the method and the theories seem to have a place in the study and treatment of nervous disease, they are being considered in a more sane light and in a better atmosphere. It is to be feared that the reader will not glean from Brill's book this present-day atmosphere. So enthusiastic a pupil of Freud as Brill cannot write in the light of a non-combatant. The reader who wishes to obtain a knowledge of the extreme limit of the Freudian school at this time can gain it from Brill's book.

A SHORT PRACTICE OF MIDWIFERY FOR NURSES, EMBODYING THE TREATMENT ADOPTED IN THE ROTUNDA HOSPITAL, DUBLIN. By Henry Jellett, B.A., M.D., F.R.C.P.I., Master, Rotunda Hospital. Fourth Edition. Cloth. Price, $2.50. Pp. 508, with 169 illustrations. New York: Paul B. Hoeber, 1914.

In the preface the author explains that in a book for nurses much must be written "which is beyond what their everyday practice would at first sight show to be necessary. Causes must be explained and methods of treatment must be given which it is not for a nurse to carry out, but which it is necessary for her to understand." He believes that if the nurse's knowledge is limited to the bare essentials which will enable her to deliver a case of normal labor she will be unable either to give her patient the required treatment before the physician reaches the case, or to give intelligent aid to the obstetrician when he does arrive. In spite of this prolog, practically the only thing which might have been omitted from the book is the chapter on hydatidiform mole; though this subject is of undoubted interest to the nurse, she is not likely to be called on to make a diagnosis or to treat such a condition.

TROPICAL MEDICINE AND HYGIENE. By C. W. Daniels, M.B., F.R.C.P., Lecturer on Tropical Diseases, London School of Tropical Medicine. With a Chapter on Snakes by A. Alcock, C.I.E., M.B., F.R.S. Second Edition. Part II. Cloth. Price, $3 net. Pp. 278, with 107 illustrations. New York: William Wood & Co., 1914.

The second part of this manual deals with diseases due to the metazoa, which include the parasitic worms; in addition, infestation with insects and the action of insects as carriers of disease are described. The book ends with a chapter on snakes and snake venoms. The treatment appears to be as thorough as in Part 1, and a considerable number of infections dealt with are common to temperate climes, such as tapeworms, ankylostoma and trichinae.

THE MENTAL HEALTH OF THE SCHOOL CHILD. The Psycho-Educational Clinic in Relation to Child Welfare. Contributions to a New Science of Orthophrenics and Orthosomatics. By J. E. Wallace Wallin, Ph.D., Professor of Clinical Psychology, School of Education, University of Pittsburgh. Cloth. Price, $2. Pp. 461. New Haven: Yale University Press, 1914.

This is a collection of reprinted papers and addresses published and delivered by the author in recent years. As suggested in the preface, they form a unitary but not a systematic whole. The book is not a text for the beginner in the psychology of the growing child. For those who have made a start in the subject, the author's views on various large aspects of the question will be valuable.

## Miscellany

### Fire-Damp or Methane Indicator

An apparatus which may prove of great value in coal-mines has recently been invented by a resident of London and is known as the Williams fire-damp indicator or methanometer. The invention is a detector of the dangerous hydrocarbon fire-damp, a gas responsible for many serious explosions in coal-mines. The apparatus is made in two parts: one, an instrument which is very sensitive and responds quickly when fire-damp is present; the other, a dial indicator which shows the exact percentage of methane in the atmosphere. The detector and indicator may be placed side by side, enabling the miners themselves to know by what percentage of fire-damp they are surrounded, or the indicator may be placed at any convenient center. The connection between detector and indicator is electric. By either one of these methods a series of instruments posted in various parts of the workings forms a safeguard hitherto unknown.

It is thought that the introduction of fire-damp indicators will also advance the use of electric hand lamps for lighting purposes in mines. At present the old safety or oil lamp is used because its flame gives evidence of the presence of methane, but many accidents are attributed to the feebleness of its light. The inventor hopes to perfect a smaller instrument which can be easily carried by each miner. (A report by a scientific man with regard to the Williams fire-damp indicator and a descriptive pamphlet may be had from the Bureau of Foreign and Domestic Commerce, Washington.)

### Sugar Solution and Coagulation

Last year by a curious coincidence The Journal published, on the same page, reviews of two articles, one commending sugar solution for its efficacy in promoting coagulation and the other commending it for its property of inhibiting coagulation (June 7, 1913, pp. 1840-1841). E. Schreiber called attention to his success with intravenous injection of a 5 to 20 per cent. solution of sugar to arrest internal hemorrhage, while F. Kuhn commended sugar solution proctoclysis in prophylaxis of thrombosis. J. Löwy has been following Schreiber's directions in twelve cases of internal hemorrhage, as he reports in the *Prag. med. Wchnschr.*, Aug. 13, 1914, and states that a good effect was realized in two of the four cases of intestinal hemorrhage from unknown cause or from anemia. The tendency to hemorrhage seemed to be arrested in twenty-four hours after infusion of 200 c.c. of a 20 per cent. solution of grape sugar, and within a week, in the anemia case, the reds rose from 940,000 to 2,340,000. No effect was apparent in the case of hemorrhagic nephritis, and only two of the seven patients with hemoptysis showed any benefit, and this not more than might have been realized from the repose alone, without the sugar. Löwy regards his results as discouraging the use of the method, as greater benefit can be counted on with other, less complicated measures, except possibly for intestinal hemorrhage.

### Medical Education and the Public

"Thirty [should be ten] years ago, any ambitious youngster who had the price could find some 'college' ready to fit him out with the magic letters, 'M.D.'—ofttimes after a 'course of study' so petty that a plumber's apprenticeship was a liberal education by comparison. To-day, most of these diploma mills have been closed—though a few continue to do business at the old stand and to send forth wretchedly unprepared men to undertake that most responsible task in the world, the care of the sick. The country needs, not more doctors, but better ones. It is getting them. The medical course of study in a first-class medical college of to-day is calculated to try the earnestness as well as the ability of a would-be physician."—*Chicago Daily Journal.*

## Medicolegal

### Physician Held Entitled to Injunction Against Former Partner

(*Marvel vs. Jonah* (*N. J.*), *90 Atl. R. 1004*)

The Court of Errors and Appeals of New Jersey reverses a decree of the court of chancery so far as it refused the complainant an injunction. The court says that the vice chancellor before whom the case was heard in the court below held that the complainant was entitled to an accounting, and to have the partnership dissolved because of breaches of the partnership agreement by the defendant, but refused to enforce against the latter his covenant to refrain from practicing his profession in the city for a period of three years, in case the partnership was terminated because of violations of the contract by him. The conclusion of the vice chancellor that it would be unjust and unnecessarily oppressive to enforce the restrictive covenant against the defendant seemed to be based on the idea that, although the independent practice of his profession in that city by the defendant would result in a loss of patients by the complainant, yet, even after such loss, the latter's practice would still be so large as to be beyond his ability to cope with it without the assistance of others, and, consequently, that the restraint sought by him against the defendant would be of little value to him if granted. The premises, however, did not justify such a conclusion. If the complainant had built up a practice so large that he was unable to take care of it without the aid of qualified assistants, he was entitled to the emoluments thereof, and to be protected against the loss of those emoluments through illegal competition. It will hardly do to say that a man who has built up a business so extensive that he cannot handle it without the aid of a staff of assistants suffers no loss or injury by its diminution in volume to such an extent that he no longer needs assistance to carry it on, provided that what remains of it is sufficient to fully occupy his own time. Common experience is to the contrary. The right of the complainant to the aid of a court of equity to restrain the defendant from violating his covenant to refrain from practicing his profession in the city for three years after the termination of their partnership agreement did not depend on the extent of the injury to his business which would result from such violation. It was sufficient that such injury was material. Moreover, the damages arising from the breach of such a covenant as that now under consideration, would be continuing, accruing from day to day, and it would be impossible to ascertain the money loss sustained by the complainant therefrom with anything approaching accuracy, and an action for damages would afford no adequate remedy. Nor could it be really said that to grant an injunction would be unjust to the defendant because it would deprive him of practicing in the only field of his acquaintance. The fact that the performance of such a promise involves personal hardship, or pecuniary loss, to the promisor, affords no justification for non-performance.

### What Is Required of Physicians and Surgeons—Malpractice Liability and Evidence

(*Longfellow et al. vs. Vernon* (*Ind.*), *105 N. E. R. 178*)

The Appellate Court of Indiana, Division No. 1, affirms a judgment for $2,500 damages in favor of the plaintiff, Vernon, against Dr. Longfellow and another, partners, who had attended the plaintiff when she, at about the age of 5 years, had slipped and injured her right leg and ankle. It was charged that the defendants had negligently failed to discover a split in the bone of the leg near the ankle-joint, used ordinary gasoline to remove an adhesive bandage or plaster, placed on the badly swollen limb a bandage or plaster-of-Paris cast so tight as to greatly impede the circulation, from which blood-poisoning resulted which extended to all parts of the body, necessitating a removal of part of the bone between the knee and the foot and the scraping of the bone of the right shoulder, etc. The court holds that the evidence was sufficient to warrant the jury in returning a verdict against the defendants.

The court says that if the want of that reasonable degree of skill and learning ordinarily possessed by physicians and surgeons practicing in similar localities at the same time, or the negligence of the physician or surgeon in diagnosing the case or treating his patient, is the proximate cause of injury to the patient, the physician or surgeon is liable to answer in damages therefor. In other words, the implied obligation of the physician or surgeon to his patient is that no injurious consequences shall result to him from want of proper learning, skill, care and diligence. Failure to exercise the reasonable care and diligence required by the law may be predicated on things done that should not have been done, or on the negligent failure to do or cause to be done something that should have been done, in the particular instance.

The question of negligence, or failure to exercise ordinary skill and care in the treatment of any particular case does not depend on the professional skill and learning of the physician, but is to be determined from a consideration of his acts, conduct, omissions and treatment in the particular instance. If he possessed the highest degree of skill and learning in his profession, and failed to exercise the care and diligence required by the law in treating his patient, his skill and learning could not shield him from the consequences of such negligent treatment. On the other hand, if he did not possess the skill and learning required by the legal standard, but this treatment in the particular instance was proper, he could not be held liable for the want of such skill which resulted in no injury to the patient.

Whether the treatment of any particular injury or case was proper, or whether a surgical operation was skilfully performed, or whether a particular disease resulted from alleged negligent treatment, and like questions of science, must of necessity depend on the testimony of physicians and surgeons learned in such matters. In such a case as this, however, in which the issues presented the question of the defendants' want of professional skill and learning, and likewise that of negligence in failing to exercise ordinary or reasonable care and diligence in diagnosing and treating the plaintiff's injury or disease, all the facts and circumstances of the treatment, the condition and conduct of the patient, the acts and conduct of the physicians, their omissions, if any, and any other fact that may throw light on the questions at issue are proper matters of evidence to be given by any competent witness, either to support or to negative the charge of malpractice.

### Courts without Power to Order Physical Examinations

*(Yazoo & Mississippi Valley Railroad Co. vs. Robinson (Miss.), 65 So. R. 241)*

The Supreme Court of Mississippi holds that, until the legislature chooses to authorize it by statute, the courts of that state have no power to compel plaintiffs in personal-injury cases to submit to physical examinations by reputable and disinterested physicians appointed by the courts. The court says that this important question has not heretofore been considered by it, and that it prefers, rather than determine whether the court below erred in the instant case in overruling the railroad company's motion, to have the plaintiff submit to such an examination to be made at the expense of the company, to settle question of the power of the circuit courts of Mississippi to make the order the company requested by its motion. An examination of the decisions of the state courts on this point discloses irreconcilable conflict. The Supreme Court of the United States said, in Union Pacific Railway Co. vs. Botsford, 141 U. S. 250: "The order moved for, subjecting the plaintiff's person to examination by a surgeon, without her consent and in advance of the trial, was not according to the common law, to common usage, or to the statutes of the United States." This expression applies with equal force to the practice, the common usage and statutes of Mississippi. Whatever may be the rules and practice of other states, the common law controls here until the legislature chooses to act on the question.

# *Society Proceedings*

## COMING MEETINGS

Amer. Academy of Ophthal. and Oto-Laryn., Boston, Oct. 19-21.
Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
American Association of Railway Surgeons, Chicago, Oct. 14-16.
Delaware State Medical Society, Wilmington, Oct. 13-14.
Idaho State Medical Association, Boise, Oct. 8-9.
Mississippi Valley Med. Assn., Cincinnati, Oct. 27-29.
Nevada State Medical Association, Reno, Oct. 13-15.
New Mexico Medical Society, Albuquerque, Oct. 5-7.
Southern Medical Association, Richmond, Nov. 9-11.
Vermont State Medical Society, Rutland, Oct. 8-9.
Virginia Medical Society, Washington, D. C., Oct. 27-30.
Wisconsin State Medical Society, Oshkosh, Oct. 7-9.

## AMERICAN ROENTGEN RAY SOCIETY

*Fifteenth Annual Meeting, held in Cleveland, O., Sept. 9-12, 1914*

The President, Dr. Sidney Lange, Cincinnati, in the Chair

### Officers Elected

The following officers were elected for the ensuing year: president, Dr. Alfred L. Gray, Richmond, Va.; vice-presidents, Drs. W. H. Stewart, New York City, and D. R. Bowen, Philadelphia; secretary, Dr. Willis F. Manges, Philadelphia; treasurer, Dr. Leonard Rey, Buffalo, N. Y.; member of executive committee, Dr. H. W. Van Allen, Springfield, Mass.

### The Interpretation of Pericolic Membranes

Dr. E. H. Skinner, Kansas City, Mo.: The disposition to take roentgenograms of the abdominal viscera at their face value is extremely dangerous, as there is probably nothing which lends itself so easily to misinterpretations of thought. The increasing use of fluoroscopic palpation in both the horizontal and vertical positions will help to eliminate many faulty impressions of single roentgenograms.

#### DISCUSSION

Dr. George E. Pfahler, Philadelphia: If the surgeon and roentgenologist would work together more, we would make better progress. I gathered from Dr. Skinner's paper that he considers as diagnostic signs the defects in filling and dilatation of the cecum as the result of constriction above. The condition of reverse peristalsis is an important one to observe.

Dr. A. W. Crane, Kalamazoo, Mich: Roentgenologists have a great responsibility in advising surgeons concerning operations on the intestinal tract which they interpret as stasis. If we pay attention to the clinical laboratory and the physiology of the gastro-intestinal tract, we can be of great assistance. Whenever we have a kinking of the intestinal tract it gives rise to auto-intoxication, and to the absorption of putrefactive products. That gives a reaction in the urine which is definite, namely, the indican reaction. Whenever indican is found in the urine, there is a deficient secretion of hydrochloric acid in the stomach. Food material is not digested in the stomach. The hydrochloric acid is secreted, not for the purpose of digestion, but for the purpose of sterilization, primarily. Even water taken into the stomach is not absorbed, nor are the proteins in the stomach absorbed by it, but by the intestinal canal. The present physiologic view of the stomach is that it is a sterilizing chamber, and that the hydrochloric acid is the material which accomplishes the sterilization. When the condition of intestinal stasis exists, indican appears in the urine and the patient presents symptoms of auto-intoxication. That is not a surgical case unless there is a definite obstruction which causes dilatation. If hydrochloric acid be administered, it will often cause a disappearance of the symptoms. Therefore, many of these patients who do not receive such treatment, but who are subjected to a short-circuiting operation, are not relieved permanently of auto-intoxication. It is here that the roentgenologist can be of much service, especially if he calls the clinical laboratory to his assistance. He is not warranted in advising surgical operation when he discovers evidence of kinking in the bowel. It is merely a question of how much harm is the kinking doing.

Dr. A. M. Cole, Indianapolis: I have examined quite a number of patients who had a short-circuiting operation and, much to my surprise, as well as that of the surgeon, I found that there was still some stasis present. I think we are apt to see too much in roentgenograms of the intestinal tract. Adhesions, kinks and ptosis undoubtedly are present, and a few require surgical intervention, but there is no doubt that some of these patients are perfectly well. Function is the important question to be considered. Is the stasis due to organic disturbance, or to the fact that the patient is anemic, atonic and tired? It has been my experience that under proper hygienic régime many of these patients have become perfectly well in from three to six months. All the intestinal symptoms disappeared. No matter how many kinks and bands may be present, if function is not interfered with, there is no necessity for surgical intervention. We assume a great responsibility when we advise operation because we find evidence of anatomic abnormalities in the intestinal tract.

Dr. George C. Johnston, Pittsburgh: One may demonstrate kinks in almost every case, but that does not mean anything if the kinks open up and the bowel empties itself. The mere existence of ptosis, adhesions, kinks and membranes means nothing unless these structures interfere with the functional activity of the intestinal tract. When they do, the case should be referred to the surgeon, but not otherwise.

Dr. James T. Case, Battle Creek, Mich: The key-note of this whole problem is function. The question does not hinge on the presence of kinks, bands and adhesions, but on function. The examination should not be confined to the colon or ileum, but the entire gastro-intestinal tract should be examined roentgenographically. Nevertheless, we must lay sufficient emphasis on intestinal stasis. Personally, I do not believe that short-circuiting is a solution of the question. That kinks can be shown roentgenographically is an accepted fact, but function is the condition that must be studied. Everyone has seen many cases of Lane's kinks which did not obstruct; these are not surgical cases. I think ileocecal-valve insufficiency is responsible for many cases.

### The Protection Necessary When Using the Harder Rays

Dr. H. W. Van Allen, Springfield, Mass.: These conditions should be fulfilled in each case: (a) The target should point away from the operator. (b) The tube should be more than 6 feet from the operator. (c) Lead, 1/16 of an inch in thickness, should be on three sides of the switch booth, and 1/8 inch thick on the side directly between the tube and the operator. Between this lead and the operator must be some material capable of absorbing the secondary rays caused by the gamma rays striking against the lead. A good arrangement is to place the lead outside of the wood material of the booth. (d) The booth should be ventilated as the depressive effect of ionized air is harmful. These are equally effective with all kinds of tubes, regardless of their type. It is with the deep therapy that new protective precautions are needed.

The new method of cross-fire treatment increases the time per patient materially, and as we will have in the near future tubes which give almost pure gamma rays in large quantities, with little limit to the length of time such tubes can be kept active, it is evident our danger as operators will be greatly augmented. Of all of the above elements of safety, distance is of the greatest importance.

The first essential of tube protection is that it should be a non-conductor of electricity. It should be as resisting to the Roentgen ray as possible. It should be as light weight as posible. For neither of the two latter requirements is glass ideal, several substances being more practical. Many refinements of technic can be added to such a tube-covering, as devices to cool the tube with forced air current. It should carry some means for holding the filters, as these are better so placed than on the patient. This will avoid burns from a secondary ray. These tube-coverings should be as small as possible to facilitate their use in depressions, as the neck, groin and perineum.

### Roentgen Diagnosis of Lesions of Vermiform Appendix

Dr. H. M. Imboden, New York City: Retention of cecal contents after the cecum is apparently empty should be regarded as suggestive of chronic appendicitis. A tender area definitely located in the course of the appendix must be regarded as very suspicious. The Trendelenburg position affords opportunity to study this area unapproached by any other. Stereoroentgenography affords the increased amount of information usual to this method in general.

#### DISCUSSION

Dr. A. Howard Pirie, Montreal: I watched a barium-filled appendix for three weeks and then had the opportunity, forty-three days later, to examine the appendix, which had been removed. It was still filled with the barium. The patient in that case was suffering from gastric symptoms. The appendix was not referred to in any way. After I examined the patient roentgenographically I said that she ought to have an attack of appendicitis because the appendix contained barium. Three weeks afterward she had the attack, with abscess formation. I do not know whether there is any coincidence in the fact of the barium having been given and the attack of appendicitis. I hope not.

Dr. Paul Eisen, Chicago: In every case of appendicitis examination of the stomach is of the utmost importance. Many patients are sent to us with a diagnosis of ulcer of the stomach, and on examination we find pathology in the appendix. These cases have a large six-hour residue in the stomach.

Dr. George E. Pfahler, Philadelphia: If this bismuth stays in the appendix for such a length of time, why was the appendix not filled with fecal material or food residue before the bismuth got into it? Why did not that stay and crowd the bismuth out?

Dr. D. R. Bowen, Philadelphia: I had one case in which a pin was found in the appendix. It had been lodged there for forty-two days, to my certain knowledge, and if I can accept the statement of the patient it was there for several months, and during all that time there were no symptoms referable to the appendix. The patient was examined because she was known to have swallowed some pins at one time, and also because she had some pain in the left iliac fossa. When the appendix was removed it was found acutely inflamed, enlarged and deformed. I cannot help but feel that in Dr. Pirie's case the barium had something to do with the attack of appendicitis.

Dr. E. H. Skinner, Kansas City, Mo.: In one of my cases there was an appendix shadow for six days after the bismuth meal. This case showed a duodenal ulceration, and a gastro-enterostomy was done, the appendix being removed at the same time. On examination it appeared to be perfectly normal. One can frequently see the appendix forty-eight hours after a bismuth meal, but not before, so that probably the appendix fills as a result of antiperistalsis of the bowel.

Dr. B. C. Darling, New York City: Whether the appendix fills in a certain time or does not, depends on whether it was empty before the bismuth got into that region. Any observation in this connection, to be of value, must be based on an examination of may hundreds of cases. I do not see how the mere fact of retention in the appendix can be taken to mean anything in particular.

Dr. L. T. Le Wald, New York City: I think that the retention of bismuth in the appendix is an indication of a sluggish function of the appendix. We examined three cases of diverticulitis which came to operation. They showed a retention of bismuth in the pockets, the bismuth remaining there for over a week.

Dr. A. Howard Pirie, Montreal: When the patient is in an upright position, with the appendix hanging down into the pelvis, the fluid contents of the ileum are churned up when they reach the cecum, and when this material begins to settle, the heavy part goes down, and if the appendix hangs down straight this material will settle in the appendix. The same may be true when the patient is lying down, if the appendix hangs down over the pelvic brim. That was the case in my patient and probably was the reason why the barium salt was retained in the appendix for so long a time.

Dr. James T. Case, Battle Creek, Mich.: These cases can be examined fluoroscopically. I have seen the appendix in 600 cases, and then I stopped counting. The essential point is not whether the appendix is filled or not, but the fact is that the appendix does not participate, very actively, at least, in the peristaltic movements of the cecum. There is an antiperistalsis which I have demonstrated by means of roentgenograms, which showed the transfer of the material from the descending colon and the hepatic flexure by a so-called mass movement, clear across the transverse colon. Antiperistalsis is a very important factor in normal digestion. If antiperistalsis occurs, this material in the colon will get into the appendix and even back into the ileum.

Dr. W. H. Stewart, New York City: If there is a retention of material in the appendix for many days, it certainly means a loss of function on the part of that organ, probably the result of some irritation. I believe that in every one of these cases there is some pathology in the appendix.

Dr. A. W. Crane, Kalamazoo, Mich.: Except in catarrhal appendicitis the lumen of the appendix is closed, and as soon as the lumen is closed there is progressive sepsis in the appendix. Appendicitis means bacterial activity. When the appendicitis begins as a catarrhal process the bismuth never enters the appendix. If bismuth can be demonstrated in the appendix, I believe it means that that is not an inflamed appendix. Such an appendix certainly is not the seat of a stricture. When we cannot show the appendix in the roentgenogram, and we can demonstrate a pain point in the region of the appendix, it suggests appendicitis. Here, as in other portions of the gastro-intestinal tract, we ought to be very careful about our advice.

(*To be continued*)

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## COLORADO STATE MEDICAL SOCIETY

*Forty-Fourth Annual Meeting, held at Boulder, Sept. 9-11, 1914*

(*Concluded from page 1134*)

### Some of the Professional Responsibilities of the Physicians of Colorado

Dr. O. M. Gilbert, Boulder: Almost every physician in Colorado should be an expert in the diagnosis and management of tuberculosis. The frequency with which a case is permitted to pass unrecognized through the really incipient stage, in which a cure is almost certain, is appalling. Few influences have been more potent during the past two decades in bringing the practice of medicine up to its present high standard than the medical society. There the best that is in us is stimulated, while our petty differences, which are so unworthy of our high calling, soon sink into oblivion.

There has been entirely too much special and indiscriminate legislation on medical matters. At the last session of the California legislature, for instance, thirty-nine bills were introduced which had to do in part or in whole with medical or health affairs. Much would be gained by the repealing of about two-thirds of the laws of this nature that are now on the statute books, and follow by creating a health commission or department of public health, with its duties and powers well but broadly defined, which could deal efficiently with many of the affairs which are now dealt with so inefficiently by the special acts.

### Acute Intestinal Obstruction

Dr. C. E. Tennant, Denver: Three factors are extremely important to the successful care of bowel obstruction. The first of these is the early recognition of the lesion; the second, the immediate exploratory effort, and the third, the good judgment and originality of the operator, who devises methods whereby bowel section may be avoided, even though the early circulatory and necrotic changes may have already commenced in the bowel wall.

In briefly summing up the means at hand for reducing the present high mortality attending acute bowel obstruction the following four important rules should be observed: first, the early recognition of the lesion even at the expense of exploratory laparotomy; second, the total abstinence from all purgative laxatives and ingestion of fluids which may hasten the rotation of the intestine and its attendant circulatory embarrassment; third, the frequent stomach lavage prior to and often after the operation; fourth, to bear in mind that unless absolutely indicated, the penalty for bowel resection at this time is a greatly increased hazard for the patient.

### Use of Amniotic Membrane in the Prevention of Peritoneal Adhesions

Dr. C. B. Lyman, Denver: I have operated in twenty cases in which the membrane has been employed; most of these were cases in which adhesions had developed after abdominal operations and the symptoms were very distressing. All the patients have been completely relieved of the symptoms which had been in existence prior to the operation. Clinically, the results have been perfect in all cases.

### Modern Views on Biliary Calculosis

Dr. J. L. Mortimer, Denver: The absolute indications for operation are: 1. The acute infectious cholecystitis, not responding to a few days medical treatment. To this may be added peritonitis due to perforation of the gall-bladder or ducts. 2. Empyema and all suppurative processes of the gall-bladder region or liver. 3. Chronic choledochus obstruction, when medical treatment is without effect, and when intermittent hepatic fever sets in. 4. Chronic relapsing cholecystitis, when medical therapy fails. 5. Adhesions when therapy fails. 6. Hydrops vesicae follae, with persistent and severe irritative phenomena. 7. Acute intestinal obstruction in patients with a history of gall-stones. 8. When carcinoma is suspected.

### Tendon Transplantation Following Infantile Paralysis

Dr. C. G. McEachern, Denver: It is my opinion that every case of infantile paralysis can be benefited by surgical procedure.

### Treatment of Weak and Flat Feet

Dr. George B. Packard, Denver: We must aim to make passive motion possible without pain, spasm or deformity, and to strengthen the muscles, thus restoring function and overcoming deformity and obstruction. The indiscriminate use of foot plates may in some cases do a great deal of harm by weakening the muscular support of the foot. In mild cases or when the feet seem normal at rest, but abducted on weight bearing, the shoes may be modified in such a way as to correct the abnormal position. The next stage is when muscular spasm develops with increase of pain and abduction of the foot. It will be necessary now to put the foot at rest, and this can generally be done in the milder spasmodic cases by adhesive plaster strapping, the foot first gradually but rather forcibly being put into the corrected position. Arch supports may be used later in these cases but should not be used until spasm and resulting pain are relieved. In the more severe cases of this variety an anesthetic must be given, and plaster of Paris applied after the foot has been overcorrected. It is very important also to maintain dorsal flexion as well as adduction. If adhesion or bony changes have taken place, the same effort should be made to correct the deformity if possible by manipulation.

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**Medical Ethics.**—Good ethics, then, is to be found among surgeons who, following the teaching of Hippocrates and Aristotle of Celsus and Galen maintain that he is the upright scientist who pursues his art by the light of sound reason; who draws his conclusions and guides his practice by deductions founded on accurate observation, who observes that clear inductive method which is older than history; who abhors exaggeration and pretence; who practices square dealing; who conducts himself toward his fellows and toward the public as a generous and honorable man.—James G. Mumford, *Clifton Med. Bull.*

# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### Albany (N. Y.) Medical Annals

*September, XXXV, No. 9, pp. 479-526*

1 *Case of Adult Type of Poliomyelitis. H. C. Gordinier, Troy.
2 Modern Psychiatry as Related to Therapeutics. J. V. May, Albany.

1. **Case of Adult Type of Poliomyelitis.**—Gordinier reports two cases. The first was a case of rapidly ascending motor paralysis of the type of Landry, which began suddenly in the muscles of the lower extremities, extended rapidly upward, involving in turn those of the trunk, upper extremities and diaphragm, and without subjective or objective sensory disturbances, resulted in death from respiratory paralysis eight days from the onset. The second case was one of acute poliomyelitis in a young adult involving the muscles of both upper extremities and those of the left lower extremity. Death at the end of five days of respiratory paralysis.

Gordinier lays especial emphasis on the absence in his cases, together with many of the recorded cases, of the Landry complex in the literature, of mononuclear round-cell infiltration of the pia, and of the vascular walls, which is so characteristic pathologically of poliomyelitis. He believes from the study of his case and from a careful survey of the literature of Landry's disease, and that of poliomyelitis and multiple neuritis, that we still have a group of cases, identical or at slight variance with Landry's original description. These cases cannot be relegated either on clinical or pathologic evidence, to the adult type of poliomyelitis, or multiple neuritis. In view of the facts here presented, Gordinier believes that the term "Landry's Paralysis" cannot be dropped.

### American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

*September, LXX, No. 3, pp. 329-544*

3 *Experimental Ligation of One Ureter with Application of Results to Clinical Gynecology. W. C. Jones, Chicago.
4 Pseudostruma of Ovary. L. W. Strong, New York.
5 *Case of Rupture of Corpus Luteum with Intraperitoneal Hemorrhage. M. R. Bookman, New York.
6 Abdominal Wall Hernia. A. B. Keyes, Chicago.
7 *Mortality in Cesarean Section. G. M. Boyd, Philadelphia.

3. **Experimental Ligation of One Ureter.**—Jones has ligated the ureter in fifty-two dogs; and the results of this work together with observations on a personal clinical case of probable ureteral obstruction by accident, constitute the basis of this paper. Its length and detail do not permit of making an abstract. Therefore the original should be consulted.

5. **Rupture of Corpus Luteum.**—Bookman is of the opinion that suddenly increased intra-abdominal pressure of trauma predisposes to the rupture of the forming or newly formed corpus luteum. The small so-called hemorrhagic cysts of the ovary when ruptured may easily cause laceration and bleeding. Cases of intraperitoneal hemorrhage due to this cause are frequently mistaken for ruptured extra-uterine pregnancy or acute appendicitis. Ovarian apoplexy, ruptured hemorrhagic cysts of the ovary, ovarian and pelvic hematoceles (when due to no other cause), ovarian hematomata and hemorrhage into the peritoneal cavity from a ruptured corpus luteum, may all be grouped as having the same etiology, differing only in degree. With acute pelvic pain at or about the time of menstruation slight rise of temperature, signs of peritoneal irritation with some anemia and a history of straining, the existence of a ruptured corpus luteum must be kept in mind. Treatment of the mild cases is symptomatic, of the severe cases, surgical. Prognosis is usually good in all cases except in those with associated pathologic blood conditions.

7. **Mortality in Cesarean Section.**—Boyd cites forty-eight cases of cesarean section. He says that the mortality in cesarean section depends on the skill of the operator and the condition of the patient at the time of operation. In clean cases, operated on before labor, the maternal mortality should not be more than from 2 to 3 per cent. When the case is under careful supervision, the labor test does not necessarily contra-indicate the classical operation, but after the membranes rupture, there exists danger of infection. The classical operation should not be performed in cases undoubtedly infected. The chief indication for the extraperitoneal or transperitoneal section is the "neglected case," or when that is mildly infected. When, however, the patient is seen late in labor, and undoubtedly infected, then, because of the high mortality, probably 25 per cent., supravaginal hysterectomy must be performed.

### American Journal of Roentgenology, Detroit

*June, I, No. 8, pp. 313-330*

8 *Practical Results in Roentgen Ray Examination of Mastoid. S. Lange, Cincinnati.
9 Antero Posterior Position for Mastoid Roentgenography. P. M. Hickey, Detroit.
10 *Further Consideration of Roentgen Diagnosis of Luetic Skeletal Manifestations. P. Brown, Boston.

8. Abstracted in The Journal, Nov. 15, 1913, p. 1841.

10. Abstracted in The Journal, Nov. 8, 1913, p. 1743.

### Boston Medical and Surgical Journal

*September 17, CLXXI, No. 12, pp. 437-472*

11 *Treatment of Hemoptysis in Pulmonary Tuberculosis. N. B. Burns, North Reading.
12 Treatment of Phthisis by Pulmonary Compression. C. Floyd, Boston.
13 Present Status of Artificial Pneumothorax Therapy. J. A. Lyon, Rutland.
14 Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. H. D. Chadwick, Westfield.
15 Id. Should Method Be Used? F. T. Lord, Boston.
16 Roentgen Ray as an Aid to Diagnosis of Pulmonary Tuberculosis. P. C. Bartlett, Boston.
17 Id. H. W. Van Allen, Springfield.
18 Id. P. H. Cook, Worcester.
19 Diagnosis and Treatment of Tuberculosis in Childhood. W. C. Bailey, Boston.
20 Roentgen Ray in Tuberculosis of Children. W. J. Dodd, Boston.
21 Tuberculosis in Children. R. M. Smith, Boston.

11. **Treatment of Hemoptysis in Pulmonary Tuberculosis.**—Applying his principles to an actual case, the following procedure is the one adopted by Burns in these cases. The patient is placed in a semirecumbent position, usually flat on his back, with curved basin at side of face for expectoration. Nitroglycerin 1/100-grain dose under the skin is immediately given from an emergency hypodermic unit. An icebag is placed on the chest and cracked ice is given by mouth for a few minutes. This should not be continued indefinitely after the initial excitement is passed, for the icebag is likely to cause trouble if applied for more than an hour at a time. In the meantime the physician quietly encourages the patient. Only ten patients have died of hemorrhage at North Reading since the institution was opened in 1909. Morphin is given with great reluctance and only in hopelessly advanced cases, in which the sole indication is to preclude all possible suffering.

When the hemorrhage is so extensive that the blood rushes into the bronchial passages of the well lung, causing dyspnea and cyanosis, it is best to turn the patient on his side with his head over the edge of the bed, allowing gravity to exert its influence in withholding the blood in the lung the worst diseased. Burns emphatically discourages the routine use of morphin in the usual case of hemoptysis. It seems better to him to open the intestinal tract freely in such cases. He uses magnesium sulphate in full doses, provided there are no positive contra-indications, as extreme asthenia, enteritis or any ulceration in the bowels.

No solid food is to be given for some hours after the initial attack, but cold milk or cold bouillon can be taken in small amounts at regular intervals. A dram of lime water is added to each 8 ounces of milk to improve its digestibility and to add to the body's calcium content. At the end of eighteen hours, barring recurrence, or heavy streaking, soft solids may be given. The patient is kept as quiet as possible. If an aggravating cough is present, small frequent doses of codein or heroin may be given, and with impunity so long as the bowels are kept open. Sodium nitrite and calcium sulphid each in 1-grain doses may be administered to the patient at. three- to four-hour intervals for from twenty-four to forty-eight hours. Subsidence of streaking, as well as severe headache, call for discontinuance of sodium nitrite. Burns usually gives two doses of 1 ounce each of magnesium sulphate, one soon after the initial attack, and another on the second day. One week in bed with entire absence of streaked sputum is the requirement necessary before the patient is allowed up and about to any extent.

### Bulletin of Lying-In Hospital of City of New York

*June, IX, No. 4, pp. 249-342*

22 Technic of Extraperitoneal Cesarean Section. B. C. Hirst, Philadelphia.
23 Five Cases of Extraperitoneal Cesarean Section. J. W. Markoc, New York.
24 *Craniotomies Done in Hospital from 1903 to 1913. E. S. Gushee, New York.
25 Cesarean Section. A. B. Davis, New York.
26 Certain Aspects of Midwife Problem in Relation to Medical Profession and Community. G. W. Kosmak, New York.
27 *Revival of Obstetric Chair. J. W. Markoe, New York.
28 Serum Diagnosis of Pregnancy by Dialysation Method. C. F. Jellinghaus and J. R. Losee, New York.
29 Case of Birth Dislocation of Lower Femoral Epiphysis. E. D. Truesdell, New York.

24. **Craniotomies.**—From 1903 to 1913, there were delivered in the two services of the hospital, 52,133 patients. Among this number there were 322 craniotomies, 64 in the out-door service that is about ⅕ of 1 per cent. of the deliveries, and 258 in the hospital, or in about 1 per cent. of the patients delivered. In the hospital proper over one-half of the cases in which a craniotomy was done were emergencies. They numbered 167, and the majority or 125 cases, had had unsuccessful attempts at delivery by physicians or midwives. This leaves 91 cases of craniotomy which occurred directly under the care of the hospital, which is about two-fifths of 1 per cent. of the 21,584 deliveries in the hospital service. Of these 91 craniotomies, there were 21 cases of eclampsia with premature dead babies, and 7 cases of placenta previa with premature dead babies. In the most of these cases the after-coming head was perforated to insure rapid delivery and to prevent severe cervical lacerations.

The indications for craniotomy in the two services were: Contracted pelves, 121; fetal death, 265; hydrocephalus, 14; cervical contractions (noted especially in premature cases), 34; tonic contraction of uterus, 6; cases of rapid delivery in interest of mother, placenta previa, 4, and eclampsia, 2. In 101 cases craniotomy of the after-coming head was done. Of the remaining 157 cases the basiotribe was used in 65, the cephalotribe in 43, the cranioclast in 32. In the remaining 17 there was no note as to the instrument used. Among the 258 craniotomies in the hospital there were 119 primiparae, 137 multiparae and 3 were not described. Over two-thirds were vertex presentations.

The number of deaths of mothers in the hospital were 35, or 10 per cent., of the number of cases in which craniotomy was performed, or one-tenth of 1 per cent. of the deliveries. Of the cases in the tenements on the other hand there was only one death of mother and in this instance a midwife had been in attendance for some forty-eight hours before the hospital was notified. Of the 36 deaths in the hospital 30 were among the emergency cases, in the remaining 6 the cause was as follows: 2 eclampsia, 1 diabetes mellitus and toxemia, 1 shock following hysterectomy for ruptured uterus, 1 endocarditis and chronic nephritis, 1 placenta previa. Of the 30 deaths in the emergency cases, 18 died from shock or hemorrhage, 9 from sepsis and 3 from eclampsia.

27. **Revival of Obstetric Chair.**—In looking about for a means of compelling the patients to assume the upright or squatting posture, the thought came to Markoe that a chair might be improvised that would keep the patient in the proper position and at the same time be comfortable or as comfortable as any woman can be when undergoing the pains of labor. Hence a chair was constructed which is depicted in this paper. The chair, it is believed, will be most useful during the first and early part of the second stage and is not in any way intended as a delivery table, although it could be easily modified so that it could be used for both purposes. The illustrations would suggest that a chair may be so constructed that it could be carried from house to house and thereby facilitate its use in private practice.

### California State Journal of Medicine, San Francisco

*September, XII, No. 9, pp. 357-396*

30 Intimate Relation of Orthopedic Surgery to Neurology. H. W. Wright, Santa Barbara.
31 Treatment of Gastric and Duodenal Ulcer. R. Bine and E. Schmoll, San Francisco.
32 *Surgery of Gastric Ulcer. L. Eloesser, San Francisco.
33 Dose of Salvarsan. D. W. Montgomery, San Francisco.
34 Early Diagnosis of Cancer of Rectum. A. J. Zobel, San Francisco.
35 Psychotherapy in Urology. V. G. Vecki, San Francisco.
36 Photography in Relation to Medical Sciences. H. D. Power, San Francisco.
37 Case of Oidiomycosis. W. W. Roblee, Riverside.
38 Perforated Duodenal Ulcer. B. J. O'Neill and G. T. Courtenay, San Diego.
39 Value of High Frequency Current in Treating Calculi in Diverticulum. M. Molony, San Francisco.

32. **Surgery of Gastric Ulcer.**—Eloesser summarizes his views as follows: Acute ulcer is not to be treated surgically unless: (a) perforated; (b) bleeding obstinately, or (c) intractable by medical means. Hematemesis should not be made an indication for operation unless the presence of a bleeding ulcer can be reasonably sure. A preliminary transfusion of blood will often give time for diagnostic examination and benefit the patient meanwhile. Chronic callous ulcers suspicious of malignancy should be treated by resection and gastro-enterostomy. Chronic ulcers of evident innocence should be treated by gastro-enterostomy with or without pyloric closure. The results of resection are not sufficiently better than those of gastro-enterostomy to compensate for the added risk. Gastric procedures should not be carried out unless indicated by clearly demonstrable gastric lesions. At all operations for gastric ulcer, the abdomen should be carefully examined for extragastric irritative or infectious processes. The treatment of these may be more important causally than the treatment of the ulcer itself. Gastric operations are not causally but symptomatically therapeutic. Prolonged postoperative medical care is imperative.

### Canadian Medical Association Journal, Toronto

*September, IV, No. 9, pp. 757-852*

40 Medical Profession and Militia. J. A. Grant, Halifax.
41 Treatment of Empyema, Subphrenic Abscess, etc., by Aspiration Followed by Injection of Formalin Solution. A. McPhedran, Toronto.
42 Linitis Plastica. G. E. Armstrong, Montreal.
43 Hour-Glass Contraction of Stomach. Report of Three Cases. A. Primrose, Toronto.
44 Industrial Disease and Industrial Hygiene. C. J. Hastings, Toronto.
45 Canadian Practitioner's Diagnosis of Pulmonary Tuberculosis. A. F. Miller, Kentville, N. S.
46 Importance of Balkan Wars to Medical Profession of Canada. G. C. Jones.

### Cleveland Medical Journal

*August, XIII, No. 8, pp. 523-594*

47 Nature of Cutaneous Sensation, with an Instrument for Its Measurement. W. Timme, New York.
48 Paleolithic Giants and Dwarfs. T. W. Todd, Cleveland.
49 Gastric Surgery. F. C. Herrick, Cleveland.
50 *Impurities that May Occur in Nitrous Oxid. H. D. Haskins, Cleveland.
51 Office Practice in Rectal Diseases. S. Englander, Cleveland.
52 Mercuric Chlorid Poisoning. Case History. C. W. Race, Evanston, Ill.
53 Fate in Organism of Degradation Products of Protein. H. H. Biggs, Cleveland.

50. **Impurities That May Occur in Nitrous Oxid.**—Haskins found that the impurities present in nitrous oxid when too high a production temperature is used are ammonia and nitric acid, set free by heat dissociation of ammonium nitrate. When produced in a metallic apparatus, the cooled impure gas contains free ammonia. As low a production temperature as practicable should be used. In a closed apparatus there is no reason why the acid and ammonia should not recombine when cooled, forming ammonium nitrate and thus leaving no

ammonia or acid in the free state. If, however, the gas apparatus is metallic, some of the nitric acid is consumed in forming a salt with the metal, and the corresponding amount of ammonia cannot recombine with acid, so that it is left in the free state in the nitrous oxid. This poisonous gas must be removed by bubbling the nitrous oxid through dilute sulphuric acid.

### Delaware State Medical Journal, Wilmington

*July, V, No. 8, pp. 1-26*

54 Morphin, Limitations and Uses as an Aid to Anesthesia. J. S. Keyser, Wilmington.

### Indiana State Medical Association Journal, Fort Wayne

*September, VII, No. 9, pp. 397-460*

55 Direct Laryngoscopy, Bronchoscopy and Esophagoscopy with Modified Bruning's Bronchoscope. D. W. Layman, Indianapolis.
56 Prevalence and Manifestations of Malaria. G. D. Marshall, Kokomo.
57 Metastatic Infection. F. S. Cuthbert, Kingman.
58 Hemoptysis and Its Treatment. J. R. Stewart, Colorado Springs, Colo.

### Journal of Biological Chemistry, Baltimore

*September, XIX, No. 1, pp. 1-140*

59 *Variations in Fat Content of Blood under Approximately Normal Conditions. W. R. Bloor, St. Louis.
60 Researches on Purines. C. O. Johns and B. M. Hendrix, New Haven, Conn.
61 Urea and Total Non-Protein Nitrogen in Normal Human Blood: Relation of Their Concentration to Rate of Elimination. F. C. McLean and L. Selling, Portland, Ore.
62 Elimination of Phenolsulphonephthalein in Acute and Chronic Tartrate Nephritis. F. P. Underhill and N. R. Blatherwick, New Haven, Conn.
63 Inhibition of Autolysis by Alcohol. H. G. Wells and G. T. Caldwell, Chicago.
64 *Phosphorus Content of Casein. A. W. Bosworth and L. L. van Slyke, New York.
65 *Cause of Acidity of Fresh Milk of Cows and Method for Determination of Acidity. L. L. van Slyke and A. W. Bosworth, New York.
66 Proteins of Blood of Limulus Polyphemus. L. C. L. Alsberg, Woods Hole, Mass.
67 Metabolism of an Isomer of Xanthin and Some Isomers of Methylxanthins. S. Goldschmidt, New Haven, Conn.
68 Drying Urine for Chemical Analysis. W. W. Braman, Philadelphia.
69 Excretion of Creatinin by Normal Women. M. Tracy and E. E. Clark, Philadelphia.
70 *Studies in Carbohydrate Metabolism. Influence of Subcutaneous Injections of Dextrose and Calcium Lactate on Blood-Sugar Content and on Tetany after Thyropara-Thyroidectomy. F. P. Underhill and N. R. Blatherwick, New Haven, Conn.
71 *Comparative Efficiency for Milk Production of Nitrogen of Alfalfa-Hay and Corn Grain. E. B. Hart and G. C. Humphrey, Madison, Wis.

59. **Fat Content of Normal Blood.**—Bloor found that feeding fat in the ordinary way caused an increase in the fat content of the blood beginning in about one hour after feeding and reaching a maximum in about six hours. When the thoracic duct was tied there was no increase in blood-fat after fat feeding. Intravenously injected fat as casein emulsions or in colloidal suspension up to 0.4 gm. per kilo of body-weight—enough to increase the fat content 100 per cent., disappeared from the blood in less than five minutes. Since the particles were from $\frac{1}{2}$ to $\frac{1}{7}$ the size of the red blood-corpuscles, the disappearance could scarcely have been due to a straining out by the capillaries, but rather to a storage in some way or other, possibly by the liver, since it has been shown that the injected fat accumulates in largest amount in the liver. When amounts of fat up to 0.8 gm. per kilo in the form of egg yolk were injected, some of the fat persisted in the blood for several hours, which might have been due to the flooding of the temporary storehouses beyond their capacity, or to the influence of the lecithin in the egg-yolk fat. Fasting of from five to seven days may or may not produce an increase in the blood-fat, depending apparently on the nutritional condition of the animal. An animal which did not ordinarily show any increase in blood-fat in fasting, was made to exhibit the usual curve of increase of blood-fat in fasting by stuffing with fat food for a week before the fast. Of the narcotics used, ether was the only one which ordinarily produced a rise in the fat content of the blood during the narcosis. Chloroform produced a rise in blood-fat only when the animal had been stuffed with fat for some time previously. The "after rise" in the blood-fat, i. e., an increased blood-fat content during the two or three days following narcosis was observed after chloroform and morphin but not after ether (only one case examined). Bloor's results as a whole indicate that fat may be stored in two ways: (1) a temporary storage in which the fat may be quickly but loosely stored and whose capacity is limited, and (2) the permanent fat depots which take up fat slowly and release it slowly.

64. **Phosphorus Content of Casein.**—By treating a solution of casein in dilute $NH_4OH$ with ammonium oxalate and an excess of $NH_4OH$ and letting stand twelve hours, the authors found that the phosphorus content is reduced to about 0.70 per cent. This lower percentage can not be explained as being due to hydrolysis of casein and splitting off of phosphorus. While some of the casein is hydrolyzed, this portion does not enter into the final preparation and does not affect its composition, because the hydrolyzed portion is not precipitated by acetic acid while the unhydrolyzed part is. Analysis of various preparations of casein containing varying amounts of ash show a general correspondence between the ash and phosphorus content.

65. **Acidity of Cow's Milk.**—The authors claim that the acidity of fresh milk is due to the presence of acid phosphates. Titration of phosphoric acid with alkali, in the presence of calcium salts, results in hydrolysis of dicalcium phosphate formed during the titration, whereby free calcium hydroxid and phosphoric acid are first formed and then calcium hydroxid unites with more dicalcium phosphate to form insoluble tricalcium phosphate. As a result of these reactions more alkali is required to make a solution, containing calcium and phosphoric acid, neutral to phenolphthalein, than is required in the absence of calcium. The calcium must be removed previous to titration by treatment of 100 c.c. of milk and 2 c.c. of saturated solution of neutral potassium oxalate.

70. **Thyroparathyroidectomy.** — According to the authors hypoglycemia resulting from thyroparathyroidectomy is neither the cause nor the effect of the accompanying tetany; for although dextrose injections restore blood-sugar content to normal, such injections have little influence over tetany. Moreover, the condition of hypoglycemia precedes that of tetany. It is therefore suggested that the removal of the thyroids and parathyroids gives rise to two distinct effects, one being manifested on the blood-sugar regulating mechanism, causing hypoglycemia, the other acting on the nervous system, producing tetany. Calcium appears to be intimately associated with both effects, for injections of calcium lactate will temporarily restore blood-sugar to normal and also abolish tetany for a time. Calcium may play an important rôle in maintaining the equilibrium of the blood-sugar regulating mechanism during normal life.

71. **Milk Production of Nitrogen of Alfalfa Hay and Corn Grain.**—Data are presented by Hart and Humphrey on the comparative value for milk protein production of the nitrogen from alfalfa hay and the corn kernel. The data indicate that on the plane of intake used the nitrogen of alfalfa hay is as effective for milk protein building as that of the corn kernel. The acid amid nitrogen of alfalfa is very low in amount, constituting about 1 per cent. of the total nitrogen, while the amino-acid nitrogen makes about 10 per cent. of the total nitrogen. It is well established that amino nitrogen has nutritive value and that of alfalfa hay is probably not an exception. Their experiments give no indication of the value of the acid amid nitrogen. The real nutritive value of the nitrogen of roughages should rest on the nature of the total amino-acid content derived from more complex proteins and preexisting free amino-acids rather than on the proportion of "amid" nitrogen as found by the Stutzer method.

Alfalfa hay has specific diuretic properties and its ingestion was generally followed by a marked rise in the output of urine. This rise in renal activity caused a depression in the milk flow which again rose in volume as the alfalfa hay was withdrawn from the ration. The diuretic stimulus caused in some cases a shrinkage in volume of 5 to 6 pounds on a flow of 25 pounds daily. It is possible that this diuretic effect is due to salts contained in the hay, yet the possibility of the presence of specific substances of organic nature is not excluded.

### Journal-Lancet, Minneapolis

*September 15, XXXIV, No. 18, pp. 475-499*

72 Visit to Surgical Clinics of Russia, Finland, Sweden, Norway, Denmark and Belgium. W. J. Mayo, Rochester.
73 Management of Hare-Lip and Cleft-Palate Cases. R. E. Farr, Minneapolis.
74 Elephantiasis Lymphangitica. H. L. Staples, Minneapolis.

### Journal of Outdoor Life, New York

*September, XI, No. 9, pp. 257-286*

75 *Value of Tuberculin in Treatment of Tuberculosis. J. A. Miller, New York.
76 Those Who Help Themselves. H. Shigley, Colorado Springs, Colo.
77 Needs of Patients Discharged from Tuberculosis Sanatoria. C. F. Bolduan, New York.
78 After Sanatorium—What? S. E. Goldstein, New York.
79 Employment of Sanatorium Graduates. D. R. Lyman, Wallingford, Conn.
80 Letter to Life. C. H. Fahs, Madison, N. J.
81 Our Foreign-Born Population as Factor in Tuberculosis Problem. W. L. Rathbun, Otisville.
82 Frequency of Tuberculosis among Negro Laundresses. H. D. King, New Orleans.

75. **Tuberculin in Treatment of Tuberculosis.**—Miller says that the great majority of cases of tuberculosis had better never be treated with tuberculin at all, but for certain other cases the selection of which should always be left to an experienced physician, the results appear excellent. In general, he says, the more suitable cases are those in which the disease has become localized in the system. This is best seen in cases of so-called surgical tuberculosis, that is, of bones, glands or joints, etc., and similarly in the more localized chronic cases of pulmonary tuberculosis. The injection of small increasing doses of tuberculin seems to influence favorably the course of the disease as evidenced by diminution of general symptoms with a corresponding improvement in general health, and, particularly, by diminishing the liability to relapse when the patient goes back to ordinary methods of life.

Another way in which tuberculin can be given is by what is known as auto-inoculation. If a patient with tuberculosis takes physical exercise or does physical work it is shown that there is produced a reaction in the blood, due to the absorption of the poison from the diseased area. This poison, to all intents and purposes, corresponds to the artificial tuberculin without the necessity of the hypodermic injections. This method is now in use in a number of places and good results have been reported. However, this method should never be carried out except in cases in which the patients are under the very strict supervision of expert physicians. The results reported from it are similar to those reported by the use of injections of tuberculin, and the type of cases in which it is employed is the same. Certain it is that the tuberculin and similar methods of treatment designed to act favorably in tuberculosis by influencing the resistance or immunity to the disease have a limited field of usefulness. In the first place the cases which are suitable for this treatment are but a small portion of the whole number. Second, the amount of increased resistance obtained is relative and not absolute. Any increased resistance or immunity to tuberculosis which tuberculin treatment may produce is very limited. Tuberculin is in no sense a cure for tuberculosis, but is simply an aid to the other generally accepted methods of treatment, such as good food, fresh air, and the proper regulation of rest and exercise.

### Lancet-Clinic, Cincinnati

*September 12, CXII, No. 11, pp. 277-304*

83 Myoclonias—Paramyoclonus Multiplex. H. H. Hoppe, Cincinnati.
84 Examination of Policy Holders by Life Extension Institute. C. H. Castle, Cincinnati.
85 Graduates of Medical Department of University of Pennsylvania Who Have Taught or Practiced in Cincinnati. A. G. Drury, Cincinnati.

### Medical Record, New York

*September 19, LXXXVI, No. 12, pp. 489-530*

86 Thyroid Deficiency. E. Hertoghe, Antwerp, Belgium.
87 Intratracheal Insufflation. B. M. Ricketts, Cincinnati.
88 Epidemic of Typhus Fever in Van, Turkey. C. D. Ussher, Van, Turkey.
89 Diabetes Mellitus Following Interval Operations of Bilateral Mastoidectomy and Unilateral Exenteration of Ethmoid, Sphenoid and Maxillary Sinuses. V. Dabney, Washington, D. C.
90 Modification of Crile Cannula. A. Kahn, New York.

### Northwest Medicine, Seattle, Wash.

*September, VI, No. 9, pp. 257-290*

91 *Experiences with Radium in Treatment of Cancer and Other Morbid Growths. K. A. J. MacKenzie, Portland, Ore.
92 Ether Anesthesia. G. L. Closson, Seattle.
93 Nitrous Oxid and Oxygen Anesthesia. H. L. Geary, Seattle.
94 Local Anesthesia. T. Torland, Seattle.
95 *Sugar Solution by Proctoclysis in Postoperative Treatment. C. M. Barbee, Portland, Ore.
96 Jacksonian Epilepsy, Reference to Its Surgical Treatment. A. T. R. Cunningham, Spokane.
97 Use of Colored Lenses to Cut Down Heat Radiation and Neutralize Ultraviolet and Infra-Red Light Rays. F. F. Casseday, Portland, Ore.

91. **Radium in Treatment of Cancer.**—Although the range of MacKenzie's experience has been limited, he points with great satisfaction to the treatment of a considerable group of cases, which, treated by radium, have shown striking results, the best having been obtained in the treatment of malignant diseases, especially cancers. The complete list, however, includes also cases of sarcoma, rodent ulcer, angioma or nevi of different kinds, especially the prominent arteriovenous variety, pigmentary nevi, keloids and disfiguring scars, lupus, the tubercular form and lupus erythematosus, inveterate and chronic patches of skin disease, urethral caruncles, warts, moles and certain chronic neuralgias. In practically nearly all the cases treated, which have been selected with care, and apparent complete cure has been the result, and up to the present time no case has been encountered in which recurrence has taken place.

95. **Sugar in Proctoclysis.**—The results of Barbee's experience with sugar solution have been gratifying. Barbee says it is a valuable adjunct in treatment in which water is demanded and in which the stomach cannot be utilized for this demand. By careful observation and comparison in over 150 cases he is assured that postoperative shock is lessened, the circulation quickly equalized, vomiting diminished, thirst allayed, perspiration induced, kidney excretion increased, gas eliminated, ileus less common and, as in most of these cases in which the stomach cannot be utilized for several days, a valuable food element is constantly absorbed. Thus far he has met with only a few instances in which the patient did not satisfactorily absorb the solution. The most of these could be charged directly to faulty technic in the use of the "Murphy drip."

Sugar water is rapidly absorbed by the rectum, is practically non-irritant and seems to exercise a general stimulating effect. The strength of the solution used is 15 gm. of cane-sugar and 1 liter of water. It is administered by the (Murphy) drop method at the rate of 30 to 40 drops per minute. The rate may be increased or diminished according to the patient's needs for water, or according to the rate of absorption. This rate will use approximately 3 quarts of the solution in twenty-four hours. The approximate caloric value of the contained sugar is 200 large calories. Repeated urine examinations in many of the cases fail to show its presence in the urine. In two cases of gastro-enterostomy the solution ran continuously for seven days. Nourishment in no other form was given. The patients did not complain of the slightest hunger, kept their weights and no sugar appeared in the urine. These results lead Barbee to believe that the sugar administered by rectum is converted into glucose and utilized by the tissues.

The sugar water is started as soon as the patient is put into bed from the operating-table. If there be much shock, if the patient be deeply anesthetized or if vomiting, he is left flat until the position can be altered to a low Fowler, in which position proctoclysis is most successful. There are many conditions in which the patient must remain flat, but the great majority of cases may and should receive some elevation at the head. Within a short time the pulse increases in volume, the skin becomes warm and moist, followed by free perspiration, there is much less or no thirst, vomiting is lessened, kidney excretion increased and gas escapes. When these results are obtained and maintained, Barbee says, they are past postoperative shock and the fear of ileus. With a few exceptions these results follow the use of sugar solution by proctoclysis.

### Ohio State Medical Journal, Columbus

*September, X, No. 9, pp. 519-574*

98 Thymic Asthma. H. J. Morgan, Toledo.
99 Professional Ethics; Professional Jealousy and Other Matters. H. E. Beebe, Sidney.
100 Full-Time District Physicians: How the Plan Operates in Cincinnati. J. H. Landis, Cincinnati.
101 Rupture of Urethra Following Fracture of Pelvis. C. M. Harpster, Toledo.
102 Prescription, Facing Lenses and After-Treatment. B. L. Millikin, Cleveland, F. K. Smith, Warren, and M. D. Stevenson, Akron.
103 Unique Fracture Dislocation of Hip. F. J. Schmoldt, Cleveland.
104 Definite Plan for System of "Health Supervision" of School Children in Ohio. P. B. Brockway, Toledo.

### Pennsylvania Medical Journal, Athens

*September, XVII, No. 12, pp. 933-1006*

105 Early Diagnosis and Treatment of Syphilis. B. J. Wetherby, Wilkes-Barre.
106 State Tuberculosis Dispensaries. A. P. Francine, Philadelphia.
107 State Sanatoria for Tuberculosis. W. G. Turnbull, Cresson.
108 Multiple Papillomata of Vocal Cords. N. P. Stauffer, Philadelphia.
109 Study of Coagulation Time of Blood in Several Species. G. M. Dorrance, Philadelphia.
110 Case of Osteo-Arthritis of Spine. A. H. O'Neal, Wayne.
111 Opium Habit. D. J. Hetrick, Harrisburg.
112 Answers to Some Practical Questions on Use of Pituitary Extract in Obstetrics. J. O. Arnold, Philadelphia.
113 Experience with Crotalin at Oakburne Epileptic Colony. N. S. Yawger, Philadelphia.

### Southern Medical Journal, Mobile, Ala.

*September, VII, No. 9, pp. 687-764*

114 Malaria and Blackwater Fever in Southern Rhodesia. W. C. Gorgas, Ancon, Canal Zone.
115 *Arterial Hypertension and Hypotension in Medicine and Surgery. H. H. Roberts, Lexington, Ky.
116 Importance of Early Recognition of Paresis. J. K. Hall, Richmond, Va.
117 Amebic Dysentery. J. Kenan, Selma.
118 Intravenous Administration of Salvarsan in Babies. L. W. Elias, Asheville, N. C.
119 *Verrucose Dermatitis. H. H. Hazen, Washington, D. C.
120 Supreme Civic Law. O. Dowling, New Orleans.
121 Innocent Criminal. A. H. Cook, Hot Springs, Ark.
122 Obstetric Management from View Point of General Practitioner. I. Kimbell, Auburn.
123 Cesarean Section in Eclampsia. H. R. Shands, Jackson, Miss.
124 Diagnosis of Fibroid of Uterus and Importance of Early Surgical Interference. A. W. Ralls, Gadsden.
125 *Diaphragmatic Hernia. Report of Case. S. McGuire, Richmond, Va.
126 Factors Necessary to Make Correct Surgical Diagnosis. E. D. Newell, Chattanooga, Tenn.
127 Early Operative Treatment for Cranial Lesions. F. Y. Cronk, Guthrie, Okla.
128 Inflammatory Pathology of Tonsil. B. C. Willis, Richmond, Va.
129 Enucleation of Eyeball with Implantation of Gold Ball. M. H. Biggs and H. Norris, Rutherfordton, N. C.

115. **Arterial Hypertension and Hypotension.**—In the management of hypertension cases Roberts disapproves of the use of vasodilators. If the tension is above the danger line and it is imperative that immediate action be taken to prevent hemorrhage or acute dilatation, then, he says, there is nothing which will give more immediate or lasting effect than to resort to venesection. In all cases with marked hypertension the patient should be put to bed, and the eliminative forces should be increased and all fluids restricted. A low protein diet should be ordered and all those conditions which are intensifying the hypertension actively treated. For the management of those cases of hypertension in which the danger line has not been crossed, a select diet which is nutritious, but low in animal proteins, should be given. Massage, selective hydrotherapy and a systematic form of exercise, preferably taken in the open air, should be advised.

119. **Verrucose Dermatitis.**—Surgical treatment in Hazen's opinion is undoubtedly the quickest way of curing the condition. Salves and ointments are absolutely useless, except to prevent the spread of the malady and to allay itching. So far as Hazen's experience goes neither radium nor the Roentgen ray has helped, although he admits that either of these two remedies might prove beneficial. The best treatment is probably thorough curettage, under a general anesthetic, and cauterization with either the actual cautery or the acid nitrate of mercury. Preliminary curettage is to be preferred, because one can tell by the "feel" of the curet about how much tissue it is necessary to remove.

125. **Diaphragmatic Hernia.**—Following a stab wound in the posterior axillary line about the third intercostal space on the left side of the chest, McGuire's patient developed a diaphragmatic hernia. The history, symptoms, physical examination and roentgenographic findings all pointed to diaphragmatic hernia, with escape of practically the entire stomach into the left thoracic cavity. A very dense and firm adhesion was found between the cardiac end of the stomach and the posterolateral surface of the chest wall just opposite the stab wound. This was peeled loose after considerable effort and there was at once the escape of some stomach contents. The stomach was delivered through the opening into the thorax and an incision 3 inches long found on its anterior surface beginning near the esophageal opening and extending in the direction of its greater curvature. The edges of this incision did not bleed and showed evidences of cicatrization, hence it seems reasonable to believe that the rupture of the diaphragm and hernia of the stomach resulted from a blow and injury inflicted on the abdomen prior to the cutting, and that when the stab wound was made in the third intercostal space the vulnerating instrument cut the stomach which was already in the left thoracic cavity. The rupture in the diaphragm was about 4 inches in length, beginning near the esophageal opening and extending through the left leaf toward the sternum. The patient recovered.

### Washington Medical Annals

*September, XIII, No. 5, pp. 279-334*

130 Early Diagnosis and Prevention of Cancer. T. Abbe, Washington, D. C.
131 Case of Intestinal Adhesion. I. S. Stone, Washington, D. C.
132 Hay-Fever. D. G. Smith, Washington, D. C.
133 Case of Voluntary Displacement of Eye. A. H. Kimball, Washington, D. C.
134 Hairballs. D. S. Lamb, Washington, D. C.
135 *Postoperative Leukocyte Count, with Especial Reference to Appendicitis. C. S. White, Washington, D. C.
136 Case of Syphilitic Multiple Sclerosis; Diagnosed Clinically in Spite of Negative Laboratory Tests. T. A. Williams, Washington, D. C.
137 *Relation of Systolic and Diastolic Blood-Pressure in Diagnosis of Certain Acute Circulatory Conditions. H. H. Newman and M. B. Fischer, Washington, D. C.
138 Faith Cures and How They Act, Contrasted with Principles of Scientific Mental Healing. Case Reports. T. A. Williams, Washington, D. C.

135. **Postoperative Leukocyte Count with Reference to Appendicitis.**—After catarrhal appendicitis or mild infections, with removal of the source, White says, we may expect an initial leukocytosis, followed by a gradual and permanent decline in the absence of complications. After a mild infection and the cause removed, a secondary infection of a small area or a transient toxemia is noted by a moderate leukocytosis, usually present after the first week of the illness. Secondary infection of the peritoneum with good resistance shows an early and high increase of the leukocytes and will continue for an extended period; the pulse and temperature alone are misleading, but the leukocyte count as an adjunct gives much better insight into the mischief within the abdomen. With general peritonitis infection, with a constant low count or a declining leukocytosis, the prognosis is very bad.

137. **Systolic and Diastolic Blood-Pressure in Circulatory Conditions.**—Newman and Fischer believe that a fall in blood-pressure associated with decreased pulse pressure is indicative of heart failure; whereas a fall in pressure associated with increased pulse pressure is indicative of hemorrhage or shock. The cases they have observed seem to adhere to their theory. Slight changes in the systolic and diastolic relation are not to be relied on. Cases should be observed frequently in order that the state of the circulation be understood. Knowing the previous state of the circulation, a fall in pressure should be carefully studied, in order that proper interpretations of the changes be made. The authors urge that the systolic and diastolic blood-pressure be taken on all surgical cases, before, during and after the operation. Such findings, in their opinion, might be of service in diagnosis in circulatory crises. They further urge that blood-pressure readings be made on all cases likely to have acute circulatory conditions.

### West Virginia Medical Journal, Wheeling

*September, IX, No. 3, pp. 75-108*

139 Newer Concepts of Gall-Bladder Disease. W. W. Babcock, Philadelphia.
140 Diabetes Insipidus. Report of Case. J. W. Preston, Roanoke, Va.
141 Metastatic Infections of Joints—Etiologic Factors, Diagnosis and Treatment. E. F. Peters, Maybeury.
142 Skiagraphy and Interpretation of Negative. R. H. Pepper, Huntington.

## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Medical Journal, London

*September 5, II, No. 2801, pp. 421-456*

1 Educational Number.

### Edinburgh Medical Journal

*September, XIII, No. 3, pp. 193-288*

2 *Pathology and Etiology of Duodenal Ulcer. D. P. D. Wilkie.
3 *Bacteriologic Study of Tuberculosis of Lymph-Nodes in Children. A. F. Mitchell.
4 Healing Process of Infantile Bronchial Lymph-Node Tuberculosis. E. Rist.
5 *Bronchogeneous, Placentogeneous, Dermatogeneous, and Enterogeneous Infection with Tuberculosis in Infancy. C. von Pirquet.
6 *Gluteal and Crural Types of Fibrositis: Their Relationship to Spurious and Genuine Sciatica. L. J. Llewellyn and A. B. Jones.
7 Doctors in Some Recent French Plays. J. B. Adams.
8 Medicolegal Problem: Visual Conditions Necessary for Shooting. W. G. Sym.
9 Case of Dyspituitarism. A. W. Falconer.
10 Cesarean Section in Primipara with Ovarian Cyst. P. Leighton.

2. **Pathology and Etiology of Duodenal Ulcer.**—Although as a rule readily diagnosed, Wilkie says, a chronic duodenal ulcer may occasionally exist and give rise to none of the characteristic symptoms, the first evidence of such a "silent" ulcer being sometimes its perforation. "Silent" duodenal ulcers are met with most frequently in the subjects of arteriosclerosis, and are found for the most part on the posterior wall of the duodenum. Some toxic or irritative factor, usually within the abdomen and most frequently associated with the colon or appendix, is found in a large proportion of cases of chronic duodenal ulcer.

Wilkie suggests that probably many acute duodenal ulcers are primarily follicular ulcers from the breaking down of inflamed lymph follicles. Whatever be the primary cause of a gastric or duodenal ulcer, spasm of the muscular coats of the viscus is an important factor in determining its chronicity. The situation of the opposing ulcers on the anterior and posterior walls of the duodenum on the boundary zone of the areas supplied by the anterior and posterior branches of the supraduodenal artery suggests that a common vascular deficiency rather than a contact infection accounts for the peculiar tendency to chronicity and recurrence.

This vascular deficiency, Wilkie believes, may be due to arteriosclerosis, but probably it is usually due to spasm of the muscular coats of the duodenum induced by a slight local anemia consequent to strain on the supraduodenal vessels, this muscular spasm being favored by the increased vagotonus and the irritable condition of the autonomic nervous system which exists in such cases. The sex incidence of duodenal ulcer is explained by Wilkie on anatomic grounds. The relatively high pylorus and short fixed duodenum of the male allows of its vascular supporting ligament, the hepatoduodenal ligament, being exposed to strain, which in the female, with her relatively low pylorus and lax duodenum, is borne by the left border of the gastrohepatic omentum and lesser curvature of the stomach. The fixity of the male duodenum further predisposes to kinking at the first duodenal angle, and thus to an unduly long exposure of its first part to the acid chyme from the stomach, undiluted by bile or pancreatic juice, the regurgitation of which is impeded.

3. **Tuberculosis of Lymph-Nodes in Children.**—The total number of cases examined by Mitchell was twenty-nine, all being children under 12 years of age. At each necropsy particular attention was directed toward the three chief groups of lymph-nodes—the cervical, bronchial and mesenteric. Occasionally the tonsils were also examined. Cultures were isolated from twelve cases. Eight cases yielded cultures of human tubercle bacilli; in four cases they were of the bovine type. In the four bovine cases there was more extensive and advanced caseation of the mesenteric glands than of any other group of glands.

The bronchial and mesenteric glands of eighteen children who presented at necropsy no visible lesions of tuberculosis were tested on guinea-pigs for the presence of tubercle bacilli. In thirteen of these cases the cervical glands, and in two the tonsils, were also tested. Tubercle bacilli were demonstrated to be present in a single case in the bronchial glands of a child aged 4 years; the bacilli were of the human type. Of eighty cases of tuberculous cervical glands in children examined by Mitchell the bovine bacillus was present in seventy-one instances (88 per cent.), and the human bacillus in nine (12 per cent.). Without exception, the cases were those of children 12 years of age and under. The maximum incidence occurred during the second year of life. Most of the cases were brought to hospital on account of a lump in the neck, which had been present for a varying period. The average duration of the illness before surgical advice was sought was seven and a half months. A careful search was made in every case of the existence of pulmonary tuberculosis in the parents and other members of the household.

As regards the bovine cases, it seems more than a coincidence that in not a single case was there a history of pulmonary tuberculosis in other members of the family. In sixteen cases, however, one or more of the children in the respective families were affected with various forms of surgical tuberculosis. Out of eight cases of abdominal tuberculosis in children observed, seven have proved to be of bovine origin and one of human origin. All the children were under 12 years of age, and had been fed on raw milk. It is interesting to note that in the human infection the father of the patient suffered from chronic pulmonary tuberculosis.

5. **Infection with Tuberculosis in Infancy.**—For the first year of life, von Pirquet says, the bronchogeneous infection with tuberculosis is by far the most frequent way of entry (about 95 per cent. of all infections). The enterogeneous infection is not important—at least, not in Austria (1 per cent. to 2 per cent. of all infections). A placentogeneous infection of the fetus is a rarity, as is also stomatogeneous and dermatogeneous infection. Prophylaxis of infant tuberculosis has chiefly to deal with the separation of the nursling from the coughing adults.

6. **Gluteal and Crural Fibrositis.**—In attempting to differentiate the spurious sciatic pains of gluteal or crural fibrositis from the true sciatica, Llewellyn and Jones state, attention should be paid to the following points: 1. The pain is referred not to the sciatic nerve, but to the muscular and fascial structures. 2. There is an absence of tenderness over the nerve trunk and also of sensory paresthesia referred to its area of distribution. 3. The pain, too, differs from sciatica in that it

is less radiating, partaking rather of a diffuse feeling of tenseness or stiffness referred more especially to the fibrous attachments of the affected muscles or aponeuroses. 4. The pain in uncomplicated gluteal fibrositis is less severe, though more constant, and lacks, moreover, the tendency to paroxysmal exacerbation so typical of true sciatic neuralgia. 5. The pain in fibrositis is evoked or aggravated by the particular movements subserved by the affected muscles. Thus, in the case of the gluteus maximus, difficulty in rising from a sitting posture or walking upstairs, and in the gluteus medius internal rotation of the thigh, are the movements entailing most discomfort. 6. On the objective side nodules or infiltrations are to be detected in the implicated muscles of fascia.

### Glasgow Medical Journal

*September, LXXXII, No. 3, pp. 161-239*

11 Practical Points in Abdominal Surgery. T. K. Dalziel.
12 Case of Complete Auriculoventricular Heart-Block. G. A. Allan.
13 Six Cases of Lumbar Nephrectomy and One Case of Resection for Renal Varix. D. Newman.

### Indian Medical Gazette, Calcutta

*August, XLIX, No. 8, pp. 297-336*

14 Anatomic Terminology. C. Milne.
15 Segregation and Kala-Azar. W. M. Young.
16 *Operation of Election for Radical Cure of Inguinal Hernia. E. A. R. Newman.
17 Prevention of Malaria in Troops of Indian Empire. P. Hehir.
18 *Treatment of Cholera by Intraperitoneal Injection of Iodin. J. J. A. Brachio.
19 Cases of Intestinal Obstruction. C. Brodribb.
20 Case of Suspected Addison's Disease Aggravated by Ascaris Lumbricoides and Hysteria. P. S. Bedell.
21 New Pedicle Suture. T. H. Foulkes.
22 Case of Absence of Uterus. B. K. Chowdry.

16. **Radical Cure of Hernia.**—The fat and subcutaneous tissue having been divided and all bleeding points secured, Newman splits the aponeurosis of the external oblique parallel to its fibers throughout the length of the wound, including the intercolumnar fascia at the inner angle. The wall of the supposed sac, when found, is held up at any point with a pair of dissecting forceps and carefully nicked with the knife. The opening is then enlarged longitudinally for an inch or more with the scissors. In the funicular variety of hernia with the forefinger inside the sac and the sac wall held between it and the thumb, the sac is most rapidly and generally quite easily, separable from the apex to neck by wiping the tissues of the cord off it with a gauze swab. The cord proper is but little interfered with and it is usually unnecessary to lift it more than partially from its bed.

In the tunical variety the separation is more difficult because the vas deferens and spermatic plexus of veins are so intimately adherent to the posterior wall of the sac. The same procedure is followed, namely, wiping with a gauze swab, but along the adherent line a few touches with the knife are necessary. When the more easily separable portions of the funicular part of the sac have been freed, it is cut through transversely, thus separating it from the scrotal portion. The cut margin of the funicular portion is then clipped at intervals with forceps and held up, while the separation of the posterior adherent portion is completed right up to the internal ring.

In the funicular variety the sac after isolation is twisted into a cord at its neck, transfixed, ligatured and the redundant portion cut off. The stump is then drawn up into the abdominal cavity by passing the ends of the ligature in turn through the internal ring and the abdominal wall and tying them externally, the knot lying on the aponeurosis of the external oblique. In the tunical variety occlusion by ligature is usually impossible and a purse-string suture must be passed right around the neck and tied. This may be varied by passing the suture in case the sac is adherent, then crossing the ends and occluding the remainder of the neck by ligature. The redundant portion is next cut off and the stump drawn up as above described. Any remains of the funicular portion must be carefully removed. The scrotal portion can either be left—with or without occlusion by ligature—or removed separately. As this adds considerably to the length of the operation, Newman usually leaves it, unless the sac is thin and easily separable, in which case it is stripped off early in the operation.

The gap in the lower abdominal wall at the site of the inguinal canal is closed by pulling the transversalis and internal oblique muscles down over the front of the cord and suturing them to the back of Poupart's ligament with two or three square or mattress sutures of stout silkworm gut, placed in order from the internal to the external ring and finally tied in this order. The outermost suture should obliterate the internal ring, and the innermost should close the external ring securely, without unduly constricting the spermatic vessels. Lastly, the cut margins of the external oblique aponeurosis are united by a continuous flax-thread suture. The skin wound is then sealed with a pad of aseptic gauze and a firm spica bandage applied.

18. **Use of Iodin in Cholera.**—Being encouraged by the effects of iodin in a few isolated cases of cholera, Brachio tried its effects more fully in an epidemic of rather a virulent type. The results were gratifying. He divided his experiments into three methods, namely: 1. A mixture consisting of tincture of iodin, 10 ♏, dilute sulphuric acid 10 ♏, tincture of digitalis 10 ♏, water 1 ounce. One ounce for an adult every four hours. 2. A pill consisting of iodin, ¼ grain, extract gentian, q. s.; one pill for an adult three or four times a day. 3. An intraperitoneal injection, consisting of iodin, ¼ grain, potassium iodid, ¼ grain, distilled water, 20 ♏. Twenty minims constituted one complete treatment for an adult. Having scrubbed a small portion of the skin of the abdomen just above the cecum with a piece of antiseptic wool, and painting the part with tincture of iodin, Brachio injected 20 drops of the solution with an all-glass hypodermic syringe and needle, by gripping and pulling up the abdominal wall as high as possible and driving the needle at right angles to the wall right down to the hilt and squirting its contents into the cavity.

Of all three methods the injection impressed him most favorably. In almost all the cases the treatment was supplemented with a free use of epinephrin by dropping the solution on the tongue, as it was quickly absorbed and nothing was lost in the event of vomiting. The iodin in either the mixture or injection form had a marvelous effect on the vomiting. In all the cases Brachio gave only one injection. He suggests that perhaps a second might have saved the lives of some who died, but unfortunately he was not able under the circumstances to give this as he had to move on to another village and was only able to come back to the last perhaps on the second or third day. One of the cholera doctors injected sixteen patients; of these ten recovered. Another reported having treated fifty-two patients, of whom forty-five recovered.

### Lancet, London

*September 5, II, No. 4749, pp. 637-682*

23 Dysentery. F. M. Sandwith.
24 *Bullet Wounds in War. W. G. T. Posnett.
25 Some Signs and Symptoms of Hypothyroidism in School-Children. J. L. Dick.

24. **Bullet Wounds in War.**—From the cases quoted by Posnett it is seen that bullets may pass through the most vital tissues without doing any permanent injury. In the treatment of bullet wounds, Posnett says, it must be remembered that there often is great initial shock. The soldier frequently goes into battle in a hungry condition and is more or less tired by marching, and the receipt of a severe injury while in this state is accompanied by shock to the whole system. His mental state while engaged with the enemy also probably contributes its share. The impact of a bullet against the body is very severe. One patient who was struck through the right ilium told Posnet that he felt as if he "had been hit by a crowbar wielded by a giant," and that he had been thrown three or four yards out of the saddle.

An empty stomach is frequently the salvation of a wounded soldier who has been hit in the abdomen; a wound of the stomach or intestines seems to close rapidly without any trouble and so long as there has not been leakage of gastric or intestinal contents the patient will probably recover in a short time, but if leakage takes place symptoms of localized peritonitis may be expected, which will require a laparotomy. Wounds of the bladder usually require a suprapubic cystotomy, as they do not heal readily and generally leak into the surrounding tissues. A clean wound of the kidney seldom requires any interference, but Posnett has had to remove a kidney for a wound which cut the ureter across about 2 inches below the renal pelvis. What may be called local shock is a condition sometimes encountered in wounds of the soft parts. The great velocity of the bullet seems to shake up the tissues for some little distance around the wound, with the result that there is a feeling of considerable stiffness in the part for several days, and nerves in the immediate neighborhood, although not touched by the bullet, may be the seat of more or less neuralgic pain for a considerable time. Tissues in this condition are not favorable for operative proceeding, as there is a tendency to delayed healing. It is better, if possible, to wait a few days for this local shock to pass off before proceeding to operation.

### Revue Médicale de la Suisse Romande, Geneva

*August, XXXIV, No. 8, pp. 501-560*

26 *Mind-Blindness: Apraxia. Long.
27 *Mortality of Whooping-Cough. (Coqueluche.) A. D'Espine.

26. **Apraxia.**—Long reviews the history of the conception and the literature of this subject and reports in detail a case in a spinster of 66. There is both lack of proper apprehension of the true nature of things and inability to perform certain acts even when the motion is done before her eyes and she has only to imitate it. She has therefore both the soul-blindness and the motor apraxia. By a series of deductions and eliminations the lesion responsible for the trouble can be localized. Two years ago the patient developed symptoms suggesting foci of hemorrhage in the brain but there was no tendency to hemiplegia or hemi-anesthesia, hemianopsia or agnosia. Aphasia and apraxia were the only symptoms, and this testified to the comparatively trivial nature of the lesion and located it between the zone of Rolando and the occipital lobe.

27. **Whooping-Cough.**—D'Espine states that in 1913 there were 46 infants with whooping-cough in his service; most of them were bottle-babies and 9 were between 2 and 6 months old. Two succumbed to pneumonia already installed when the children were first brought to the clinic. Another died of tuberculosis and still another, enfeebled by chronic bowel trouble, died of general debility. The others all recovered; the mortality was thus 8.6 per cent. although, strictly speaking, the whooping-cough can scarcely be held responsible for any of the deaths in this series. The mortality from whooping-cough throughout Switzerland is comparatively high. Statistics for the decade ending in 1910 show the proportion of the general mortality to be 1.10 per cent. from whooping-cough; 1.05 from diphtheria; 0.91 from measles; 0.3 from typhoid and 0.27 per cent. from scarlet fever. The whooping-cough mortality has not declined in Switzerland in recent years while in England it has dropped to one-half the former figure, but it is still four times that of Switzerland. The statistics for other countries are compared with these. All testify that whooping-cough is a serious disease and that it runs a more serious course in institutions than in private homes. Children with whooping-cough should be kept at home and given outpatient care as needed. Another conclusion from the data presented is that open-air treatment should be the rule for whooping-cough, either in the home or hospital or in an open shelter. A third conclusion is that strict isolation is necessary: individual cubicles with special nurses until the diagnosis is certain, and then isolation in a special ward.

### Archiv für klinische Chirurgie, Berlin

*August, CV, No. 2, pp. 277-527. Last indexed Aug. 22, p. 711*

28 *Puncture of the Corpus Callosum in Treatment of Epilepsy, Idiocy and Allied Conditions. (Weitere Erfahrungen mit dem Balkenstich.) A. Stieda.
29 *Resection of Thymus for Simple and Exophthalmic Goiter. (Thymusreduktion bei Basedow und Struma.) H. v. Haberer.
30 Radiotherapy. (Probleme der Therapie mit radioaktiven Substanzen.) Habs.
31 Exostosis on Heel or Elbow. (Spornbildung am Calcaneus und Olecranon.) F. Rolly and O. Appelt.
32 Origin of Free Bodies in the Knee. (Zur Kenntnis der Entstehung von freien Körpern im Kniegelenk.) A. Troell.
33 Pathology of the Shoulder after a Contusion. (Bedeutung des Akromialgelenks bei subcutanen Schulterverletzungen.) R. Sievers.
34 *Surgical Treatment of Pulmonary Tuberculosis by Resection of Ribs and Section of Phrenic and Intercostal Nerves. P. L. Friedrich.
35 *Operative Treatment of Traumatic Injury of Spine. (Zur Chirurgie der Verletzungen der Wirbelsäule und des Rückenmarks.) Borchard.
36 *Prophylaxis of Peritoneal Adhesions. (Neue Experimente zur Frage der Vermeidung peritonealer Adhäsionen.) E. E. Pribram.
37 *Operative Treatment of Internal Hydrocephalus by Diversion of Cerebrospinal Fluid into the Abdominal Cavity or Pleura. B. Heile.
38 Implantation of Nerve in Muscle. H. Heineke.
39 Practical Utility of Abderhalden's Serodiagnosis of Cancer. K. Fritsch.

28. **Puncture of the Corpus Callosum in Treatment of Epilepsy, Idiocy, etc.**—Stieda describes the experience at the Halle clinic with puncture of the corpus callosum which has been done nineteen times on seventeen patients. The effect realized was far from brilliant but the cases were all old inveterate ones. Done earlier, he is convinced that better results will be obtained, and that there is a future for this simple, brief and harmless operation which does not injure the brain nor entail shock and can readily be done under local anesthesia. The technic was that followed by A. von Bramann. (See The Journal, Jan. 14, 1911, p. 162.) When the dura was opened there was little or no pulsation evident in the brain, but after the puncture and release of a few c.c. of fluid pulsation returned, showing how conditions in regard to the circulation are favorably modified by it. Headache and dizziness subsided. In one case of puberty epilepsy the attacks became much milder after the corpus callosum had been punctured and then there was an interval of two years nearly entirely free from seizures. They then recurred in a mild form but were banished almost completely again for four years by a repetition of the puncture. In one case of epilepsy since childhood with hydrocephalus and imbecility, the seizures did not recur for several weeks after the puncture and since then they have been much less numerous and much milder. In another very severe case the seizures stopped abruptly for six months; they then returned, but were banished anew for a time by repeating the puncture. The little operation did no harm in any instance and more or less benefit was realized in all but two cases.

29. **Operations on the Thymus for Goiter.**—Haberer has resected the thymus in twenty-one cases, including eight cases of exophthalmic goiter, seven of ordinary goiter with unduly large thymus and a case of severe myasthenia. In all but two cases the thyroid was resected too. The postoperative improvement in the exophthalmic goiter cases was particularly striking and justifies reduction of the thymus whenever it is found unduly large at the operation on the thyroid. His experience has been that a combined partial operation on both the thyroid and the thymus gives better results than on either alone. The postoperative course is better when the thymus has been resected than when the thyroid alone is resected and the unduly large thyroid left undisturbed. Reduction of the thymus does not seem to entail any untoward consequences, even for the growing organism.

34. **Operative Treatment of Pulmonary Tuberculosis.**—Friedrich has applied various surgical measures in treatment in forty-five cases of pulmonary tuberculosis and describes his technic and the results, comparing them with the literature on the subject. He advocates operative treatment for all cases in which artificial pneumothorax is indicated but cannot be applied on account of adhesions or other reason. He resects the ribs from the rear, cutting close to the spine, and insists that the mobilization should include the wall over the entire lung on the side affected even if only one lobe is

involved, if operative treatment is attempted at all. He is rather skeptical as to benefit from compression of the lobe by a filling. Resection of the phrenic nerve entails a permanent mutilation which he thinks is unnecessary; the same therapeutic results can be obtained by merely crushing the nerve. This permits it to recuperate later. He has done this in eight cases but in six the diaphragm was already bound down with adhesions so that thus modifying its innervation had no effect on its excursions.

Resection of the intercostal nerves on animals produces effects analogous to those of exclusion of the phrenic nerve, the lung shriveling up thereafter. The same procedure was applied in a few cases of pulmonary tuberculosis, which he describes with illustrations. He pulled out all the intercostal nerves on that side, after blocking the nerve trunk, and found it a comparatively simple and easy procedure. In one case he extracted four nerves and resected five ribs. The results to date are encouraging. In conclusion Friedrich extols ample resection of ribs from the rear in one or more sittings as having won an important post in the campaign against extensive unilateral tuberculous disease.

35. **Injuries of the Spine.**—Borchard reports the successful reduction and complete cure of a forward dislocation of the first lumbar vertebra. Bladder and rectum were paralyzed and also the legs, and the knee-jerk was abolished, but the symptoms indicated that the spinal cord was suffering from pressure alone, and this was corrected by exposing and pulling the vertebra back into place. Roentgenoscopy showed that the bones were intact. He sutured together with wire the spinous processes of the first and second vertebrae after interposing a pedunculated flap of ligament and bone. Good results also followed surgical treatment in two other cases of injury of the lower spine, but in one it proved impossible to ward off cystitis, to which the patient succumbed. In this case a sliver of bone had pierced the dura causing merely paralysis of bladder and rectum. These experiences justify operations on the spine when there seems to be any chance to believe the spinal cord can be relieved thereby from injury from pressure or even from disturbance in the local circulation. The only absolute contra-indications are signs that the spinal cord has been injured entirely across. In his cases persistence of sensation to some extent in the legs testified that part of the spinal cord was still functioning. The longer the pressure lasts, naturally, the severer the injury.

36. **Prophylaxis of Peritoneal Adhesions.**—Pribram injected the vitreous body from the eyes of calves in his experiments on the peritoneum of rabbits, dogs and cats after introducing a small sponge into the abdominal cavity or irritating the serous membrane with a magnesium powder or tincture of iodin. When the abdomen was opened three weeks later the controls all had developed numerous adhesions. There was nothing of the kind in the animals whose abdominal content had been lubricated with the injected vitreous substance, except that close to the sponge were a few insignificant adhesions and adhesions had formed when the irritation had been exceptionally intense. The vitreous body can be easily sterilized and keeps for two or three days. The peristaltic movements distribute it throughout the intraperitoneal cavity and it coats the intestines as with thick slime, and causes no disturbances even on repeated injections.

37. **Diversion of Fluid in Hydrocephalus.**—Heile reports the case of an intelligent boy of 8 with internal hydrocephalus causing contracture and paralysis of the legs. Puncture of the corpus callosum and lumbar puncture induced great improvement but it was only transient. He therefore implanted a stretch of a vein to drain the lumbar dural cavity into the abdominal cavity. This worked finely for a time but then the vein collapsed and he implanted a rubber drain on the other side and this fully answers the purpose. The child's contractures have subsided and from being a helpless paralytic since his birth now, five months since the operation, he is learning to walk and can get about without help. The rubber tube is 5 mm. in diameter; it leads from the lower end of the spinal dural sac to the abdominal cavity in the triangle of Petit, above the ilium, passing between the external and internal oblique muscles.

It is important in hydrocephalus to ascertain the point where there is the greatest accumulation of fluid. This proved in a case of external hydrocephalus to be in the fourth ventricle, and he diverted the excess of fluid into the intrapleural space by means of an implanted rubber tube. In order to reduce friction from the tube in the pleura he slipped over the lower end a segment taken from the living jugular vein nearby. The choked disk, headache and vertigo have entirely subsided. In both cases the tube healed in place without reaction. The benefit in the first case during the five months to date has surpassed, he says, anything yet realized in treatment of internal hydrocephalus. The technic in each case is shown with illustrations.

### Berliner klinische Wochenschrift

*August 3, LI, No. 31, pp. 1445-1492*

40 *Myoma and Pregnancy. (Uterus myomatosus gravidus III mens.) L. and T. Landau.
41 Treatment of Tuberculosis According to Friedmann's Method; Twenty-Two Cases. C. Klieneberger.
42 *Salvarsan and. Latent Microbism. C. Gutmann.
43 Epithelium-Proliferating Action of the Amino-Azobenzols. L. Martinotti.
44 Radium Treatment of Cancer. (Weitere Erfahrungen in der Radiumbestrahlungen maligner Geschwülste.) Weckowski.
45 Urobilinuria and the Diazo Reaction in Typhus and the Diplobacillus Exanthematicus. M. Rabinowitsch.

*August 10, No. 32, pp. 1493-1536*

46 *Contracture Following Trauma of Distant Joint. (Reflexkontraktur steifgehaltener Gelenke.) A. Tietze.
47 *Friedmann's Treatment of Tuberculosis. M. Wolff.
48 *Helminths and Appendicitis. (Sind die Würmer, besonders die Oxyuren, direkt oder indirekt schuld an der Appendicitis?) L. Aschoff.
49 Gunshot Wound of Spleen Patched with Omentum. (Milzschuss, durch freie Netztransplantation geheilt.) R. Mühsam.
50 Sterilization of the Hands. Huntemüller and B. Eckard.
51 *Histology of Carcinoma after Radiotherapy. F. Heimann.
52 Technic for Radiography of the Appendix. A. Henzelmann.
53 *Relation of Atypical Gout to Asthma and Pulmonary Tuberculosis. A. Mayer.
54 Humbug "Second Sight." (Die "Hellseher," ihre Tricks und ihre Opfer.) R. Meyer.

*August 17, No. 33, pp. 1537-1568*

55 *Fatal Case of Bovine Tuberculosis in Man. H. Beitzke.
56 Unfavorable Experiences with Friedmann's Treatment of Lupus; Seven Cases. Starke.
57 Combination Salvarsan-Mercury Treatment of Syphilis. W. Scholtz.
58 Importance of the Recess Shadow in Roentgenoscopy of the Stomach. (Diagnostische Bedeutung des Nischensymptoms bei der radiologischen Magenbetrachtung.) Strauss.
59 *Early Differentiation of Gastric Ulcer and Cancer. (Zur Diagnose der beginnenden sekretorischen Insuffizienz des Magens.) M. Ehrenreich.
60 Postdiphtheric Polyneuritis in Physician, with Pains, Ataxia and Paralysis; Unable to Practice for Nine Months. P. Friedlaender.
61 Age of Human Embryos in Connection with Last Menstruation. H. Triepel.

*August 24, No. 34, pp. 1569-1588*

62 *Practical Suggestions for Battle-Field Surgery. (Praktische Winke für die Chirurgie im Felde.) Franz.
63 Torsion of Omentum Including Loop of Intestine. (Netztorsion.) K. Fritsch.
64 Antiperistalsis as Result of Adhesions. (Rückfluss und röntgenologische Antiperistaltik des Duodenums als Folge von Adhäsionen.) Ehrmann.
65 Distribution and Elimination of Radio-Active Substances. (Verteilung und Ausscheidung radio- aktiver Substanzen.) J. Plesch.
66 Action on the Lungs of Thyroid Extract. (Beeinflussung der Lungen durch Schilddrüsenstoffe.) B. Zondek and W. Frankfurther.

40. **Myoma and Pregnancy.**—Landau thinks that physicians as a rule are too apt to regard myomas in the uterus as of comparatively little moment. In a case reported in detail a physician consulted by a young woman contemplating matrimony advised her that the uterus was in such a myomatous condition that pregnancy was out of the question and she would have to tell her fiancé this, but otherwise she need not worry. This idea that pregnancy is impossible in an extremely myomatous uterus and that the sterile are inclined to myomas must be abandoned. On the other hand, the numerous apparently normal deliveries with myomas and

the cases of successful enucleation of myomas during or after delivery show that the complication of a pregnancy with myomas is not very much to be dreaded. In the present case the woman became pregnant immediately after her marriage and the myomatous uterus was amputated at the third month. It weighed nearly 12 pounds. Landau adds that all recovered of his fifty-one patients requiring operative treatment of a myomatous pregnant uterus, and that the mortality in his total 544 cases of uterine myoma was 1.8 per cent.

42. **Casual Infection Enhances Toxic Action of Salvarsan.**—Gennerich and others have called attention to the necessity for refraining from giving salvarsan if the patient is suffering from a febrile infectious process anywhere or has just recovered from such infection and bacterial toxins are still circulating in his blood. Gutmann emphasizes the necessity for caution in this respect, especially since Yakymoff has found that mice given an intravenous injection of minute amounts of the endotoxin of the colon bacillus and then treated with salvarsan showed that the toxicity of the salvarsan had been enhanced nearly threefold by the preliminary treatment. The toxicity was enhanced eightfold when the mice had been mildly infected with trypanosomes, while stronger infection with trypanosomes enhanced the toxicity fifteenfold. The toxicity was most pronounced when the trypanosomes were still circulating in the blood. These experiences warn decidedly against injecting salvarsan unless several days have elapsed after a febrile infectious process. Gutmann warns that trouble may be anticipated if the salvarsan is injected during the incubation phase of an infectious process or during a stage of latent microbism as he calls it. Only by careful determination of the fact that the patient is free from bacterial infection, latent or otherwise, can we be certain to avoid danger from this superposed toxic action and influences. If a febrile acute infection develops during a course of salvarsan treatment, he advises to wait at least a week or two before going on with the salvarsan. When the salvarsan is resumed, he insists on the necessity for commencing treatment anew with a very small tentative dose to test the patient's susceptibility before going on with the course. He describes four cases in which there was unsuspected latent microbism when the salvarsan treatment was commenced, follicular tonsillitis developing after a day or so or ovarian trouble flaring up, and in each case the salvarsan was followed by a serious general reaction, chills, fever, headache, somnolency, etc. Suspending the salvarsan until the infectious storm had blown over, it was then resumed without further disturbance.

46. **Reflex Contracture of the Fingers from Distant Traumatic Joint Disease.**—Tietze gives a number of illustrations of the contracture he describes, saying that as it is impossible to bend the fingers intentionally in this way, the bending must be a reflex process from the joint trouble. He explains it as the result of efforts to spare the painful joint, as he has witnessed these contractures develop during acute articular rheumatism and during an attack of gout as well as with chronic arthritis and joint disease from severe trauma.

47. **Friedmann's Treatment of Tuberculosis.**—Wolff reports discouraging experiences with Friedmann's remedy, which he applied in 60 cases of pulmonary tuberculosis. Among 47 patients weighed at intervals, 28 lost weight, some losing from 8 to 22 pounds during the course of treatment. Seven of the patients have died since. He gives the details in regard to the symptoms and Roentgen findings in 26 cases before and for several months after treatment and reviews his extensive experimental work with the Friedmann remedy, saying in conclusion that the experiences of the last thirty years in the treatment of pulmonary tuberculosis have all proved so disappointing that he thinks the victims of tuberculosis should be left in peace now and not have their hopes being constantly aroused with new remedies, only to be dashed down again with most disastrous consequences for the patients.

48. **Helminths and Appendicitis.**—Aschoff does not believe the oxyuris is directly responsible for true appendicitis, but he thinks it can induce conditions which simulate appendicitis. This false appendicitis, however, can be cured by expelling the helminths, and consequently he urges that more attention should be paid to worms, especially in children, as expulsion of the helminths will ward off attacks of false appendicitis and thus protect against unnecessary appendicectomy. When the supposed appendicitis is merely trouble from helminths, removal of the appendix does not prevent recurrence of the false appendicitis attacks.

51. **Histologic Findings in Cancers after Radiotherapy.**—Heimann gives the microscopic findings in five cases in which the cancer had been excised after vigorous radiotherapy had been applied. The microscope revealed, he says, actually phenomenal modification of the cancer cells, and to a depth of 3 cm. The cancer cells beyond this point were not affected, but in four of the cases the cancer did not extend to the depth of 3 cm. and all the cancer cells seemed to have been destroyed.

53. **Atypical Gout in Connection with Asthma and Pulmonary Tuberculosis.**—Mayer thinks that the only reliable signs of gout outside of the paroxysmal attacks are the output of uric acid, both the natural output and the output after intravenous injection of 0.5 gm. uric acid. The healthy eliminate nearly all this amount of uric acid in the following two days, but patients with deranged metabolism of purin retain a large proportion of it. He applied this test to forty patients with chronic bronchitis and asthma and found that nine showed the characteristic retention of the uric acid typical of gout. In nearly every one of these cases there was a family history of gout and diabetes and the children showed the exudative diathesis, confirming Strümpell's assertion that true asthma is one manifestation of the exudative diathesis. The asthma in these cases was a constant asthmatic condition with occasional exacerbations and the latter were brought on by the same kind of injurious influences which are liable to bring on the attack of true gout. The curve of the output of uric acid during the exacerbation resembled in every respect that of the typical attack of gout. Treatment of the asthma as for gout alone had a decided beneficial effect.

He found the behavior of uric acid typical of gout also in some tuberculous patients. Several of the patients had been subject to attacks of gout before their tuberculosis developed and in all the gout became attenuated thereafter. The tuberculosis seems to be unusually mild in persons with a tendency to gout. Three of Mayer's patients were of the gouty type and had a mild tuberculous pulmonary affection displaying a marked tendency toward healing, but they were subject to recurring hemorrhages from the lungs. The hemorrhage could be brought on without fail by injecting a minimal dose of tuberculin. Tuberculin induces considerable leukocytosis and thereby an increase in uric acid. When this increase was superposed on an already abnormally high proportion of uric acid, as the total reached its highest point, hemorrhage in the lungs occurred. During the hemorrhage the curve of the output of uric acid was exactly like that of a typical attack of gout. That the tuberculin was not responsible for the hemorrhage is evident from the fact that there were no signs of a tuberculin reaction. The temperature persisted normal throughout.

The experiences related suggest that treatment as for gout alone may prove useful for both asthma and tuberculous hemoptysis in cases such as the above.

55. **Fatal Case of Bovine Tuberculosis in Boy of 14.**—Beitzke states that the case reported showed the severest pathologic anatomic findings of generalized tuberculosis that he has encountered in his fourteen years of necropsy work at Lausanne. The cadaver was that of a lad of 14 who was taken sick with pain below the diaphragm, vomiting, emaciation and diarrhea. By the fourth month he began to cough, ascites developed, and he died six months after the first signs of anything wrong. Necropsy revealed generalized tuberculosis of exceptional severity and extent, evidently starting in the abdomen. Inoculation of animals confirmed the bacteriologic findings of bovine tubercle bacilli. The eight other children and the parents were healthy and it was learned that

this boy used to spend much time at a neighboring farm and drank a glass or two of milk at the milkings, and some of the cows here discharged tubercle bacilli in their milk. Beitzke adds that the proportion of fatal cases of bovine tuberculosis in man is even larger than with tuberculosis from human tubercle bacilli. He has compiled 126 cases of bovine tuberculosis in accessible literature in addition to Weber's 138 cases. He remarks that the case here reported is the first instance to be published in which the bovine tubercle bacilli were actually cultivated from the milk of the cows in question.

59. **Diagnosis of Commencing Insufficiency of Gastric Secretion.**—Ehrenreich expresses surprise that so little attention has been paid to the significant change in the secretory functioning of the stomach in the direction of stimulation or paralysis. Irritation stimulating to excessive functioning or paralysis preventing functioning are the opposite poles corresponding to benign and malignant stomach affections. Determination of conditions in these respects is of far greater diagnostic import than the amount of free hydrochloric acid in the stomach content. He has found that the acidity of the residue in the fasting stomach, compared with the acidity after the test-breakfast, gives a proportion altogether different with simple ulcerative and cancerous conditions. In the benign affections the acidity was higher or at least as high as in the fasting residue while the reverse was constantly the case with cancer. The findings in six gastric or duodenal ulcer cases showed acidity from 0 to 56 and after the test-breakfast from 16 to 80, the increase ranging from 12 to 43. In six cancer cases the acidity in the fasting content was 0 in two cases and from 16 to 82 in the others. After the test-breakfast it was 0 in four cases and had dropped from 82 to 72 in another. In four other cases the findings were equally conclusive and an operation confirmed the presumptive diagnosis.

With cancer there is a residue retained in the fasting stomach and it acts as a constant irritant to induce secretion. If the stomach is then pumped clean and the test-breakfast taken, the secretory apparatus is fatigued by the preceding irritation. If there is any tendency to insufficient secretory functioning it at once becomes manifest by the inadequate response to the stimulus from the test-breakfast. With ulcer, on the other hand, the tendency is to excessive secretion, and the stomach responds to the second stimulus with considerable secretion. The principle of the test is thus to supervise the secretory behavior of the stomach after it has been whipped up by two stimuli applied in turn. The findings seem to be more reliable when the total amount of the test-breakfast equals the total amount of residue content—bulk apparently influencing the response to a certain extent. The method is applicable only in cases with considerable retention.

62. **Surgery on the Battle-Field.**—Franz describes the different projectiles in use in the different armies now in the field and gives a number of practical suggestions when a battle is impending. Among them he mentions the necessity for lubricating the syringe with ointment, and having one syringe for morphin and one for camphorated oil, carrying a bottle of each, the morphin in a 3 per cent. solution.

### Correspondenz-Blatt für Schweizer Aerzte, Basel

*August 1, XLIV, No. 31, pp. 961-992*

67 *Operative Treatment of Extreme Rachitic Curvature of Long Bones. (L'osteosynthèse de Lambotte dans le traitement des déviations rachitiques.) A. Machard.

68 The Physical and Biologic Bases of Radiotherapy. (Strahlentherapie.) H. E. Walther. Commenced in No. 30.

*August 8, No. 32, pp. 993-1024*

69 Functional Importance of the Musculature of the Arteries. W. R. Hess.

*August 22, No. 34, pp. 1057-1088*

70 *Pathology of the Liver and Tests of Functional Capacity. O. Steiger. Commenced in No. 33.

71 Gummatous Ulceration in Vulva and Vagina. K. Bollag.

67. **Treatment of Rachitic Curvature.**—Machard has been much pleased with his success in straightening rachitic long bones by means of Lambotte's method of extension and screwing the bones to a metal plate. No foreign body is left permanently in the tissues. One assistant is necessary, but all the handling is done with instruments. When the dry cotton gloves come through the whole procedure still dry and without a trace of blood, this guarantees that there has been no direct contact with the tissues. Correction of the deformity may require correction of rotation and preventing overriding from traction by muscles, as well as the lengthwise straightening of the bone. As the bones of children between 3 and 7 are so weak, he makes the screws, clutch and plate of aluminum, the whole weighing less than 100 gm. In his twelve cases the children began to use the limb the second day after the operation and the fixation plate was discarded by the eighteenth to the twenty-six day. The right femur was thus lengthened by 6½ cm. and the left by 5½ in one child of 6, and in a child of 5 the leg below the knee was made 7 cm. longer. Both these children now walk without support while before neither could even stand alone. He never witnessed any tardy by-effects, and the healing seems to leave more natural conditions than when a plaster cast is applied. The plate also corrects rotation, he says, and maintains the corrected position after the osteotomy better than any other technic. Consolidation is prompt and the scar left in the bone is minimal. The procedure should of course be reserved for the more serious cases as even at the best it requires a long incision for the osteotomy, and the four screws are foreign bodies liable to set up infection. There was suppuration in one screw-hole in one of his cases; all the others healed without complications.

70. **Functional Tests in Liver Disease.**—In this communication from Eichhorst's service at Zurich, Steiger compares the findings with a number of tests of the functional capacity of the liver. By applying several tests it is possible to obtain very good oversight of conditions in the liver as he shows by tabulation of the findings in fourteen typical cases of various stomach, pulmonary or liver affections. The findings with catarrhal jaundice and cirrhosis of the liver were more characteristic than we can obtain with any functional tests applied to the spleen or pancreas or even in certain forms of kidney disease. Insufficiency on the part of the liver is demonstrated, he affirms, when alimentary galactosuria coincides with alimentary levulosuria (determining also the sugar content in the blood-serum), and there is also a positive reaction to the camphor-glycuronic acid test; an abnormally low fibrinogen content in the serum, and pathologic urobilinuria.

The research reported apparently demonstrates that the amino-acid output alone is the only really instructive method among the chemical tests, but the technic for this and the camphor-glycuronic acid test of the capacity of the liver for synthesis are too complicated for general use.

On the other hand, the determination of pathologic urobilin in the urine is comparatively simple and within the reach of all. It indicates absolute insufficiency on the part of the liver unless there is an abnormal production of urobilin in the intestines from pathologic destruction of blood.

The carbohydrate tests with 100 gm. levulose or 40 gm. galactose permit finer differentiation if one is not content with merely noting the presence of the sugar in the urine but repeats the tests with varying amounts until the exact degree of tolerance for each is ascertained. Hohlweg has found that the tolerance of the liver for levulose is reduced in direct proportion to the extent to which the parenchyma is damaged. He gives 50, 75 or 100 gm. of levulose in 300 c.c. of milk, fasting, and examines the urine every two hours thereafter for six hours. Three days later he repeats the test with a smaller amount of levulose. Determination of the sugar in the blood-serum instructively supplements the levulose test.

Alimentary galactosuria is not pronounced with disturbance in the liver from cholelithiasis or simple congestion. With cirrhosis of the liver or cancer there is merely moderate galactosuria, but with catarrhal icterus the galactosuria is always extremely pronounced. The patient takes 40 gm. fasting and the urine is collected in two six-hour periods. It is tested for galactose by the Trommer or Nylander technic and polarimetric examination.

The discovery that the liver controls the fibrinogen content in the blood has given us another test for the functional capacity of this organ. The normal content in the blood is about 0.3 or 0.4 per cent., but it falls to 0.05 per cent. with cirrhosis of the liver or catarrhal jaundice. It is readily estimated, Steiger adds, by weighing the blood-clot after addition of calcium chlorid, or by heating the plasma to 59 C. for twenty minutes.

### Deutsche medizinische Wochenschrift, Berlin

*August 6, XL, No. 32, pp. 1601-1648*

72 *Threatening Conditions in Acute Heart Disease. (Behandlung der bedrohlichen Zustände bei der akuten Endo-, Myo- und Pericarditis.) Grober.
73 *Cystic Tumors in the Suprasternal Fossa. (Zystische Geschwülste im Jugulum.) Riedel.
74 *Disappearance of Typhus, Relapsing Fever and Plague from Civilized Countries. (Das Aussterben der "Krankheiten der Unkultur.") K. Kisskalt.
75 *The Coagulo-Reaction in Syphilis. (Eine Gerinnungsreaktion bei Lues.) L. Hirschfeld and R. Klinger.
76 *Operation to Restore Tibia. (Operationen zur Deckung grösserer Tibiadefekte.) H. Andree.
77 Operative Treatment of Hour-Glass Stomach. (Sanduhrmagen.) A. Pers.
78 *Protective Ferments against Maize-Albumin in Serum of Pellagrins. (Schutzfermente gegen das Maiseiweiss—Zeine—im Blute der Pellagrösen.) J. J. Nitzescu.
79 *Boas' Phenolphthalin Test for Occult Blood. H. Schirokauer and I. Boas.
80 Inefficacy to Date of All Mechanical Devices to Cure Impotency. (Bemerkungen über mechanische Mittel zur Behebung der Impotenz.) G. Flatau.
81 Standardization of Graduated Syringes. (Eichung medizinischer Spritzen.) W. Roerdansz.
82 The Organization of the French Service for Care of the Wounded. (Die französische Kriegskrankenpflege.) Adam.

*August 13, No. 33, pp. 1649-1664*

83 Angina Pectoris. Grober.
84 Radiotherapy of Cancer. (Ergebnisse der Strahlenbehandlung der Karzinome.) O. Küstner and F. Heimann.
85 Hypophysis Extract in Treatment of Amenorrhea. E. Kosminski.
86 Venereal Disease in the Troops Now in the Field. (Venerische Krankheiten bei den im Felde stehenden Truppen.) A. Neisser.

*August 20, No. 34, pp. 1665-1680*

87 Treatment of Threatening Conditions in Acute Leukemia, Pseudoleukemia and Hemorrhagic Diatheses. Grober.
88 Tuberculosis of the Thyroid. Permanent Cure for Twenty-Two Years to Date after Operation on Tuberculous Thyroid. (Kropftuberkulose.) Riedel.
89 Blood-Platelet Preparation to Arrest Bleeding. (Coagulen Kocher-Fonio.) E. Juliusburger and T. v. Mutschenbacher.
90 Operation for Embolism. (Beitrag zur Gefässchirurgie.) L. Dreyer.
91 *Phenolphthalin Test for Occult Blood in the Stools. A. Schneider and v. Teubern.

72. **Acute Heart Disease.**—Grober emphasizes the importance of the salicylates in acute endocarditis, myocarditis or pericarditis even when there is nothing to indicate articular rheumatism. Among other measures, cold applications to the heart not only give subjective relief but are useful in keeping the patient still. This is of extreme importance, and the psychic treatment to tranquillize and impress on the patient the necessity for keeping still is a vital factor in the cure. Effusion in the pericardium is frequently accompanied by an effusion in the pleura, and when the latter was tapped the effusion in the pericardium was spontaneously absorbed in some of his cases. He gives an illustration of the technic for puncture of the pericardium. When done gently there need be no fear of perforating the ventricle wall.

73. **Cystic Tumors in Suprasternal Fossa.**—In the case reported by Riedel a cystic tumor was removed from a woman of 77, supposed to be a cystic goiter or dermoid cyst. but the microscope showed tuberculosis. There can be no doubt that it was secondary to an isolated tuberculous process in the thymus. A second operation was necessary five weeks later but both were restricted to clearing out the focus and draining and a complete cure was soon realized. Riedel states that cystic goiter was evident in 148 of his 1,070 operations for goiter at Jena. The cyst generally starts in a side lobe. Dermoid cysts in this region are also comparatively frequent but the above case of tuberculosis was the only one of the kind he has encountered. It was remarkable further in the acute development of the cystic process; it first manifested itself only three weeks before it compelled the operation.

74. **The Disappearance of Typhus, Relapsing Fever and Plague.**—Kisskalt remarks that the recent discovery that typhus and relapsing fever are transmitted mainly if not exclusively by the louse readily explains their vanishing from a country as habits of cleanliness exterminate vermin. This also has cooperated in the disappearance of bubonic plague, as fleas and rats have been brought under some control. Another important factor may be the fact that the black rats have been driven out of western Europe in the last century or so by the brown rats which are not so tame as the black house rat. There is a disease among rats in Europe which causes chronic lesions almost identical with those of plague in rats. It is caused by the *Bacillus pseudotuberculosis rodentium*, and this resembles the plague bacillus so closely that there is much to sustain the assumption that this is the degenerated descendant of the original bacillus of virulent rat plague in former centuries, modified by countless passages through rats.

75. **Coagulation Test for Syphilis.**—Practically the same article was summarized in these columns quite recently, page 1060. Hirschfeld and Klinger have examined to date the serum of 250 persons for the coaguloreaction. The findings paralleled those of the Wassermann test as closely as the range of positive reactions with the latter test with different extracts. The coaguloreaction is the first method—outside of the immunity research technics—which reveals a specific change in the condition of the blood, and it is the only one yet advanced, they say, based on the physiology of coagulation. Syphilitic serum inhibits coagulation with their technic. A color reaction can be obtained by tinting the fluid with a suspension of a stain and then shaking the fluid; the particles of the stain get caught in the fibrin and the fluid becomes decolored.

76. **To Remedy Defects in the Tibia.**—Andree comments on the necessity for saving all the epiphysis zones to insure further growth. There are four in the normal tibia and fibula together, but when the upper or lower on one of these bones is lost, approximately normal conditions for growth can be secured by slitting the other bone in the center and implanting the slit-off part in the marrow of the bone with the large defect. The slit bone then forms a Y or a reversed Y. This secures three epiphysis zones. The conditions for further growth are thus good from the start, and the bones soon grow strong and in normal proportions. This method of transplanting a slit-off branch of the adjacent fibula, holding it in place with a pedunculated periosteum-bone flap, is so simple that no special skill is required, while the results were most excellent in the case reported. There is no shortening of the leg although the lower half of the tibia had been entirely destroyed. The patient was a girl of 12 and the operation was done a year after an osteomyelitic process had destroyed the entire lower half of the tibia. The weight-bearing on the foot is also normal with this technic. Six illustrations accompany the article.

78. **Serodiagnosis of Pellagra.**—Nitzescu writes from Bucharest to call attention to the possibility of early serodiagnosis of pellagra by the presence of protective ferments against maize albumin—zeinolytic ferments. The maize albumin or zein seems to have a toxic action, and the ferments formed to combat this linger in the blood long after other symptoms have disappeared when maize is dropped from the diet. In a recent case a patient with merely nervous manifestations was shown by the serodiagnostic test to be suffering from otherwise latent pellagra, and later other characteristic symptoms developed. The response was particularly pronounced in eight cases with predominant gastro-intestinal disturbances. The reaction was negative in the fifty-eight cases only in two pellagrins who had been in the hospital for over two years and had eaten no maize during this time and had no symptoms left except slight mental confusion at times. The zein was extracted according to Osborne's directions and the Abderhalden ninhydrin technic was followed otherwise.

79-91. **The Phenolphthalin Test for Occult Blood in the Stools.**—Boas replies to Schirokauer that the possible sources of error he suggests are purely theoretical. They have no practical importance unless it can be demonstrated that the findings are positive in a normal person who has eaten no fish or meat for several days beforehand. This he has been unable to show. Schneider and von Teubern write from the university policlinic at Bonn, in charge of Professor Krause, that the findings were constantly accurate in sixty cases tested, including tests on themselves after several days of exclusively milk-vegetable diet. The test proved more delicate than the Weber or aloin tests, and is a convenient and reliable method for determining the presence of invisible blood in the stools. (One of Boas' latest communications on the subject was reviewed in The Journal, March 29, p. 1035.)

### Therapeutische Monatshefte, Berlin

*August, XXVIII, No. 8, pp. 449-608*

92 *Treatment of Pleurisy, Emphysema and Atelectasia. (Therapie der Krankheiten der Respirationsorgane.) L. Hofbauer.
93 *Treatment of Leukemia. B. Hahn.
94 Favorable Influence of Salvarsan in Case of Advanced Tabes. H. Becher and R. Koch.
95 Friedmann's Treatment of Tuberculosis; Nineteen Cases. H. Becher and H. Waegeler.
96 *Injection of Alcohol to Cure Prolapse of the Rectum. (Mastdarmvorfall.) Roux.
97 *Roentgen Treatment of Keratitis from Acne Rosacea. L. Pick.

92. **Treatment of Pleurisy and Emphysema.**—Hofbauer remarks that if operative measures are not required in pleurisy, the tendency to effusion should be checked with calcium lactate or other salt, absorption promoted with salicylates, superheated air and the "Karell cure," supplemented by appropriate breathing exercises. Hofbauer emphasizes the value of the latter in particular, confirming the importance of respiratory movements in promoting absorption of fluid in the pleura. The Roentgen rays have shown that when reclining on one side, the half of the diaphragm on the under side is drawn high up and makes exceptionally extensive excusions, while the half of the diaphragm on the uppermost side makes exceptionally small excursions. This renders it easy to induce maximal active respiration on one side with minimal on the other, and thus promote absorption to the utmost while sparing the rest of the pleura. To accomplish this the patient must recline on the side affected and practice abdominal breathing; the earlier this is done the better. Sometimes the absorption may proceed so rapidly under this that the temperature runs up. This can be guarded against by having the patient recline and exercise in this way only a short while at a time, and gradually, by a sort of immunizing process, there soon comes to be no further febrile reaction. The procedure is a form of autoserotherapy, and it aids also in preventing development of adhesions and cicatricial bands, and it tones up the diaphragm.

In treatment of emphysema the main point is to train the lungs to empty themselves more effectually. Breathing exclusively through the nose, with long tranquil expiration, the auxiliary muscles of expiration become trained to work better, and he has devised an apparatus which exerts intermittent pressure on the abdomen just as the natural expiration process stops. The apparatus by compressing the abdomen prolongs the expiration, and the patient soon learns to imitate this and thus force up the diaphragm in this way naturally by utilizing the hitherto neglected forces of the abdominal musculature. Patients with emphysema are permanently relieved in this way; the signs of cardiac insufficiency subside and the circulation in general is improved. He calls this method of treatment *Summtherapie*, as the patient makes a humming noise during expiration coincident with the signal of the apparatus, either a light or buzzer working during expiration.

93. **Leukemia.**—Hahn remarks that while the last few years have given us a few more weapons to fight leukemia, yet its cause is as much of a mystery as ever. A vigorous course of treatment is not indicated as a rule unless there is progressing anemia, distressing leukemia tumors, or the whites are increasing beyond measure. The reason for holding back with energetic treatment is on account of the acute, almost explosive, aggravation of the condition which has occurred in many cases when all seemed to be going exceptionally well under treatment. The relapse then may prove far worse than the original trouble for which the treatment was started.

The Roentgen rays seem to check the growth of the hyperplastic white-corpuscle-producing tissues, but overdosage may prove fatal, and too small doses may actually overstimulate these tissues: In Decastello's case of chronic myelosis the whites dropped after three mild exposures from 720,000 to 400 with 0.9 per cent. neutrophils and the patient died from hemorrhages. Schwarz has reported disastrous results from stimulation of functioning by minute doses. In this group belong the cases of leukemia developing in professional roentgenologists; Heinecke has recently compiled six cases of this kind. Hahn advises systematic exposure of every accessible gland in the lymphatic form, but with myelogenous leukemia exposure of the enlarged spleen alone answers the purpose. In rebellious cases and recurrences he has witnessed benefit from exposing the long bones of the legs between the series of other exposures. He noted a marked improvement in the symptoms and general health in 75 per cent. of his cases, while the others were not influenced (6 in 23 cases). Béclère has reported no failure in his 12 lymphatic and 93 myelogenous cases. Radio-active substances fail in about 20 per cent. of the cases, according to the literature to date. The action and effect seem to be about the same as with the Roentgen rays; the lymphatic form seems to be less amenable to the Roentgen-ray reaction and recurrence is inevitable.

Benzol is commended by some and denounced by others. It certainly should not be given with disease of the liver or kidneys, or with catarrhal intestinal trouble, and it should be suspended when the leukocytes have dropped to 20,000 or 25,000, before they have got down to normal figures. Hahn's experience suggests the advantage of changing from one method of treatment to another; one seems to pave the way for a better utilization of another, while both can be applied with lesser dosage, possibly commencing with the Roentgen rays and continuing with benzol, not giving above 1 gm. a day of the latter. If myeloblasts appear in large numbers under Roentgen treatment he changes to thorium X and follows with a vigorous course of arsenic. When to start treatment again with recurrence is still a question. It is his practice to keep up the Roentgen exposures after subsidence of symptoms, giving every week or two a fraction of an erythem dose, and lately has been giving occasionally 0.5 or 1 gm. of benzol a day, carefully supervising the liver and kidney functioning, and resorting to vigorous measures at the first signs of any flaring up of the process. With leukemia, myelosis and lymphadenosis it is better to hold back from vigorous measures on account of the danger of exacerbation unless one's hand is forced; then arsenic should be given a trial first. With acute leukemia all treatment seems to be hopeless, but as it is not always possible to differentiate the acute form, thorium X plus a vigorous course of arsenic should be tried.

96. **Treatment of Prolapse of the Rectum.**—Roux advocates anew his method of treating prolapse, the advantages of its simple technic having been amply proved during the eight or ten years since he began to apply it. He injects alcohol into the connective tissue around the rectum, outside the intestinal wall. Under general anesthesia the needle is inserted back of the rectum, on the median line, and alcohol is deposited here and on each side, between the rectum and coccyx and sacrum. The needle is then introduced again on each side farther around, but the pouch of Douglas is respected. He has thus injected from 2 to 4 or 6 c.c. of alcohol in children, with no untoward results, not even when up to 10 c.c. was injected. A roll of gauze, smeared with petrolatum is placed between the buttocks and brought up entirely around the abdomen holding the rectum firmly in place. This is left for three to eight days or more. Esthetic considerations here are the only drawback to this technic. Adults can be kept constipated for this period, but defecation has to be permitted to children.

97. **Treatment of Keratitis Secondary to Acne.**—Pick calls attention to the excellent effects he has realized in eight cases of this most tenacious affection with Roentgen treatment applied to both the eye and the acne rosacea on the face. His youngest patient was 28 and the oldest 70; the younger the patient the more readily the eye becomes involved while the older the patient the more rebellious to therapeutic measures. He applied the Roentgen rays at four- to eight-day intervals each to a mild erythem dose and found that under from four to six exposures even severe and necrotic cases subsided to a complete cure. He never witnessed anything suggesting injury to the eye from these doses, and no other measures were necessary except rinsing with a tepid mild disinfectant and smearing the lids with a 20 per cent. zinc-petrolatum salve. Other physicians who have tried it also confirm the certain and prompt recovery under roentgenotherapy, and the abortion of incipient recurrence.

### Wiener klinische Wochenschrift, Vienna

*August 20, XXVII, No. 34, pp. 1227-1242*

98 *Operation on Side Wall of Nose through Window in Septum. (Perseptale Operationen an der lateralen Nasenwand.) K. Kofler.
99 The War and Tuberculosis. (Krieg und Tuberkulose.) J. Kollarits.

98. **Perseptal Operations on Walls of Nose.**—Kofler has been impressed with the advantages of working on the interior of the nose and lacrimal sac through a temporary window cut in the septum. He has been applying this technic for a year and a half and here reports eight cases with seven illustrations of the exact technic. In most of the cases the septum was deformed and required correction, but even when this was not the case, the benefit from direct inspection and facility of access confirmed the advantages of this technic. One patient had had rebellious suppuration in the lacrimal sac for a number of months; the others had a suppurative process in the antrum of Highmore on one or both sides, dragging along for years until promptly cured by the thorough operation possible by the perseptal technic.

### Zentralblatt für Chirurgie, Leipsic

*August 22, XLI, No. 34, pp. 1385-1408*

100 Adhesive Plaster Dressing for Harelip Operations. (Zur Frage des Heftpflasterverbandes bei Hasenschartenoperationen.) C. Helbing and H. Matti.
101 Wire Extension from the Heel. (Die Drahtextension am Calcaneus.) E. Gelinsky.

### Zentralblatt für Gynäkologie, Leipsic

*August 22, XXXVIII, No. 34, pp. 1185-1200*

102 Preparation of Blood-Platelets to Arrest Hemorrhage in Gynecology. (Anwendung des Koagulen Kocher-Fonio in der Gynäkologie.) H. Albrecht.
103 Rubber Mittens for Management of Normal Delivery. (Der Gummifäustling zur Leitung der Spontangeburt.) E. Meyer.

### Gazzetta degli Ospedali e delle Cliniche, Milan

*August 13, XXXV, No. 97, pp. 1017-1024*

104 *Unusual Complications of Typhoid in Two Children. A. Melchiorri.

*August 20, No. 100, pp. 1049-1056*

105 *Recrudescence of Tuberculosis Under Influence of Intercurrent Disease or Trauma. (Studio delle tubercolosi terminali.) V. Bellizzi.

104. **Typhoid Fever in Children.**—In the two cases described pains and edema in the scrotum were accompanied by bilateral radial paralysis in one case and total aphasia, complete by the fourth day. In both there was pronounced hypotonus at first, soon yielding to hypertonus. One of the children became extraordinarily emaciated and developed decubitus. Both recovered but they were in the hospital three and four months.

105. **Terminal Tuberculosis.**—Bellizzi applies this term to cases in which tuberculosis developed and ran a fulminating course as the vital processes were depressed from some other cause. The first patient was a syphilitic woman of 55, with cirrhosis of the liver, who died a few days after developing symptoms on the part of the heart and lungs, without fever. Necropsy revealed confluent miliary tuberculosis, evidently quite recent and primary. In the other case a young woman died of fulminating miliary tuberculosis and necropsy showed that the trouble was the flaring up of old latent tubercles. The tubercle bacilli had evidently been long walled in but when something happened to lower the vitality the bacilli made their way out and set up new speedily fatal processes.

### Pediatria, Naples

*July, XXII, No. 7, pp. 481-560*

106 *Luetin Reaction in Inherited Syphilis. S. Cannata.
107 *Influence of Fat on Gastric Digestion of Milk. S. Riva Rocci.
108 Desiccated Milk in Infant Feeding. (Il latte in polvere nell' alimentazione dei lattanti.) G. Finizio.
109 *Scarlet Fever Developing in Surgical Patients. (Scarlattina da ferita.) F. Luna.
110 *Congenital Rachitis. M. Reano.
111 Local Necrosis Following Skin Tuberculin Test. (Incidenti secondarii alla cutireazione di v. Pirquet. F. Fonzo.

106. **Luetin Reaction in Inherited Syphilis.**—Cannata's experience has been quite favorable with Noguchi's technic for serodiagosis of inherited syphilis. The findings were not always correct, but the proportion of correct responses was larger than with the Wassermann test in the 100 syphilitic children and the 30 non-syphilitic controls tested. In the latter group there was never any luetin reaction, and the reaction was negative in 17 of the 51 children less than a year old with positive signs of syphilis; the Wassermann in this group gave a negative response in 35. In older children the tests paralleled each other more closely. In a total of 56 cases with negative Wassermann the luetin test was positive in 41; the advantages of thus revealing the inherited taint early are obvious.

107. **Influence of Fat on Gastric Digestion of Milk.**—Riva Rocci states that the presence of fats in his experiments much facilitated the digestion of milk in the test-tube by the digestive ferments in an acid medium. He theorizes to explain this by assuming that the droplets of fat throughout the mass of coagulated milk hold the particles apart enough to permit capillary action, and thus promote the diffusion of the digestive ferments through the mass and their action on a larger surface of the particles forming it.

109. **Scarlet Fever in Surgical Patients.**—Luna witnessed the development of typical scarlet fever in three children after tracheotomy for diphtheria. In two of the children mediastinitis and purulent pleurisy developed and both died. The third child recovered after passing through nephritis during desquamation. The location of the wound in cases of "surgical scarlet fever" has an influence on the prognosis. When the wound is on an arm or leg, for instance, infection of the glands in the region is not so serious as when the glands are in the chest or throat. As a rule the "surgical scarlet fever" is mild and is in reality merely a scarlatiniform eruption around a suppurating wound. But a number of cases are on record with the typical angina and the rest of the syndrome, but even with these recovery is the rule without complications. Hahn has recently reported seven cases of scarlet fever developing consecutive to operations for empyema and three secondary to accidental wounds, burns, etc.

110. **Congenital Rachitis.**—Reano relates that he has examined 854 newly born infants at Turin seeking for signs of rachitis and comparing the signs found with the development of the children, especially in regard to appearance of true rachitis later. The size of the fontanels, the greater or less hardness of the skull, the existence of parchment-like areas, abnormal palpation findings in the articulations between the costal cartilages and the sternum—none of these findings can be regarded as signs of rachitis in the newly born, as all are liable to become modified to normal conditions as the child grows when the environment, the inheritance and the food do not predispose to rachitis. Parchment areas in the skull subsided spontaneously in about 50 per cent. of the cases in which they were found and generally in two or three months, without rachitis developing later. In the other 50 per cent. signs of pronounced rachitis were manifest when the sixty-four children were reexamined at 6 months of age.

### Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

*June 6, LVIII, No. 23, pp. 2045-2230 and Supplement*

112 *Remote Sensations from Faradic Stimulation of Points in Post-Central Gyrus in Conscious Patients. ("Sensible punten" op de schors der groote hersenen van den mensch.) C. T. van Valkenburg.

113 Fetus Compressus; Two Cases. M. Kamerling.

*June 13, No. 24, pp. 2231-2338*

114 Animals Trained to "Think." (Denkende dieren: het aandel der menschen.) G. van Rijnberk.

115 *Examination of Heart through the Esophagus. (Onderzolk van het hart van den slokdarm uit.) C. E. Benjamins.

*June 20, No. 25, pp. 2339-2418*

116 The Workings of Workmen's Compensation Legislation. (Gevolgen der ongevallenwet.) P. Kooperberg.

117 Anatomy of the Nose. (Het kleppenstelsel van den neus.) P. J. Mink.

118 *Alternating Hemiplegia Following Injection of Alcohol into the Gasserian Ganglion. G. C. Bolten.

112. **Sensory Foci in Brain Cortex.**—Van Valkenburg gives details of two cases in which during an operation on the brain during local anesthesia alone he applied faradic stimulation to the postcentral gyrus and found that this induced sensations in the fingers and around the mouth. He gives diagrams of the sensory points and the regions they control, comparing his findings with those of Cushing and Krause in this line. The foci were well defined. The patients were young men of 17 to 25, with epileptiform seizures for one or four years. They said that the sensations from faradic stimulation resembled those at the aura of their seizures.

115. **Examination of the Heart by Way of the Esophagus.**—Benjamins describes the technic for esophageal cardiography, auscultation of the heart sounds and other means of studying the action of the heart through the esophagus, and gives characteristic findings. He ties a finger condom on the tip of a rubber tube and introduces it for about 32 or 35 cm. from the teeth. Then the condom is inflated and the whole connected with a recording drum and the movements of the left auricle then register themselves on the drum—an esophageal cardiogram which can be usefully studied synchronously with the electrocardiogram as he shows by a number of tracings.

118. **Hemiplegia Following Injection of Alcohol into the Gasserian Ganglion.**—Bolten's patient was a woman of 58 who had suffered for years from extremely severe trigeminal neuralgia of all three branches. She had intense headache after the injection and was given morphin. The temperature ran up to 104 F. and symptoms of paralysis on either side alternated but gradually improved so she is now able to be around. Bolten adds that the neuralgia was conquered by the operation, and that the symptoms observed should be credited to the unusual neuropathic taint in the family. This exceptional occurrence should not bring discredit on the deep alcohol treatment of trigeminal neuralgia. That the patient has practically entirely recovered shows that no serious damage was done.

### Hospitalstidende, Copenhagen

*August 26, LVII, No. 34, pp. 1049-1080*

119 *Further Research on Spiroptera Cancer in Rats. (Fortsatte Undersøgelser over Spiropteracarcinomet hos Rotten.) J. Fibiger.

119. **Animal-Parasite Cancer in Rats.**—Fibiger has continued his study of the cancers found in the stomachs of rats and evidently connected with the special parasite discovered in them. It seems to be a new species of *Spiroptera* and it has been found to date only in the numerous rats infecting three sugar warehouses and among these only in the decumanus. None was found in 1,100 rats from other parts of Denmark nor in 350 from other countries. The cockroach seems to serve as an intermediate host, and Fibiger thinks that these insects probably were brought with the cargo of sugar from the West Indies. The parasites were found in 7 of 8 dead rats sent him from one of these West Indian ports and in 52 of 70 cockroaches. In 6 rats and 150 living cockroaches from another West Indian port he found the nematode in 3 of the rats and in 27 of 45 cockroaches examined. These findings confirm that the parasite belongs to a tropical species. It can be communicated to other varieties of rats and other rodents, and other insects beside the cockroach can serve as the intermediate host, the bedbug and the meal-worm. He fed 91 rats with infected cockroaches. Some have been under observation since June, 1912, and no less than 12 have developed carcinoma in the stomach, the findings corresponding in every respect to those on which he published his first report. The article is not concluded in this issue of the *Hospitalstidende*. [His previous communication was discussed editorially in The Journal, April 5, 1913, p. 1077.]

### Ugeskrift for Læger, Copenhagen

*July 30, LXXVI, No. 31, pp. 1353-1388*

120 *Trauma and Osteomyelitis. H. C. Slomann.

*August 6, No. 32, pp. 1389-1418*

121 Mode of Therapeutic Action of Sunshine. (Om den moderne Helioterapis Virkemaade.) T. Brinch.

122 Remittent Hydronephrosis. G. Espersen.

*August 13, No. 33, pp. 1419-1448*

123 *The Pirquet and Salve Tuberculin Tests on Children. (Om kutane og perkutane tuberkulinreaktioner.) Monrad.

120. **Trauma and Osteomyelitis.**—Slomann's article is based on the experiences of the wage-earners' sickness insurance companies in Denmark, 1910 to 1912. There were 2,128 cases of sickness among the 140,000 industrial workers insured and 1,940 among the 300,000 field workers. These figures include 32 cases of osteomyelitis for which a traumatic origin was claimed, but the connection was not proved in 14. Slomann compares these cases with 104 cases of osteomyelitis at the Copenhagen public hospital in the last ten years. It developed after tonsillitis in 7; after enteritis in 4; after pyuria in 2 cases and after furuncles or other superficial suppuration in 9. The antecedents were not known in 54 cases. In 33 cases trauma was incriminated, but in 10 there had been an interval of three weeks or more without symptoms so that the connection with the trauma seems out of the question. The remaining 23 cases were unmistakably of traumatic origin. In 3 the skin had been injured so that inoculation of germs was probably the main factor. In the others the trauma had been a contusion and the osteomyelitis had developed in less than eight days in the injured region.

Spontaneous osteomyelitis is shown by his figures to be four times more common than the traumatic; the latter formed 19.2 per cent. of the cases reviewed. The period of incubation was at longest only twelve or fourteen days and in 3 cases there were fever and more or less pain and swelling the same day as the contusion. The connection with the trauma is plausible if the accident was of such a nature as to render injury of the bone-marrow probable; it need not have directly affected the spot involved, as for instance when the whole skeleton or a large part of it is jarred by a severe fall. A connection with the trauma may be accepted if the osteomyelitis develops directly after a period of extravasation of blood, swelling, tenderness, etc., in the region affected by the trauma. When this is the case the interval may be even longer than two weeks and still the osteomyelitis form part of the traumatic syndrome.

123. **The Tuberculin Skin and Percutaneous Reactions in Children.**—Monrad has had the Pirquet test applied to 3,408 children and the Moro salve test to 333. The latter is so simple and convenient and the findings parallel those of the Pirquet so closely, that he wonders it is not more generally used. The two reactions were concordant in 323 of the 333 cases and in 6 of the 10 cases in which the reactions conflicted, the course of the cases confirmed the salve-test findings. A negative response to the Pirquet test, he declares, may be accepted as excluding tuberculosis with 97 per cent. certainty. A positive reaction under 1 year of age indicates always active tuberculosis; between 1 and 2 years it indicates this in six-sevenths of all the cases and in two-thirds of all between 2 and 5. Over 10 the conditions are more as in adults, about two-thirds of the positive reactions being traceable to inactive tuberculosis.

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# OSTEOPLASTIC CLOSURE OF THE TRIFACIAL FORAMINA*

ALLEN B. KANAVEL, M.D.

CHICAGO

The accompanying experimental study was undertaken to determine whether or not it was possible so to close a nerve-canal through bone as to prevent the nerve from reaching the surface and functionating. The result may find practical application in various conditions, but primarily it may be of use as a substitute for certain palliative procedures now employed in the treatment of trifacial neuralgia, namely, those methods used when for some reason the intracranial procedures are rejected and when the simpler alcohol injections fail to give relief, as for instance the use of screws of metal or ivory, or paraffin, or guttapercha or other similar devices.

The anatomy of the dog's infra-orbital nerve lends itself particularly well to this method of study. It is really more satisfactory than that in man. The nerve is large and the foramen overhanging. On the other hand, there is greater possibility of infection.

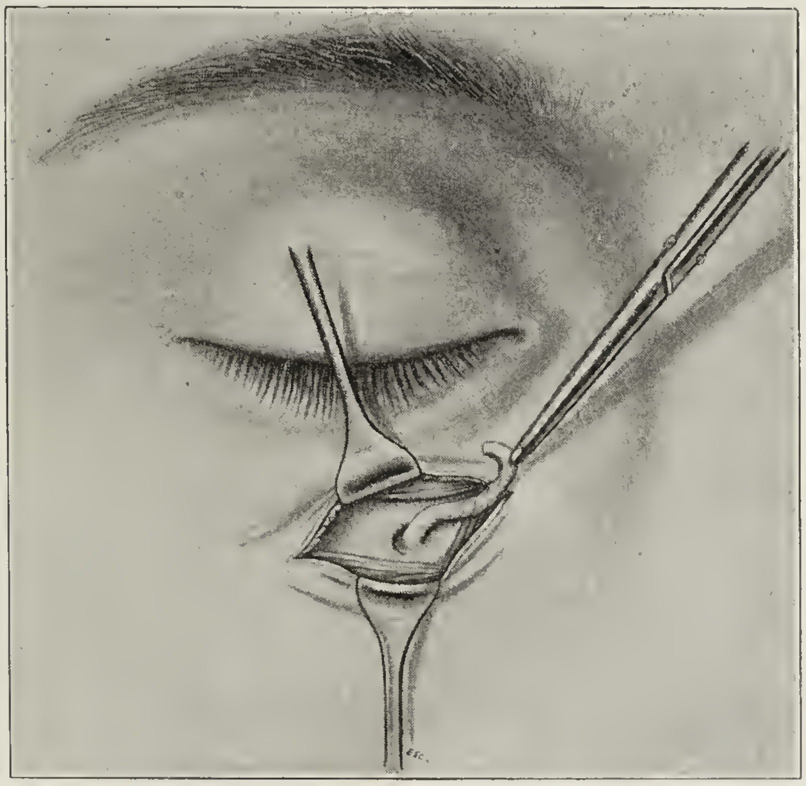

Fig. 1.—Method of exposing and removing the infra-orbital nerve by torsion.

The experimental work falls into three groups:

A. Avulsion of the nerve with curettage of the canal, breaking down of the foramen and covering the area as well as possible by pedicle-flap of adjacent periosteum.

B. Avulsion of the nerve, curettage of the canal and a transplant of periosteum from some other part of the body.

C. Avulsion of the nerve, curettage of the canal, and a transplant of bone to fill the canal.

It was found advisable in the dog to make the incision through the mucous membrane at the junction of the lip and jaw. The dogs were run in series, being killed in forty-five, ninety and 180 days.

An attempt was made to determine the best method of removing the periosteum within the canal and at the foramen with the idea of favoring bone growth and closure of the canal or union with the bone transplant. Various types of olive-pointed burrs were used and others made to order, but it was found in the end that small, sharp curets were more satisfactory. Likewise the best method of avulsing the nerve was studied and various broaches were made similar, only much larger, to those used by dentists in avulsing the nerves of teeth. These also were abandoned as being inferior to simple avulsion. It was found that the best results were obtained by grasping the nerve firmly and twisting very slowly so that from five to ten minutes were consumed in the procedure.

For the sake of conciseness, the detailed report of each experiment, although kept, is not reported here. The results in the various groups may be classified as follows:

In the series with the avulsion of the nerve, curettage of the canal, breaking down of the foramen, and covering the area with a pedicled periosteal flap, the experiments were uniformly successful in obliterating the canal if the work was thoroughly done. Some difficulty was found in preserving adjacent periosteum in good condition for flap transplant, and in no case was it perfectly satisfactory. A similar difficulty was later encountered in the patient operated on.

In the second group with avulsion of the nerve, curettage of the canal and a transplant of periosteum from some other part of the body, the results were not nearly so successful. The nerve grew through in a majority of instances in spite of the fact that infection was infrequent.

In the third group with avulsion of the nerve, curettage of the canal and a transplant of bone to fill the canal, the experiments were successful except in those cases in which infection ensued, a complication that was rather common, incident to the presence of the wound in the mouth. In these cases after a few months the nerve grew out through the osteoporotic tissue between the canal wall and the osseous transplant.

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

In the successful cases complete bony closure ensued. The results were sufficiently satisfactory to lead to the assumption that under favorable conditions the canal would be completely obliterated. Where the result was satisfactory the nerve was found to have grown down along the canal to its full extent and to end blindly at the original point of exit. The bone wall itself on external inspection presented no evidence of a previous foramen. Microscopic sections of the connective tissue immediately adjacent to the bone and over the old foramen and opposite the nerve ending failed to disclose any nerve-fibers, so that we must conclude that they had not grown through.

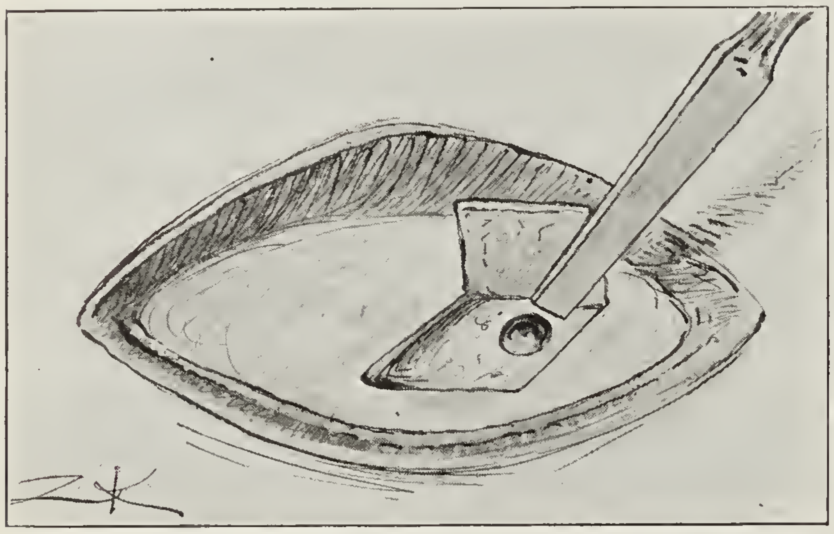

Fig. 2.—Breaking down the rim of the infra-orbital canal.

CLINICAL APPLICATION

The foregoing results of experimental work are presented as proof of a *principle in surgical pathology on which study may be made in the future* and must not be construed as an advocacy of this method of operation in all cases of tic douloureux. It may be justifiable, however, to suggest lines of future clinical study as they occur to me. It would seem that the procedure would not be indicated in those patients on whom the removal of the ganglion or excellent intracranial operation first proposed by Frazier and Spiller can be done with safety. It probably would not be indicated in those patients to whom alcohol injections give complete relief for a considerable period. It may be justifiable to study its field of usefulness in greatly debilitated patients who are not good surgical risks and who are not relieved by injections or in those patients who refuse intracranial procedures—in other words, where it has been customary to avulse the nerve or fill the foramina with foreign bodies.

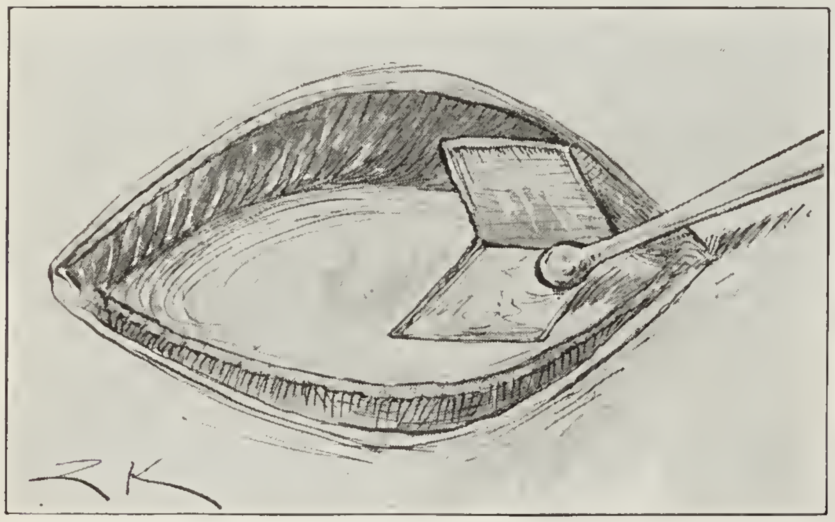

Fig. 3.—Curetting the infra-orbital canal thoroughly so as to remove all periosteal tissue.

It must be remembered that all peripheral operations fail to prevent the return of pain along the filaments that leave the nerve back of its point of exit from the foramen, as for instance, that portion of the infradental that goes to the side of the tip of the tongue. In my patient, however, in which this occurred, it has not given rise to complaint and was elicited only on questioning.

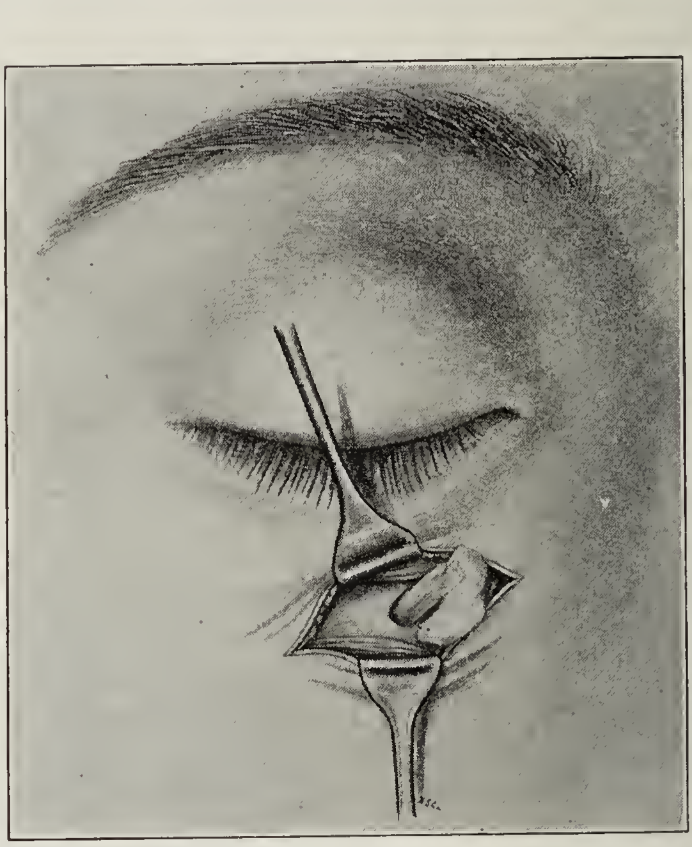

Fig. 4.—Transplanted bone plug in position with periosteum attached.

The work can, for the most part, be done under local anesthesia especially by trunk injection. The method employed in the patient operated on by myself is seen in the accompanying illustrations.

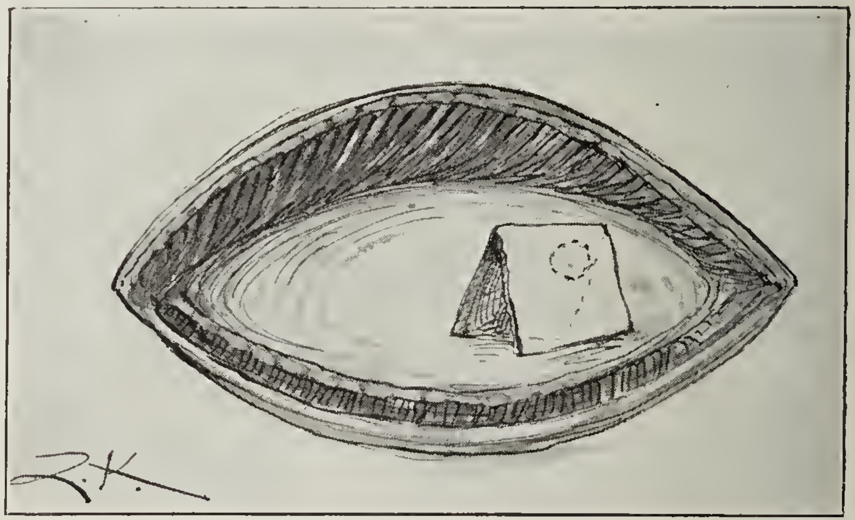

Fig. 5.—Detached periosteum thrown over site of operation. In the operation this could not be as satisfactorily done as would appear from the picture.

In the operation on the infra-orbital nerve the incision was made in the line of the skin-crease and the nerve slowly twisted from its trunk. The periosteum was so thin that a satisfactory pedicle flap could not be made, although this was done as well as possible. The bone was extremely thin and friable, necessitating care in the curettage of the canal. This was done thoroughly, paying especial attention to the foramen.

A small bone plug ¾ inch in length and as near the size of the canal as possible was removed from the tibia, a piece of periosteum the size of a penny being left attached to its outer end. This was then wedged into the canal down to the attached periosteum. The adjacent periosteum was pushed over it and the skin closed by a subcutaneous stitch (Figs. 1-5).

In the infradental branch an incision was made under the angle of the jaw so that the scar would be out of sight. The skin and muscle were next detached from the angle upward. A crucial incision (Fig. 6) was made in the periosteum at the angle over the area of the nerve; then with a small trephine a button of the outer plate of bone down to the medulla was removed (Figs. 7-11). The nerve was found and twisted out of its canal. The canal was then curetted thoroughly and broken down. The button of the outer plate was now reinserted, being rotated 90 degrees so that the destroyed canal of the button was at right angles to the canal in the bone, and it was driven into the medulla between the two tables at the proximal side for a fraction of a centimeter. The periosteum and muscle-flaps being now restored, the skin was closed by a subcutaneous stitch. The patient was warned not to use the jaw too violently for some weeks.

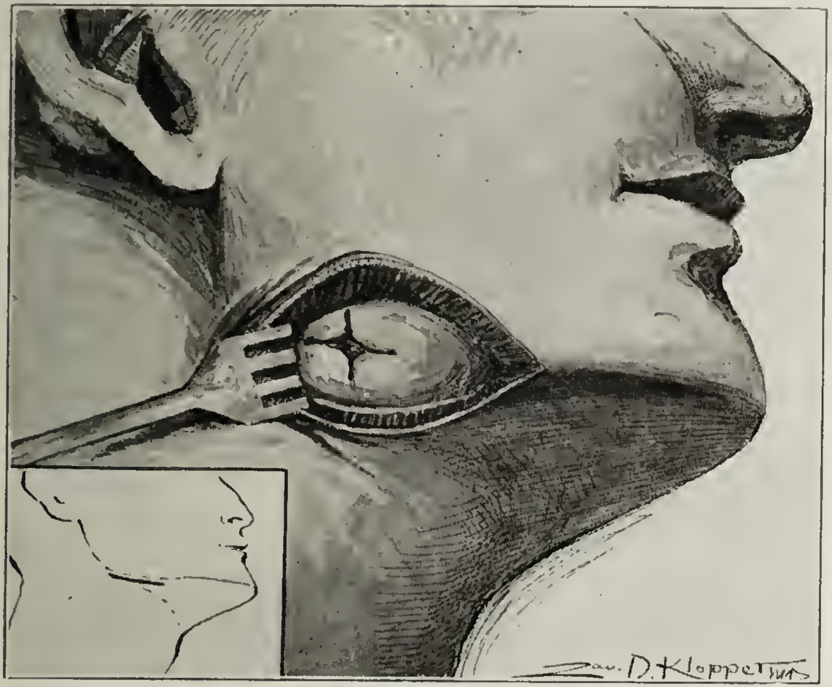

Fig. 6.—Crucial incision over site for bone plug over infradental canal.

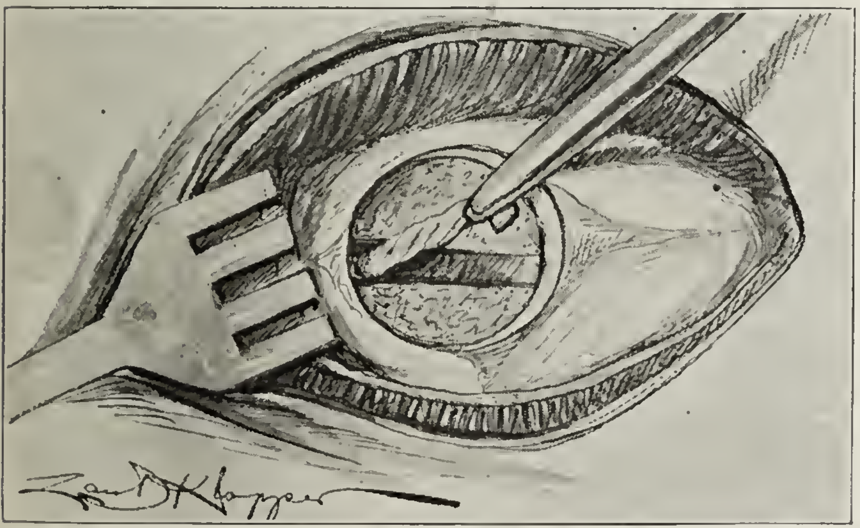

Fig. 7.—Torsion and removal of infradental nerve.

A word of warning should be given against extending the infra-orbital incision too far toward the nose, thus endangering the lacrimal sac. Again care must be taken not to injure the facial nerve when retracting the muscle at the angle of the jaw.

I append a brief report of the patient operated on who has been without recurrence of her trouble for nine months, too short a time, certainly, for the final report, which will be made at a later date.

## REPORT OF CASE

History.—Mrs. A. L., aged 74, admitted to Wesley Hospital, Oct. 26, 1913, discharged, Nov. 1, 1913, six years ago began to have pains over entire left side of face. They were of a dull, aching character. Patient states that they came on subsequent to the extraction of a lower tooth. They kept increasing in severity but she complained mostly during the day, especially in the morning. She slept all right at night. The treatment relieved her for a period of six or seven months, when the pain came on again, similar in character with the same aching, burning pains.

About two years previous to the time of this report she was at Wesley Hospital and had the nerves injected with alcohol. This relieved the patient again for a period of six months, the pains coming on again at the end of this time similar in character to previous attacks. This continued up to the date of her admission to the hospital, Oct. 26, 1913. The pain has been worse the last five or six weeks, being worse in the morning, but does not trouble much at night. It begins usually on the left side of the upper lip immediately below the ala nasi, then the lower lip on the left side. This then radiates up the left side of the face and terminates in the left temporal region. Patient sleeps well, bowels, constipated; appetite, fair; uses two to three grains of morphin daily.

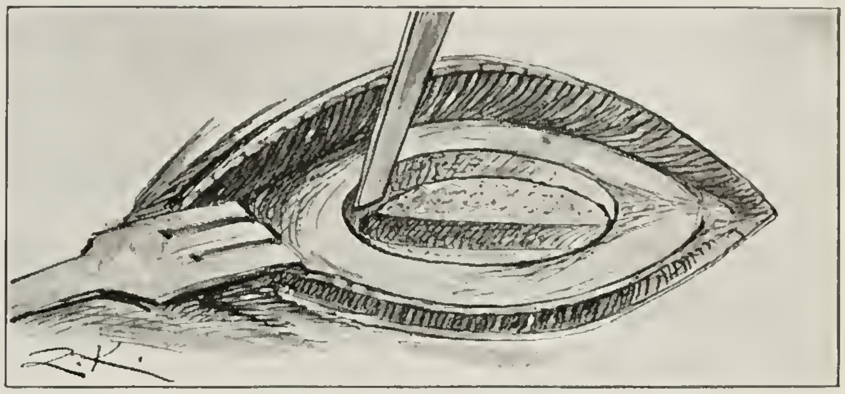

Fig. 8.—Breaking down infradental canal.

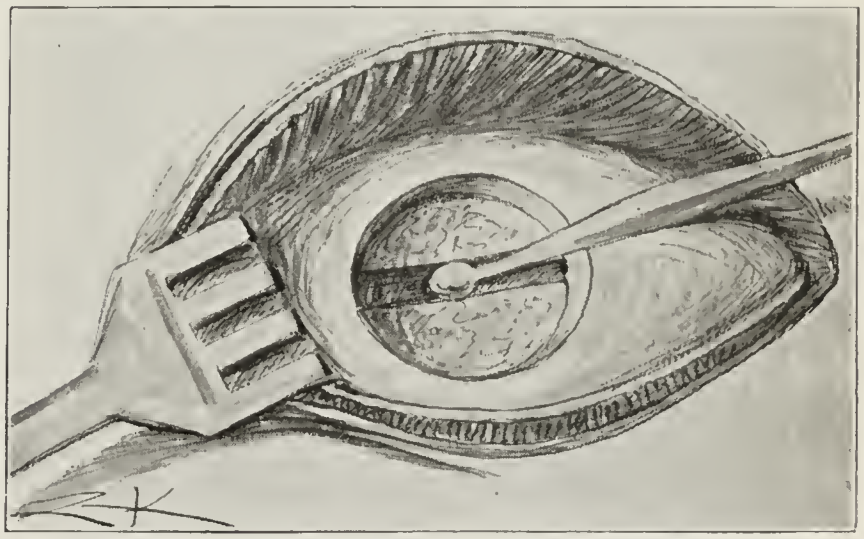

Fig. 9.—Curetting infradental canal.

*Examination.*—Physical examination showed in brief, a markedly anemic and emaciated patient with tenderness over the supramaxillary and inframaxillary nerves. The supra-orbital was not involved. There was marked pain on chewing and talking.

Cardiovascular Examination: Patient cyanotic; pulse, irregular, extra systole. Vessels hard. Apex, beat fifth interspace. Dulness midsternum to midclavicular line. Apex, two tones, systolic murmur. Aorta, two tones, systolic murmur. Pulmonic, two tones, no murmur. Extra systole every fifth to tenth beat.

Remainder of physical examination is not of importance in the present instance. At operation the inferior dental and infra-orbital nerves were operated on by the method discussed above. Patient made an immediate recovery, although for five or six days she had a moderate facial paralysis. This entirely cleared up, as may be seen by the photograph (Fig. 12), at the end of a week. March 28, 1914, the family reported that the patient had ceased the use of morphin and had no pain except that lately she had noticed some pain in the tip of the tongue on the left side. There was no paralysis and the scar was not visible to ordinary inspection. On examination, June 15, 1914, the patient was found to be in similar condition and perfectly satisfied with the result.

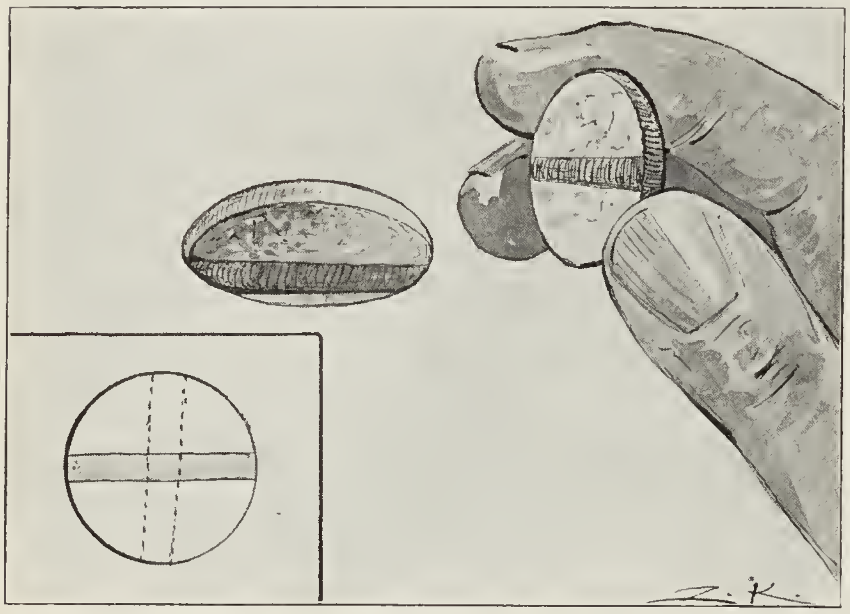

Fig. 10.—Replacing bone plug at right angle to the canal.

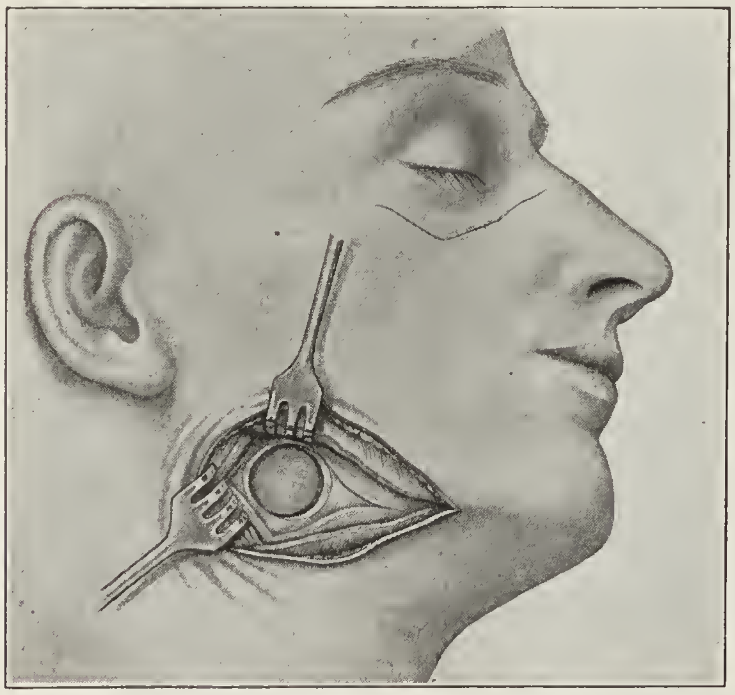

Fig. 11.—Subcutaneous stitch closing over the infra-orbital operation and the method of driving the plug between the two laminae of the lower jaw.

In conclusion I wish to emphasize that this work is presented purely as an experimental and clinical study, and I should not wish to be betrayed by enthusiasm into advocating the operation until further experience has been accumulated by myself and others.

I wish to acknowledge my indebtedness to Dr. Lester H. Hills for assistance in the experimenttal work.

31 North State Street.

## ABSTRACT OF DISCUSSION

**Dr. S. J. Mixter**, Boston: The procedure suggested by Dr. Kanavel seems worthy of trial in those cases in which the deeper operation cannot be done. No one could question the advisability of doing the more serious operation if it were possible, but we have all seen cases in which that is not possible and in them this method is worthy of trial. This brings up the whole question of the possibility of stopping the growth of the sensory nerve by plugging a canal. We have all tried, unsuccessfully, generally, to plug the foramina on the face. The inferior dental, the infra-orbital, plugged with screws and other substances, are generally failures. How far a nerve can be plugged is a question. I do not wish to bring up in any way the treatment of trifacial neuralgia, because that is not included in this paper. It is general operative treatment, but I may say that nerves can be so shut off as to prevent recurrence of pain. It has been my custom in doing the intracranial operation not to do the beautiful operation that Dr. Frazier originated and that has been done so successfully, but to do what to me is a less serious operation, that is, divide the second and third division inside the skull, and fill the fossa and lamina with a mass of amalgam. I find that that prevents recurrence of pain, in my hands at any rate, and is a less severe operation than the one on the root. Dr. Kanavel's method certainly is one that should be tried. On the receipt of his paper a few weeks ago I was so impressed with the value of the procedure that it occurred to me to try it in the intracranial operation, and in that case, instead of using amalgam as I usually have done, I made some plugs from the tibia and drove them firmly in place from the inside of the skull into the foramen ovale and the foramen rotundum. I found it was not so simple, in a way, because bone is hard, the nerves are brittle and it was rather difficult to get a good-fitting plug; but after a little effort the plugs were made, driven firmly in place and the patient has had no trouble so far. Of course the time is too short to draw any conclusions as to the ultimate results, but the procedure seems to me worthy of trial. If these canals can be closed permanently by bone plugs it seems to me it is possible to prevent recurrence of pain.

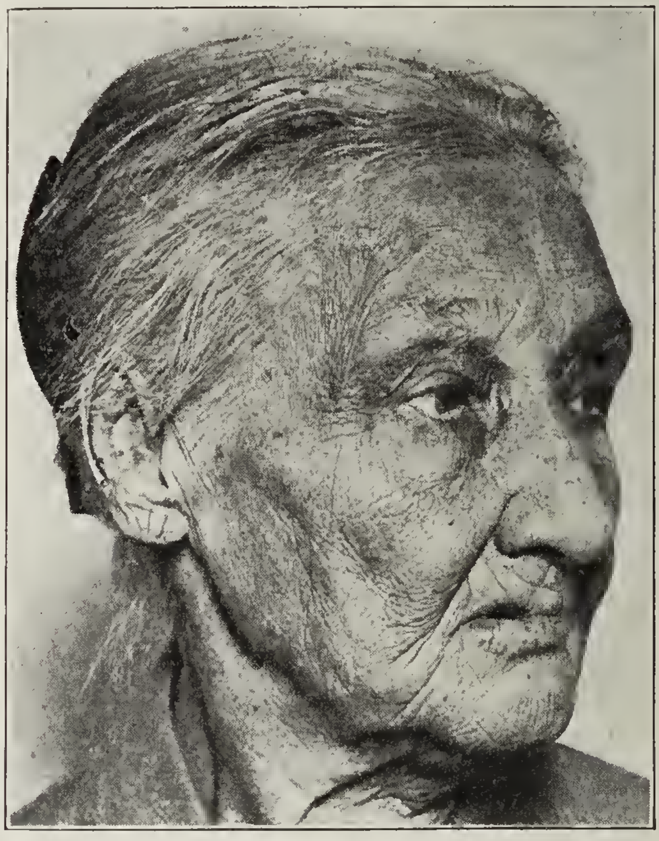

Fig. 12.—Patient a week after operation.

**General Laws.**—Ability to recognize individual pathological phenomena is of prime importance, but the power to grasp the meaning of general laws according to which tissues act and react is paramount.—Adami and McCrae.

# MYOSITIS

## ISCHEMIC MYOSITIS: INFILTRATION MYOSITIS: CICATRICIAL MUSCULAR OR TENDON FIXATION IN FOREARM: INTERNAL, EXTERNAL AND COMBINED COMPRESSION MYOSITIS, WITH SUBSEQUENT MUSCULOTENDINOUS SHORTENING *

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In 1869 Volkmann described a contracted condition of the flexor muscles of the wrist, hand and fingers which he termed an ischemic paralysis, but which came to be known clinically as Volkmann's contracture. He believed at that time that the condition was due to a death of the muscle cells consequent on a prolonged deprivation of the blood from the part, or an interference with the circulation leading to a malnutrition and caused by pressure of a splint or bandage applied, for instance, in a case of fracture of the radius and ulna, or of the humerus near the elbow joint. He stated that very rarely did the condition follow an injury or a fracture in which neither a splint nor a bandage is used. This was true in one case seen by us, in which a contracture of the flexor tendons of the arm followed a trauma, a street-car running over the patient's forearm. It is the only case of the kind we have seen. The muscles of the arm, as the biceps, can have a similar contraction, as shown in many of our cases. However, the condition is most often met with consequent on fractures at the elbow joint or in the forearm, but it does occur in the lower extremity as well as in the upper. Certain it is that a severe contusion of the muscles of an extremity, without fracture or external wound or evidence of injury, may be followed by this contracture. Cases are also recorded in the literature in which a tight plaster-of-Paris cast has caused "an immediate paralysis of the muscles" and a subsequent contracture. In our cases it is fairly clear that hemorrhage beneath the aponeurosis of the upper forearm following fracture or injuries of the deeper structures can cause myositis and subsequent contraction, even when splints or bandages have not been used. These are the internal compression variety. The splint causes the external variety.

Bardenheuer is of the opinion that the condition is caused entirely by a vascular disturbance, that is, that the degenerative changes in the muscle cells are due directly to a venous stasis, and that the cells are poisoned by the metabolic products in the blood-stream.

Other observers are of the opinion that the condition is simply one of localized anemia, and J. J. Thomas regarded it as a case of nerve involvement, laying considerable emphasis on this phase of the etiology. We believe that it is a pressure ischemic myositis, from hemorrhage and effusion into the muscles, aided by the constriction of a splint or bandage or a tight skin, which leads to a myositis from pressure anemia and later to a contracture of the muscle as a whole, and therefore a shortening of the muscle tendon. An acute flexion of the elbow following injuries leads to the same condition. All observers are agreed that ischemic myositis and contracture follow fractures more often than any other cause; in fact, 80 per cent. of these cases follow fractures, especially fractures in the neighborhood of the elbow joint, and among these supracondyloid fracture of the humerus stands out prominently.

As the result of a fracture the tissues are bruised, a blood and serum effusion follows and the tension in the subfascial zone in the forearm can be so great as to cause cyanosis of the whole forearm and hand. A blood-clot forms in the tissues, inflammation follows, with a deposit of the inflammatory products in the tissues. We believe that the injury to the artery plays little or no rôle in the destruction of the protoplasm of the muscle cells. It is the pressure which causes the cell destruction, unless it be the continuous forcing of blood into the tissue after the venous circulation is retarded by the tension on the elbow veins. The obstruction is in the veins and not in the artery, as the great edema always indicates obstruction to return circulation and not to arterial circulation. Arterial obstruction leads to dry gangrene; venous to wet gangrene. The radial pulsations are present throughout the entire course of some of the cases. This should not be so if the artery were injured.

We have seen a large number of these cases and are convinced from our experience that it is the tight bandage, aided by the tight skin and fascia, that does the mischief. The damage is practically all done within the first forty-eight hours after the application of the bandage, or after the acute flexion of the forearm, and we have seen one case in which the damage was present as early as six hours after the application of the bandage. We are convinced from our observations that muscular contraction from trauma of the elbow joint is most commonly the sequence of bandaging. It is a traumatic myositis, the result of pressure produced by a circular bandage or a splint applied too firmly against the skin, fascia and muscles of the arm or forearm, so resisting the edema traumatica that cellular ischemia and necrosis result.

All the damage, so far as the myositis is concerned, is done within the first seventy-five hours, but the contraction of the muscles and the flexion deformity of the fingers does not show itself fully until weeks have elapsed, four to six, the fixation becoming permanent in from ten to twelve weeks. It then remains stationary, except for the additional deformity which is produced by the growth in length of bone without a growth of muscle. This makes it appear as though the muscles were continuing to contract, which is not my view of the case. The damage is done so quickly that this fact and a study of the symptomatology lead one to the conclusion that constriction of the forearm is the indirect cause of the contraction. One must bear in mind, too, that the lesion is always on the volar side of an extremity, the side on which the large arterial trunks are situated. In other words, it is always a flexion contraction and not an extension contraction, notwithstanding that the posterior splint will have as much pressure on it as the anterior, as it must act as a counter-support for the bandage or cast.

There is not a paralysis of the motor nerve as a result of the ischemia, except when the nerve is especially compressed.

The nerves may be involved as a result of (1) severe primary inflammatory infiltration of the tissues

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* Read before the Section on Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

pressing on the nerves; (2) by diffuse pressure of the primary myositis, which I very much doubt; (3) by cicatricial contraction on the nerve, also doubtful; (4) by direct traumatic compression to the nerves, always possible; (5) by the pressure of excessive or exuberant callus; (6) by division of the nerve.

The term "ischemic paralysis," with muscular flaccidity and elongation, may be used in these cases of nerve involvement as indicative of its being a complication of an ischemic myositis; but even then we believe that it would be far better to term the condition an ischemic muscular atrophy or myositis with paralysis. So far as the real pathologic condition is concerned which is responsible for the contracture, it is purely an anemic myositis, as we believe, the result of pressure by a cast, bandage or splint on an edematous infiltrated tissue. We have similar examples where extremities have had constrictors on for hours at a time for the emergency suppression of hemorrhage, with temporary ischemic neuritis, or axonal transmission is suspended but is not followed by contracture. When a bandage is applied too tightly around the knee, for example, or if a plaster cast is applied to the knee and remains uncut, the external popliteal nerve may be compressed as it passes over and around the neck of the fibula, winding from behind forward. This results not in a *muscular contraction,* as we see it everywhere else in the body, but in a *paralysis* and *elongation* of the muscle, which in the lower extremity is recognized as a drop-foot.

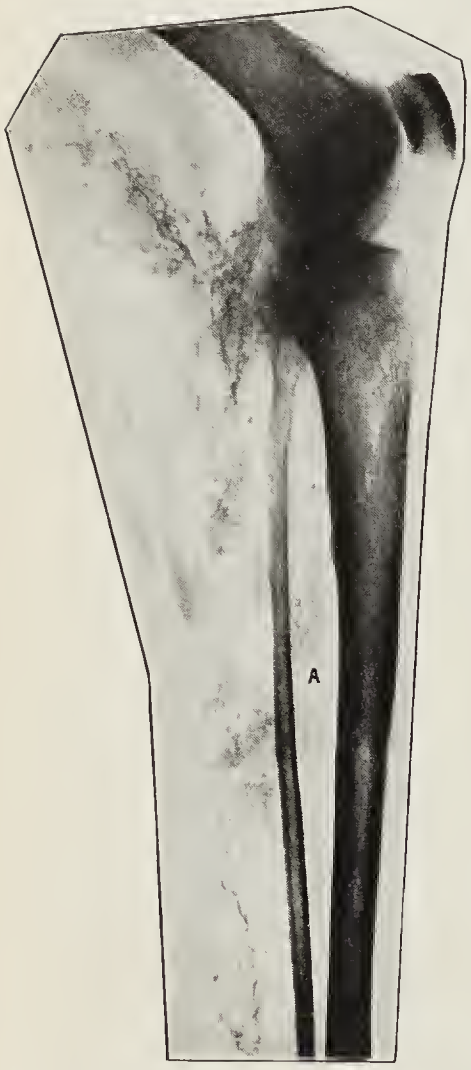

Fig. 1.—Contraction of knee, result of myositis ossificans. The thickening and induration of the blood-vessels is shown well at A. The deposits in the muscles are numerous and of considerable size.

It is a common sequence of a prolonged Buck's extension, or the pressure of a plaster cast on the nerve, or of its compression by a splint or circular bandage. It results in a paralysis of all the extensor group of muscles on the anterior surface of the leg, and later a contraction of the calf muscles follows, causing a talipes equinus. The drop-foot so commonly present after fractures of the leg and thigh is a dressing sequence and not an injury sequence, and is due to a degeneration of the protoplasm of the motor neurons, known as the axis cylinder. The nucleolus of the neurons in the anterior cornu is not disturbed.

Occasionally, in traumas to the arm, forearm, thigh and leg, the muscle bellies are cut through to the bone, and extensive hemorrhage takes place into them. The muscles become adherent or united to the periosteum, causing their fixation and immobilization, so that voluntary contraction or extension cannot be produced below the point of muscular fixation. Absorption of the adipose tissue may follow this contusion, and the skin is frequently attached directly to the aponeurosis or belly of the muscle. A myositis ossificans may occur, and when it extends into the muscle for a considerable distance it not infrequently produces a contraction and a limitation of motion. Intramuscular angiomas, as the result of trauma or infection, may have a phlebitis, which in turn causes a deposit throughout the muscles or muscle group of an extremity, resulting in contraction and fixation, with permanent deformity, as shown in one case (Fig. 1).

Now, as to the symptoms of this condition: Let us consider the cases occurring in the upper extremity, as these are, after all, the most common as well as the most important. The first symptom noted is a stiffening of the fingers and a swelling of the fingers, hand and forearm. In most cases there is also a discoloration, a cyanosis, although in one of our cases it was stated in the history that there was no discoloration at any time. Occurring almost simultaneously with these objective symptoms is *pain, usually intense;* the patient, whether child or adult, does, as a rule, complain of the pain very much, though by the attendants and friends it is regarded as a necessary adjunct or concomitant of the fracture. There is soon limitation of motion and then complete loss of motion in the fingers. If the constricting agent, the hemorrhagic edema, the bandage, cast or splint is not removed, the swelling and cyanosis may increase in degree, although the pain gradually lessens in severity, and after a few hours or days disappears entirely. Finally, the swelling and cyanosis disappear, but normal motion in the fingers is not restored. In some cases the symptoms are very slight in degree. The patient may not suffer severe pain at all, but the result to the muscle is the same. The swelling of the forearm and hand is always present in the early hours and gives the signal of danger.

The progression of the pathologic changes is rapid. The electrical reaction of the affected muscles is first suspended, except in the cases in which there is an associated nerve lesion, when the reaction of division or degeneration may be present.

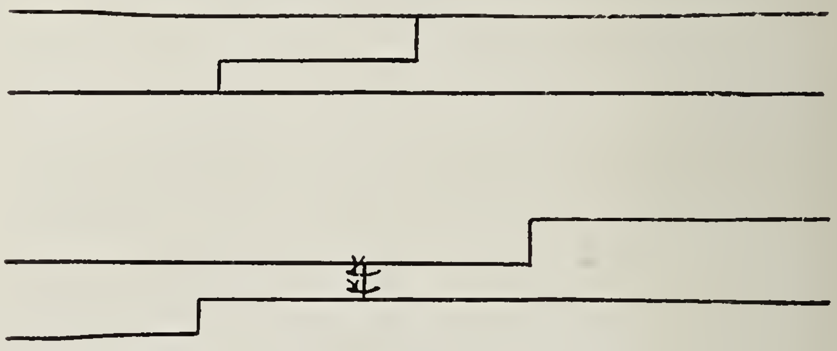

Fig. 2.—Method of tendon elongation. Double L incision and approximation by suture of long ends of two L's.

Let us view concisely the symptom-complex as it occurs in one of these cases, say following a supracondyloid fracture of the humerus. A fracture is not necessary, as is shown in one of our cases. There is first the injury of the joint and the surrounding tissues, causing an infiltration of the tissues and a compression of the vein which results in a venous stasis. Second, the *local infiltration* in the upper forearm, severe in degree, causing a woody hardness, bronze glistening skin and severe pain, the result of the venous stasis in the subcubital tissues. Third, degeneration and atrophy of the muscle cells and cicatricial formation. Fourth, contraction of the muscle scar and tendons leading to a deformity of the hand and fingers. Fifth, electrical changes in the muscles, if much muscle tissue is destroyed or when the nerve-supply is injured in the manner stated above. The paresthesias, anesthesias and hyperesthesias are accounted for by the associated nerve lesions.

There may also be some constitutional disturbance, such as elevation of temperature, some malaise, sensations of chilliness, but, as a rule, these are absent or so completely overshadowed by the *pain* that no notice is taken of their existence. In a few cases the interossei and lumbricales are also involved; that is, there may be a slight atrophy. The most characteristic and at the same time early severe symptoms are the pain and the swelling. The other symptoms are in the nature of associated symptoms, but should be looked for in making the diagnosis.

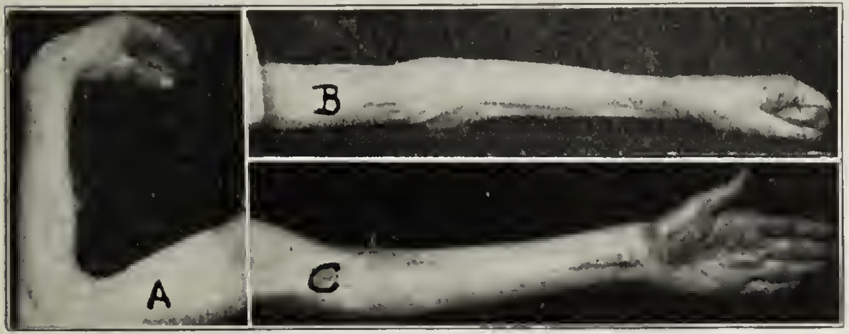

Fig. 3 (Case 2).—*A*, position of hand before operation, the result of forcible contraction, being flexed at right angles; even in this position the fingers could not be extended. *B* and *C* show the degree of flexion and extension of the fingers five months after the tenoplasty was done on the flexor tendons.

As to the late diagnosis of this condition: The deformity of the hands and fingers is in itself diagnostic. It is the typical claw-finger, *main-en-griffe*. The fingers are flexed into the palm of the hand when the wrist is extended or partially extended, and even with the use of considerable force the fingers cannot be straightened. The metacarpophalangeal joints are not flexed. When the wrist is flexed, the fingers can be extended wholly or partially, except in the very severe cases, when the interphalangeal joints remain more or less flexed. As the condition progresses the wrist-joint may likewise be flexed and the finger-nails are forced into the palm. The forearm is slightly pronated and the elbow becomes somewhat flexed. The condition is then accompanied by wasting of the flexor muscles, and it may reach so great a degree that the muscles are no longer palpable, but in the place of muscles one feels a hard rope-like mass. Except for the flexion of the joints, they are otherwise normal; that is, their anatomic structure remains unchanged. On the anterior surface of the wrist-joint it is always possible to see or at least palpate the tense tendons of the flexor muscles. They feel like a bundle of large violin strings, and they are made more tense or more prominent on every effort to extend the fingers.

In arriving at a late diagnosis it is well to consider the following if one would avoid falling into error: First, the history of a fracture, trauma or infiltration of the tissues, accompanied by pain; second, swelling of the hand and forearm, cyanosis and severe pain in the forearm, hand and fingers; third, amelioration of the symptoms on the removal of a constricting bandage or compressing splint, or on straightening out the flexed forearm; or fourth, the infiltration continues to increase in degree in spite of the removal of the bandage; fifth, in complicated cases the presence of anesthesia or paresthesia; sixth, in complicated cases the absence of the radial pulse (this is rare); seventh, they show no improvement with time, but, on the contrary, become worse, and are not materially benefited by massage or electricity.

The treatment may be divided into (1) prophylactic, (2) non-operative, and (3) operative.

Prophylactic treatment consists in—

A. Avoiding the immediate application of compressing splints or circular constricting bandages or casts.

B. Permitting the forearm to assume the position of greatest comfort for twenty-four or forty-eight hours, unless there is a backward dislocation of the elbow, which should be corrected.

C. *The elbow should never be fixed in a flexed position* immediately after the accident.

D. If the *cyanosis* still continues with the forearm extended and elevated, the fascia on the antero-ulnar side of the forearm should be split for a distance of 3 to 6 inches subcutaneously. This can be done with a tenotome without any danger of compounding the injury and should be done within twenty-four to thirty-six hours, if good results are to obtain. (If the forearm is dissected one can see the firm capsule surrounding the flexor group of forearm muscles in its upper 6 inches.)

E. Put on the fixing bandage later when the swelling has materially subsided.

F. The displacement of the fragments can be restored six to ten days after the fracture just as well as on the day of the fracture, and with much less hazard to the extremity.

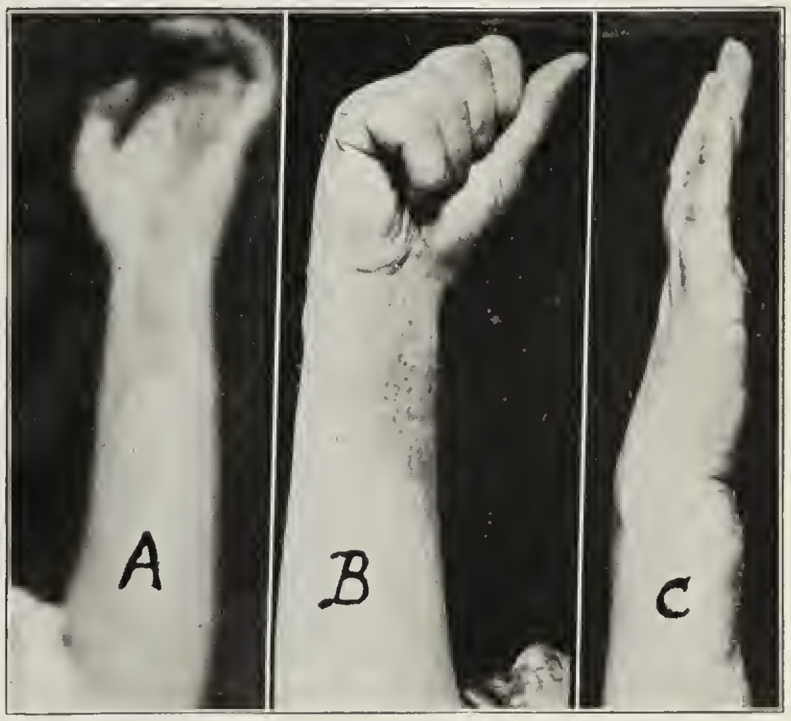

Fig. 4 (Case 3).—*A*, position of hand and fingers before operation. *B* and *C*, degree of flexion and extension one month after operation. The range of motion was normal.

Bandages and splints *should never be applied for the purpose of reducing a fracture*, and rarely ever for the maintenance of position *by force* after reduction. They are simply immobilizers or means for limiting voluntary or mechanical disturbance of the bones after reduction is effected. I have seen in the last five years upward of fifty cases of this type, involving the upper extremity, which shows how common the lesion is. In not one of these cases was there any paralysis of sensation or motion, showing that the nerve was functionating properly. The limitation of motion was due to the contraction of the muscle following the pressure myositis. The treatment of fractures at the elbow joint by the non-bloody extra-articular nailing permits one to place the forearm in any position desired immediately after the nailing.

The non-operative treatment aims at restoring function in the damaged muscle by means of massage combined with passive movement, such as extension of the wrist or finger joints, supination of the forearm and extension of the elbow. Faradism and galvanism may be resorted to, but have little or no effect. Electrical treatment is not essential, nor is it productive of good results when the cases are severe or recognized too late to be amenable to the prophylactic treatment.

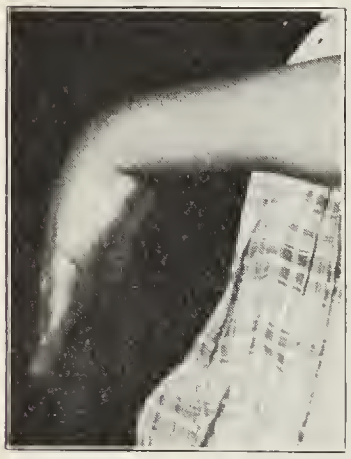
Fig. 5 (Case 4).—Position of hand and fingers before operation. The fingers can be extended with the wrist in flexion. (No photograph after operation. Usual result.)

In 1908 Jones of Liverpool reported a method of treatment which he had resorted to with good results in a number of cases. He used an adjustable splint, which was placed on the forearm and the palmar surface of the hand, with an extension along the palmar surface of each finger. This splint is adjustable by means of set-screws for the wrist and fingers separately. The principle of the treatment is to straighten the splint gradually, a little each day, so that the fingers are straightened out and finally the wrist. The process is continued until the fingers are fully extended with the wrist first sharply flexed, and then the wrist is likewise forced into extension until it is in full extension and the fingers in hyperextension. Later, massage and electricity are resorted to. Jones has had good results with this method, but it has never become popular. Sayre of New York used this splint in one case, and was well satisfied with it. Naturally, the treatment must be carried on over a great period and can only result in good when the scar tissue is limited.

Mikulicz devised the operation for resection of portions of the bone; that is, the ulna and radius in the case of the forearm. This method has been practiced by a number of surgeons with varying success. The principle of the treatment is to shorten the bone sufficiently to permit of bringing the fingers and wrist into a fully extended position. The section is made obliquely and the divided ends of the bones are fastened together with wire, plates or any other method which the surgeon may choose. The great danger of this operation is the possibility of the occurrence of a non-union, and for that reason it has never become popularized to the extent that it is used in preference to other methods. However, Mikulicz has stated that he has had good results and he should have had when asepsis prevailed and union took place.

Bardenheuer advised an oblique division, or even a transverse division, of the muscles, done subcutaneously, allowing the muscle ends to slide by one another, so that when union of the cut ends occurred the muscle was longer than before. This should not be attempted. The principle of this plan has been used by us rather extensively in lengthening the Achilles tendon, but for an entirely different pathologic condition. Transplantation of the flexor and extensor tendon insertions has also been practiced, although only to a very slight degree.

Finally, there is the operation of tenoplasty, consisting in the lengthening of *all* of the flexor tendons in the forearm just above the anterior layer of the annular ligament. This is the operation which we have performed and with such a uniformly good result that we see no reason for changing our plan of procedure. The operation should not be done until the contracture has reached its maximum, and on account of the danger of adhesions forming to the annular ligament, the work must be done well up on the forearm, or provision must be made to prevent the occurrence of these adhesions.

The principles of treatment consist (*a*) in the correction of the deformity by tendon elongation, not mere division; (*b*) in balancing the muscle groups, so that subsequent contraction and deformity do not occur; (*c*) in the transverse division of such portion of the joint capsule and forearm fascia as is necessary to permit of a full latitude of motion in the joint at the time of operation.

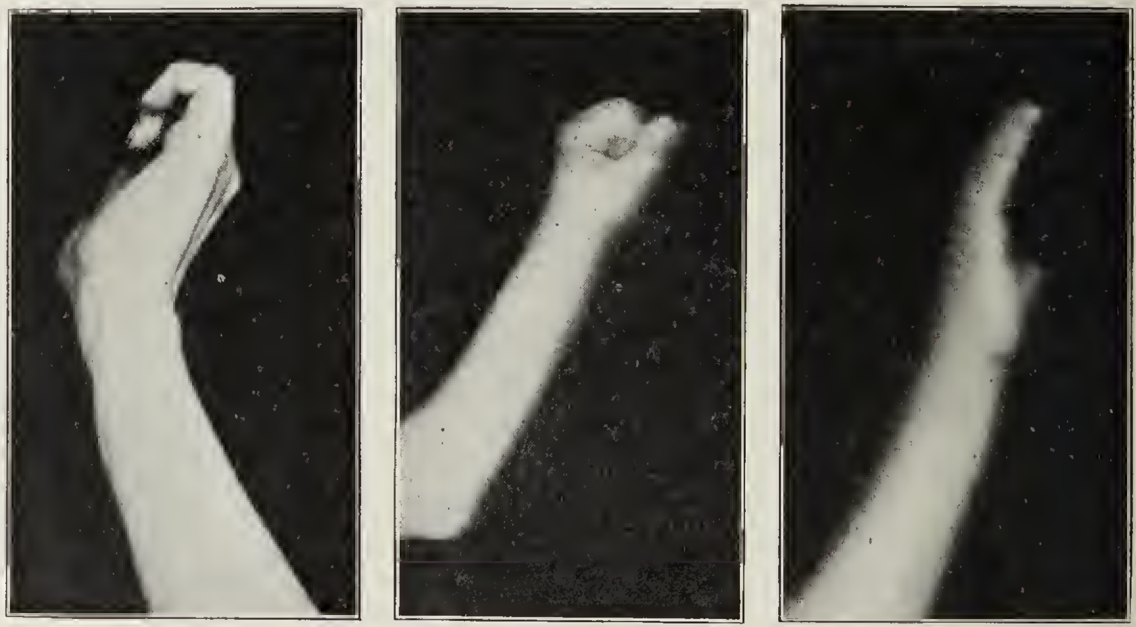
A B C

Fig. 6 (Case 7).—*A*, position of hand and fingers before operation; *B* and *C*, degree of flexion and extension seven weeks after operation.

The first is accomplished by the elongation of the flexor tendons by means of a ┌─┘-shaped incision and division of the tendon (Fig. 2). Each tendon should be elongated sufficiently so as to leave a good slack at the time of the primary correction. If possible, adjacent tendons should not be divided on the same plane. To avoid uniting wrong ends of tendons to one another, a sort of crossing of the wires, the sutures should be inserted in the ends of each divided tendon immediately after the division, not tied, but clamped with a forceps and laid aside. The degree of elongation should be estimated by straightening the fingers and extending the wrist to the fullest extent after division and before approximation. This lengthening may need to be made for as great a distance as 3 inches, but the degree of lengthening does not in any way increase the difficulty of the operation or militate against the final good result.

When the tendons have all been elongated and sutured with a very fine chromicized gut or silk, if the hand still does not come into a fully extended position, the capsule of the joint should be divided across the anterior surface of the wrist joint. The line of tendon division is covered by a pedicled flap of fat and fascia taken from the side of the wrist. When this cannot be accomplished, the point of union or approximation should be surrounded by egg membrane to prevent tendon agglutination, or a free fat flap should be transplanted into the space. When the sutures are tied and the tendons replaced, a portion of the tendon sheaths or the fascia and fat from the inner or outer side of the forearm should be swung in between the tendon groups and sutured, so that each tendon will lie in its separate compartment. Unless this is done, the tendons will become fixed to each other transversely, and the muscles will move as a *group* in place of *individually*. This tendon elongation is ideal in its results, if one attains asepsis and has some muscle cells remaining to contract when the tendon is elongated.

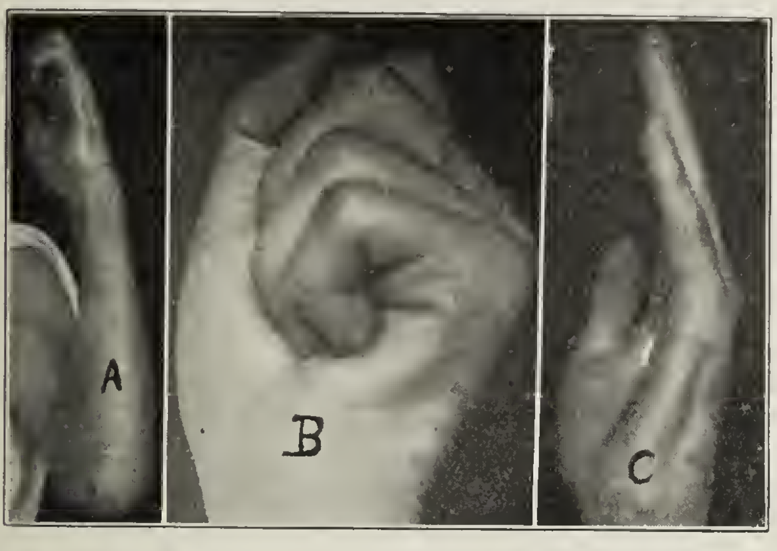

Fig. 7 (Case 8).—*A*, position of hand and fingers before operation; *B* and *C*, flexion and extension eight weeks after operation.

The *division of the joint capsule* associated with elongation of tendons does not receive sufficient attention in the literature on the subject. It is necessary if a permanently good result is to be obtained. After prolonged contractions in the neighborhood of the elbow, even after the biceps tendon has been elongated, the forearm may not come down into a position of extension until the anterior capsule of the joint is divided. After this is done the arm can be forced down gently, and sometimes it drops down, without any previous stretching of the brachialis anticus. If resort is had to stretching, care must be observed not to injure vessels and nerves. Occasionally a complete paralysis of the muscles of the forearm has been produced by injudicious stretching, which has caused an injury or trauma of the musculospiral, median and ulnar nerves. This paralysis is due to a suspension of transmission of nerve impulses in the axons by what I believe to be an edema consequent on the stretching. It disappears in from two weeks to four months, and in every case of the kind which I have seen the function of the muscles was completely restored. Failure to divide the joint capsule is the most common cause of failure in this class of cases (Case 2).

If the anterior or posterior group of tendons, that is, the superficial or deep flexors, are contracted to such a degree and fixed to the bone, that a plastic operation cannot be performed, then the operation of excision of a section of the bones of the forearm should be resorted to, so as to shorten the forearm and the muscles and tendons are then at the same time placed under favorable conditions for mobility. A fat and fascia flap should be interposed between the muscles, tendons and the bone to prevent the recurrence of the adhesions. If pedicled flaps cannot be obtained from the tissue around the seat of operation, then the fascia lata of the trochanteric region always affords an ample supply of tissue for this purpose. We have used such detached flaps of fat and fascia in a number of cases for various purposes; it has always healed in and we have been well satisfied with the result. It is essential that the periosteum and the skin should not become attached to the line of the new union of the muscles or tendons, as these fixations are a great impairment to motion in subsequent muscular contractions and relaxations. It is of the greatest importance that superlative asepsis be attained by never touching any of the tissues with the gloved hand. The skin is closed with a subdermal catgut stitch and a horsehair dermal stitch.

As to the after-treatment of these cases: The arm is dressed in a wire cage splint, placed on the dorsal surface of the forearm and hand, with the wrist in hyperextension and the fingers straight. The arm is kept elevated on a pillow, so as to prevent edema in the forearm and the area operated on. The fingers are watched daily—in fact, hourly—and on the slightest complaint of pain on the part of the patient, or of the appearance of a swelling of the fingers, the bandage is loosened. The stitches are removed on the tenth or twelfth day, and the patient is encouraged to flex and extend the fingers as often as possible. We have not had a single case in which the result was otherwise than as expected—that is, the patient regained practically full power of flexion and extension. Voluntary motion should be attempted after the tenth to fifteenth day, depending on the age of the patient. It should never be forced to the degree of causing severe pain. Gentle transverse massage may be used to advantage. It often takes months to develop contraction sufficient to give full range of motion in the muscles.

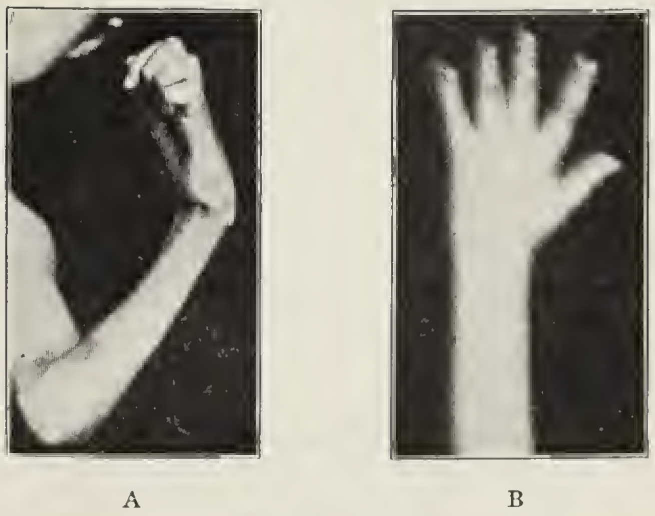

Fig. 8 (Case 9).—*A*, position of hand and fingers before operation; *B*, degree of extension six weeks after operation. (Flexion was also nearly normal, but the photograph was so blurred as to make it worthless for printing.)

### CONCLUSIONS

1. The contracted wrist is always a sequence of cicatricial contraction following myositis.

2. The myositis is of pressure or infiltration origin or acute edema or hemorrhage.

3. The drop wrist is of nerve origin.

4. The extensors are rarely involved in these cases, though we have seen two of positive splint pressure origin.

5. The prophylactic treatment gives excellent results, and should always be resorted to immediately on the manifestation of the pain, swelling and cyanosis syndrome of symptoms.

6. The early tenoplasty is the ideal operation, when the disease is fully developed.

7. Capsulotomy should never be overlooked in the proper cases.

8. Resection of the bones is admissible in cases not amenable to tenoplasty.

9. The operation should be performed as soon as the acute symptoms have fully subsided, three to four months after the accident.

10. Correction of malunion should be instituted before the tenoplasty operation.

### REPORT OF CASES

The following is an abstract of a few illustrative cases:

Case 1.—Man, aged 24, sixteen years previously had fractured the left radius at the junction of the lower and middle thirds. The fracture was reduced and anterior and posterior splints were applied and left on for five or six weeks. In the course of the next few months the patient noted an increasing inability to extend the fingers. Various attempts at forcible extension failed to relieve the condition. The flexor tendon of the little finger was elongated and the ulnar and median nerves had been exposed and freed but without any result. On admission to the hospital the patient had a typical Volkmann's contracture; the muscles reacted to voluntary impulses and the faradic current, showing that there was no motor neuron lesion. In November, 1902, all the flexor tendons were lengthened from 1¼ to 2¾ inches with good result. One year later a second additional lengthening was made and was followed by a perfect result. The patient is a surgeon and his hand is as good as its fellow.

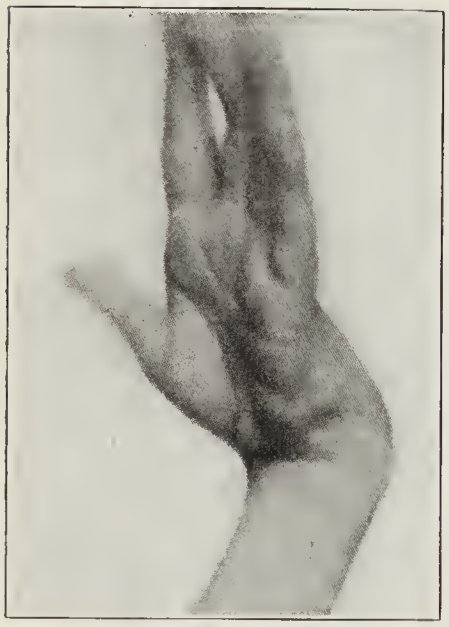

Fig. 9 (Case 11).—Position of hand and fingers before operation. With the wrist flexed the fingers are well extended.

Case 2.—Man, aged 19, sustained a fracture of the left arm near the elbow ten years previously. A plaster cast was applied with the arm flexed to a right angle at the elbow. During the six weeks the cast was on, the patient had great pain in the forearm with enormous swelling of the hand and fingers. When the cast was removed the arm was flexed at a right angle and there was only 1 inch range of motion in the elbow. The wrist was flexed and the fingers contracted on the palm with great atrophy of the muscles of the forearm and arm. The muscles reacted to the faradic current. The treatment in this case (June, 1909) consisted of elongation of the biceps tendon and as this failed to increase the motion materially, the anterior portion of the joint capsule was divided transversely, immediately restoring a full range of extension. Four weeks later all the flexor tendons of the forearm were elongated from 1½ to 2¾ inches and the anterior capsule of the wrist joint was divided transversely. The result was complete restoration of motion. The patient now is a good amateur pianist (Fig. 3).

Case 3.—Woman, aged 26, sustained a simple Colles' fracture with subsequent infection of the skin wound, which discharged pus for eight weeks and then sloughed over an area of about 4 inches square. The result was a stiff wrist and contracted fingers. Massage and electricity failed to give relief. Inquiry elicited the information that the forearm had been dressed with an anterior wood splint, causing much pain and swelling of the hand. Ten days later an abscess just above the wrist was opened and then followed the long period of pus discharge and sloughing of the skin. The flexor tendons were found adherent to the bone in a mass and were dissected free and lengthened for from 2 to 3 inches. A pedicled flap of fat and fascia was placed between the tendons and the bone. The result was eminently satisfactory. The patient regained a normal range of motion and resumed her professional work on the stage as a harpist (Fig. 4).

Case 4.—Patient, aged 5, sustained a fracture of the elbow-joint. A circular plaster cast was applied with the arm flexed to a right angle. The following morning the hand and forearm were swollen and at the end of forty-eight hours the child was suffering excruciating pain. The hand was cyanotic. When the cast was removed six weeks later, the elbow-joint was fixed in flexion, and the fingers were flexed into the palm of the hand. Tenoplasty was done on the flexor tendons with good result.

Case 8.—Man, aged 24, sustained a fracture of the olecranon. The following day the fracture was reduced and the arm was wrapped in an adhesive-plaster cast extending from the thumb up to the middle of the arm, with the elbow in full flexion. The hand soon began to swell and became so painful that four or five days later the adhesive was cut, except for a distance of 4 inches directly over the wrist. When the adhesive was entirely removed, three weeks later, the hand was stiff and swollen. The fingers were flexed and could not be extended without assistance. The degree of flexion increased. We performed the usual tenoplasty with a good result (Fig. 7).

Case 9.—Patient, aged 11, sustained a supracondyloid fracture of the humerus. After reduction of the fracture, a metal right-angle splint was adjusted to the inner side of the arm and secured in place with a roller bandage. As soon as the boy regained consciousness he complained of pain in the arm, which increased in severity and was shortly followed by swelling of the hand. Eighteen hours after the injury the hand was considerably swollen. Not until the third day were the bandages loosened. The splint was left on four weeks and then the patient could not flex or extend his forearm fully, the fingers were drawn into the palm of the hand and he was unable to extend them. At the first operation which we performed a projecting fragment of bone was removed from the anterior surface of the humerus to restore normal elbow motion. The result was perfect. At the second operation the flexor tendons of the forearm were elongated 1½ inches. The full normal range of motion was restored (Fig. 8).

## ABSTRACT OF DISCUSSION

Dr. Ernest Laplace, Philadelphia: The better understanding of fractures must be based on pathology. A fracture is necessarily attended by hemorrhage which infiltrates the tissues. We cannot hope that this will disappear without leaving some fibrin or hematin infiltrating the histologic elements of the parts. If the surgeon undertakes the treatment of a fracture, as a plumber solders a bit of lead pipe, without regard to the soft structures, then he fails signally. There is no routine treatment of fractures. Due attention must be given to the swelling and to the local histologic injury in the individual case, that the ultimate result may be attended with the least impairment of function. Therefore, whether splints, plaster-of-Paris casts or any other method be resorted to, the result must not be lost sight of. There is no post-haste in the treatment of the fracture itself. Attention should, however, be given to the soft structures that these may be relieved from their traumatism as soon as possible. This is especially true in children in whom it has been demonstrated that even if the immediate union be not at first creditable, time will readjust the fractured ends with remarkable precision as Kummell has shown in a large series of cases by Roentgen-ray demonstration. When fractures are forcibly put into casts or subjected to undue pressure at the time of the first dressing, such injury may result to the soft structures as may lead to permanent contraction and other impairment of function.

Dr. Dean Lewis, Chicago: An ischemic contracture is one of the most serious sequences of a fracture. A thorough understanding of the causes underlying the development of contractures of this type is necessary before a rational therapy can be applied or an improper one avoided. Ischemic contractures follow most often fractures about the elbow and knee, and in the majority of cases the line of fracture passes through the lower end of the humerus or femur. The anatomic relations about these points favor the development of ischemic contractures. The antecubital fossa is covered by a dense fascia, as is also the popliteal fossa. Related to each fossa are large venous trunks which can easily be compressed by a hematoma developing beneath the fascia. The displaced fragment of the fractured bone often lies in such a position that it compresses the main artery of the extremity. Compression by the fragment and pressure of the hematoma beneath the resistant fascia may cause an ischemia or a venous congestion either of which continued long enough will result in muscle degeneration followed by contractures. The subfascial hematoma also interferes with, or prevents the development of a collateral circulation, in those cases in which the main artery is compressed by the fragment. It is undoubtedly true that most cases of ischemic contractures follow the application of constricting bandages, but it should also be remembered that statistics indicate that ischemic contractures follow fractures even when no dressing has been applied. Bardenheuer, who I believe has made the greatest contribution to this subject, has stated that about 8 per cent. of the contractures follow fractures which have had no dressing applied and in which no attempt at reduction has been made. We should remember that a supracondylar fracture unattended to for twenty-four hours may develop contractures in spite of the fact that proper treatment has been applied when seen by the surgeon, and that the damage has already been done, because of the indifference or neglect of the patient. In some cases active means should be resorted to. The fascia covering the antecubital fossa should be incised to remove the hematoma, and the projecting fragment of bone should be replaced to prevent pressure on the main vessel. We are indebted to Dr. Murphy for emphasizing the etiologic rôle of the surgeon in these cases and for outlining so clearly the methods by which this most distressing sequel can be avoided.

Mr. Harold Collinson, Leeds, England: I will, briefly, emphasize what Dr. Lewis has said. I would ask Dr. Murphy whether the ischemic contraction of the forearm was not occasionally merely the result of the extravasation of the blood between the muscular bellies in the upper portion of the forearm. In illustration of this the most striking case of ischemic contracture that I have ever seen was in a small boy who fractured the lower end of his humerus and was under my own care from the very start. He had a great amount of hemorrhage around the elbow-joint and was treated in bed with the arm raised and flexed at an angle of about 120 degrees. He was watched carefully and within twenty-four hours developed ulcers over the tongue and in the index fingers. No splint was ever applied to the arm at any time and in the next month he developed a very marked degree of Volkmann's contracture. Fortunately, it was treated early by massage and movements and he has now a comparatively useful forearm, but it struck me that it was possible in a certain proportion of cases for this condition to arise independent of any treatment. Possibly if some more active treatment had been undertaken in these cases we might have had a better result, but I think not. With regard to the treatment of these late cases it has been my misfortune to have some of these cases, and they are, I am afraid, in my experience, a little more discouraging than they appear to Dr. Murphy. In a case in which the muscular bellies are converted into a hard cicatricial mass, the lengthening of all the tendons of the forearm, which I have undertaken in a certain number of these cases, has been productive of what we call a good result in only a small proportion. It occurs in the late neglected cases that the muscular bellies have lost all power of contraction and while one is able to get the fingers straight with the wrist extended, the amount of use in these fingers, so far as flexion is concerned, is in a certain proportion of cases rather disappointing. I have never undertaken the shortening of the bones of the forearm, but I was hoping that Dr. Murphy when he again talked would be able to tell us of some rather more intelligent treatment than this which I have up to the present undertaken.

Dr. John B. Murphy, Chicago: I mentioned in my paper the three etiologic factors in the production of myositis—the pressure from the splint, the pressure of flexion, and the pressure of the hemorrhage and effusion beneath the aponeurosis in connection with the trauma. The most common cause is pressure from the splint. I have a beautiful case now, from the pathologic point of view, illustrating the point brought out by Mr. Collinson—an arthroplasty in which the patient had a hemorrhage extending down the forearm beneath the fascia, forming a clot there and producing a suspension of muscular contraction within the first eight hours. On examination I found that the blood had passed beneath the aponeurosis and had compressed the muscle. Another matter which was not mentioned in my verbal discussion of the treatment is that when the skin becomes tense, shiny and feels woody, the open incision should be resorted to, and thus free the tension on the blood-clot that is forming and prevent the hemorrhage, necrosis or myositis. This is the proper treatment in this condition, but it must be immediate if good results are to obtain. When there is a large transudate under the muscular aponeurosis, and the tension is severe, subcutaneous division of the aponeurosis is indicated. I thank Dr. Laplace for accentuating the essential factor of the avoidance of trauma in the early or after-management of these fractures. One does not have to fix the bone in its proper position at once; one can wait until the edema and swelling have materially subsided. Above all, however, your morning prayer when treating these cases should include "Deliver me this day from executing passive motion in a recent fracture of the elbow-joint, when that passive motion causes the patient severe pain," as it increases the callous, the connective-tissue formation, the tendency to fixation, and adds to the trauma which is already superlative in that area.

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**The Ancient Practitioner.**—The high esteem in which the physician was held is proved by the beautiful words of Jesus. the son of Sirach (180 B.C.), Ecclesiasticus (R.V.), chapter xxxviii:

"1. Honor a physician according to thy need of him with the honours due unto him:
For verily the Lord hath created him.
2. For from the Most High cometh healing:
And from the King he shall receive a gift.
3. The skill of the physician shall lift up his head:
And in the sight of great men he shall be admired.
4. The Lord created medicines out of the earth;
And a prudent man will have no disgust at them.
5. Was not water made sweet with wood,
That the virtue thereof might be known?
6. And he gave men skill,
That they might be glorified in his marvellous work."

—Neuburger, *History of Medicine*.

# THE RODMAN OPERATION FOR BREAST CANCER*

DONALD GUTHRIE, M.D.
SAYRE, PA.

Rodman in 1908 described an operation for the radical treatment of breast cancer which embraces the good features of the most approved and accepted methods.

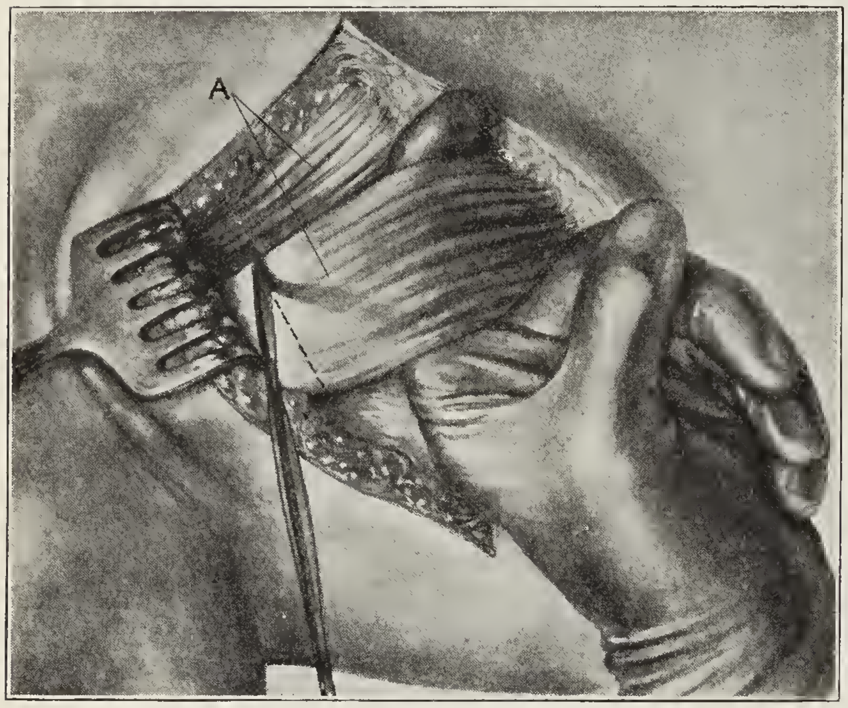

Fig. 1.—*A*, pectoralis major muscle.

In the past three and one-half years, my associate, S. D. Molyneux, and myself, have operated in 117 breast cases. Of this number 79 had the radical operation, 77 for carcinoma, 1 for sarcoma, and 1 for tuberculosis, and in 74 instances we used the Rodman operation. This number of cases is far too small, and the length of time since operation too short, to justify any conclusions about results; still we have employed the operation frequently enough to be impressed with the good points, and believe it to be one of the best radical operations.

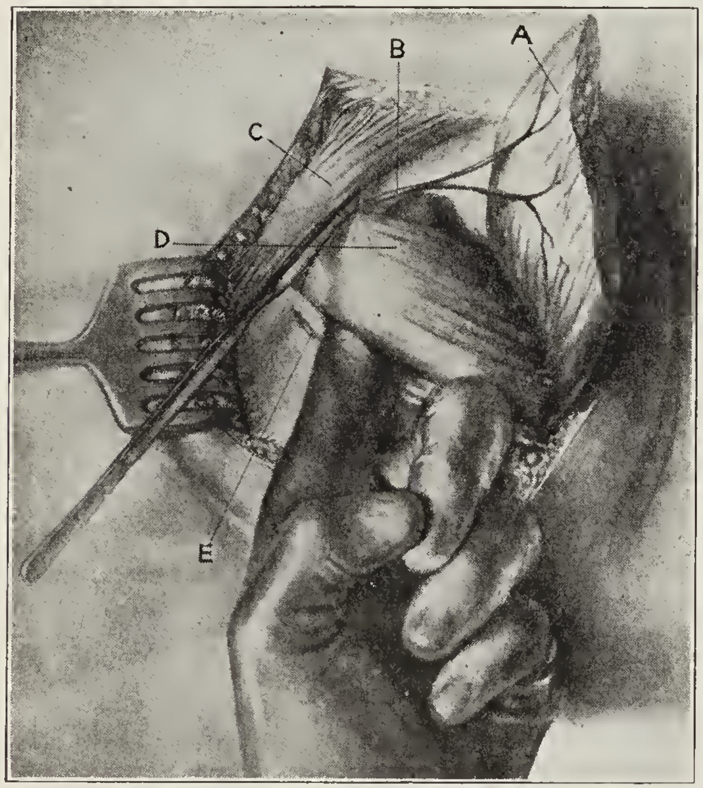

Fig. 2.—*A*, pectoralis major muscle; *B*, acromiothoracic artery; *C*, pectoralis major (clavicular portion); *D*, pectoralis minor muscle; *E*, long thoracic artery.

Rodman emphasizes the importance of a primary axillary dissection, because by working from the axilla instead of toward it the danger of expressing cancer-cells into the adjacent tissues is avoided.

Often it is very important to inspect the extent of axillary involvement before it can be decided whether or not a complete operation is justifiable. The late S. W. Gross called attention to this thirty-five years ago. Judd, in a late paper, points this out, and believes that many advanced cases would not be subjected to the radical operation if the extent of axillary involvement was first determined.

Willy Meyer first practiced and advocated ligating the axillary vessels at their point of origin to lessen the amount of hemorrhage. More blood is lost in any type of operation which attacks the breast first, instead of the axilla, because the same vessels are cut across several times in working toward their points of origin.

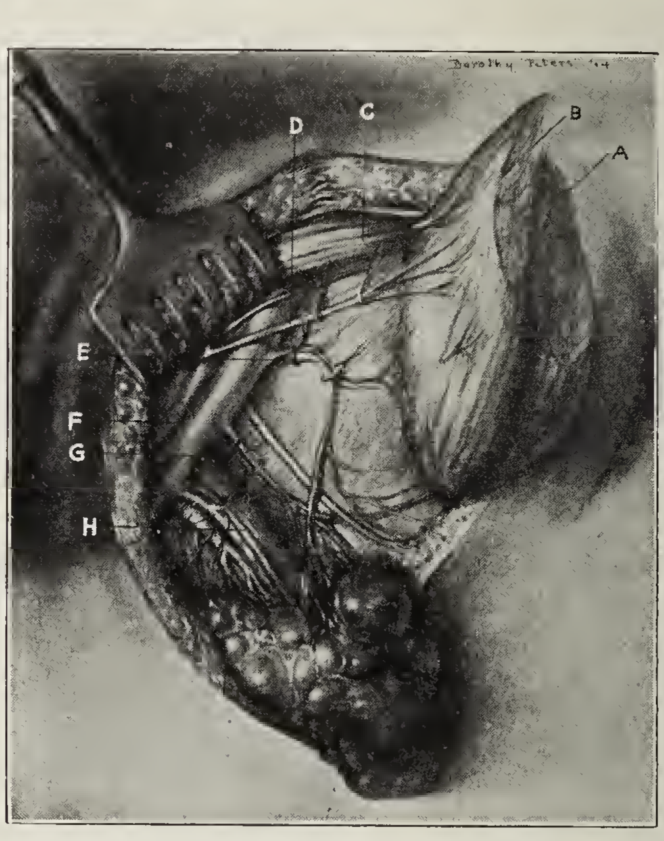

Fig. 3.—*A*, pectoralis major muscle; *B*, pectoralis minor; *C*, pectoralis major (clavicular portion); *D*, acromiothoracic artery; *E*, long thoracic artery and vein; *F*, nerve of Bell; *G*, alar thoracic artery and vein; *H*, subscapular artery, vein and nerve.

Long exposure of a large denuded area of the chest, which occurs in operations that work from sternum to axilla, tends to produce shock. With lessened hemorrhage the time of operation is shortened, and shock is minimized.

Rodman's primary incision is a straight one, beginning one inch below the clavicle, two fingers' breadth from and parallel to the sulcus, between the deltoid and pectoralis major muscles. An incision extending on the arm frequently forms a cicatrix, which limits the range of motion of the arm, and at times causes edema. Our patients have had splendid use of the arm after operation.

The axilla is exposed by severing the tendons of the pectoralis major and minor muscles at their insertions. As a rule, the clavicular portion of the pectoralis major is not removed, unless the growth is in the upper outer quadrant of the breast (Fig. 1). The acromiothoracic and the long thoracic arteries run parallel (above and below, respectively), to the tendon of the pectoralis minor muscle, and should not be injured during this step of the operation (Fig. 2). By cutting the costocoracoid membrane, the space of Morenheim is well exposed.

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

The dissection of the axilla begins at the apex and extends from above downward and from within outward. As the sheath and fat are removed from the axillary vessels the acromial, long and alar thoracic, and the subscapularis branches of the axillary artery are encountered in the order named (Fig. 3). These, with their accompanying veins, are cut, and the proximal ends ligated. No attempt should be made to remove individual enlarged glands. The contents of the axilla should be removed *en masse,* as a gland-bearing fascia. When this dissection has been completed nothing is left on the inner aspect of the axilla but the posterior thoracic, or nerve of Bell, and posteriorly the long, subscapular nerve.

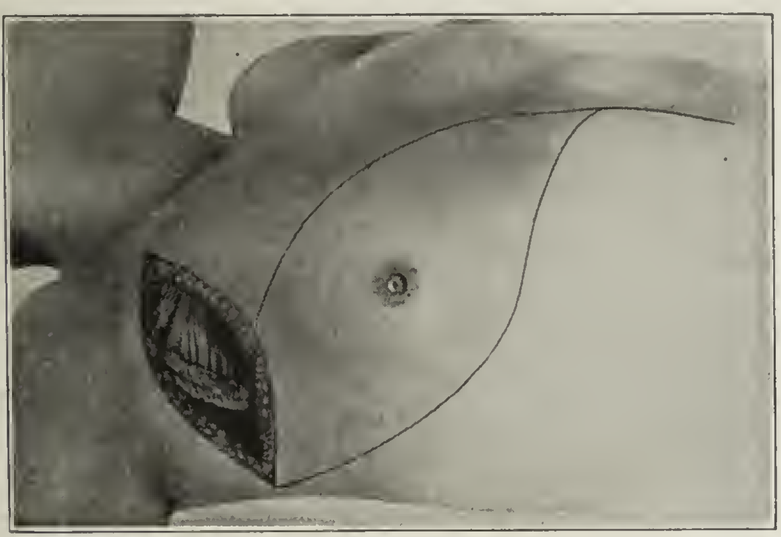

Fig. 4.—Incision for removal of breast.

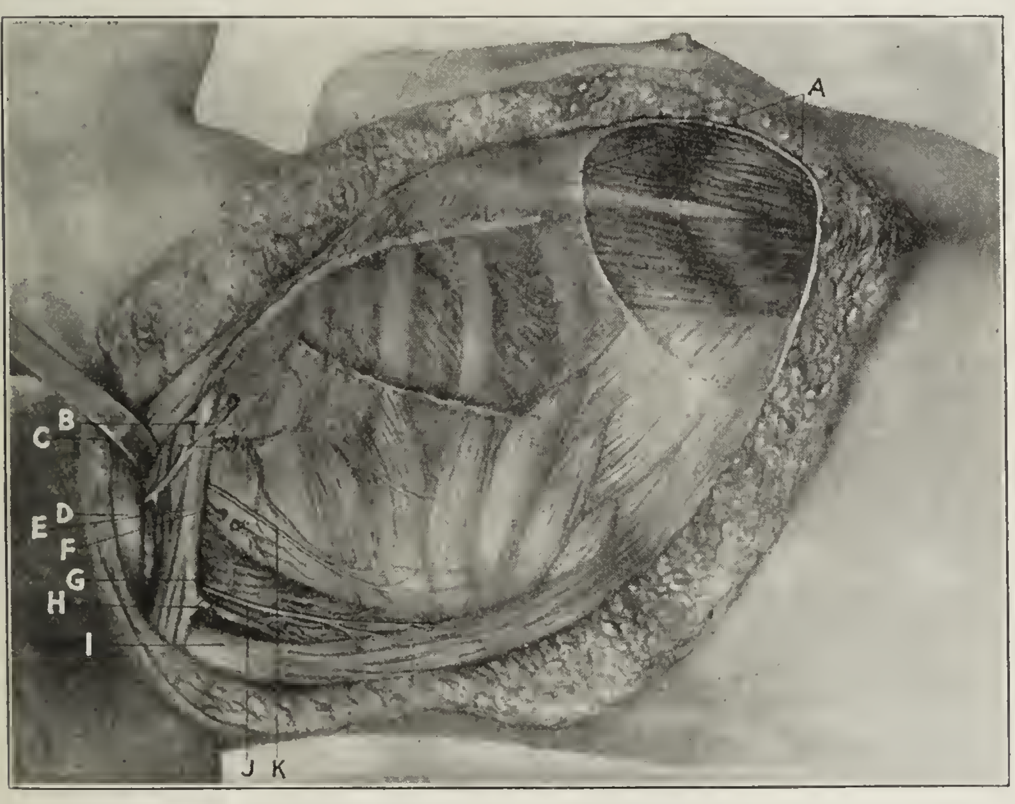

Fig. 5.—*A,* sheath of rectus muscles; *B,* acromiothoracic artery; *C,* long thoracic artery; *D,* pectoralis major (clavicular portion); *E,* axillary vein; *F,* alar thoracic artery; *G,* subscapular muscle; *H,* subscapular artery and vein; *I,* latissimus dorsi muscle; *J,* subscapular nerve; *K,* nerve of Bell.

The breast is removed by an incision beginning at the middle of the primary incision, encircling the breast, and extending downward to a point midway between the ensiform and umbilicus (Fig. 4). The oval should be 5 or 6 inches or more at its greatest breadth, and the incision must never come within 2 inches of the edge of the growth. The subcutaneous tissues are cut on a slant, so that the skin is everywhere undermined for a distance of several inches from the edges of the wound. Rodman and Judd practice free dissection of the superficial and deep fascia, as first advocated by Mr. Hanley, who believes that the peritoneal cavity has been invaded by the permeation of cancer-cells along fascial planes, the rectus particularly.

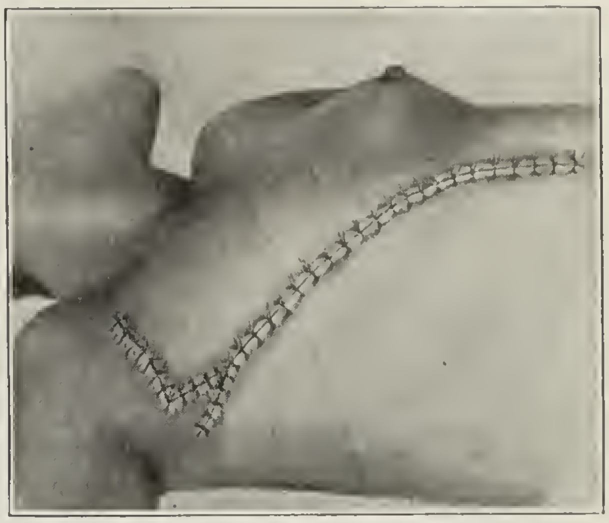

Fig. 6.—Closure of wound.

While a large amount of skin, equidistant in all directions, must be removed, it is rare that skin-grafting ever becomes necessary to close the wound. Judd showed that recurrences in the skin occur more frequently in cases in which a large amount of skin had been removed, but the fascia underneath saved, than when less skin was taken and a very free dissection of the superficial and deep fascias was made. He believes that skin nodules are developed from extension along the lymphatics in the fascia, and not from those in the skin itself, and urges a wide dissection of the superficial and deep fascia, beginning in the axilla, extending down over, and including the pectoral muscles from the sternum outward over the muscles of the back and downward, including the fascia of both recti (Fig. 5).

Rodman advises exploring the supraclavicular glands by a separate incision, if the growth is situated in the upper hemisphere of the breast, or if the axillary glands are badly involved. It is our custom to consider cases inoperable if section of the supraclavicular glands should show cancer involvement, for we believe that internal metastasis has already occurred.

We have a large wound to close; on the chest, the cut ends of the pectoral muscles and the intercostals are exposed, below, the external oblique and recti, posteriorly, the latissimus dorsi, the teres major and subscapularis muscle, and long subscapular nerve, the inner aspect of the axilla, the nerve of Bell, and the digitations of the serratus magnus muscle.

Closure of the wound is begun where it was started, near the clavicle. Closure of the oval is begun at the sternal end. After advancing one-third of the distance it can be determined if the flaps can be approximated readily. If this is impossible, the axillary portion of the large wound is closed, advancing one-third of the distance. The central one-third, which cannot be approximated, is covered by Thiersch grafts, taken from the thigh (Fig. 6).

We do not employ drainage, except in fleshy persons or when there has been any undue amount of trauma, and we rarely are troubled by serum. Since leaving the sternal ends of the pectoralis major and minor, as advocated by Rodman lately, the flaps adhere readily to the chest wall, and dead space is better obliterated. The arm is released after twenty-four hours, and passive motion and massage begun early (Fig. 7).

I am glad to report that patients with breast tumors are coming to us much earlier for consultation than a few years ago. The percentage of operations for benign tumors has increased very much and we see fewer inoperable cancers of the breast.

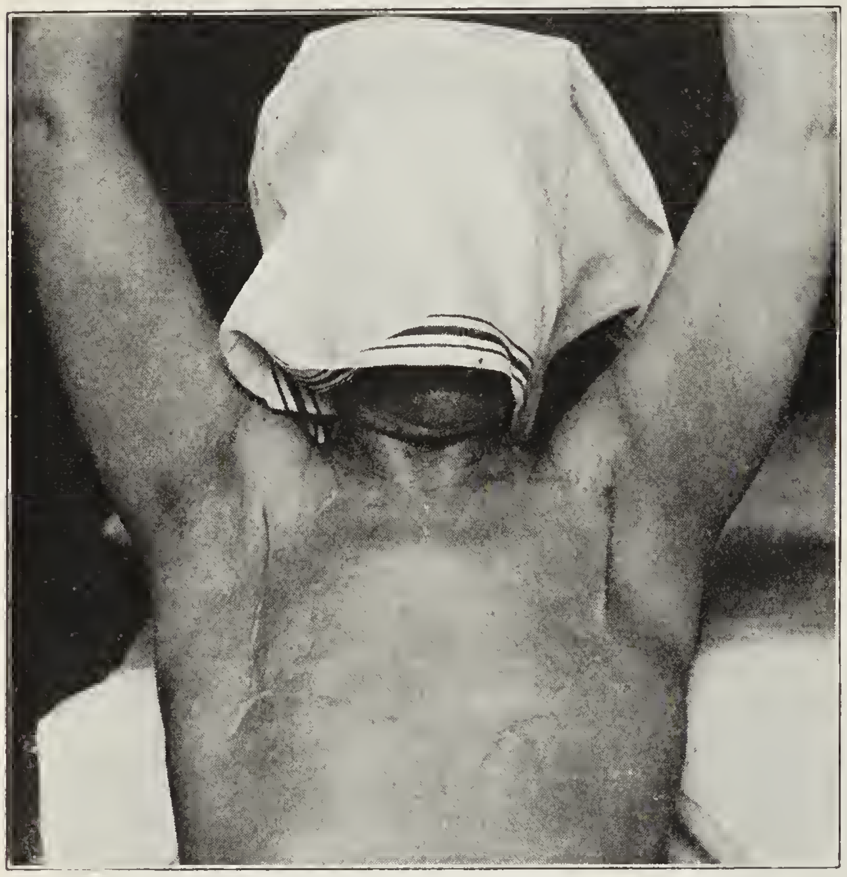

Fig. 7.—Function of arms, after double operation.

# CANCER VACCINE AND ANTICANCER GLOBULINS AS AN AID IN THE SURGICAL TREATMENT OF MALIGNANCY*

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During the past six years I have devoted considerable time to the study of specific cancer therapy, and various phases of these investigations have been published from time to time as definite facts of scientific interest were obtained. The work is based on the theory[1] first published in 1910, which states that through altered chemical nature the normal tissue-cell changes into the malignant cell.

If a malignant cell is chemically different in its protein content from a normal tissue-cell it should be possible to sensitize an animal to one protein and not the other. That this is the case has been proved and it has also elicited knowledge concerning a new and extremely interesting form of sensitization to which has been given the term "transitory sensitization."

Formerly I have purposely refrained from mentioning the therapeutic results obtained in these investigations in the belief that at least from three to five years should elapse before any correct judgment could be obtained. Now, however, sufficient time has passed and I believe that the results are of enough value to publish a detailed report. With regard to the therapeutic application of specific therapy I will limit the report to the first one hundred cases. This is done because of the fact that in this group all cases under consideration will be such as have been under observation from at least one to six years. The results obtained since then have been more gratifying and the improvements in technic will be mentioned, but the cases have not been under observation long enough to justify definite conclusions.

The scientific portion of the work is a correlation, for the most part, of work previously published and only reference to this will be given. The theory on which this work has been done is given in "Protein Split Products," Chapter XIV.

In the early part of 1910 I first began the injection of serum obtained from sheep and rabbits, when their large mononuclear count was highest, after sensitization to cancer protein, in cases of human carcinoma and sarcoma. Previously I had employed such serums in mouse carcinoma and, while retrogression and disappearance of many mouse tumors was observed, yet, with the strain in my possession, the number of spontaneous recoveries among controls was so great that conclusive records could not be drawn. It is interesting, however, to note that Abderhalden[2] has recently reported favorably on the use of such a serum in rat sarcoma. His serum was obtained twenty-four hours after the injection of the sensitizing dose, which is the time that the increase in large mononuclear cells is usually highest and his report is a gratifying confirmation of my work.

As stated above and previously published,[3] however, injections of both rabbit- and sheep-serum from animals sensitized were given in twelve inoperable or recurrent cases.

Of these twelve cases eight were given rabbit-serum and four, sheep-serum. Injections of from 1 to 5 c.c. were made every second or third day. Of the cases treated with sheep-serum one became sensitized after three weeks and two others developed an acute nephritis. Of the eight given rabbit-serum, four developed an acute nephritis with blood and albumin in the urine at the end of four weeks. While in all cases there was improvement in the condition of the malignant growth, yet the use of the serum was discontinued, since in over 50 per cent. of the cases in which it was tried, the serum complications rendered it impracticable. While I now realize that the initial doses of serum were much too small, yet I am fully satisfied from my own experience that a prepared serum as suggested by Abderhalden will never be of practical value in advanced cases, not only because of the danger of the serum as a vehicle for the ferment, but also for other reasons that I will mention later. It is of particular interest to note, however, that, in this series of twelve cases, those in which the kidneys attempted to take care of the foreign serum, developed acute nephritis, while those in which the body cells split up the serum for subsequent elimination became serum sensitized.

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Vaughan, J. W.: Some Modern Ideas of Cancer, The Journal A. M. A., May 7, 1910, p. 1510.

[2] Abderhalden, E.: Influence on Rat Tumors of Serum Containing Ferments Protecting Against Some of the Tumor Elements, Med. Klin., Berlin, Feb. 9, 1914, p. 183.

[3] Vaughan, J. W.: Blood Changes Caused by the Hypodermic Administration of the Cancer Proteid, The Journal A. M. A., Nov. 16, 1912, p. 1764.

If the use of the serum containing the specific ferment is contra-indicated, and I believe that my cases have shown this to be true, the next step was to ascertain whether the specific ferment could be obtained free from the undesirable serum proteins.

For this purpose an attempt was made to remove the ferment from the large mononuclear leukocytes. That this can be done is shown in previously published work[4] and the final product has been given the name of anticancer globulins. It must be understood, however, that even in this form our ferment is in a far from purified state.

It has been customary to test the activity of each batch of globulins by mixing 10 c.c. of a 1 per cent. solution with 5 c.c. of 2 per cent. cancer vaccine, incubating one hour and injecting intravenously into normal rabbits. While this is usually fatal, yet there may be a wide variation in the amount of poison liberated, consequently we have never been able satisfactorily to standardize the ferment.

In the following report of cases the term vaccine will be given to cover the number of injections of both cancer-cell vaccine and cancer residue, while the term ferment will include serum, unfiltered leukocyte extract, filtered leukocyte extract, globulins and in a few cases the leukocytes *in toto*. For the exact meaning of these preparations see "Protein Split Products in Relation to Immunity and Disease," chapter XIV. This grouping under one head is done for the sake of brevity, as a more detailed report would occupy too much space as well as because the active principle under each head is the same.

The method of administration, whether subcutaneous, intravenous, or intraperitoneal will not be designated but the general conclusions of several hundred injections by each method will be considered altogether.

## REPORT OF CASES

Case 1.—Mr. C. Inoperable epithelioma of the palate and cheek. First seen Sept. 2, 1909. Patient received 20 injections of vaccine. Slight temporary improvement following first three injections, followed by steady advance of the disease. Patient died about two months after discontinuing injections.

Case 2.—Miss B. Epithelioma of arm. First seen Oct. 7, 1909. Patient received 30 injections of vaccine and 15 of ferment. This patient had been previously operated on three times. The epithelioma had progressed until complete absorption of the humerus had taken place for a distance of 6 inches. About one-half of the injections were given before amputation and one-half after. Following the second injection of sensitized leukocytes, which would equal about 90 mg. of globulin, the patient reacted severely. There was loss of consciousness, subnormal temperature and pulse around 140 for three days. During this time the wound cleaned up with marked rapidity and good granulation tissue appeared. After recovery from this severe intoxication caused by liberation of the cancer poison amputation was done. The patient is still alive and without recurrence.

Case 3.—Mr. D. Recurrent carcinoma of the cheek and lymph-glands. Secondary to lip carcinoma. Seen March 3, 1910. Has received 25 injections of vaccine and 48 of ferment. Patient is living and without recurrence.

Case 4.—Mr. H. Recurrent epithelioma of ear, following two weeks after radical removal. First seen Oct. 1, 1910. Patient was given 8 injections of residue. Growth disappeared and has not returned to date.

Case 5.—Mr. W. Recurrent carcinoma of tongue and floor of mouth. First seen Nov. 6, 1910. Patient was given 10 injections of vaccine. No improvement and patient died while under treatment.

Case 6.—Mrs. F. Recurrent carcinoma of breast. First seen April 7, 1912. Radical removal and second removal of recurrent nodule, had been performed previously. Patient given 10 injections of vaccine and 70 of ferment. Patient still living with recurrence.

Case 7.—Mrs. C. Recurrent carcinoma of the breast following radical removal. First seen Nov. 28, 1910. Patient given 18 injections of vaccine. Patient still living without recurrence.

Case 8.—Mrs. E. Endothelioma of eyelid. Slight recurrence following operation two weeks previous. Patient first seen April 9, 1912. Given 2 injections of vaccine and 16 of ferment. Still living without recurrence.

Case 9.—Mrs. G. Recurrent carcinoma of the breast following radical removal. First seen Nov. 30, 1910. Patient given 34 injections of vaccine and 15 of ferment. Temporary improvement for first six months followed by steady progress of the disease. Patient died from lung metastasis.

Case 10.—Mr. B. Recurrent breast carinoma following radical removal. Patient given 35 injections of vaccine, 31 of ferment. Patient died while under treatment.

Case 11.—Mr. S. Recurrent sarcoma of back following operation. First seen Jan. 1, 1911. Recurrence disappeared entirely after six injections of vaccine. Injections were discontinued for three months when there was an axillary gland recurrence. Then given 6 injections of vaccine and 12 of ferment, and axillary removal attempted. Patient died while under treatment.

This last case is of special interest because of the fact that every evidence of tumor disappeared under vaccine injections only again to reappear in more malignant form. During the injections of globulins on three different occasions injections were made directly into the tumor. Each time that this was done, within from one to five minutes the patient would complain of difficult breathing, which was followed by all the symptoms of protein sensitization. This would be followed by a period of rest of from fifteen minutes to one-half hour after which a severe chill would appear and the temperature would rise to 104 or 106. This would last from one to two hours after which the condition would return to normal with the exception that the patient would complain of weakness for three or four days.

These findings are extremely instructive as they show the specificity of the ferment, especially as such symptoms appear only when the injection is made directly into the tumor. As a rule when the ferment is injected subcutaneously there is no reaction on the part of the patient, unless the dosage is extremely large. When the intravenous method is employed there frequently follows a chill about one-half hour after injection, which is followed by a considerable rise in temperature, but never are typical sensitization symptoms observed. A discussion of the respective merits of these various methods of introduction of the ferment will be reserved, however, until the case reports are finished.

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[4] Vaughan, V. C.: Protein Split Products in Relation to Immunity and Disease, Philadelphia, Lea and Febiger, 1913, Chap. xiv.

Case 12.—Mrs. B. First seen Dec. 15, 1910. Inoperable carcinoma of the rectum. Colostomy had been performed. Patient given 25 injections of vaccine and 11 of ferment. No improvement. Patient died while under treatment.

Case 13.—Mr. B. Seen Dec. 20, 1910. Inoperable carcinoma of the rectum. Colostomy had been performed. Patient given 16 injections of vaccine. Patient died during treatment.

Case 14.—Mr. C. Recurrent epithelioma of ear one month after operation. First seen April 21, 1912. Patient given 6 injections of vaccine and 6 of ferment. Patient living, condition not known.

Case 15.—Mrs. D. Recurrent sarcoma of head, size of fist. First seen Dec. 23, 1910. Patient had had several injections of Coley's mixed toxins. Given 10 injections of vaccine and 7 of ferment. Patient died three months after discontinuing treatment.

Case 16.—Mr. K. Recurrent carcinoma of glands of neck secondary to lip carcinoma. First seen April 26, 1912. This patient has had incomplete excision of the primary growth and applications of arsenious paste. Patient given 43 injections of vaccine and 154 of ferment. Radium was also used during this time. Patient living but tumor shows progression.

Case 17.—Mrs. P. Recurrent carcinoma of the breast. First seen Jan. 6, 1911. Patient given 9 injections of vaccine. Patient died while under treatment.

Case 18.—Mrs. S. Carcinoma of the stomach with extensive glandular involvement. First seen March 12, 1912. Radical operation performed. Patient given 1 injection of vaccine and 42 of ferment. Patient living and well.

Case 19.—Recurrent carcinoma of the breast. First seen Jan. 20, 1911. Recurrence in opposite breast and possibly liver. Patient given 55 injections of vaccine and 91 of ferment. Patient living, apparently well.

Case 20.—Recurrent carcinoma of the breast. First seen Feb. 1, 1911. Mediastinal recurrence. Patient given 14 injections of vaccine and 4 of ferment. Patient died during treatment.

Case 21.—Mr. M. Small round-celled sarcoma of the leg. First seen Feb. 2, 1911. Amputation performed. Patient given 10 injections of vaccine. Patient living and well.

Case 22.—Mrs. S. First seen March 3, 1911. Recurrent carcinoma of the breast. Patient received 36 injections of vaccine and 24 of ferment. Patient discontinued treatment, not improved.

Case 23.—Mrs. B. Recurrent carcinoma of the breast. First seen July 1, 1911. Patient received 28 injections of vaccine and 21 of ferment. This patient improved rapidly at first. After a large dose of sensitized leukocytes, however, there was a severe reaction with temperature of 106. At the same time the recurrent nodules visible disappeared with rapidity and death resulted five days later. This is a case that evidently liberated so much of the poisonous group during the process of disintegration of malignant cells that its liberation proved fatal.

Case 24.—Mr. E. Recurrent rectal carcinoma. March 11, 1911. Patient received 20 injections of vaccine. All signs of tumor disappeared and he discontinued treatment. This patient was not seen by me again, but I have ascertained that he had recurrence which proved fatal one year later.

Case 25.—Mrs. L. Inoperable uterine carcinoma. March 12, 1911. Patient given 24 injections of vaccine and 8 of ferment. Patient died while under treatment. This case was advanced in type with both rectal and bladder fistulas when first seen.

Case 26.—Mrs. G. Recurrent breast carcinoma. First seen March 25, 1911. Patient given 18 injections of vaccine and 28 of ferment. This is another case in which death was apparently brought about by too rapid liberation of the poison group by a large dose of specific ferment.

Case 27.—Mrs. G. Inoperable carcinoma of the colon. April 27, 1911. Patient given 17 injections of vaccine and 15 of ferment. Case was very advanced when first seen and patient died while under treatment.

Case 28.—Mrs. W. Inoperable carcinoma of the breast. First seen June 6, 1911. Patient given 13 injections of vaccine and 8 of ferment. Patient died two months after discontinuing treatment.

Case 29.—Mrs. B. Multiple sarcomatosis. First seen June 9, 1911. Patient given 13 injections of vaccine, 15 of ferment. Patient died while under treatment, evidently from excessive liberation of cancer protein poison.

Case 30.—Mr. R. Recurrent epithelioma of lip. June 13, 1911. Patient received 6 injections of vaccine. Patient living without recurrence.

Case 31.—Mrs. B. Inoperable carcinoma of the breast. June 17, 1911. Patient given 14 injections of vaccine and 19 of ferment. Slight improvement at first, followed by rapid growth of tumor. Patient died two months after discontinuing treatment.

Case 32.—Mrs. S. Epithelioma of the face. First seen June 20, 1911. Patient given 7 injections of vaccine and 19 of ferment. Patient died while under treatment.

Case 33.—Miss R. Recurrent carcinoma of breast with abdominal metastasis. First seen July 1, 1911. Patient given 23 injections of vaccine and 96 of ferment. Patient discontinued treatment because of severe reaction following the injection of ferment. Condition was improved at this time and the patient is still living with recurrence.

Case 34.—Mrs. P. Inoperable carcinoma of breast with liver metastasis. First seen July 5, 1911. Patient given 21 injections of vaccine and 89 of ferment. Patient died while under treatment.

Case 35.—Miss McA. Carcinoma of breast with axillary involvement. Patient refused operation. First seen July 18, 1911. Was given 25 injections of vaccine and 48 of ferment. All signs of tumor disappeared and patient is still living without recurrence.

Case 36.—Mrs. T. Recurrent carcinoma of the breast. First seen August 23, 1911. Patient given 53 injections of vaccine and 66 of ferment. Patient discontinued treatment as the tumor was apparently not influenced.

Case 37.—Mrs. S. Recurrent epithelioma vulvae. First seen August 17, 1911. Patient received 8 injections of vaccine. Recurrence disappeared and patient is still living without any signs of malignancy.

Case 38.—Mrs. Z. Epithelioma of face. First seen Oct. 21, 1911. Patient received 7 injections of vaccine. Growth disappeared and the patient is still living without recurrence.

Case 39.—Mr. P. Inoperable rectal carcinoma. First seen Sept. 13, 1911. Patient received 10 injections of vaccine and 56 of ferment. Patient died from hemorrhage.

Case 40.—Mr. R. Carcinoma of the lip. Small excision for microscopic section. Refused radical operation. First seen Aug. 18, 1911. Patient given 8 injections of vaccine. Patient living without recurrence.

Case 41.—Mr. M. Epithelioma of the face. First seen Aug. 9, 1911. Patient received 1 injection of vaccine and 3 of ferment. Patient living without recurrence.

Case 42.—Mrs. M. Recurrent carcinoma of uterus. July 27, 1911. Patient given 25 injections of vaccine and 62 of ferment. Patient died while under treatment.

Case 43.—Mr. H. Inoperable carcinoma of the rectum. First seen Sept. 15, 1911. Patient given 10 injections of vaccine and 15 of ferment. This is another case that apparently died from a too excessive liberation of the poison radical.

Case 44.—Mrs. O. Carcinoma of uterus, with involvement of vaginal wall. Panhysterectomy performed, followed by slight vaginal recurrence. First seen Sept. 18, 1911. Patient given 15 injections of vaccine. Patient living without recurrence.

Case 45.—Mr. B. Inoperable carcinoma of the tongue. First seen Sept. 22, 1911. Patient given 15 injections of vaccine and 30 of ferment. Patient died while under treatment.

Case 46.—Mrs. McR. Inoperable carcinoma of uterus. First seen Sept. 27, 1911. Patient received 8 injections of vaccine and 15 of ferment. Patient died while under treatment.

Case 47.—Mr. L. Recurrent rectal carcinoma. First seen Sept. 28, 1911. Patient received 10 injections of vaccine and 78 of ferment. Treatment discontinued after apparent disappearance of tumor. Present condition not known.

Case 48.—Mr. C. Inoperable carcinoma of jaw. First seen Sept. 30, 1911. Patient received 12 injections of vaccine and 15 of ferment. Patient died while under treatment.

Case 49.—Mrs. F. Recurrent carcinoma of breast. First seen Oct. 6, 1911. Patient received 15 injections of vaccine and 6 of ferment, with considerable improvement. Treatment was discontinued in order to try colloidal copper. It has been ascertained that the patient died while under this treatment.

Case 50.—Mr. S. Inoperable sarcoma of the neck. First seen Oct. 24, 1911. Patient received 14 injections of vaccine and 12 of ferment. Patient died while under treatment.

Case 51.—Mrs. K. Inoperable carcinoma of stomach. First seen Oct. 31, 1911. Patient received 5 injections of vaccine and 6 of ferment. Patient died while under treatment.

Case 52.—Mrs. K. Carcinoma of breast. First seen Oct. 31, 1911. As complete removal as possible was performed. The tumor was the size of the patient's two fists with axillary and supraclavicular involvement. Patient received 10 injections of vaccine and 29 of ferment. Patient still living without recurrence.

Case 53.—Mrs. W. Inoperable carcinoma of the breast. First seen Nov. 3, 1911. Patient received 11 injections of vaccine and 22 of ferment. Patient died while under treatment.

Case 54.—Mr. P. Carcinoma penis with inguinal involvement. First seen Oct. 5, 1911. Patient received 40 injections of vaccine and 152 of ferment. After 10 injections of vaccine total ablation of external genitals was performed. Patient living without recurrence.

Case 55.—Mr. S. First seen Nov. 10, 1911. Recurrent sarcoma of the neck. Patient received 13 injections of vaccine and 36 of ferment. Patient died while under treatment.

Case 56.—Mrs. M. General carcinomatosis following radical removal of carcinoma of breast. First seen Nov. 21, 1911. Patient has received 33 injections of vaccine and 100 of ferment. This patient had metastasis in ileum, vertebra, lungs, inguinal glands and opposite breast, and when first seen was confined to her bed, the slightest movement of which would bring on severe pain. At present the recurrent areas are much diminished. The patient has twice traveled from Michigan to Oregon in comparative comfort, takes daily automobile rides and is much improved.

Case 57.—Miss C. Recurrent in supraclavicular glands following radical breast removal. First seen March 19, 1912. Patient received 7 injections of vaccine and 66 of ferment. Patient living without recurence.

Case 58.—Mrs. B. Inoperable uterine carcinoma. Jan. 4, 1912. Patient received 8 injections of vaccine and 33 of ferment. Patient died while under treatment.

Case 59.—Mr. G. Recurrent sarcoma of leg. First seen Jan. 15, 1912. Recurrence was excised. Patient given 3 injections of vaccine and 9 of ferment. Patient living without recurrence.

Case 60.—Mrs. M. Recurrent carcinoma of the breast. First seen Jan. 28, 1912. Patient given 6 injections of vaccine and 51 of ferment. This patient died apparently from a too rapid liberation of cancer-protein poison.

Case 61.—Mr. P. Recurrent carcinoma of cheek. First seen Feb. 7, 1912. Patient received 10 injections of vaccine and 45 of ferment. Patient died while under treatment.

Case 62.—Mr. T. Inoperable carcinoma of the esophagus. First seen May 8, 1912. On account of inability to swallow either fluids or solids gastrostomy was performed first. Patient given 2 injections of vaccine and 95 of ferment. Patient died while under treatment.

Case 63.—Dr. B. Recurrent carcinoma of tongue. First seen May 10, 1912. Patient given 2 injections of vaccine and 28 of ferment. Patient living without recurrence.

Case 64.—Miss G. Carcinoma of the breast. First seen May 13, 1912. Patient given 10 injections of vaccine preliminary to operation. Axillary glands were involved. Subsequently given 17 injections of vaccine and 149 of ferment. Patient living without recurrence.

Case 65.—Mr. S. Sarcoma of the leg. First seen May 21, 1912. Patient had used Coley's Mixed Toxins, during which time he fell and fractured the leg at the site of tumor. After amputation of leg patient was given 12 injections of ferment. Patient living without recurrence.

Case 66.—Mr. D. Recurrent carcinoma superior maxilla. First seen June 10, 1912. Patient given 6 injections of vaccine and 40 of ferment. Slight improvement, treatment discontinued because of desire of patient to try something else.

Case 67.—Mrs. K. Inoperable carcinoma of the uterus. First seen Feb. 4, 1913. Patient given 35 injections of ferment. Patient died from hemorrhage while under treatment.

Case 68.—Mrs. C. Carcinoma of colon. First seen June 12, 1912. Radical removal had been performed which showed glandular metastasis. Patient given 3 injections of vaccine and 21 of ferment. Patient living without recurrence.

Case 69.—Mrs. V. Recurrent carcinoma of uterus. First seen June 15, 1912. Patient given 5 injections of vaccine and 60 of ferment. Patient died from acute urinary suppression while under treatment.

Case 70.—Mr. V. Carcinoma of cheek. First seen May 30, 1913. Patient given 8 injections of vaccine and 17 of ferment. Patient living without recurrence.

Case 71.—Mr. H. Extensive recurrent carcinoma of jaw. First seen Oct. 25, 1910. Patient given 50 injections of vaccine and 25 of ferment. Patient died while under treatment.

Case 72.—Mrs. R. Carcinoma of uterus, inoperable. First seen July 16, 1912. Patient given 8 injections of vaccine and 36 of ferment. Patient died while under treatment.

Case 73.—Mrs. C. Recurrent carcinoma of breast. First seen July 18, 1912. Patient given 5 injections of vaccine and 30 of ferment. Patient died with all the symptoms of protein poisoning.

Case 74.—Mrs. W. Recurrent carcinoma of breast. Abdominal metastasis. First seen March 1, 1913. Patient given 25 injections of ferment. Patient died while under treatment.

Case 75.—Mrs. S. Recurrent carcinoma of breast with liver metastasis. First seen Aug. 1, 1912. Patient given 6 injections of vaccine and 25 of ferment. Patient died five months after discontinuing treatment.

Case 76.—Mrs. N. Recurrent carcinoma of breast. Vertebral metastasis. First seen Aug. 3, 1912. Patient given 10 injections of vaccine and 60 of ferment. Temporary improvement followed by slow progress of the disease. Patient died while under treatment.

Case 77.—Mrs. J. Carcinoma of stomach, inoperable. First seen Feb. 24, 1913. Patient given 2 injections of ferment. Patient died apparently from rapid liberation of protein poison.

Case 78.—Mrs. V. Recurrent uterine carcinoma. First seen Aug. 31, 1912. Patient given 21 injections of ferment. Marked temporary improvement followed by rapid progress of the disease. Patient died one month after discontinuing treatment.

Case 79.—Mrs. P. Carcinoma of the breast. Size of two fists, with axillary involvement. First seen Feb. 24, 1913. Radical removal attempted, following which she received 19 injections of vaccine and 46 of ferment. Patient living without recurrence.

Case 80.—Miss B. Epithelioma of head involving temporal bone, entire ear gone. First seen Sept. 2, 1912. Patient given 20 injections of vaccine and 85 of ferment. The disease is progressing slowly.

Case 81.—Mrs. K. Recurrent carcinoma of breast. First seen Sept. 4, 1912. Patient given 19 injections of vaccine and 82 of ferment. Patient died because of rapid progress of the disease.

Case 82.—Mr. H. Inoperable sarcoma of orbit. First seen Sept. 30, 1912. Patient given 18 injections of ferment. Rapidly growing tumor apparently brought to a standstill.

Treatment discontinued so that patient could go East for operation from which he died.

Case 83.—Mr. P. Inoperable carcinoma of rectum. First seen Oct. 2, 1912. Colostomy performed. Patient given 36 injections of vaccine and 117 of ferment. The growth has retrogressed and the patient attends to his business. He has gained forty pounds. Is still under treatment.

Case 84.—Mr. Von J. Inoperable carcinoma of stomach. First seen Nov. 26, 1912. Gastro-enterostomy performed because of obstruction. Patient given 25 injections of ferment. Patient died while under treatment.

Case 85.—Miss L. Recurrent sarcoma of arm. Inoperable First seen Dec. 5, 1912. Given 4 injections of ferment. Patient died from protein poison.

Case 86.—Mr. B. Inoperable sarcoma superior maxilla. First seen Feb. 26, 1913. Patient given 4 injections of vaccine and 36 of ferment. Patient died from protein poison.

Case 87.—Mr. W. Recurrent carcinoma of the rectum. First seen Dec. 7, 1912. Patient given 24 injections of vaccine and 74 of ferment. Condition progressively worse. Treatment discontinued.

Case 88.—Mrs. B. Recurrent epithelioma of face. Patient had twice been operated on, had been treated with Roentgen ray and radium. First seen Dec. 30, 1912. Patient given 10 injections of residue and 15 of ferment, after which the area was curretted and a skin flap applied which was taken from the neck. Subsequently she has received 17 injections of vaccine and 65 of ferment. Patient living without recurrence.

Case 89.—Dr. U. Recurrent carcinoma of tongue. Submental glands involved. First seen Feb. 25, 1913. Patient given 32 injections of vaccine and 59 of ferment. Patient living without recurrence.

Case 90.—Mr. D. Carcinoma of cheek with extensive glandular involvement. First seen Feb. 7, 1913. Patient given 1 preliminary injection of vaccine. Radical removal attempted. Patient given 15 of vaccine and 20 of ferment. Patient living without recurrence.

Case 91.—Mr. L. Recurrent rectal carcinoma. First seen March 12, 1913. Patient given 15 injections of vaccine and 47 of ferment. After 5 injections of vaccine and 20 of ferment, treatment was discontinued for two months and examination at this time showed recurrence which disappeared on subsequent injections.

Case 92.—Mrs. G. Sarcoma of neck. First seen March 18, 1913. Previously treated by paste. Excision made. Patient given 3 injections of vaccine and 17 of ferment. Patient living without recurrence.

Case 93.—Mr. S. Recurrent rectal carcinoma. First seen March 20, 1913. Patient given 27 injections of vaccine and 40 of ferment. Patient living with advancing recurrence.

Case 94.—Mrs. S. Inoperable carcinoma of tongue. First seen March 20, 1913. Patient given 13 injections of vaccine and 43 of ferment. Patient died while under treatment.

Case 95.—Mrs. W. Small recurrence of rectal carcinoma. First seen April 11, 1913. Patient given 12 injections of vaccine and 25 of ferment. Patient living without recurrence.

Case 96.—Miss C. Carcinoma of breast with axillary involvement. First seen June 4, 1913. Radical removal performed. Patient given 29 injections of vaccine and 37 of ferment. Patient living without recurrence.

Case 97.—Mrs. McD. Recurrent carcinoma of breast. Small nodule. First seen July 9, 1913. Patient given 26 injections of vaccine and 30 of ferment. Patient living without recurrence.

Case 98.—Mrs. M. Recurrent adenocarcinoma of breast. First seen July 11, 1913. Three recurrent nodules. Patient given 27 injections of vaccine and 39 of ferment. Patient living with slight remaining hardness in one of the recurrent nodules.

Case 99.—Mrs. S. Inoperable rectal carcinoma. First seen May 8, 1909. Patient given 12 injections of vaccine. Marked temporary improvement followed by rapid progress of the disease. Treatment discontinued.

Case 100.—Mrs. L. Inoperable uterine carcinoma. First seen Sept. 10, 1912. Patient given 23 injections of vaccine and 72 of ferment. Patient still under treatment with periods in which she is apparently better followed by periods of apparent advancement of the malignant process.

Of the preceding one hundred cases, 50 were inoperable or possessed such a recurrence after former operation as to be classed as inoperable. Of these cases 2 are apparently well and without recurrence, and 4 are markedly improved, which, in this division, would give 4 per cent of apparent recoveries and 8 per cent. the outcome of which is still in doubt.

The cases which showed definite recurrence, which however, was comparatively small in amount, were fourteen in number. Of these 6 are apparently well and 3 improved. There are 5 cases which show small operable lesions in which operation was refused. Of these, 4 are clinically well and 1 improved.

The advanced cases in which operation was performed in combination with specific treatment were thirty-one in number. Of these 23 or 73 per cent. are apparently well. One displayed rapid recurrence and 7 seemed to receive no benefit. All cases except one were microscopically malignant, the one case being that of breast carcinoma in which axillary involvement was present and which refused operative interference.

The study of the blood-counts made in these cases has lead to the conclusion that cases in which the percentage of large mononuclear leukocytes increases to from 10 to 20 per cent. following specific treatment, do well, while those that run a high polymorphonuclear count and in which the percentage of large mononuclear cells is not materially increased are not benefited.

We are accustomed to state that when recurrence does not occur after operation that the removal has been such that all malignant cells have been removed, and that recurrence depends on the incomplete removal of tumor cells. That such is not the case is very easily seen from the clinical course of the disease itself. Almost every malignant process has periods of retrogression or at least of stationary growth, which are in turn followed by more or less rapid progress of the disease. Such observations point to the belief that the body at times forms ferments which are antagonistic to the growth and multiplication of malignant cells, only to lose this ferment when the tumor cells begin to multiply again. That such a transitory ferment is probably present is shown by my animal experiments, by the few undisputed either temporary or apparent recoveries on record as well as by the apparent higher percentage of recoveries obtained when specific therapy is employed.

With regard to the use of either vaccine or residue it should be stated that the field in which they are of service is limited. The best results are obtained in cases in which the amount of tumor tissue present is small, and in which the differential leukocyte count of the patient shows a decided reaction following the administration of the cancer protein. Lunckenbein[5] states that results obtained by the intravenous injection of autolyzed malignant cells in patients suffering from cancer are superior to those obtained by subcutaneous injection and, consequently, he advocates this method of procedure.

From a study of the increase in large mononuclear leukocytes following subcutaneous, intravenous and intraperitoneal administration in our animals it is seen that the largest increase occurs after intraperitoneal injection, and during the past year I have used this method almost exclusively, using the intravenous only in cases in which the presence of tumor or adhesions contra-indicated intraperitoneal injections.

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[5] Lunckenbein: Zur Behandlung Malignev Geschwülste, München. Med. Wchnschr., Jan. 6, 1914, p. 18.

From a scientific point of view the higher degree of sensitization attained by this method is a most interesting and important fact since it tends to prove that the degree of sensitization obtained, to the cancer protein at least, is not dependent so much on the amount of protein introduced into the body as it is on the number of body cells that the protein comes in contact with.

When the protein is introduced subcutaneously it comes in contact with but a relatively few body cells; when introduced intravenously the number is probably considerably larger; but when one of the large body cavities is employed the number of cells that the protein comes in contact with must be enormously increased. So far I have used only cancer residue in the peritoneal cavity. I do this for two reasons, first, because as I have shown above the residue contains the sensitizing portion of the protein which is the portion desired, and secondly, I believe that with the poisonous portion removed there will be less local irritation. Thirdly, the residue is soluble in normal saline and consequently in a more divided state than an autolysate or a cell suspension, for which reason it will react more readily and also come in contact with a greater number of body cells.

A vaccine or residue is efficient only in cases which respond with a considerable increase in the percentage of large mononuclear leukocytes, and its chief use should be in operable cases in which a single intraperitoneal dose is given twenty-four hours before operation in order that the blood-stream may have present as a part of its content some specific ferment which can be available for the splitting up of malignant cells not removed and such cells as are cast into the blood or lymph-channels through the operative manipulation.

With regard to the ferment it can best be stated that all cases give evidences of marked benefit from its use during the administration of the first three or four doses, after which the ferment seems to lose its efficiency. The period during which it is active is about ten days, and subsequent injections cause but little reaction. This is easily understood if we stop to consider that the body in all probability forms an antiferment to our specific ferment which renders doses given after the formation of the antiferment inactive. This might be said to be true of any of the specific ferments now employed. As for instance, the first dose of diphtheria antitoxin is generally more efficacious than subsequent injections.

In order to overcome this difficulty a series of cases have been treated by giving from two to five doses of ferment followed by two injections of residue. This has been done because it was thought possible to use up the antiferment formed by the ferment, by the administration of the residue, inasmuch as the chemical relationship between these substances must be very close. Clinically this gives much better results in advanced inoperable cases that do not respond to any method. The dosage of globulins should be from 50 to 100 mg. and the intravenous method of administration is by far the most active.

In conclusion I would state that I do not believe that any method of specific therapy will be of much avail in cases that have large amounts of malignant tissue present. In such cases the use of large amounts of globulins may prove fatal, as in some of those reported in this series when 200 or 300 mg. were given intravenously at a time. The real value of either vaccine or ferment will be in their use in connection with operative removal in order to destroy such cells as are not removed by operation and thus reduce the percentage of recurrent cases.

It is now my practice to give intraperitoneal injection of residue twenty-four hours before operation. If the increase in large mononuclear leukocytes reaches from 15 to 25 immediately before operation, that is deemed sufficient. If this does not occur, then an intravenous injection of 100 mg. of globulins is given following the operation. In all of my cases alternate vaccine and globulin injections have been given frequently for the first six months after operation and then once a month thereafter, as by this means it is possible to see the patient frequently enough so that definite conclusions as to the progress of the case can be drawn.

Washington Arcade.

## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. GUTHRIE AND VAUGHAN

Dr. Parker Syms, New York: Twenty years ago what is now known as the modern method of operating for cancer of the breast came as a distinct epoch, in the simultaneous publication by Dr. Halstead of Baltimore and Dr. Willy Meyer of New York, of operative procedures independently devised by them. These methods were based on practically the same principles and comprised the removal of the pectoral muscles with the extensive and anatomic dissection of the subclavian, axillary and subaxillary spaces, with the removal of the fat and lymphatics surrounding the breast, *en masse*. I prefer the method of Willy Meyer, because the dissection of the lymphatics and vessels is from the axilla toward the breast. It is against the current instead of with it. The dissection of course is thorough and the hemorrhage, according to this method, is minimized. Since Dr. Meyer published his procedure I have employed it without change, except that I carry the long arm of the incision, anterior to, and above the axilla. If we keep the axilla free from cicatrix, we will have the arm absolutely unlimited so far as motion is concerned. We have learned much since this epoch of modern breast surgery concerning the method and manner of dissemination and radiation of cancer. Handley's theories as to permeation of cancer cells have taken a great hold. Probably the most important work in this field was that of Harold Stiles. He demonstrated the fact that widespread undermining and dissection of the lymphatic-bearing fascia is quite as important as widespread dissection of the skin; neither is to be neglected and neither is neglected in the Rodman operation. One subject presents itself in a new light. Bloodgood has pointed out that cancer is coming to the surgeon almost as a new problem. Cases are brought to him earlier. We must determine how to treat, not only cancer, but the precancerous conditions. Most prominent among these is chronic cystic mastitis. We know that this disease results in cancer in a large percentage of cases. We are learning that the cancerous change is a matter of stage. That the evolution of chronic cystic mastitis into cancer is simply a progression; if the process is carried far enough it will definitely result in cancer. What are we to do in these cases? As yet we have no clinical evidence of the transition into cancer. If we treat these cases as embryo cancers, employing the radical operation, we shall be performing a mutilating operation unnecessary in many instances. So far as the prevention and cure of cancer is concerned, however, we may be successful in 100 per cent. of these cases.

Dr. William L. Rodman, Philadelphia: The method to which Dr. Guthrie is pleased to give my name is a composite procedure, all the steps not original with myself, but it is an operation which I carefully worked out on the cadaver after many years experience in cancer of the breast. I wanted to accomplish certain ends and to avoid certain embarrassments which had resulted in failure in my previous experience. I feel that I have simply brought together the good points of Halstead, Meyer, S. W. Gross, Stiles and Handley. I have kept accurate records of my private patients, every one operated on during the last sixteen years, but not of the ward patients, as it is practically impossible to follow them up. The functional result of the operation is absolutely good. The unfortunate results that I formerly had when I used skin grafting was due to the arm sticking up at a right angle, preventing movements as in dressing the hair or similar procedures. At present the patients can do anything that they could do before. As Dr. Guthrie says, the chief advantage is that the lymphatics are blocked at the axilla first and next at the epigastric triangle. Handley demonstrated that there are more metastases to the liver than anywhere else. Therefore attention must be paid to this. He showed also that the cancer cells permeate along the lines of least resistance, around the umbilicus, along the round ligament and the liver. The important thing is not to manipulate the breast at all during the operation. The last step is removal of the breast after blocking. The small amount of hemorrhage is an advantage. As to ultimate results we all know that Volkmann's original teaching of a two-year limit for non-recurrence was absolutely wrong; we further know that three years to insure a cure is also wrong, yet the three-year limit is generally accepted. I imagine that after five years the patient should be given a reasonable assurance. According to Ransohoff if the patient lives three years there is a 90 per cent. chance of non-recurrence. So that the three-year limit is a pretty good one to follow. Of the private patients that I operated on in the last fifteen years (three cases of carcinomatous mastitis should be excluded), thirteen or 28 per cent. are dead; one case was inoperable and the patient is counted as dead; 72 per cent. are living considerably more than three years after operation.

Dr. Joseph Bloodgood, Baltimore: I am impressed that if the surgeon does a radical operation, a dissection *en bloc*, if possible, and tries to push out of his mind the idea of a closure of the wound, the individual results will be best. I have been brought up with the idea of a wide skin incision and skin grafting, but I have found that when a poorly trained operator makes this broad area of denuded skin he may be so impressed with its extent that his hand may be stayed in the subcutaneous dissection. Dr. Halstead did not mention the subcutaneous dissection in his earlier publications, but in my experience, and I was with him almost from the beginning, he never failed to do it, and the wide subcutaneous dissection of fat and fascia are the essential features in the operation for cancer anywhere. There should be no dispute with regard to the long incision. That incision allows wider subcutaneous dissection upward. Therefore it is necessary for the region downward, but also allows flaps that come together with less tension. To some surgeons who operate for cancer of the breast, important as the axillary dissection is, the chest-wall dissection is more important. The new and more difficult problem which is presenting itself to us to-day is not the dissection *en bloc*, not the wider dissection, not the good function of the arm, but the exploratory diagnosis of those lumps in the breast in a woman over 25 which we cannot diagnose clinically. Out of 210 cases in twenty-five years, in which the lump was removed, one woman has come back with cancer two and a half years after, showing that we were then justified in the non-mutilating operation. If, at the exploration, malignancy is determined, a complete operation follows at once. In our cases of adenocarcinoma every patient is well five years after operation with not a single recurrence up to date. In adenocarcinoma the proper diagnosis and exploratory incision gives 100 per cent. of good results. If the proper diagnosis is not made the percentage drops under 20, showing the result of the incomplete operation. In the more malignant forms of cancer, which are 75 per cent. of all, in our exploratory incisions the worst results are 85 per cent. Therefore one may see the greater responsibility of the surgeon who operates on an apparently innocent lump in the breast as compared to the surgeon who operates on a clinically malignant cancer of the breast.

Dr. William B. Coley, New York: There is no doubt that there is a growing interest in the treatment of cancer on biologic principles, and that any great advance in cancer therapy must come along these lines, an opinion which was strongly expressed by Mansell Moullin a year ago in his Bradshaw lecture on the biology of tumors. The two principal types of vaccine therapy that have been studied are active and passive immunization. Both methods have been extensively tested under the Huntington Cancer Research Fund of the General Memorial Hospital during the past three years by Drs. Beebe, Berkeley and Weil. The latter has made a critical review of the whole subject and while his paper has not yet been published, he kindly permits me to quote from it. He states that passive immunization, which consists in injecting cancer tissues into an animal, rests on two fundamental assumptions, the correctness of which has not yet been fully proved. The assumptions are: (1) That it is possible by the injection of cancer tissue to produce specific, immune cytolytic bodies which have the power to destroy the cancer cells; (2) that it is possible by this immune serum to destroy cancer cells in the body tissues of the patient. Active immunization, he states, rests on two similar assumptions, both fundamental, only one of which has been proved: (1) That the animal body can produce antibodies against its own tissues. (2) That these antibodies are effective in the body of the producer against its own antigenic cells. Dr. Weil states that the experimental studies as to the applicability of serum therapy, have failed absolutely to vindicate it in animals.

With regard to vaccine therapy in the human being, next to Vaughan's exhaustive paper is that of Vidal brought out three years ago at the International Congress of Cancer Research in Paris. Vidal has been working on the subject since 1905. He describes ninety-four cases, six of which he regards as cured, nineteen benefited. The patients were well from three to ten years. Vidal's method consisted in the injection of cancer material which had been saturated with a dog's antitumor serum before injection. Further, each injection was preceded by the injection of nucleic acid to produce a leukocytosis. Odier of Paris read a paper a year ago before the congress at Brussels in which he reported two remarkable results from passive immunization. Dr. Vaughan's results are certainly the most hopeful of any so far obtained from the use of any type of vaccine derived from the cancer cell. As to active immunization Dr. Weil holds that the entire literature does not show a convincing case except that observed by Stauler of Dr. Kümmell's clinic (Hamburg) in which a carcinoma of the uterus disappeared and the patient remained well for six months.

Dr. M. M. Lucid, Cortland, N. Y.: Residing as I do in a city in central New York, for which the statistics of the state show the third highest mortality for cancer, it was with interest that I assisted in ascertaining the reason. The fact that the majority of cases of cancer of the breast which passed through our hands were late cases, solved the problem. That early diagnosis and radical removal with a good sharp knife in good light speaks for low mortality there can be no doubt, and the bloodless operation by tying off the vessels first from above is the operation of choice. Crile's method of axillary dissection is most commendable and insures, if possible, against recurrence. In my experience untreated cancer of the breast will almost invariably result in the death of the patient within three years. The percentage of patients that go beyond that period is so small that it may be disregarded. That the disease is primarily, local, and therefore amenable to early and radical surgical removal, is a fact beyond dispute. Although the results shown by different surgeons vary, the highest percentage of cures is attained by those surgeons who do the complete operation as described in the Rodman procedure, which should serve as an argument in favor of the extensive removal of all tissue which can possibly be diseased. At present surgery is the only branch of medicine that can rightly hold out any hope of cure for cancer of the breast, therefore early and complete removal by the knife is the accepted and only weapon of defense by surgeons of national reputation against this disease. The early operation should be insisted on before axillary involvement, which will save four out of five. It is the incomplete operation that may properly be styled the forerunner of recurrence. The dangerous significance of the cancer problem is a subject which rarely reaches the attention of the lay mind and is only appreciated by comparatively few physicians. It is therefore of the utmost importance that every member of the medical profession carry the message to his clientèle that they may know what may be expected and what has been accomplished by surgery in curing this most common disease, especially the radical removal of breast tumors in the precancerous stage.

Dr. Henry S. Wieder, Philadelphia: Dr. Bloodgood has, in my opinion, sounded the true keynote in the discussion of carcinoma of the breast. I think, however, that he has not gone quite far enough. He speaks especially of the small lumps found in the breasts of women over 25 and calls special attention to the necessity of diagnosis at the time of the exploratory incision. Unfortunately, as he states, a great many surgeons without previous thorough pathologic training are not capable of making a diagnosis in the more obscure cases. In addition there are still other cases which I believe defy the most capable pathologist or surgeon to make a diagnosis by simple incision without frozen section. Suspicions may be aroused as to the true condition but in some of these cases it is impossible to make an accurate diagnosis with the naked eye. I recall three cases which looked grossly like simple, benign, abnormal involution, but which, on careful gross-sectioning and examination of the most suspicious portion by frozen section, proved to be carcinoma in its incipient stage. These cases undoubtedly would have been overlooked if examined by gross-section only. Only once have I found this process to fail to reveal incipient carcinoma, as shown by a little deeper paraffin section on identically the same block of tissue as used for frozen section. In this case also a few more sections would have revealed its true nature. It was the earliest case of carcinoma of the breast I have ever seen. I therefore wish again to emphasize that in operative work on the breast, whenever possible, the surgeon should have a trained pathologist as assistant and have frozen sections made at the time of the operation.

Dr. Julius H. Jacobson, Toledo, O.: I believe that we can do just as complete work with such standard operations as the Kocher, Halstead and Willy Meyer operations as with the operation devised by Rodman. There is, however, one important point in favor of the Rodman operation which should decide us in our choice of methods, and that is the question of postoperative lymphedema of the arm. Dr. Rodman has stated that he observed a slight lymphedema of the arm in only one case out of the 150 operations which he has performed. In all other operations in which the incision extends over the insertion of the pectoral muscles on to the arm, postoperative lymphedema is not infrequent. I know of no complication following the radical operation for cancer of the breast which is more distressing and before which we are more hopeless. I have performed Handley's operation for the relief of this condition but without result. The operation which practically gives us no postoperative lymphedema, in my opinion, is the one we should adopt. Dr. Bloodgood has given us the keynote to the entire situation, namely, the early diagnosis of cancer of the breast. The recent advances in the production of local anesthesia, especially with the use of Braun's technic of conduction anesthesia have given us a simple method whereby we can remove all suspicious growths of the breast and subject them to an immediate microscopic examination with the freezing microtome. In this manner we can arrive at an early diagnosis, relieving the minds of both patient and physician regarding the presence or absence of malignancy. Such cases can be taken into the hospital, the growth removed and examined, and if the condition should prove to be benign, they can leave the hospital in about two hours from the time of entry. It has been my experience that patients consent more readily to the removal of suspicious growths of the breast, when they are informed that it can be done in this manner. The method seems to me to be the best in dealing with precancerous conditions of the breast and to meet logically and squarely the problem as we see it in practical surgery to-day.

Dr. Donald Guthrie, Sayre, Pa.: In reply to Dr. Jacobson's question about the frequency of edema of the arm following operation, there is only one patient who showed it. The operation was done against our better judgment. The extent of Roentgen-ray involvement was sufficient to contra-indicate a radical operation. There is one point I did not mention. Dr. Wainwright of Scranton gives his patients a thorough roentgenization before the flaps are closed, the idea being to destroy any cancer cells expressed from the breast. We roentgenize our patients immediately after the operation is completed and urge them to come back for treatments for at least a year afterward. With regard to the skin flap we employ a wide incision 5 or 6, or more inches at its greatest width. Since we have learned to undermine the tissues by cutting them on a slant we can close large wounds which formerly had to be skin grafted.

Dr. J. W. Vaughan, Detroit: First, I will answer Dr. Coley's remark with reference to Dr. Weil's failure to find any specific ferment. Dr. Weil stated, at the cancer association in Washington one year ago, that it was impossible to sensitize animals to cancer protein. The reason he could not find it was that he did not look for it at the right time. He looked for it several days afterward as in ordinary sensitization. It is present twenty-four hours afterward and it disappears six hours later. Abderhalden's work mentioned in the paper corroborates this work. With regard to injections and treatment by vaccines, the results are not good, but they are better than they were. Why? Before they were given by guess work. Now they are governed by the increase in mononuclear cells. What practical value has this on the subject of when to operate in cancer? Every surgeon has operated on a little adenocarcinoma no larger than your thumbnail to find that within six months the patient has general carcinomatosis. The next may be a patient with a great big adenocarcinoma; the surgeon will operate with fear and feel sure it will recur in a few months. Why does it not recur? Because it has been operated on at the time that the blood-stream contains this specific ferment. The thing to do is to produce this specific ferment in the blood-stream before operationg and then recurrences will be fewer.

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**Infant Mortality.**—One speaks of armies being "decimated" by war; of a people being "decimated" by a pestilence, and at such conditions remains aghast at the tragedies of human existence. Yet the universe looks on unmoved at a decimation or slaughter which has been in our midst for untold generations. Under the very best conditions this destructive process amounts to simple decimation; at the worst, not merely simple but to double, triple and even quadruple decimation. This form of decimation is infant mortality, which until recent years has practically passed unnoticed. . . . A new-born child has less chance of living a week than a man of ninety, and of living a year than a man of 80. Over 3,200,000 infants less than a year old perish annually in the countries forming the civilized world, or, in other words, one infant dies in every ten seconds, every hour of the twenty-four.—Alan Brown and George Campbell, *Canadian Med. Assn. Jour.*

# THE ASSOCIATION OF ERYTHEMA NODOSUM AND TUBERCULOSIS*

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During the past few years numerous instances have been recorded by French and German observers of the association of erythema nodosum with tuberculosis, especially in childhood. It appears that in many instances an attack of erythema nodosum has been followed directly or within a short period by the development of an active tuberculous process in the lymph-glands, meninges, pleura or other structures. As long ago as 1872, Uffelmann[1] called attention to the grave significance frequently attached to erythema nodosum occurring in children of tuberculous ancestry, but not until recently has the subject again come into prominence.

The question of the etiology of erythema nodosum still awaits solution, and the views held by different writers vary widely. Regardless of whether we look on erythema nodosum as a distinct disease due to a specific micro-organism, as the cutaneous expression of a systemic disorder due to the ingestion of drugs or the absorption of toxins or as a symptom in the course of other diseases, as syphilis or tuberculosis, the large and increasing number of observations of its association with tuberculosis deserve attention.

A review of the recent literature shows that the writers are by no means in accord as to the etiologic significance of their observations. Many express themselves as convinced of the tuberculous nature of all their cases of erythema nodosum, as opposed to those who do not look on erythema nodosum as of uniform etiology and as tuberculous in only a small percentage of cases, while others deny any relationship whatever to tuberculosis.

On the basis of the tuberculin test (von Pirquet) applied in forty-eight cases of erythema nodosum in children from 2 to 13 years of age, all of whom gave an intense positive reaction, Pollak[2] states that the disease occurs in childhood exclusively in individuals infected with tuberculosis, and is in all probability a tuberculous dermatosis. Three of these children later developed an active tuberculosis in the cervical lymph-glands, meninges and pleura, while several had a history of antecedent tuberculosis of glands and bone. Five attempts at experimental inoculation (with blood and an excised nodule from two cases, and a nodule alone from another) gave a negative result.

The conclusions of Pollak are sharply criticized by Moro,[3] who had four negative tuberculin reactions in thirty patients. He also failed in three cases to obtain a local reaction in the lesions of erythema nodosum by subcutaneous injections of tuberculin (from 0.2 to 2 mg.), and points out that the occurrence of erythema nodosum it not even necessarily dependent on the presence of a tuberculous allergy of the tissues.

Brian[4] made a thorough bacteriologic and experimental study of ten cases of erythema nodosum to determine their possible connection with tuberculosis. Seven of eight cases examined gave a positive reaction to tuberculin (von Pirquet and subcutaneous). By subcutaneous injection of blood from one patient, a woman of 29, without clinical evidences of tuberculosis, Brian succeeded in producing tuberculosis of the inguinal glands in two of three guinea-pigs inoculated. Similar attempts in nine other cases were negative. An acid-fast bacillus was demonstrated by means of sedimentation with acetic acid and antiformin in the blood of the majority of the patients, but Brian does not consider these as tubercle bacilli, and is unwilling to express an opinion as to their significance. Cultures with blood and synovial fluid remained sterile, and inoculation of rabbits with blood and synovial fluid was without effect, and did not produce arthritis or affections of the serous membranes. As a result of his work Brian concludes that tuberculosis is certainly not the only cause of erythema nodosum, and probably enters into the etiology of only a small number of the cases, and this is also true of rheumatic polyarthritis.

Hildebrandt[5] relates the case of a woman of 24 years, with a history of tuberculous infection in childhood, who developed the lesions of erythema nodosum ten days after an acute angina and stomatitis. With 1 c.c. of blood drawn when the eruption was at its height, he succeeded in producing tuberculosis in two guinea-pigs by intraperitoneal injection. The tubercle bacilli were found to be of human type. As the eruption disappeared a bilateral pleurisy and pericarditis developed, which from their course and in connection with an infiltration of one apex and tuberculous glands in the neck, were certainly tuberculous. Hildebrandt believes in the tuberculous origin of some cases of erythema nodosum, though the final proof is still lacking.

Kober[6] is of the opinion that erythema nodosum in children with a family history of tuberculosis is an early symptom of infection with tuberculosis, and considers prophylactic measures as necessary. He cites the history of a girl, aged 6, with erythema nodosum preceded for fourteen days by febrile attacks, prostration and joint swellings, with positive von Pirquet reaction, and later enlarged glands at the hilus, as shown by Roentgen examination.

Jadassohn[7] has recently expressed the opinion that renewed study of the relationship of erythema multiforme, purpura and above all of erythema nodosum to tuberculosis is necessary. All three conditions must necessarily be regarded either as of complex etiology, or, in addition to the idiopathic disorders of unknown but possibly specific infectious etiology, we must recognize the existence of symptomatic or secondary affections which closely resemble or imitate the idiopathic form. Tuberculotoxins or tubercle bacilli can readily be assumed as causative for some of the secondary or symptomatic forms.

Among the French observers are many who consider the tuberculous etiology of erythema nodosum as proved. Landouzy[8] maintains that the septicemias due to the bacillus of Koch have a varying symptomatology in accordance with their form, intensity and evolution. The type with a more or less latent symptomatology develops pulmonary, pleural, cutaneous, periosteal, articular, endocardial and pericardial affections, and among these erythema nodosum is the principal manifestation.

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* Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Uffelmann: Deutsch. Arch. f. klin. Med., 1872, x, 454; ibid., 1876, xviii, 313.

[2] Pollak: Wien. klin. Wchnschr., 1912, xxv, 1223.

[3] Moro: München. med. Wchnschr., 1913, lx, 1142.

[4] Brian: Deutsch. Arch. f. klin. Med., 1911, civ, 272.

[5] Hildebrandt: München. med. Wchnschr., 1907, p. 310.

[6] Kober: Med. Klin., 1912, p. 781.

[7] Jadassohn: XI Kongress der deutschen dermatologischen Gesellschaft, September, 1913.

[8] Landouzy: Gaz. d. hôp., 1913, lxxxvi, 2098; Presse méd., 1913, p. 941.

His belief that in the majority of instances erythema nodosum is a septicemia due to the tubercle bacillus is shared by Aubert,[9] Alamartine[10] and Leriche, [11] while Courmont[12] and Pic[13] state their belief in the tuberculous nature of some though not all of the cases.

Landouzy is the only one who has thus far succeeded in finding the tubercle bacillus in the lesions of erythema nodosum.

The histology of a lesion excised from the forearm of a woman aged 27, with arthralgias, probable endocarditis, typical erythema nodosum and suspected pulmonary tuberculosis was negative as to tuberculous structure, but a typical tubercle bacillus was found imprisoned in a coagulum in the lumen of a vessel. A guinea-pig was inoculated subcutaneously with a nodule from the same patient, and when killed seventy days later numerous tubercle bacilli were found at the site of inoculation, with tuberculous changes in the spleen, liver and lungs.

Aubert reports four cases of erythema nodosum in patients aged 17, 10, 3 and 10 years, all with positive ophthalmo-reaction, and symptoms of profound systemic disturbance. From four to six months later three developed tuberculous processes in the lungs and mediastinum, and two died within one year, while the fourth patient is undergoing an antituberculous regimen.

Courmont's six patients were adults, from 16 to 37 years of age, with positive response to the serodiagnostic test of d'Arloing and Courmont, and other indications of tuberculous infection (pleurisy, hydrarthrosis).

Sezary[14] states that tuberculous meningitis is a common sequel of erythema nodosum. He records the case of a girl, aged 8, who developed tuberculous meningitis four months after a short attack of erythema nodosum, at which time there was rough breathing at the apices and tracheobronchial adenopathy.

Kuhn[15] studied twenty-two cases of erythema nodosum in children and obtained a history of tuberculosis in eight. One of his patients developed tuberculous meningitis six weeks after erythema nodosum and another a tuberculous pleurisy after three months, but Kuhn considers the association of the two diseases as a coincidence.

Dunlop[16] records tuberculous meningitis in a boy of 8, with a family history of tuberculosis, developing fourteen days after an attack of erythema nodosum.

Abt[17] has observed tuberculous meningitis in a child 5½ years old, following immediately on the subsidence of erythema nodosum, and suggests that erythema nodosum, like other infectious diseases, may act by preparing the soil for tuberculous infections, particularly the miliary type.

Meara and Goodridge[18] have recently recorded a case in which directly after the subsidence of a mixed eruption of erythema multiforme and erythema nodosum in a woman of 25, without a history of tuberculosis, a fulminant tuberculous meningitis developed, and at necropsy there was found tuberculosis of the cervical and mediastinal glands, lungs and meninges.

As a further contribution to this subject I desire to relate briefly the case histories of two patients who came under my observation:

Case 1.—In a girl, aged 13, with a negative personal and family history, on the fifteenth day after the subsidence of an attack of measles. there appeared a profuse nodose eruption over both tibiae. This was preceded during two days by fever, pain in the right shoulder and swelling in the left cervical region, without sore throat. During the next three days the eruption also appeared about the knees and on the extensor surface of both arms and forearms. The nodes were all highly inflammatory, tense and tender to the touch, and measured from 1 to 2 inches in their longest axis. Within ten days the eruption had entirely disappeared. The cervical adenitis increased during several days, was stationary for two weeks and then gradually subsided. An evening rise of temperature persisted for several weeks, and the patient gradually regained her former strength. Permission for a tuberculin test was not granted, but the clinical features of the adenitis left no doubt of its tuberculous nature.

Case 2.—Girl, aged 4, sister of the preceding patient, also had measles at the same time as her sister, following which a bilateral cervical adenitis developed, with continuously high temperature for ten weeks. Several small tender nodes appeared on the legs and arms sixteen days after the eruption of measles had vanished, and subsided within a few days. These were followed within one week by a discrete papular eruption which appeared first about the mouth and on the hands. New lesions continued to develop during the next fourteen days and were most plentiful on the hands, forearms, feet and legs. The eruption consisted of scattered papules of pinhead size and slightly larger, without areolae, on the summits of which tiny vesicles rapidly formed and soon dried into adherent, depressed crusts, leaving a barely perceptible scar. The diagnosis of tuberculid was made. A von Pirquet test gave a moderately developed positive reaction. During this period the patient was irritable, complained of sore throat, and of pain in the tumefied cervical glands. The temperature varied between 102.5 and 104. After four weeks symptoms of tuberculous meningitis appeared and death occurred three weeks later.

From a study of the case reports now available in the literature it appears reasonable to regard the close association of erythema nodosum with tuberculosis in these cases as more than accidental. If we look on erythema nodosum as an infectious disease due to a specific micro-organism we can adopt the suggestion of Abt, that, like other infectious disease as measles and pertussis, it may act by preparing the soil for tuberculous infections. It has not yet been definitely established, however, that erythema nodosum has a specific cause, while there is experimental evidence to show that in some cases tubercle bacilli were present in the blood at the time of the eruption, and in the lesions themselves. This would establish the tuberculous etiology of some cases of erythema nodosum, which can then be classed as symptomatic, along with the nodose lesions occurring in syphilis, gonorrhea, scarlet fever and typhoid fever.

Furthermore, erythema nodosum occurring in young children with a family or personal history of tuberculosis should be regarded with suspicion and as perhaps indicative of the change of a latent or unsuspected focus of tuberculosis into an actively advancing process.

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9. Aubert: Presse méd., 1913, p. 707.
10. Alamartine: Gaz. d. hôp., 1912, lxxxv, 1027.
11. Leriche: Gaz. d. hôp., 1913, lxxxvi, 2221.
12. Courmont: Lyon méd., 1911, cxvii, 1523.
13. Pic: Lyon méd., 1911, cxvii, 1527.
14. Sezary: Gaz. d. hôp., 1912, lxxxv, 125; Med. Press and Circ., 1912, xciv, 32.
15. Kuhn: Arch. f. Kinderheilk., 1903, xxxvi, 195.
16. Dunlop: Brit. Med. Jour., 1912, ii, 120.
17. Abt, I. A.: Erythema Nodosum, The Journal A. M. A., Nov. 12, 1904, p. 1454.
18. Meara and Goodridge: Am. Jour. Med. Sc., 1912, cxliii, 393.

## ABSTRACT OF DISCUSSION

Dr. Fred Wise, New York: While the theory of the tuberculous origin of erythema nodosum is very interesting, it is scarcely in accord with the short duration and practically spontaneous disappearance of the lesions in some of these cases. Lesions which are caused by the presence or activity of the tubercle bacillus in the tissues are almost invariably chronic and persistent in nature. How, then, should we reconcile the presence of tubercle bacilli in the lesions of erythema nodosum, when they are so evanescent in character?

Dr. Ernest L. McEwen, Chicago: Dr. E. C. Rosenow of Chicago has recently succeeded in isolating an organism from the lesions of erythema nodosum in a number of cases. In one of these, of which I have personal knowledge, the patient was a young, foreign-born woman with indefinite joint-pains; in the lesions of the legs Dr. Rosenow was able to find this particular organism and to show its close relationship to the streptococcus which he has demonstrated to be the cause of articular rheumatism. If Rosenow is on the right track these cases of erythema nodosum associated with tuberculosis must be explained as Dr. Foerster has suggested, namely, that some acute infectious disease, like measles, lights up a latent tuberculosis, while coincidentally an infection with Rosenow's organism occurs. It is quite remarkable that so many cases of erythema nodosum associated with tuberculosis are reported in the literature. We have reason to expect that the future will reveal to us some wonderful things in connection with the transmutation of organisms. We know that certain strains of organisms will select certain tissues and leave others alone, a fact which is as important as it is striking. Rosenow, I understand, has been able to change his streptococcus of rheumatism, through a series of definite stages, into a pneumococcus, and back again, by animal inoculations under certain conditions. This field of research, I believe, will prove to be an extremely rich one in the near future.

Dr. George M. MacKee, New York: I believe, with Dr. McEwen, that Rosenow is on the right track. I also feel as does Dr. Wise with regard to the short duration and spontaneous recovery of erythema nodosum lesions, and I cannot conceive of a tuberculous process of so brief a duration. In erythema nodosum we have lesions that last only a few days, and it is almost inconceivable that they should be due to the toxins of tuberculosis.

Dr. W. C. Brownson, Asheville, N. C.: With regard to the value of the von Pirquet test from a diagnostic point of view, the pediatrists have come to the conclusion that it is of doubtful value except in very young children. Still we constantly read of the von Pirquet test as an aid in the diagnosis of tuberculosis verrucosa cutis or blastomycosis. As a matter of fact, the test is of little value except in young children.

Dr. J. B. Kessler, Iowa City, Iowa: This discussion reminds me of a patient I had last winter who was suffering from erythema nodosum. The case had been regarded as one of lues until that diagnosis had been disproved by several negative Wassermann tests. The paper of Dr. Foerster and the work of Dr. Rosenow certainly show us the way to make a correct diagnosis in these cases.

Dr. A. Ravogli, Cincinnati: I am not inclined to believe that erythema nodosum has any relationship to tuberculosis. I have seen only a few cases of this affection, usually occurring in young girls, ranging in age from 12 to 19, and giving a history of some acute antecedent disease, usually a sore throat together with arthritic pains. The attacks were of brief duration, the eruption being usually confined to the lower extremities, in the form of hard, oval, red erythematous nodules, which disappeared in a short time, leaving the patient in an apparently normal condition. For these eruptions I think Rosenow has given us a very good explanation, namely, that the staphylococcus or some hybrid form of streptococcus from the tonsils enters the circulation and when it reaches the small ramification of the capillary blood-vessels, produces a kind of thrombi which causes exudation and the erythematous eruption. Bazin's disease, erythema induratum, I have always regarded as a localized tuberculosis, as it often ends in ulcerations.

Dr. Richard L. Sutton, Kansas City, Mo.: I have recently done some work in connection with sarcoids (Boeck and Spiegler-Fendt), erythema nodosum and the erythema induratum of Bazin. Beginning with nodular tuberculosis of the hypoderm (Wende), we can readily separate the various types of lesions into definite clinical groups. There are undoubtedly three distinct varieties of "erythema nodosum," and perhaps four: erythema nodosum directly due to bacteria (Rosenow), erythema nodosum due to the tubercle bacillus or its products, and erythema nodosum occurring as a result of the ingestion of certain foods or drugs. The tuberculous type of erythema nodosum I think should be designated as "erythema indurata disseminata," to distinguish it from the other varieties.

Dr. O. H. Foerster, Milwaukee: I wish to emphasize that many of the cases reported in the literature have been in children in whom the erythema nodosum has been followed by a tuberculous meningitis or other tuberculous manifestation.

## DISEASES AND NEW GROWTHS OF LYMPHATIC ORIGIN *

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When I was first asked to read a paper before the Section on Dermatology of the American Medical Association I hesitated to accept because I did not know anything new to communicate. Then my friend, Udo Wile, proposed that I speak about the changes of the skin in lymphatic leukemia, a subject I have written about. Though many of you will be quite familiar with what I am going to say, there may be some who have not had much opportunity to study this question.

Skin troubles may be the first prominent symptom of lymphadenosis and the skin specialist familiar with these troubles will, in a good many cases, be able to make the diagnosis in a very early stage of the disease. Concerning the nomenclature I think the old names lymphatic and myeloid leukemia should be replaced by aleukemic, subleukemic and leukemic lymphadenosis and myelosis. The essential pathologic feature of lymphadenosis is the generalized hyperplasia of the lymphatic hematopoietic tissue and the essential feature of the myelosis is a generalized hyperplasia of the myeloid tissue. According to the blood-changes, which represent only a symptom, although a very important one—we distinguish, in speaking of lymphadenosis, an aleukemic form, if the blood is normal, a subleukemic form if the number of the white blood-cells is normal or very little increased, but the proportion of the lymphocytes is augmented, and a leukemic form when there is an absolute, permanent, progressive increase of lymphocytes and the total number of leukocytes is augmented.

The changes of the skin that may be observed in the beginning or in the later course of lymphadenosis can, from clinical and histologic points of view, be divided into changes not characteristic at all and not distinguishable from clinically and histologically similar affections of other origin on the one hand, and on the other, changes representing proper localizations of the lymphadenotic process in the skin. The former more frequently met, are called leukemids, a name

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suggested by Audry; the latter are the lymphadenoses of the skin in the proper sense of the word.

### LYMPHADENIDS (LEUKEMIDS)

Among the skin lesions not characteristic in themselves are to be mentioned the purpura met especially in the so-called acute mostly large-celled leukemia, first described by Friedreich, Ebstein and A. Fraenkel. In those cases, multiple swelling of the lymph-nodes, enlargement of the liver and spleen may be completely absent, and the most striking features of the clinical picture are either petechial or more diffuse hemorrhages of skin and mucous membranes, the latter often terminating in necrotic lesions of the gums and the mucous membrane of the mouth and suggesting scurvy.

If there is fever or severe troubles of the general health one first thinks of a septic affection leading to the hemorrhagic diathesis and only the blood-picture enables one to make the diagnosis, which might be quite impossible in the aleukemic forms of this type. The purpura can be combined with the formation of blisters, described by Shattuck in this country.

Then there must be mentioned the so-called prurigo lymphatica (first described by E. Wagner, Buschke, Breseendorff). Like the prurigo of Hebra the prurigo lymphatica is characterized by numerous pinhead- to hemp-seed-sized semiglobular or more conical, pale, elastic, edematous papules each bearing on its top a deep-seated vesicle that soon gets scratched off and is replaced by a crust. The skin between these papules becomes thickened, edematous, as the effect of the continual scratching. The surface is dry and scaly. Secondary pus infection (impetigo, furuncles) complicate the picture. In a word, there is, morphologically, a very great resemblance between prurigo lymphatica and the prurigo of Hebra. Whereas, Hebra's disease, however, always starts in early childhood, recurs in more severe attacks during the winter or summer, the prurigo lymphatica starts at every age and shows exacerbations in certain seasons. In prurigo lymphatica one does not find the typical localization of the prurigo of Hebra.

Prurigo lymphatica is not only observed in aleukemic and leukemic lymphadenosis, but also in other more or less generalized affections of the lymphatic apparatus, parenchymatous as well as granulomatous, in lymphosarcoma (Wunderlich, Dubreuilh), in some cases of tuberculosis of the lymphatic glands, in hyperplastic conditions of the lymphatic glands observed in malaria, in lymphogranulomatosis (Hodgkin's disease). Neither the clinical nor the histologic picture (thickening of the epithelium, formation of rare vesicles, status spongioides, chronic inflammatory changes of the superficial layers of the derma) is sufficient to prove the lymphadenotic nature of the condition. The diagnosis has to be based on the blood-finding or the histologic examination of an excised lymph-node.

In other cases you might observe an intense itching, a pruritus, without any visible lesions of the skin or secondary changes, due to scratching or pus infection. This pruritus is not of itself characteristic in any way. Very instructive and convincing of the connection between affections of the lymphatic system and pruritus is the case published by Blaschko. A patient with lymphosarcoma of the supraclavicular glands suffered from very severe itching. After removal of the glands the pruritus disappeared but came back four years later with a recurrence of the lymphatic new-growth. In other cases of lymphadenosis, one can observe common urticaria, urticaria papulosa or papulovesiculosa (lichen urticatus), multiple formation of furuncles and carbuncles.

More interesting are the cases of universal exfoliative erythrodermia observed in the course of lymphadenosis by Elsenberg, Peter, Wassermann, Nicolau. Those cases show a close resemblance to the so-called pityriasis rubra of Hebra and many observations of cases published under this name may be allied to a lymphadenotic condition. The "leukemic and pseudoleukemic erythrodermias" are characterized by a subacute or chronic progressive reddening of the skin spreading in a shorter or longer lapse of time over the whole, or almost the whole body, by formation of bran-like or flaky scales and enlargement of the lymph-nodes. The latter symptom, however, can be absent as in Wassermann's case, in which Ehrlich had made the diagnosis of lymphatic leukemia on account of the blood-finding and the post-mortem detected a considerable enlargement of the retroperitoneal glands caused by a pure lymphoid hyperplasia.

There may be swelling of the liver and the spleen, but these symptoms are very often absent and the diagnosis can be proved only if an increase of lymphocytes in the blood is shown, the total number of leukocytes being normal or augmented. In case the blood-picture is aleukemic, a histologic examination of an enlarged lymph-node is to be made. To some extent the skin-lesions vary. There may be more or less complete loss of hair and nails; the latter may be cracked and thickened; in one case the skin is thickened, edematous, while in another it is thinned, atrophic, leading to retraction (ectropion of the eyelids, for instance). Fever is frequent but may be absent. Among the subjective symptoms must be mentioned the feeling of chill common to all universal erythrodermias and due to the augmented loss of heat and the itching, mostly not very marked, but sometimes rather intense.

The histologic changes consist in a continuous diffuse or more circumscribed infiltration of the upper layers of the derma, the stratum papillare and subpapillare, the blood-vessels of which are much dilated. The infiltration is formed by small deeply stained round cells—morphologically and after their tinctorial properties identical with the small lymphocytes of the lymph-nodes and larger elements with pale oval nuclei—proliferated connective-tissue cells. The lymphocytes surround the vessel follicles, sweat-glands and sebaceous glands; the fibroblasts are more diffusely spread between. Except the cell-forms mentioned you find mast-cells and pigment cells, the latter sometimes in very large numbers. In Nicolau's case they formed at the lower border of the infiltration a band consisting of three or four rows of cells. The rete malpighii is mostly atrophic and covered by a more or less hypertrophic horny layer.

A differentiation of these "pseudoleukemic and leukemic erythrodermias" from other universal chronic exfoliative reddenings of the skin of unknown origin, especially from the genuine pityriasis rubra of Hebra, is quite impossible by means of clinical and histologic study of the skin only. It has already been mentioned, and especially Jadassohn and Nicolau insist on the point, that some of the cases of Hebra's disease belong to the lymphadenosis (lymphatic leukemia and pseudoleukemia of the old nomenclature). A critical analysis in that respect is quite impossible; so far as I know in no case published as pityriasis rubra of Hebra has a reliable blood-count been made. In every case of chronic universal exfoliative erythrodermia the blood must be examined at different times, repeatedly, with special regard to the differential count, and the diagnosis of pityriasis rubra of Hebra can be made only after excluding a leukemic and a tuberculous erythrodermia (cases of the latter described by Jadassohn, Brunsgaard, Wertheim-Finger, as you know). As the histologic findings of the universal exfoliative erythrodermias encountered in lymphadenosis are not especially characteristic, common chronic inflammation (perivascular round-cell collections and proliferation of the connective-tissue cells), they must be differentiated, at least for the present, from the clinically, not so much, as the histologically absolutely characteristic, universal, lymphadenotic (lymphatic-leukemic) infiltrations of the skin.

Suppose the cause, the pathologic agent or agents of lymphadenosis will be discovered one day, suppose the bacteriologic facts found by E. Fraenkel and Much, and by myself—not very convincing now—will be confirmed by other authors and put on a solid experimental basis—suppose all that, and the more or less artificial borders put up between the true clinically and histologically well-characterized lymphadenosis of the skin and the non-characteristic so-called lymphadenids (leucémids—Audry) will disappear.

### THE PROPER LYMPHADENOSIS OF THE SKIN

The proper (leukemic, subleukemic and aleukemic) lymphadenosis of the skin represents a pathologic condition completely equivalent to the changes of the inner organs caused by a generalized hyperplasia of the lymphatic tissue. The lymphadenosis of the skin may be divided (after Riehl, Paltauf, and F. Pinkus) into a diffuse or better, universal form, and a circumscribed form causing flat infiltration, nodes or tumor-like swellings.

In the so-called myelosis (myeloid leukemia)—characterized by a generalized hyperplastic proliferation of myeloid tissue—a diffuse universal participation of the skin with typical histologic structure (myeloid tissue) has not been observed. There is a circumscribed myelosis of the skin, however, first perhaps described by Hindenburg and lately by Brunsgaard from Christiania, in a very remarkable paper. Histologically myelosis cutis shows perivascular myeloid cell-formations, that mean neutrophil and eosinophil myelocytes, myeloblasts, giant-cells (megacaryocytes) and nucleated red corpuscles. In comparison with the circumscribed lymphadenosis the circumscribed myelosis of the skin is extremely rare and there have been observed only a few cases.

### UNIVERSAL LYMPHADENOSIS OF THE SKIN

The conception of the universal form is not very well defined and has not been accepted by all authors, a fact probably due to the extreme rarity of the cases. Some authors—for instance, Felix Pinkus, who has written an excellent article on lymphatic leukemia of the skin—mix the universal form up with the so-called lymphodermia perniciosa.

The name "lymphodermia perniciosa" has made great confusion and has been applied to quite different processes showing certain clinical similarities. Kaposi first used this name for a case studied by himself and well known from the literature. No exactly analogous case has ever been observed since, by Kaposi or any other author. Tallant thinks that the pathologic changes in the original case ought to be considered as an atypical malignant proliferation of the lymphatic tissue-leukosarcomatosis, in the sense of Sternberg. Most of the cases reported afterward as lymphodermia perniciosa correspond to the type called by the French authors (E Besnier, Vidal, Hallopeau, Jeanselme, Leredde) *érythrodermie prémycosique;* some of them are perhaps identical with the universal form of lymphadenosis.

A satisfactory critical analysis of all the material referring to that subject is scarcely possible, as most of the publications are of an older date and do not give a sufficient description of the hematologic and histologic picture. By clinical observation alone a differentiation of all these processes cannot be made. Clinically their similarity may be striking. Universal reddening and more or less considerable tumefaction of the skin in connection with swelling of all the palpable lymph-nodes, and with enlargement of liver and spleen may be found in generalized purely hyperplastic and perhaps also in aggressive malignant proliferation of the lymphatic apparatus as well as in certain—principally in the lymphatic tissue—localized infectious granulomas (mycosis fungoides and perhaps lymphogranulomatosis). As we do not know very much about the cause of these different conditions they must be differentiated by their pathologic picture. Their diagnosis has to be based on the histologic findings. The blood-picture may be of great value for the diagnosis if it shows characteristic alteration, but if it is normal or only slightly changed it is of no use in the classification of those affections. Therefore, I suggested to divide the universal infiltrating erythrodermas observed in the course of the different affections of the lymphadenoid tissue, on account of the histologic changes, into four groups: (1) lymphadenotic (lymphatic-leukemic), (2) lymphosarcomatous, (3) mycotic, and (4) lymphogranulomatous erythrodermias.

The number of the cases of universal infiltrating erythrodermia, in which there can be no doubt, clinically, hematologically or histologically—about their lymphadenotic nature, and which should be called lymphadenotic erythroderma (diffuse lymphadenosis of the skin) is very small and amounts only to four, including one personal observation. The first case has been described by Riehl of Vienna, to whom we are indebted for the knowledge of this disease and the second one has been observed and published by Linser of Tübingen, the third one, by Rodler-Zykin in Jadassohn's clinic, differs rather from the classic type.

I shall not bother you with the history of my own case. You will find it in my publication on this subject. There was a universal intensely itching swelling and reddening of the skin, enlargement of all the palpable lymph-nodes especially the axillary, inguinal and crural. The blood-picture was that of lymphatic leukemia, total number of leukocytes 40,000, lymphocytes 60 per cent. (among them 11 per cent. of large atypical forms). The histologic examination of an excised piece of skin showed the characteristic lesions —a continuous, diffuse, pure lymphocytic infiltration of the two upper thirds of the derma, going down to the lower third of the cutis propria and the subcutaneous tissue in form of perivascular and periglandular cell-collections.

The infiltration seems to be very monomorphous—at least at the first glance—and contains numerous newly formed much-dilated vessels. If the infiltrating cells are examined with a higher-power lens it may be remarked that they are all lymphocytes, but that the common so-called small lymphocytes are rather scarce and that the large forms with pale round or oval, sometimes kidney-shaped and lobulated nuclei, the so-called lymphoblasts and atypical forms, prevail.

Mitoses are very numerous. There is no proliferation of the connective tissue. The original connective tissue is mechanically dislocated and forms a sort of network, the meshes of which are filled in by the lymphocytes. The epidermis is in some parts proliferated, in others atrophic. The papillary and subpapillary layers show a very marked edema, dilatation of blood-vessels, but very little infiltration, so that regarding the sections with a low power, the uppermost layer of the derma seems to be normal. About the bacteriologic findings I shall speak later.

In the later course the number of leukocytes increased considerably (up to 120,000, 78 per cent. of which were lymphocytes). The patient died one year and nine months after the first trouble of the skin had appeared. The post-mortem showed diffuse lymphatic leukemic changes of the skin, adhesive pericarditis, fatty degeneration of the heart-muscle, aneurysm of the aorta descendens, hydrothorax (left side) and edema of the lungs, leukemic infiltration of the liver, spleen, kidneys and lymphatic glands.

### CIRCUMSCRIBED LYMPHADENOSIS OF THE SKIN

While the clinical picture of the diffuse lymphadenosis of the skin is not very well characterized, the diagnosis of the circumscribed form is not so difficult and can be made with more or less probability. The two forms never go into each other. The circumscribed type neither terminates in a universal swelling of the cutis nor are there well-defined tumor-like growths to be observed in the course of the lymphadenosis universalis. The circumscribed patches and tumors are observed in the aleukemic, subleukemic and leukemic lymphadenosis.

My personal observations of circumscribed lymphadenosis of the skin concern three cases of subleukemic and two cases of aleukemic lymphadenosis (in the latter the blood examined at different times being absolutely normal).

These facts are of certain value and prove the identity of processes that show pathologically the same changes but differ as to the blood-picture and were formerly strictly separated as lymphatic, leukemic and pseudoleukemic. Ehrlich and his pupil, F. Pinkus, the well-known dermatologist in Berlin, showed first that the lymphatic, leukemic and pseudoleukemic are the same process. Long before them, J. Orth had, on account of the pathologic findings, pointed out their relationship.

### DIAGNOSIS OF THE CIRCUMSCRIBED LEUKEMIC AND ALEUKEMIC LYMPHADENOSIS OF THE SKIN

An absolutely certain clinical diagnosis of these lesions is impossible considering the rarity of the affection on one side and certain similarities with other processes on the other side. Nevertheless, you can, in the great majority of cases, conclude on the nature of the skin lesions, and I shall try to sketch the most important clinical features. First of all, the localization is very characteristic, the face being the seat of all predilection that is taken either exclusively or generally. It is quite an exception that it does not show any changes like in the much discussed case observed by Nékam. There are other skin diseases, of course, that prefer the face (lupus vulgaris, lupus erythematosus), but the appearance of chronic tumor-like swellings of the face reminding one of sarcoma, must always raise the suspicion of lymphadenosis.

Especially the nose and the adjoining parts of the cheeks, the eye-lids, lips, chin, ears and ear-lobes are involved. The infiltration of the eye-brows and glabella gives the face a most characteristic appearance recalling the facies leontina of the lepers. Frequently the scalp and upper extremities, especially the backs of the hands, are affected at the same time as the face.

Among the less frequent localizations are to be mentioned the skin of the breast, especially about the mammae (Pfeiffer, second of my cases), abdomen, scrotum (one of my observations), glans penis (infiltration of the corpora cavernosa in one of my cases). Occasionally every part of the body may be involved, but the cases with numerous nodules all over the body (head, trunk and extremities), cases described by Biesiadecki, Hochsinger and Schiff, Kreibich (second case Feger), are extremely rare.

Concerning the shape of the lesions it must be mentioned that more or less well-defined, macular, slightly elevated patches and semiglobular projecting tumors develop close together and turn one into the other. I think that this fact is very characteristic and of value, making the diagnosis with the genuine new growths (sarcoma).

The formation of ringed, festooned lesions either by central involution and peripheral spreading of a single patch or by juxtaposition of different smaller patches is quite unusual in lymphadenosis, whereas it is frequently seen in mycosis fungoides. The flat patches may persist for years without transformation into tumor-like new growths. The size varies within the widest limits. The patches vary from the size of a silver dollar to an area corresponding to two palm's breadths and more. The tumors are from pea-size up to the size of two fists and are sometimes lobulated, showing that they have formed by coalescence of different smaller new growths.

The color is mostly a peculiar yellowish-brown or yellowish-brown red, rarely bluish-red, on pressure translucent, reminding one of lupus vulgaris. If there is a hemorrhagic diathesis at the same time, the tumors may be the seat of hemorrhages and look like melanotic new growths (dark blue, bluish-black). If the infiltrations are localized only in the deeper layers of the cutis propria and in the subcutaneous tissue, the surface may appear quite normal or only show a slight bluish tinge.

Sometimes the tumors are firm to the touch, sometimes soft and always of a somewhat elastic edematous consistence. The changes remain always localized to the derma and hypoderma or to the subcutis alone; they never take the underlying tissues. The visible mucous membranes are, as a rule, free from lesions except some slight edema. There are only three cases of lymphadenosis (observed by Fröhlich, Pfeiffer, Kirkoroff) with typical changes of the mucous membranes of mouth, pharynx and larynx.

Most of the cases of so-called leukemia and pseudoleukemia cutis, with formation of nodes about the pharynx, the uvula, the soft palate, etc., or with diffuse infiltrations of the mucous membranes of the pharynx and larynx are lymphosarcoma (Case Fano and Liebmann, case Schultz). A very striking feature is the absolute want of any signs of a regressive metamorphosis (softening disintegration). Even if rather large tumors disappear suddenly, for instance, after an erysipelas, or a pneumonia, there is only a slight atrophy of the skin left. True scarring is never observed. It is quite exceptional that the new growths ulcerate. Only in one case (Nicolau) has there been a superficial ulceration. The course is very characteristic. After growing rather rapidly to a certain size they may remain stationary for years or grow but very slowly. The subjective symptoms are, in the majority of cases, very trifling and consist in some burning sensations recurring from time to time, and in a certain pain on pressure.

Of great importance in diagnosis are, of course, multiple symmetrical swellings of the lymph-nodes especially of the retromaxillary and submaxillary regions, about the neck, the axillae and the groins. These enlarged glands may be found in other diseases of the lymphatic system, however, leading equally to tumor-like conditions of the skin, and on the other hand, in lymphadenosis the palpable lymph-nodes may be of normal size. In three of my cases nobody would have thought of lymphatic leukemia by examining the lymphatic glands. The same is true of enlargement of the liver and the spleen.

The blood-picture is a great help if it shows the characteristic changes of leukemic and subleukemic lymphadenosis, but if it is aleukemic, that means normal, it cannot influence the diagnosis. The blood-finding alone is not always reliable, since leukemic blood-findings may be seen in atypical new growths of the lymphatic system (lymphosarcoma, leukosarcomatosis) and in certain forms of mycosis fungoides. Therefore, a histologic examination should be made in every case.

The histologic picture is absolutely typical and shows a pure, lymphocytic infiltration of the skin and the subcutaneous tissue, stopping with a very sharp line just beneath the papillary layer. The epithelioma (normal or flattened) is always separated from the tumor-like infiltration by a narrow, somewhat edematous zone, in which one can only with a high-power lens detect some newly formed cells. This distribution is very characteristic. The original collagenous tissue is dislocated and forms a kind of reticulum; the elastic tissue has been destroyed in the center of the large tumors. In the smaller patches, it may be rather well conserved.

In the large tumors absence of follicles, sebaceous glands and sweat-glands may be observed. In the smaller patches one can see that the process very often starts in the neighborhood of the hair follicles, the sebaceous glands and sweat-coils, which are well conserved. This perifollicular, periglandular localization is due to the fact that follicles, etc., are surrounded by a very well-developed system of capillaries.

At the first glance and employing the ordinary stains, it looks as though there was only one cell-form, small, more or less round elements with a very narrow border of protoplasm or without protoplasm, and a dark-stained nucleus showing sometimes a sort of wheel structure employing certain stains (polychrome, methylene blue, methyl green, pyronin and a combination of Much, Grünwald, Gram), one is able to differentiate between the different forms of cells.

Most of the infiltrating cells are of the type of the so-called small lymphocytes of the lymph-nodes but there are also irregularly scattered lymphoblasts and lymphoblastic plasma-cells (cells with a large, pale, round or kidney-shaped, lobulated nucleus, two or more very distinct nucleoli and a narrow border of protoplasm, that takes the pyronin more or less intensely). At the periphery there are some proliferated connective-tissue cells.

Lymphocytic plasma-cells (type Marschalko) are absent in the majority of cases but sometimes they are found, as in one of my cases, in which they were rather numerous in some sections. Mitoses are very rare.

### PATHOGENESIS

There are two different theories about the origin of the lymphadenotic infiltrations of the skin. Some authors (Kreibich, Nékam, Nicolau) thought that innumerable lymphocytes emigrated and were deposited in the neighborhood of the blood-vessels; that there was no local proliferation of lymphocytes at all or only to a very small amount. In favor of this theory, the above-mentioned authors noted the absence of inflammatory changes and proliferative lesions of the connective tissue, the lack of mitoses, in spite of the extraordinary quantity of newly formed cells, the presence of small lymphocytes in the lumen, the walls and the neighborhood of the same vessel and the universal distribution in some cases.

This theory was opposed by Felix Pinkus. Basing his theory on Ehrlich's doctrine that the lymphocytes had no self-movement, he said it was quite impossible or at least very improbable that the numerous cells forming the lymphadenotic infiltrations came exclusively from the blood. Concerning the lack of mitoses, he found something analogous in the lymphatic glands of his own case—very few mitoses and absolute absence of germinating centers.

He thinks that in the early stages of lymphatic leukemia there is an overproduction of lymphocytes but later on a sort of stasis takes place. Based on Ribbert's theory that the lymphatic tissue is spread all over the body, he explains the origin of the lymphadenosis cutis by a local proliferation of the preformed lymphatic tissue of the skin, produced by the leukemic condition, analogous to the lymphatic proliferations in the lymph-nodes, the spleen, marrow, lungs and kidneys. Suppose that, normally, there is lymphatic tissue in the skin, the theory of Pinkus seems to be the most plausible. There can be no doubt that in some cases the cell-proliferation by indirect division exists. Nékam and Nicolau insisted on the lack of mitoses. I found karyokineses in two of my cases of circumscribed lymphadenosis cutis and in my case of universal lymphadenosis they were quite numerous.

On the other hand, it is possible that some of the lymphocytes come from the blood. We know from the researches of Max Schultze, Hirschfeld, Wolf, Maximow, Jolly, Helly, Schwarz, Schridde and Zieler, that the lymphocytes are capable of moving or at least acquiring this power of self-movement under certain pathologic conditions.

Schridde lately contested the existence of rudimentary lymph-follicles in the fetal connective tissue, considering the perivascular cell-collections found by Ribbert to be myeloid formations (consisting of myelocytes, myeloblasts, nucleated red cells, megakaryocytes) which are wide-spread in the embryonic organism. For the explanation of the perivascular formation of the lymphadenotic infiltrations of the skin the preexistence of preformed lymphatic tissue is not necessary. It is quite possible that the lymphatic new growths originate from the perivascular lymphocytes of the adventitia, the so-called *Adventitiazellen* (Marchand) or from the endothelial cells of the lymphcourses changed by metaplasia (Schridde) or from the so-called *Gefahsrandzellen* (Pappenheim).

## ETIOLOGY

We know nothing absolutely certain concerning the cause of the generalized hyperplasias of the lymphatic system. The so-called acute leukemia is perhaps of infectious origin, although it is sometimes quite impossible to exclude a secondary infection in these cases, and many authors think that the acute forms are quite another disease and have nothing to do with the chronic lymphadenosis. Concerning the cause of the latter, some pathologists (Orth, Pappenheim) suggested that it was of an infectious nature; others think lymphatic leukemia must be placed among the genuine neoplasms; others consider it as a special trouble quite different from the true new growths and from the infectious granulomatous conditions.

E. Fraenkel and Hatluch inoculated the emulsion of a lymphatic leukemic lymph-node into six guinea-pigs and found, on smears of two swollen lymph-glands, large, partially granular rods, three or four times as thick as tubercle bacilli and partially or completely stained by Gram stain. E. Fraenkel and H. Much found the same Gram-positive, thick, partially granular rods in the antiformin sediment of spleen and lymphatic glands in other cases of lymphatic leukemia. There were no acid-fast rods to be found. The leukemic bacilli of E. Fraenkel and H. Much could not be confirmed by other authors and it is, of course, absolutely necessary to control their findings on a larger material and by animal inoculations.

Then there should be mentioned the very interesting case published by Coley and Ewing in the *Transactions of the New York Pathological Society* under the title of "Acute Lymphatic Tuberculosis (Pure Generalized Lymphatic Hyperplasia Caused by Tubercle Bacilli)." In one of my cases of circumscribed leukemia of the skin, I found, in the sections of skin and spleen, partially extracellular, acid-fast, Gram-positive bacilli. Some of them looked like tubercle bacilli, some of them were thicker. In the case of universal lymphadenosis of the skin I found the same organisms, acid-fast Gram-positive and antiformin-fast bacilli. As I had not at all expected to find acid-fast bacilli in lymphatic leukemia, I had, unfortunately, not inoculated guinea-pigs or monkeys and I cannot say anything about the nature of these micro-organisms. They show, however, that we will have, in every case of lymphadenosis, to look for them and to put these findings on an experimental basis.

The prognosis of the lymphadenosis of the skin coincides with the prognosis of lymphatic leukemia in general.

## ABSTRACT OF DISCUSSION

Dr. H. H. Hazen, Washington, D. C.: We American dermatologists have known for a long time of the splendid work of Professor Arndt. We have read some of his articles on skin diseases due to lymphatic derangements and are amazed at the depth and breadth of his pathologic knowledge. This proves that in order to be a good dermatologist, one must first of all be a good general pathologist. We have in this group of diseases the sarcomas, including that of Kaposi, and the curious tumors described by Polland and others. Next come the Spiegler-Fendt sarcoids, and then the various other sarcoids, between which there is often no hard-and-fast dividing line. On the other hand, and likewise grading into the sarcomas, we find the lymphatic diseases, which may roughly be divided into leukemic and aleukemic. In the first group belong acute and chronic lymphatic leukemia, which merge one into the other, and the myeloid leukemia and also chloroma. In the aleukemic group we may place multiple myeloma, Mikulicz' disease, Hodgkin's disease, myocosis fungoides and certain lymphomas such as those described by Winfield. Nearly all of the aleukemic growths may become leukemic. Wende has described a typical case of Hodgkin's disease or pseudoleukemia that terminated in leukemia, and the case of mycosis fungoides reported by Pardee and Zeit, although the blood-counts might not bear critical examination, ended in leukemia so far as the blood-picture and the necropsy findings could be interpreted. We must bear in mind that when there is any visceral complication in mycosis fungoides, it is limited to the lymphatic glands or the bone-marrow. In addition, certain cases of lymphodermia perniciosa (of Kaposi) seem to be a direct connecting link between leukemia and mycosis fungoides, while the leukemias are connected with the sarcomas through the so-called leukosarcoma of Strenberg, a condition of which most Americans have heard very little. Certain other diseases also show a relationship to the sarcomas. Some years ago White and Proescher described a spirochete as the cause of some of these diseases, but their work has not been confirmed. More recently, however, Bunting and Yates seem to have isolated a bacillus as the exciting organism in Hodgkin's disease. In diagnosis, Dr. Arndt has rightly emphasized the fact that leukemic conditions may have aleukemic periods, and at such times a blood examination would be positively misleading. He calls attention to the necessity, in such cases, of studying tissue obtained by biopsy, but it seems to me that there might be some danger of confusing a leukemic condition with a benign lymphoma, as in the case of Winfield. In the treatment of these conditions, the Roentgen ray should be used, possibly combined with benzol. Will Dr. Arndt give the German conception of lymphogranulomatosis, concerning which some of us are a trifle hazy?

Dr. John A. Fordyce, New York: Dr. Arndt's lucid description of these lymphatic affections of the skin will lead us to study our cases more carefully from both a clinical and a histologic point of view. In the last few years I have had two cases of universal lymphadenosis similar to the condition described by Dr. Arndt. One case what that of a woman with a generalized erythrodermia without much exfoliation, together with enlargement of the lymphatic glands. That case undoubtedly belonged to the group described by Dr. Arndt under the name of universal lymphadenosis. After trying all the usual remedies in this case, we resorted to the Roentgen rays, to which the lesions yielded rather rapidly, and at present the patient shows only a few recurrent lesions, with some thickened patches of skin. It has been found impossible completely to eradicate the condition. The picture never looked anything like mycosis fungoides. Several blood examinations were made without any definite findings, but after listening to Dr. Arndt's paper we will proceed to make a more careful examination. Some years ago I had another case of generalized thickening of the skin, with lymphatic enlargement, which at the time was regarded as one of premycotic erythrodermia.

Dr. A. Ravogli, Cincinnati: While studying under Hebra years ago, I saw many cases of prurigo, and he usually referred to them as scrofulodermata and prescribed cod-liver oil with excellent results. The lymphatic exudation in the derma constituting the small papula of prurigo offers a good explanation for its persistency, and for the itching sensation, which it causes. In granuloma fungoides, although the leukemic condition has been advocated by Brocq and others, yet there may be a peculiar infection, which we so far do not know, which causes the proliferation and the fungous growths of the lesions. It is possible that the lymphatic system acts as an important factor in some cases of erythroderma, of which we have, so far, no idea of their etiology.

**Dr. Martin F. Engman**, St. Louis: The more we study and follow the literature on the differences between the so-called granuloma and malignant growths, the more we must realize that too much dependence cannot be placed on the morphologic aspect of the subject. The experimental work done by Rous and others on the dog and chicken tumors shows that in one there was produced, apparently, a granuloma and in the other a sarcoma. The original irritation, be it a micro-organism or of chemical nature, may cause certain lymph-changes and produce certain objective clinical symptoms, and as these increase, we may have later the typical blood-changes, which in the earlier types may be absent, while in other cases they follow very quickly. In the literature on mycosis fungoides, we are given the blood-findings, yet a differential count is unique. In skin affections, leukocytosis alone means nothing. We reported six cases of mycosis fungoides, with indefinite blood-findings; later, we obtained a leukocytosis, but the cells were composed of polymorphonuclear leukocytes, without any increase in the lymphocytes. In the tuberculid group we have one case now under observation, and we have found that all these cases run a high mononuclear count. The whole classification depends largely on the blood-findings.

**Dr. S. Pollitzer**, New York: The entire subject of the leukemic diseases of the skin is relatively new and has been studied only since the establishment of hematology on a scientific basis by Ehrlich. These cases are, of course, very rare, although they are not so rare as their scant report in the literature would lead us to believe. I have been looking for leukemic affections of the skin for several years, and I am sure that in the past I overlooked some cases. I have at present under observation a man with typical lesions of leukemia, and with both a relative and absolute lymphocytosis. A relatively uncommon feature in this case is the occurrence of bullae of the deep-seated type, that when ruptured, healed slowly. Their cell-content is largely lymphocytic. I also have in mind a woman with nodular fawn-colored lesions on the extremities, pea-sized and smaller, many of them excoriated, who came to me because of a pruritus which was confined mainly to the extremities. I suspected a leukemic affection, but a blood-count showed a normal blood-picture. I then made a biopsy and was surprised to find that I was dealing with a rather unusual form of leprosy. I think it is quite impossible to separate the generalized erythrodermia of mycosis fungoides and pityriasis rubra from erythrodermia leukemica on clinical grounds. Jadassohn, who was the first to range pityriasis rubra with the tuberculids, did not by any means maintain that all cases of pityriasis rubra belonged to that class. It is evident that erythrodermia is a symptom of many different systemic disorders of a toxemic character. Cases of mycosis fungoides, which do not properly belong to the group described by Dr. Arndt, are far more frequent than those of the leukemic affections. In the extension statistics collected by the American Dermatological Association covering three-quarters of a million cases of skin diseases, we have thus far made no place for the leukemic affections of the skin, whereas mycosis fungoides has been reported in the proportion of one case to every three thousand.

**Prof. G. Arndt**, Berlin: I purposely omitted any discussion of various affections of the lymphatic tissue, such as lymphosarcoma, lymphogranuloma and leukosarcoma. Lymphogranulomatosis, concerning which Dr. Hazen asks, is essentially the same as Hodgkin's disease, or malignant granuloma, with swelling of the lymph-nodes, the liver, spleen, and so on. The blood-picture in these cases is either normal, or there may be hyperleukocytosis, sometimes with eosinophilia; no lymphocytosis. The histologic picture in these cases is quite characteristic, and differs from that in ordinary hyperplasia of the skin: here we have small and large lymphocytes, with giant-cells of a peculiar type, sometimes reminding one of the giant-cells of sarcoma, with one huge, bizarre nucleus. We know nothing about the etiology of Hodgkin's disease. Many regard it as a form of tuberculosis; others think it is an infectious granuloma of unknown origin; others, again, that the lesions may be caused by different pathologic agents, such as those of tuberculosis, leprosy or rachitis. Many different opinions exist and it is quite impossible to be positive. We see in lymphogranulomatosis, skin lesions, such as those of prurigo, pruritus and many others. The histologic features of lymphogranulomatosis are quite characteristic, and so long as we do not know the cause of those diseases, we have to differentiate them by their pathologic and histologic pictures as strictly as we can. One day, doubtless, we shall learn the cause of mycosis fungoides, but so long as we are ignorant of it, we must insist on a strict differentiation based on histologic and pathologic grounds. We often get a leukocytosis in the blood-picture in mycosis fungoides, and there is a group of cases—I have seen two or three—which present a rather characteristic blood-picture, with an increase of the large mononuclear cells and of the eosinophils, a picture which we never get in leukemia.

# PARESIS PATIENTS TREATED WITH INTRASPINAL INJECTIONS OF SALVARSANIZED SERUM

## A BRIEF REPORT[*]

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Paresis is such a hideous and destructive disease that physicians are always on the *qui vive* for a hopeful method of treatment. Mercury, iodids and the various arsenical preparations seem to be of very little use as ordinarily administered in paresis and many cases of tabes and cerebrospinal syphilis. This fact led Swift and Ellis[1] to experiment in animals with intraspinal injections of salvarsanized and neosalvarsanized blood-serum. Later these methods were applied to man with results already familiar to you. Swift and Ellis, however, specifically declare that they are presenting their method, not as a substitute, but rather as an adjuvant to the generally accepted forms of treatment.

Concerning the rationale of the method there is perhaps some difference of opinion. Myerson[2] warns against expecting too much of it, partly on the ground that the flow of the cerebrospinal fluid is centrifugal rather than centripetal as regards the tissues of the central nervous system. At the same time he urges further trial on the basis of his own results. The finding of the treponema in the central nervous system has of course increased the theoretic hopefulness of the method. It is well known that meningococcus antitoxin is effectual only when injected into the subdural space or ventricles. Viton[3] thinks that he can increase the permeability of the meninges by intraspinous injections of a weak solution of mercuric cyanid. If, as Mott[4] believes, the cerebrospinal fluid plays the part of a lymph in the central nervous system acting in part as a nutrient fluid, then it should be able to convey medicinal substances to some, at least, of the brain-cells. This is in agreement with the view of

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[*] Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Swift, Homer F., and Ellis, Arthur W. M.: New York Med. Jour., 1912, xcvi, 53; The Treatment of Syphilitic Affections of the Central Nervous System, with Especial Reference to the Use of Intraspinous Injections, Arch. Int. Med., Sept. 15, 1913, p. 331.

[2] Myerson, A.: Intraspinous Injection of Salvarsanized Serum, Correspondence, The Journal A. M. A., Jan. 31, 1914, p. 396.

[3] Viton, J. J.: Reactivation of the Permeability of the Meninges in Treatment of Syphilis of the Nervous System, Semana méd., Dec. 11, 1913; abstr., The Journal A. M. A., Feb. 14, 1913, p. 582.

[4] Mott, referred to in: The Production of Cerebrospinal Fuid, Editorial, The Journal A. M. A., March 28, 1914, p. 1018.

Swift and Ellis on the direct continuity of the subarachnoid space with the lymph channels and spaces.

Hough,[5] McCaskey,[6] Cutting and Mack,[7] Krida,[8] Lorenz,[9] Riggs,[10] and various European medical men have employed intraspinal injections, usually with encouraging results. That the method is not entirely free from danger is shown by Lorenz' two deaths and by some of my own cases. After treating five cases Lorenz changed to direct intraspinal injection of very dilute solutions of neosalvarsan with good effect. In the seven fatal Los Angeles cases, the patients received serum to which neosalvarsan had been added, if I am correctly informed.

I have had thirteen patients under treatment altogether, two of whom received only one intraspinal injection each, and do not appear in the tables. Of these two, one is not improved and the other is dead. This man did not bear salvarsan well when it was administered intravenously, but it was thought best to try an intraspinal treatment. Following this he had a paretic seizure and died in about six hours. He had had one paretic seizure before coming to the hospital last January, followed by pupillary irregularity, increased knee-jerks, mental confusion and disorientation, also persisting muscular weakness. The spinal fluid Wassermann was positive.

In all sixty-two intraspinal treatments have been given with the following technic: Only salvarsan has been used and wherever an intravenous salvarsan injection is shown in the tables the intraspinal injection was given on the following day. A few intravenous injections are indicated which were not followed by the usual intraspinal treatments. As soon as the blood was withdrawn the fibrin was whipped out and the blood diluted with an equal amount of physiologic salt solution, so as to make a fifty per cent. serum. This was left in the ice-box over night, the serum removed the following day and heated at 56 C. for from one-half to one hour, the period varying somewhat. The injection was made with an ordinary glass cylinder, a small rubber bulb being attached to the lower arm of a glass T, so as to make slight pressure when needed. The usual interval before withdrawal of blood was one hour, but this was sometimes shortened to one-half or three-quarters of an hour. McCaskey[11] now recommends an interval of only twenty minutes, as he thinks the spirocheticidal power of the blood is then at its height. After some vacillation I decided on 30 c.c. of 50 per cent. serum as a standard dose, an approximately equal amount of spinal fluid being withdrawn. The usual interval between treatments was two weeks.

Of the eleven patients shown in the tables, six show improvement in some respect, not necessarily clinical, one is no better and four are dead. It must be remembered, however, that most of the entire series were well-advanced cases and that paresis is a desperate disease. In most cases the tendency has been toward a reduction in the amount of globulin and of albumin, in the number of cells and in the spinal fluid Wassermann. For the Wassermann test 1 c.c. of spinal fluid was used except in a few instances in the beginning. Noguchi's butyric acid reagent was used for globulin and for albumin the trichloracetic acid method of Mestrezat as outlined by Myerson.[12] The cells were counted in an ordinary counting-chamber with a Tuerk ruling.

Case 1.—White man, aged 43. One year before commitment as insane was a dipsomaniac patient at this hospital. At that time showed slight Romberg and some tremor of tongue and fingers. In September, 1913, had a paretic attack with confusion and probably clouding of consciousness. Came to hospital Oct. 4, 1913, with well-marked speech defect, disturbance of gait and writing, absent knee-jerks, impairment of memory and judgment and slight euphoria. History of chancre five or six years previously. December 15, blood Wassermann positive. Jan. 29, 1914, was given 0.3 gm. salvarsan intravenously, followed in an hour by withdrawal of 60 c.c. of blood. Sharp reaction, chill, rise of temperature, marked disorientation, clouding of consciousness and muscular incoordination. The following day the patient's condition was much improved and he was given 10 c.c. of his own serum intraspinally. No severe reaction followed. Two weeks later patient received 0.3 gm. salvarsan on one day and 15 c.c. of serum intraspinally the following day. On the day after he became very excited, talkative and irrational. He developed a bronchopneumonia, perhaps from aspiration of food, and died on February 23. February 13, spinal fluid Wassermann was positive.

Case 2.—White man, admitted Oct. 19, 1911, aged 42. Symptoms since August, 1910. Grandiose delusions, later well-marked signs of paresis. Oct. 19, 1912, spinal fluid showed well-marked increase in protein and cells. Patient very weak and stupid, but not bedridden, at time of first intraspinal treatment. Jan. 31, 1914, he was given 10 c.c. of another patient's serum and on February 14, he received 25 c.c. Two days later he was placed in bed on account of increasing weakness, with some stiffness of muscles of back and a partial Kernig sign. February 27, he was given 20 c.c. of serum. Cells had dropped from 300 to 45, but Wassermann was strongly positive. Patient died on March 1.

Case 3.—White man, aged 28. An early case of paresis. Admitted Jan. 9, 1914, with rather aggressive grandiose ideas, but not much mental disorder. Knee-jerks absent, slight pupillary inequality present. No defect of speech or writing. January 19, spinal fluid showed a slight increase of globulin and 23 cells per cubic millimeter. Both blood and spinal fluid gave a positive Wassermann reaction. First intravenous injection of salvarsan February 6, and first intraspinal treatment on the following day. Eight successive treatments altogether at intervals of two weeks, a total of 3.8 gm. of salvarsan and 200 c.c. of 50 per cent. serum. Patient is a little more tractable and contented; globulin and albumin show a slight decrease; cells remain about the same and spinal fluid Wassermann, which was strongly positive on May 16, now gives a negative reaction with 1 c.c. of fluid.

Case 4.—Colored man, aged 48, symptoms for two months. Admitted Jan. 23, 1913, with considerable mental disorder, hallucinations of sight and hearing, absent pupillary and knee-reflexes, defect of speech and writing, considerable tremor and muscular incoordination. March 22, both blood and spinal fluid gave a negative Wassermann, perhaps because only a very small amount of fluid was used in the test. At the same time the fluid showed increased globulin and 67 cells per cubic millimeter. Patient had grown somewhat worse clinically by time of first intraspinal treatment, which was given Feb. 7, 1914. He received eight successive treatments at intervals of two weeks, a total of 210 c.c. of 50 per cent. serum from other patients. He shows a slight decrease of globulin and albumin, but the number of cells remains about the same, while the spinal fluid Wassermann is still strongly positive with 1 c.c. of fluid. Clinically there is no essential change. This patient has had only one dose of salvarsan, 0.3 gm., intravenously.

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[5] Hough, William H.: Intraspinous Injection of Salvarsanized Serum in the Treatment of Syphilis of the Nervous System, Including Tabes and Paresis, The Journal A. M. A., Jan. 17, 1914, p. 183.

[6] McCaskey, G. W.: The Auteroserosalvarsan Treatment of Syphilis of the Central Nervous System, First paper, The Journal A. M. A., Jan. 17, 1914, p. 187.

[7] Cutting, J. A., and Mack, C. W.: The Intraspinal Injection of Salvarsanized Serum in Paresis, The Journal A. M. A., March 21, 1914, p. 903.

[8] Krida: Albany Med. Ann., May, 1914 (reprint).

[9] Lorenz: Wisconsin Med. Jour., 1913, xii, No. 6 (reprint).

[10] Riggs, C. Eugene: Juvenile Paresis Treated by the Intraspinal Injection of Salvarsanized Serum, The Journal A. M. A., June 13, 1914, p. 1888.

[11] McCaskey, G. W.: The Autoserosalvarsan Treatment of Syphilis of the Central Nervous System, Second paper, The Journal A. M. A., May 30, 1914, p. 1709.

[12] Myerson: Jour. Nerv. and Ment. Dis., 1914, xli, No. 3, p. 154.

Case 5.—Colored man, aged about 40; symptoms for about three years. Admitted Aug. 23, 1913, with many fantastic delusions, hallucinations of hearing, considerable disorientation and impairment of memory, judgment and power of attention. Pupils rigid to light, knee-jerks exaggerated, speech a little slurring and ataxia present for finer movements. Patient was placed on potassium iodid and mercurial inunctions for a period of several months with a few interruptions. He seemed practically unchanged when the first intraspinal treatment was given Feb. 7, 1914. This was followed by seven other injections at intervals of two weeks, 3.2 gm. of salvarsan being given intravenously and 205 c.c. of 50 per cent serum intraspinally. The spinal fluid shows a considerable decrease of globulin, albumin and cells and now gives a negative Wassermann even with 1 c.c. of fluid. Knee-jerks are still exaggerated, but pupils react to light both consenusually and directly and secondary reaction is also present. The patient's condition on the whole seems improved and he is now working out of doors.

Case 6.—White man, aged 33. Symptoms for six months. Admitted Dec. 7, 1913, with a history of attacks of bewilderment and confusion, during which he would wander away. A very well-educated man who thought he had never contracted syphilis, though he acknowledged exposure. Some mental confusion and disorientation at time of entrance. This never entirely disappeared, though it varied somewhat from time to time. Right pupil larger than left and both rigid to light, both consensually and directly. Knee-jerks exaggerated and speech defective. Dec. 15, 1913, the blood gave a strongly positive Wassermann. Patient was placed on hypodermic injections of sodium cacodylate. He remained practically unchanged at the time of the first intraspinal treatment, which was given on February 13. This was followed by seven other treatments at intervals of two weeks, a total of 1.4 gm. of salvarsan being given intravenously and 205 c.c. of 50 per cent serum intraspinally. This patient shows a reduction in number of cells, but is worse rather than better clinically. He is more stupid and has had several paretic attacks, once a fainting-spell, once a transient facial hemiparesis, and only the other day an attack with mental anxiety, spasmodic movements, aphasia and clouding of

## TABLE OF ELEVEN PARESIS PATIENTS TREATED WITH INTRASPINAL INJECTIONS OF SALVARSANIZED SERUM

Case 1

| Date, 1914 | Cerebrospinal Fluid | | | | Treatment | |
|---|---|---|---|---|---|---|
| | Globulin (Noguchi) | Albumin (Trichloracetic Acid) | Cells Per cmm. | Wass. | Intravenous Salvarsan, gm. | Intraspinal Serum (50 %) c.c. |
| 1/29 ..... | ...... | ........ | 36 | ...... | 0.3 | 10 |
| 2/12 ..... | +++ | ........ | 17 | + | 0.3 | 15 |
| Case 2 | | | | | | |
| 1/31 ..... | ...... | ........ | 300 | ...... | .. | 10* |
| 2/14 ..... | +++ | ........ | 42 | ...... | .. | 25* |
| 2/27 ..... | +++ | ........ | 45 | +++ | .. | 20* |
| Case 3 | | | | | | |
| 2/ 5 ..... | + | ........ | 13 | — | 0.3 | 5 |
| 2/19 ..... | + | ........ | 40 | + | 0.3 | 20 |
| 3/ 5 ..... | + | ........ | 50 | ++ | 0.4 | 25 |
| 3/19 ..... | + | ........ | 53 | ++ | 0.4 | 25 |
| 4/ 2 ..... | + | + | 40 | + | 0.6 | 35 |
| 4/16 ..... | +— | + | 37 | ++ | 0.6 | 30 |
| 4/30 ..... | + | + | 45 | ++ | 0.6 | 30 |
| 5/16 ..... | + | + | 64 | +++ | 0.6 | 30 |
| 6/15 ..... | +— | +— | 16 | — | .. | ... |
| Case 4 | | | | | | |
| 2/ 7 ..... | ++ | ........ | 30 | +++ | .. | 20* |
| 2/20 ..... | ...... | ........ | 35 | +++ | .. | 20* |
| 3/ 5 ..... | ++ | ........ | 42 | +++ | 0.3 | 25* |
| 3/20 ..... | ++ | ........ | 36 | +++ | .. | 20* |
| 4/ 3 ..... | ++ | ++ | 38 | +++ | .. | 35* |
| 4/17 ..... | ++ | ++ | 44 | ++ | .. | 30* |
| 5/ 1 ..... | ++ | ++ | 20 | + | .. | 30* |
| 5/15 ..... | + | ++ | 40 | +++ | .. | 30* |
| 6/15 ..... | + | + | 31 | +++ | .. | ... |
| Case 5 | | | | | | |
| 2/ 7 ..... | ...... | ........ | ... | + | .. | 15* |
| 2/20 ..... | ...... | ........ | 120 | + | .. | 20* |
| 3/ 5 ..... | ++ | ........ | 80 | +++ | 0.4 | 25 |
| 3/19 ..... | + | ........ | 50 | + | 0.4 | 25 |
| 4/ 2 ..... | + | + | 32 | — | 0.6 | 35 |
| 4/16 ..... | + | + | 27 | +++ | 0.6 | 25 |
| 4/30 ..... | + | + | 56 | + | 0.6 | 30 |
| 5/14 ..... | + | + | 40 | — | 0.6 | 30 |
| 6/15 ..... | +— | +— | 20 | — | .. | ... |

* Other patients' serum.

Case 6

| Date, 1914 | Cerebrospinal Fluid | | | | Treatment | |
|---|---|---|---|---|---|---|
| | Globulin (Noguchi) | Albumin (Trichloracetic Acid) | Cells Per cmm. | Wass. | Intravenous Salvarsan, gm. | Intraspinal Serum (50 %) c.c. |
| 2/12 ..... | +++ | ........ | 108 | ...... | 0.3 | 15† |
| 2/26 ..... | ++ | ........ | 23 | +++ | 0.3 | 20 |
| 3/12 ..... | +++ | ........ | 46 | +++ | 0.4 | 20 |
| 3/26 ..... | ++ | ........ | 33 | +++ | 0.4 | 30* |
| 4/10 ..... | ++ | ++ | 27 | +++ | .. | 30* |
| 4/24 ..... | ++ | ++ | 58 | +++ | .. | 30* |
| 5/ 8 ..... | + | ++ | 47 | ++ | .. | 30* |
| 5/22 ..... | ++ | ++ | 60 | +++ | .. | 30* |
| 6/16 ..... | ++ | ++ | 30 | ...... | .. | ... |
| Case 7 | | | | | | |
| 3/21 ..... | ++ | ........ | 36 | +++ | .. | 25* |
| 4/ 4 ..... | ++ | ++ | 40 | +++ | .. | 40* |
| 4/17 ..... | ++ | ++ | 63 | +++ | .. | 25* |
| 4/24 ..... | ++ | ++ | 93 | +++ | .. | 30* |
| 5/ 8 ..... | ++ | ++ | 127 | +++ | .. | 30* |
| 5/22 ..... | ++ | ++ | 85 | +++ | .. | 30* |
| Case 8 | | | | | | |
| 3/27 ..... | ++ | ........ | 30 | ...... | 0.3 | 28* |
| 4/ 9 ..... | ++ | + | 35 | +++ | 0.4 | 40 |
| 4/23 ..... | + | + | 40 | + | 0.6 | 30 |
| 5/ 7 ..... | + | + | 36 | ++ | 0.6 | 30 |
| 5/21 ..... | ++ | ++ | 32 | +++ | 0.6 | 30 |
| 6/ 4 ..... | ++ | ++ | 120 | +++ | 0.6 | 30 |
| 6/15 ..... | + | + | 37 | +++ | .. | ... |
| Case 9 | | | | | | |
| 3/27 ..... | ...... | ........ | ... | ...... | 0.3 | ... |
| 4/ 9 ..... | ++ | ++ | 80 | +++ | 0.4 | 25 |
| 4/23 ..... | ++ | ++ | 44 | +++ | 0.6 | 30 |
| 5/ 7 ..... | Fluid | contained | blood | ...... | 0.6 | 28 |
| 5/21 ..... | ++ | ++ | 47 | +++ | 0.3 | 30 |
| Case 10 | | | | | | |
| 3/27 ..... | ...... | ........ | ... | ...... | 0.4 | ... |
| 4/18 ..... | ++ | ++ | ... | +++ | .. | 25* |
| 5/ 1 ..... | ++ | ++ | 67 | +++ | .. | 30* |
| 5/14 ..... | ++ | +++ | 90 | +++ | 0.6 | 30 |
| 5/29 ..... | +++ | +++ | 72 | +++ | .. | 30* |
| 6/ 5 ..... | +++ | ++++ | 153 | +++ | .. | 30* |
| 6/15 ..... | +++ | +++ | 105 | +++ | .. | ... |
| Case 11 | | | | | | |
| 5/21 ..... | +++ | +++ | 190 | +++ | 0.3 | 30 |
| 6/ 5 ..... | ++ | ++ | 51 | +++ | .. | 30* |
| 6/15 ..... | ++ | ++ | 70 | + | .. | ... |

† Mixed serum.
* Other patients' serum.

consciousness. Pupils are still unequal and rigid, knee-jerks exaggerated and speech difficulty more marked.

Case 7.—White man, 41 when admitted, May 16, 1911. Said to have been subject to "epilepsy" for four years. At time of beginning of intraspinal treatment patient showed marked mental defect, rigid pupils and absent knee-jerks. Speech was somewhat defective and patient very untidy. The first treatment was given March 21, 1914, the last, May 22. Altogether patient received 180 c.c. of 50 per cent serum, but no salvarsan intravenously. Following the sixth and last injection be vomited and had a moderately high temperature. The next day he became very stupid, had a general convulsion and passed into coma. At this time the pupils reacted moderately to light, but knee-jerks could not be elicited. Neck and back muscles were somewhat stiff. Coma continued, the lungs gradually filled up and patient died on May 25.

Case 8.—White male, age unknown, but probably about 40. "Overheated" two years before commitment, active symptoms about two weeks before. Admitted Jan. 30, 1914, with considerable mental disorder, grandiose delusions and a history of violence. Left pupil much larger than right and both rigid to light. Knee-jerks reduced, speech and writing very defective and considerable ataxia in certain muscles. First intraspinal treatment March 28, 1914, last on June 5, six being given altogether. Total amount of salvarsan injected intravenously 3.1 gm. Total amount of 50 per cent. serum 188 c.c. There is now a perceptible decrease in the amount of globulin and albumin, but cells remain the same and the spinal fluid Wassermann is still strongly positive. The left pupil is still large and rigid, but the right reacts sluggishly to light. Knee-jerks are present, but not easily elicited. Facial tremor and speech defect are still present and patient's mental condition seems practically unchanged.

Case 9.—White male, aged 37 when admitted June 4, 1913. Symptoms for two years. Time of infection not known. Delusions of wealth and grandeur and considerable mental defect. Left pupil larger than right and both rigid to light. Right knee-jerk absent, left increased. Speech and writing defective, facial and digital tremor present. No improvement up to time of first intravenous salvarsan injection, which was given March 27, 1914, the first intraspinal treatment being administered April 10. There were four such treatments altogether, with a total of 113 c.c. of 50 per cent. serum, and five salvarsan injections with a total of 2.2 gm. Patient did not seem to bear salvarsan particularly well and it always made him sick. The intraspinal injections did not seem to inconvenience him until May 22. Following the treatment of that day he vomited repeatedly. The next morning he attempted to get up, but was sent back to bed. About 4 p. m. his axillary temperature was 105.4 F. and he was quite stupid. Later he became comatose, but made spasmodic movements of arms, hands, and head. Back, neck and abdominal muscles were moderately stiff and pupils unequal. There had been a reduction in the number of cells in the fluid, but no improvement otherwise. The patient died May 24.

Case 10.—White man, aged 38 when admitted Aug. 22, 1913 Duration of symptoms at least two months, but probably much longer than that. Many expansive delusions with euphoria. Pupils rigid to light, knee-jerks elicited only with reenforcement. Very considerable ataxia present, speech and writing both very defective. No improvement up to March 27, 1914, when 0.4 gm. salvarsan was administered intravenously. Patient felt a little sick afterwards, but no marked reaction followed. He received only one other dose of salvarsan, 0.6 gm. May 14, or a total of 1 gm. There were five intraspinal injections, 145 c.c. of 50 per cent. serum being administered altogether. There has been no noticeable improvement in any way, but further treatment might bring about a remission.

Case 11.—White man, aged 27, admitted April 13, 1914, with marked excitement and history of expansive delusions. In January irritable, absent-minded and restless, later excited, irrational and euphoric, with visual and auditory hallucinations. Pupils sluggish to light and knee-jerks exaggerated. Wassermann strongly positive in blood and May 11, also in spinal fluid, with a large increase of globulin and albumin and 240 cells per cubic millimeter. May 21, patient received 0.3 gm. salvarsan intravenously. May 22 and June 5, he received 30 c.c. of 50 per cent. serum or a total of 60 c.c. Globulin and albumin have decreased somewhat, cells have dropped to 70 and spinal fluid Wassermann is less strongly positive. Pupils are more active and patient is a little quieter than he was.

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Nebraska Hospital for Insane.

# RESULTS OF ONE HUNDRED INJECTIONS OF SALVARSANIZED SERUM*

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The passing of parasyphilis is an accomplished fact. Fournier believed that this postsyphilitic condition was capable of evolving a series of diseases any of which might exist independently of an antecedent syphilis. While the truth of this conception has been generally accepted, yet its range has been very generally restricted. The chief expression of this so-called parasyphilitic state is seen in paresis and tabes. Mott believes that Erb's spinal paralysis and certain cases of amyotrophic lateral sclerosis may be regarded as postsyphilitic distrophies. Wilson refers to Dejerine's statement that 20 per cent. of tabetics show some form of muscular atrophy, and says that there is evidence that progressive muscular atrophy is a parasyphilitic affection. While 20 per cent. of tabetics develop primary optic atrophy, (Norris and Oliver), and perhaps 4 per cent. of paretics, yet without doubt it can occur alone as a postluetic disease. Nonne agrees with Fournier that epilepsy may be a parasyphilitic manifestation; it may arise in middle life, last for years, and prove absolutely intractable to antisyphilitic treatment.

There are three distinctive characteristics of so-called parasyphilitic disease:

First, time incidence; the cases rarely occur before from eight to fifteen years after infection, yet cases have been known to appear as early as one and a half and as late as fifty years; in congenital syphilis they usually manifest themselves at puberty, although they may occur very early or as late as the fourth decade. Müller has reported two virgins who became paretic at the ages of 42 and 43 respectively (Wilson).

Secondly, the primary, secondary, or even tertiary manifestations are, as a rule, insignificant in those patients who are destined to develop paresis and tabes. Out of forty cases of tabes 62 per cent. showed only a primary sore after the infection, (McIntosh and Fieldes, Head and Fearnsides). Mott found tertiary manifestations very rare in five hundred postmortems made on general paretics.

Thirdly, the development of postluetic symptoms after a most vigorous and radically administered antiluetic treatment. According to Fournier, "If the virus extends itself in severe primary or secondary manifestations there is less tendency to parasyphilis."

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According to Keyes, if the lesions of syphilis are grouped according to the tissue affected, syphilis of the nervous system is its most malignant manifestation. Out of twenty-five hundred cases he found 20 per cent. to be afflicted with this form of the disease. Nervous syphilis, whether it be of the non-degenerative or degenerative type (paresis and tabes) is due to the direct action of the *Spirochaeta pallida* on the affected tissues, nervous or non-nervous. When we speak of the non-degenerative type we refer to the gummas or the diffuse gummatous infiltrations of the meninges, or of these infiltrations around the blood-vessels of the brain or cord, or of syphilitic endarteritis; while by the degenerative form we mean the so-called parasyphilitic states arising from a primary degeneration in certain groups of neurons, namely, the exogenous fibers of the posterior columns in tabes and "the cells of the cortex with the interconnecting tangential fibers" in paresis. Thus it would appear that the toxins of syphilis manifest a selective action for definite nerve tracts. Both of these forms of nervous syphilis may occur in the same patient.

Nervous syphilis is a grave disease. In Keyes' 504 cases of this affection, 60 patients died and 175 were more or less permanently disabled. It is the degenerative type (paresis and tabes) that has proved so peculiarly intractable to treatment. A neuron once degenerated is hopelessly destroyed, and unfortunately these cases usually come to the neurologist after the central nervous elements have become seriously involved. The most that can be hoped for from treatment is an arrest of the degenerative process and the utilization, to the utmost, of the healthy neurons that remain.

Our therapy in the past has been inefficiently directed. We have failed to reach with our spirocheticidal solutions the elusive spirochete which is intrenched in the neurons themselves. There is much difference of opinion as to the anatomic facts concerning the circulation in the central nervous system; as to what channels the salvarsanized serum traverses in its course from the subarachnoid sac to reach the brain. That it does so is no longer a matter of doubt. Cotton found arsenic in the ventricular fluid after an intraspinous injection in two cases that came to necropsy. Cocain injected in the spinal subarachnoid "causes anesthesia of the entire body, so that by this means it is possible to enucleate an eyeball painlessly" (Campbell). The experiments of Flexner and Amoss with the intravenous injection of poliomyelitic cerebrospinal fluid is certainly suggestive that it may be the medium of infection through which the nervous system becomes involved in syphilis.

It would appear, therefore, that the spinal fluid, which Mott believes is the lymph of the central nervous system, is a purveyor not only of nutrition to the central nervous tissues but also of medication and possibly infection as well.

The glandular ependymal cells covering the choroid plexus secrete the spinal fluid. These cells manifest a selective action; certain substances they allow to pass into the cerebrospinal fluid from the bloodstream; to many drugs, notably mercury and potassium iodid they are impervious; salvarsan after an intravenous injection filters through them in minute but very quickly disappearing quantities. It matters not how much the general circulation is drenched with mercury and salvarsan, says Stewart, "those nerve cells and nerve fibers which are being destroyed directly by the syphilitic organism and its toxin intrenched behind the pericellular and perivascular lymph-spaces continue to decay." Success, therefore, in the treatment of degenerative syphilitic disease depends on our ability to overcome the resistance of the choroidal ependyma to the transmission of spirocheticidal drugs. Once accomplish this transit from the vascular to the nervous system, says Harris, and the therapy of nervous syphilis will be a simple matter. Moreover, he has no doubt but that ultimately Ehrlich will discover such an agent.

It is no longer a question of the advisability of the intraspinal injection of spirocheticidal solutions into the spinal and cranial subarachnoid space, but of the drug to be injected and the relative merits of the *in vitro* and *in vivo* methods. It is claimed for the former, whether the neosalvarsan be dissolved in the patient's own serum or spinal fluid or in distilled water, that the solution contains more arsenic and is more actively spirocheticidal. We do not believe, however, that this compensates for the greater risk incurred by the patient. After the tragedy which has followed in its wake, the preference for this method by many, even such investigators as Marinesco and Ravaut, over the safer and equally effectual Swift and Ellis process, is to us unjustifiable and inexplicable. Lorenz reports five cases, in two of which the patients died and in all of which very alarming symptoms followed the injection of salvarsanized serum *in vivo*. This is the first record we have seen of fatal results following the Swift and Ellis method. In our 100 injections, never, with one exception, a case of aseptic meningitis, have we had cause for anxiety.

Dr. Ayer of the Department of Neurology, Massachusetts General Hospital, reports 126 serum injections without any untoward results. In over 200 injections administered at the Boston City Hospital by Dr. Sanborn there were absolutely no ill effects. Dr. Coriat states that in the clinical work done by him no bad results have followed the injections; that clinical and serologic improvement was apparent in nearly every case. Swift and Ellis have had no unfavorable results. The former in a personal letter (to Dr. Hammes) so states and says that their occurrence can only be accounted for on the ground of faulty technic.

Peterson and Stephenson have recently reported some notable results in the treatment of nervous syphilis by what they call the intensive treatment—neosalvarsan intravenously and mercury by inunctions. Their purpose was to obtain a cumulative effect of the drug, that is, "before the activity of the drug was lessened by excretion, more was administered, and in this way the patient, by a process of gradual establishment of tolerance, became saturated with the drug in such a manner that the usual untoward effects of the same were avoided." The method adopted by them was to inject intravenously every third day for five injections 0.45 gm. of neosalvarsan. In tabes, taboparesis and paresis and other severe affections, inunctions of mercury were administered on the days the patients did not receive salvarsan. Of fifteen patients one died; the other cases were uneventful. From the serobiologic reductions in these cases it would appear that the barrier of the choroid plexus was overcome—taken by storm as it were—by this intensive method. In the experiments of Flexner and

Amoss the resistance of the choroid plexus gave way completely after the expiration of ninety-six hours and the virus passed freely.

Dr. Ravaut states that the nervous system is affected in 65 per cent. of the cases of secondary syphilis, even though there be no symptoms aside from a possible headache; an increased cell-count and an excess of globulin determines this invasion beyond cavil. According to Wile and Stokes, 63 per cent. of their cases show evidence in the spinal-fluid of central nervous involvement. Moreover, the absence of the findings indicative of this invasion in a single examination is not conclusive that the nervous system has escaped. Eicke has found the colloidal gold reaction positive in 60 out of 136 examinations, even at times in the absence of lymphocytosis and globulin excess. In some of our own cases there has been neither increase of cellular content nor globulin excess, simply a positive Wassermann of the spinal fluid and blood-serum. Too great emphasis cannot be placed on the importance of the recognition of this early stage of invasion of the nervous system, because this is the one period when the infection can be most successfully overcome. "To determine," says Dr. Ravaut, "the actuality of the nervous disease in what may be called its latent phase, and to make it disappear as rapidly as possible . . . constitutes the true prophylaxis of syphilitic nervous affections."

The following cases are illustrative of the various types of nervous syphilis and fairly represent the entire number of patients whose treatment has afforded the basis for this report.

Case 1.—J., aged 38, married, cattle-buyer, consulted us Feb. 20, 1914. Personal history is negative aside from lues contracted sixteen years ago, for which he never received treatment.

Three years ago he first felt a tired sensation in the legs; at the same time he noticed a difficulty in starting the flow of urine; about two years ago shooting pains developed in the lower extremities; patient has had to catheterize himself daily for the past twenty months. In February, 1914, the patient noticed a paresis of the right external rectus muscle. During November and December, 1913, he received five injections of salvarsan intravenously and a vigorous course of mercurial rubs with iodid; there was no improvement. At the time of our examination he showed Argyll Robertson pupils, paresis of the right external rectus muscle, loss of knee and Achilles-tendon jerks. The blood-serum gave a negative Wassermann; the spinal fluid was positive; there was globulin excess with 5 lymphocytes per cubic millimeter.

We gave him five intravenous injections of 0.4 gm. each of salvarsan, followed by five intraspinal injections of 30 c.c. of a 40 per cent. solution of salvarsanized serum. After the second treatment the bladder function became normal and he has not since catheterized himself. After the fifth injection the spinal-fluid findings were normal. The paresis of the right external rectus muscle has disappeared; he has gained 11 pounds in weight and feels much improved in every way.

Case 2.—Mrs. S., aged 42, married. Family history negative. Four children living and well, one miscarriage; menses regular until they ceased six months ago. Fourteen years ago she contracted lues from her husband. Had a short course of mercurial treatments; there were no secondary symptoms. Thirteen years ago she had an attack of acute articular rheumatism; in 1908 she was operated on for right inguinal hernia.

Dec. 6, 1912, patient had a chill with a cold sweat, followed by a severe frontal headache. Twenty-four hours later she became unconscious for thirty-six hours. The urine contained a large amount of sugar and the diagnosis of diabetic coma was made. Neurologic examination, however, showed her to be suffering from cerebrospinal lues. After recovery of consciousness there was severe frontal headache, difficulty in urination, with frequent vomiting spells, which continued for about three weeks. She complained of a feeling of pressure over the precordial region and vertigo was so marked that she was confined to bed for three and one-half months. During the succeeding two months she vomited frequently, especially in the morning; there was also a diffused frontal headache with occasional vertigenous attacks. This condition, with periods of remission and exacerbation, continued until she came under our care Nov. 8, 1913.

From December, 1912, to November, 1913, she had thirty rubs of mercurial ointment 30 grains each, and eight intravenous injections of 0.9 gm. neosalvarsan, which gave temporary improvement. At the time of our first examination after receiving these eight intravenous injections of neosalvarsan, the serobiologic findings were positive Wassermann in both blood-serum and spinal fluid, with globulin excess and lymphocytosis of 392 per cubic millimeter. Neurologic examination showed right pupil larger than left and irregular; left pupil responded to light and accommodation, right sluggish; knee-jerks exaggerated, no Babinski, no sensory disturbances.

Since Nov. 11, 1913, she has had five intravenous injections of 0.9 gm. neosalvarsan, followed by five intraspinal injections of salvarsanized serum. The reaction in this case was unusually marked, evidently due to her neuropathic temperament, since the pulse and temperature were practically normal and she was promptly quieted by a hypodermic injection of sterile water. There was gradual but steady improvement in the clinical picture. The Wassermann reaction became negative in the blood after the fourth injection and remained so. The spinal fluid gave the following reaction: mild globulin excess; lymphocytes four per cubic millimeter, as compared to 392 at the first examination; the Wassermann was positive only in very large quantities, and became entirely negative after the fifth injection. It is worthy of note that the glycosuria completely disappeared after the third intravenous injection of neosalvarsan.

Case 3.—C., aged 42, married, merchant, consulted us Dec. 1, 1913. Patient denied venereal disease. Illness began two years ago with loss of sexual power. In October, 1913, patient became depressed and forgetful; made mistakes in his business transactions; had insomnia and night-sweats. He developed delusions of grandeur with marked exaltation; will auto from St. Paul to New York in nine hours; is planning to build a million-dollar hospital, etc. There have been frequent mild epileptiform attacks.

Physical examination negative except for double inguinal hernia. Neurologic examination showed an Argyll Robertson pupil, slight Rombergism, lost knee- and Achilles-tendon jerks. There was a positive Wassermann in the blood-serum, also in the spinal fluid in all dilutions down to 0.05 c.c. There was excess of globulin and 216 lymphocytes per cubic millimeter. The colloidal-gold curve was typical of paresis.

He was given, at intervals of two weeks, nine intravenous injections of 0.7 gm. each of salvarsan followed by nine intraspinous injections of salvarsanized serum. The blood-serum is now negative, as is also the spinal fluid except in large quantities; there is only a trace of globulin and four lymphocytes to the cubic millimeter. The mental condition gradually improved after the sixth injection; the patient is now apparently perfectly normal.

Case 4.—K., woman, aged 34, married. Personal and family history negative. Husband contracted lues at 20. Six years ago she had several chronic ulcers on her left leg, which persisted for a year, but finally healed under potassium iodid and Fowler's solution. Three years ago there was noticeable some disturbance of vision, and ophthalmoscopic examination revealed a luetic, disseminated choroiditis. About two years ago her husband observed that she was unduly jealous and exceedingly nervous; no other symptoms.

The neurologic examination was negative throughout. The Wassermann in the blood-serum and spinal fluid was positive; no globulin excess; no lymphocytosis. After three injections of salvarsanized serum the Wassermann became negative in both blood and spinal fluid and there was decided general improvement. In a recent communication she tells us that she is feeling perfectly well and is better than she has been for years.

In our series of twenty-four cases we gave 100 injections and in every patient who received over four of these combined injections the Wassermann in the blood became negative except in one instance, a juvenile paretic whose blood is still positive after the ninth treatment.

In 75 per cent. of our tabetics the laboratory tests in the blood and spinal fluid have become normal in every way. Aside from this there has been decided clinical betterment, such as marked relief of the lightning pains, a practically normal return of the bladder functions, and an improvement in the general physical condition and in the gait. Two patients who clinically were typical tabetics, in whom the serobiologic findings were negative before the commencement of treatment, were greatly benefited by these injections.

The results in paresis have not been so satisfactory as those in tabes, probably owing to the fact that most of our paretics were in the advanced stage when treatment began; but it can be said of paresis, as of cancer, that even a temporary amelioration of a disease so hopeless is a success for which to be grateful and not a failure to be despised. A greater number of injections are required before any favorable laboratory changes occur. The clinical improvement is variable; one paretic of the dementing type, after eight injections, had a remission lasting four months, while another of the same class showed no clinical change after nine injections, in spite of the fact that the serobiologic findings have become normal. Case 3 with grandiose delusions (classical type) had a happy outcome both clinically and serobiologically after the ninth injection. Another patient, with frequent epileptic attacks, has had only one mild seizure since the first injection, with a marked improvement in the mental picture; the laboratory tests in this patient showed no change. A juvenile paretic showed some clinical improvement following nine injections; the serobiologic reduction being very slight.

Although cerebrospinal lues usually responds to antiluetic treatment, yet certain cases prove most refractory. It is in such cases that the intraspinal salvarsanized serum injections are especially indicated, favorable results being obtained after other methods have failed. In our series of cases there are four patients with cerebrospinal lues and one with tabes who have improved both clinically and serobiologically under treatment, having received very little or no benefit from intravenous injections alone. This is in accord with the experience of Ayer.

The reaction following salvarsanized serum is usually slight; the temperature seldom rises above 100 F.; generally it is about 99, and the rise lasts from twenty-four to forty-eight hours. Severe headache, chills, vertigo and vomiting rarely occur except in certain cases of cerebrospinal syphilis. This reaction in this affection is probably due to the fact that the lesion is frequently located at the base of the brain and near the region of the medulla, and may be of the nature of a Herxheimer reaction. In tabes there is usually a marked increase of the lightning pains for from twenty-four to forty-eight hours, but aside from the period of the injection these appear to be greatly benefited. In one of our patients the pains began exactly three hours after each injection, a phenomenon similar to that which Ayer has observed in two cases. In paresis the reaction is usually negligible, except that rarely there is an increase in the mental symptoms for from twenty-four to seventy-two hours, during which period hallucinations of sight frequently predominate.

In only one instance, as previously stated, have we observed any alarming symptoms. This was in a case of acute luetic meningomyelitis developing on a tabetic base. A report of this case was recently made by Dr. Riggs before the American Neurological Association. Twenty-four hours after the fourth intraspinal injection (the preceding three having been uneventful) the patient became restless, anxious, and there were slight muscular twitchings; temperature and pulse normal. Four hours later the temperature was 104.2, pulse 100, and there was complete unconsciousness which lasted three days. Neck and back were rigid, Kernig present, and there was every indication of acute, suppurative meningitis, but the spinal fluid was sterile. The condition gradually cleared up and the patient is much better than preceding the injection.

Here was evidently an instance of an aseptic chemical meningitis. Lorenz reports a death following such an injection; the spinal fluid showed marked lymphocytosis with globulin excess and he believed the fluid to be non-bacterial. To us this case is most suggestive of an aseptic meningitis. The possibility of an aseptic meningitis, presenting all the characteristics, clinical and pathologic, of the acute suppurative affection without the infecting organism, following the introduction of a foreign serum into the spinal canal, has been pretty clearly demonstrated. Our own case, and it would seem to us that of Lorenz as well, shows that the same alarming symptoms may follow the use of salvarsanized serum.

We use Lange's colloidal gold test as a routine procedure in connection with all our examinations of the cerebrospinal fluid. We believe it has a marked corroborative value. We have found this reaction in paresis and tabes to be definite and characteristic, particularly so in paresis. A positive reaction has taken place in all of our tabetics. A case of tabes, in a professional man with no mental symptoms whatever, gave the curve of paresis; after the serobiologic findings became practically normal this curve remained unchanged. In none of our paretics has it undergone any modification, notwithstanding marked serologic improvement. According to Miller and Levy, the colloidal gold reaction is inconstant in secondary and tertiary syphilis, the positive reactions observed in tabes and cerebrospinal syphilis are not characteristic, but they believe that the paretic curve is "sufficiently constant" to justify its use as an aid in the differentiation of this disease from those with which it might be confused.

## CONCLUSIONS

1. Clinical improvement and serobiologic reduction usually go hand in hand.

2. The report of cases without their associated laboratory reactions is unscientific and valueless.

3. The intraspinal use of salvarsanized serum, as conceived and elaborated by Swift and Ellis, is a notable advance in the therapy of syphilitic affections of the central nervous system; it furnishes the one avenue of approach for spirillicidal drugs to the otherwise inaccessible spirochetes.

4. It is a safe procedure in the hands of trained and properly equipped men. Whether it will bear the final test of efficiency, namely, cause pleocytosis, globulin excess and a positive Wassermann in the blood-serum and spinal fluid permanently to disappear, is yet to be demonstrated.

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## ABSTRACT OF DISCUSSION

### ON PAPERS OF DR. PILSBURY AND DRS. RIGGS AND HAMMES

Dr. Charles R. Ball, St. Paul: We frequently encounter the statement that salvarsan, as well as mercury, does not penetrate the meninges or get by the choroid plexus. This statement seems to me to be a rather inconsistent one. We know that a large number of deaths have been caused by an encephalitis hemorrhagica, which has followed an intravenous injection of salvarsan, and certainly the salvarsan must have passed through the meninges in order to have produced this severe effect in the cortex of the brain. We are further advised by all of the authorities on salvarsan administration that in cases of cervical myelitis or when a lesion exists in the region of the medulla we must be exceedingly cautious in this administration, otherwise we will get the Herxheimer reaction in the tissues, and death by pressure on vital centers. Recently, after a number of intravenous injections, salvarsan has, also, been regularly detected in the spinal fluid. The amount of salvarsan in the spinal fluid would seem to depend on the intensity with which it was administered intravenously or otherwise. The method of administration of salvarsan is in an extremely experimental stage. The almost infinitesimal quantities which we are able to introduce intraspinally would scarcely seem to be of any great value. If we stop to think we must realize that the blood supplies all of the living tissues in the body; when for any reason this supply is shut off from any part, that part dies. Logically it must follow that any medicament introduced directly into the blood will go wherever the blood circulates. In the working out of our therapy, we should not neglect to use common sense along with our scientific endeavor.

Dr. G. Wilse Robinson, Kansas City, Mo.: We have been following a policy of "watchful waiting" for a great many years, so far as paresis and tabes are concerned, and the result has been that we have watched our patients until hope was gone. No line of treatment previously used has apparently been of benefit, and I believe that this method of treatment does offer some measure of relief. I have been using it for some time, having made perhaps one hundred injections and treated approximately a dozen cases. Thus far I have had no bad results excepting an occasional headache. In one of the cases I finished my series of injections and the patient, after returning to his home, had a considerable number of convulsions. His wife reported to me that he had convulsions every thirty minutes for twenty-four hours. Later he returned and was under my observation for a considerable time, but apparently his mental condition was all right. He formerly had an Argyll Robertson pupil. His pupil reacted to light, the consensual reflex had recurred, physically and mentally he was apparently well, and his wife has reported that he has since continued well. The reports that we are getting on the results of this method of treatment are, I think, encouraging, and if it offers any hope to a paretic we should use it. If we are careful in our technic there is, I believe, practically no danger.

Dr. Henry F. Stoll, Hartford, Conn.: One case which I have had under observation for a year presents a number of interesting points. In the first place, the patient had what was considered excellent treatment at the time of his initial lesion fifteen years ago, namely, mercury by mouth for two and a half years, and he felt perfectly well. Seven years ago he developed locomotor ataxia, and at the time I saw him he had marked tremor of the tongue and facial muscles and would hesitate a number of seconds before speaking, suggesting bulbar involvement. After his first injection of salvarsanized serum by the Swift-Ellis method he had very severe leg pains. He was given codein and phenacetin, without any relief and in the early evening morphin ⅙ grain was administered hypodermatically. I was called hurriedly at 11 p. m. and when I arrived I thought he was dead. I never saw a man so near death recover. He had ceased breathing, but still had a fair pulse. Lumbar puncture was done, without relief. After working over him some time, respiration began, but he had to be "reminded" to breathe every few minutes all night. I supposed he had had an acute bulbar paralysis from the treatment, but Dr. Ellis drew my attention to an article by Dr. Hoover with regard to a point which does not seem to be fully appreciated: that is, that tabetics are very bad subjects for morphin. Dr. Ellis felt sure this was a case of morphin poisoning. The patient was an intelligent man and realized what the outcome of his case would be if untreated, so, at the end of six weeks, treatments were resumed. As a positive Wassermann in blood and spinal fluid persisted, I decided to change from neosalvarsan to salvarsan on Dr. Ellis' advice. The patient had been getting full doses of neosalvarsan (0.9 gm.), but I gave him only a half dose (0.3 gm.) of salvarsan, but a 50 per cent. solution intraspinally. He had very severe pains after the injection, which lasted all night and part of the next day, and in the morning a lumbar puncture showed 4,000 cells to the cubic centimeter. He had a slight Kernig, almost no elevation of temperature, and by night the cells had diminished to 2,000. Cultures were taken and no growth was obtained. He recovered and had no bad after-effects. In all he has received sixteen intravenous and fourteen intraspinous treatments, but both the blood and spinal-fluid Wassermann are as strong as when treatment was instituted. Clinically, there is but little improvement. After the first few treatments he improved a great deal, but he lost ground, which he has not regained, as the result of an enteritis from a mercurial injection.

Dr. R. Harvey Cook, Oxford, O.: I have used intraspinal injections in a number of paretic patients. One feature has not been mentioned in the discussion which I will bring out by citing a case. We know that by the old method, by iodid and mercury, there never was a case of true paresis cured. Now, if there is one case in ten thousand that will be cured or has been cured by injection of salvarsan, it has, in a way, paid for the trouble that has been gone through. We know that there can be very little injury from injection of salvarsan if the blood-pressure is watched, a precaution which should be taken in every intraspinal injection. In paretic patients it is simply an open question whether the salvarsan can reach the brain when injected into the spine. That is a technical point, however, which need not be taken up. I had two cases; one in a doctor whose wife was also a physician and who would not consent to the injection of salvarsan. The other patient received salvarsan and made no improvement whatever, although the Wassermann became negative both in the serum and spinal fluid. The cell-count was reduced to a minimum, but the patient showed no mental improvement. The physician who received no treatment improved remarkably. He was able to go home, resume his practice, and actually did several surgical operations. The improvement was so great that it was insisted that I give a written statement that my diagnosis was wrong. I stood pat, and after almost a year a complete break occurred and the patient went in a hurry. Had it been the other way, the patient who did not receive treatment showing no improvement while the other patient did improve, I would have reported a wonderful recovery had I reported within the year. A factor we should take into consideration in tabetic and paretic cases is that the spirochete may not be actually killed, but sterilized, and thus after a long period of time be able to do damage; but even in such a case we are warranted in giving the treatment, as the danger is minimum.

Dr. Frank R. Starkey, Philadelphia: The way in which this subject has been handled shows the element of courage that is coming into the medical profession. The fact that Drs. Riggs, Hammes and Pilsbury are from the West may have something to do with it. In Philadelphia we only accept things that have been handed down to us for generations or that have been imported, and to speak of successfully treating locomotor ataxia is tabooed. A little over two years ago I spoke of obtaining good results in the treatment of tabes, in fact of bringing about symptomatic cures. Some of the local medical fraternity were skeptical, but they will discover that the results that I have obtained cannot by any stretch of the imagination be attributed to incidental remission. More than 90 per cent. of the patients in my cases show improvement, and just as good results have been obtained by others who have followed my method exactly. I predicted that the prognosis and the pathology of locomotor ataxia would have to be rewritten. When I said that, I thought it would be a generation before it would be accomplished, but it is already being done. The fact that cases of tabes can be so successfully treated that their reflexes return and all symptoms disappear is sufficient reason for being encouraged in the treatment of this disease. The statement that the intraspinal injection of salvarsan and serosalvarsan is more or less of a sportsman-like affair is, I believe, quite true and the patient is always the game. The large mortality and other untoward results that follow from entering the spinal canal, which can only be done in the dark, is sufficient argument against it. The introduction of any foreign substance into this canal is bound to be followed by bad results. I am firmly convinced that the time will soon come when the medical profession will be glad to drop salvarsan.

Dr. William W. Graves, St. Louis: The whole medical world is just now in the business of curing syphilis with salvarsan, but I am not yet convinced of its worth, in any form, as a cure in any period of human syphilis. The lack of criticism in this direction on the part of many medical men seems to me to be a little short of appalling. There is no analogy between syphilis and any other disease, unless it exists in leprosy. No man can say when the syphilitic is cured, whatever the remedy employed. With due appreciation of the efforts of the discoverer of salvarsan, I believe that the idea that we may cure an infection by the introduction of a substance into the human body, which is utterly foreign to the body, is not founded on sound biologic principles. At most, such substances are remedies acting, perhaps, by stimulating, temporarily, the resistance of the organism, and not as sterilizers. Salvarsan does not sterilize the human organism of spirochetes.

This lack of criticism is indicated when everything favorable that occurs following the use of salvarsan, at any period of the disease, is put down as evidence of its worth. In our enthusiasm we are apt to forget that exacerbations and remissions characterize the syphilitic infection throughout its course, and we lose our critical sense when we forget the natural course of the disease, and consider the disappearance of symptoms in syphilitics as evidence of cures, after using salvarsan or any other remedy. There is much evidence indicating that salvarsan takes away from the individual a part of his fighting chance against syphilis. If this is true, then we may at this time predict an epidemic-like increase in paresis and tabes and other nerve manifestations during the next ten or fifteen years. Finger and others have shown that something like four times as many cases of early nerve syphilis occur after the use of salvarsan as occurred under the old methods of treatment. Either the nervous system has suddenly become four times more vulnerable to the virus of syphilis or else it has been made so by salvarsan. Many cases of paresis run a rapid course to a fatal termination after salvarsan, as indicated in Dr. Pilsbury's paper, and recently emphasized by A. Myerson and several others. Now, the man who is a paretic, or has other nerve manifestations of syphilis, is the individual who has a poor tolerance for, or a lessened resistance to, the virus; therefore, if salvarsan lessens the fighting chance of the paretic, it is reasonable to assume that it may do so in the individual who is a syphilitic, though not a paretic. I hesitate to use salvarsan in any form, because it does not seem to me to be rational therapy in the treatment of syphilis, and because of the evidence existing in support of the idea that in the cases in which it seems to do temporary good, it may do ultimate harm, by lessening the individual's fighting chance against the syphilitic infection.

Dr. C. R. Woodson, St. Joseph, Mo.: I am skeptical if not a doubting Thomas with regard to the curability of tabes and paresis with salvarsan. During seventeen years I have had an extensive experience in state hospital work in an institution of 1,500 patients, the majority of whom come from two of the largest cities of our state. I have seen many paretics improve without treatment, go home, and pass some of the most careful examiners for life insurance companies, some of them to stay out a year or two years, sometimes two and one-half or three years, without any treatment except the ordinary institutional treatment of large hospitals for the insane. There was an arrest in development of the disease, an ability to resist, that for some reason caused those patients to improve. Possibly this marked improvement that they speak of is like the improvement in some of the cases I have seen, and every man who has been connected with state hospital work has had the same experience. I hope that something can come of this salvarsan treatment. Unless something does come of that, I am frank to say that I do not believe anything will do any good except, as in the past, good care and treatment. It is a question whether or not that is humane, although it prolongs life. I almost always say to friends of my patients when they ask how long the patient will live, "Sometimes, fortunately, they die in the first stages, but it is far too often that they do not." I hope that the gentlemen who are engaged in this special line of employing salvarsan will continue and I hope for results, but still I am skeptical.

Dr. George P. Sanborn, Boston: I will give some facts concerning the Swift-Ellis treatment as I have applied it in thirty-eight cases of tabes and twelve cases of paresis. Some of these cases were in private practice but the majority were on the Neurologic Service of the Boston City Hospital. The number of injections given in this group of cases is 273. The period of treatment has varied from one month to eighteen months. The interval between intradural injections has varied according to circumstances; in tabes, an interval of two or three weeks, or as soon as the patient has recovered from any unpleasant effects of the last injection; in paresis the urgency of the case is considered, and the injections are given in as rapid sequence as possible. The reactions after intradural injections in paresis have not been so severe or so prostrating as in tabes, hence the intervals were made shorter, without untoward results. One paretic received twelve intradural injections in one hundred thirty-two days; had six weeks rest, and was then given six more injections in fifty-eight days. The reactions in paresis consist generally of little else than a headache. All patients are kept in bed for at least twenty-four hours after each injection.

In both tabes and paresis, I believe the least number of intradural injections to be recommended is twelve. I have not yet seen a case in which normal serologic conditions in conjunction with satisfactory clinical conditions were obtained even with this number of injections. Practically invariably, however, there is definite serologic and clinical improvement. I consider a series of twelve injections a unit, and after a suitable rest, if there are no contra-indications, a second unit should be started. In order to demonstrate the changes which might occur in the spinal fluid after treatment, the Wassermann test, cell-count and globulin test, have been carried out on each spinal fluid at the time of injection. The average drop in cell-count in all cases after the first intradural injection was 54 per cent. The average drop in cell-count in all cases after four or five injections was 74 per cent. In other words, all cell-counts at this time became normal. The Wassermann test became negative in no cases, though in a number it became less strongly positive.

The globulin was less readily affected than the cell-count, but showed tendency to become less strongly positive after a few injections, and in a small number of cases became practically negative. Clinical improvement in all cases of tabes and in early paresis is perfectly definite, but this is left to the neurologist to discuss. There have been no deaths in this group of cases. For the past six months salvarsan has been used exclusively. In the early cases neosalvarsan was used. Febrile reactions amounting to from 1 to 3 degrees occurred commonly after intradural injection in the early cases. The use of freshly distilled water with which to prepare salt solution used in dilution of the serum has rendered febrile reaction a rare occurrence.

Dr. C. C. Wholey, Pittsburgh: I too, have considerable respect for the spirochete, but it manifests itself differently from the respect which Dr. Graves has for it. I certainly would not stand aside and refuse to interfere with the inroads of this organism when it produces the terrible results which he describes. It is natural that there should be a great many differences of opinion concerning the effect of salvarsan at this early stage of its use. We are treating a great many types of the disease and are recognizing it more and more in its early stages, but there are many things we have yet to discover in the way of differentiation between the particular kinds of treatment and ways in which they are to be used for the different types of the disease. It may be that we will find that there are certain types which will be best treated by adhering entirely to the intravenous method. There are other types which I am sure, judging from reports that have come in and from an experience with about twenty-five cases that I have had, will have to be treated by the combined method of Swift and Ellis, and others will have to be varied with the help of mercury and the iodids. I have used the Swift-Ellis treatment in about twenty-four cases, and the injections have varied from two to eight in each case. The effect on the spinal fluid has been similar to that mentioned by the last speaker—the reduction of the cells, etc. They have always been reduced more than 50 per cent. after the first injection. I do not recall precisely the manner in which they have fallen after that. From a clinical point of view, the improvements really have, in some cases, been rather striking. A man who was having most intense abdominal crises and was in a state of collapse from inability to retain food, in twenty-four hours after injection was eating a good meal and feeling comfortable. Such things encourage us to continue the use of a drug that will produce such tremendous results. A young man came to me with a chancre of two weeks standing. The blood-Wassermann was positive, we found spirochetes in the scraping from the chancre. He was given a dose of salvarsan intravenously. That was three years ago, and repeated examinations of his blood and one of spinal fluid have given negative results. That is the only case in my experience in which we can say that there has been a complete sterilization with one injection.

Dr. Ernest M. Hammes, St. Paul: With reference to the question about using heterogenous salvarsanized serum on other patients, we have had little experience. We have used it in two cases without definite results. I did not want to give the impression that we were curing our tabetics and paretics. I do not see how any man could use the word cure in any case of paresis, even if he has a complete remission, because we all know that without treatment, remissions of from two, three, ten, fifteen and even twenty years' duration has occurred. This line of treatment, however, will give not only symptomatic relief, but will bring about serobiologic improvement quicker and better than anything else I know of.

Dr. L. B. Pilsbury, Lincoln, Neb.: My results would not indicate any decided difference in the effects produced by the autoserum and serum from other patients; in general they do not strike me as being particularly favorable. I have, of course, dealt only with paresis; not at all in this series with tabes or with cerebrospinal lues. I do not assume that the technic has been perfect, but it has been careful. I am sorry that in some cases bad results have followed. I do not know exactly to what extent they were dependent on the intraspinous administration. In the case of one man, however, I feel that his death was due to salvarsan. On certain occasions he showed marked muscular weakness, fainting the first time I gave him a physical examination. He had attacks of partial syncope after each intravenous administration of salvarsan, and died about six hours after the first intraspinal injection. I think death was due to the toxic action of salvarsan. I wish to utter a word of caution on the use of a serum containing much dissolved hemoglobin. It is intensely irritating, and although I used it on one occasion I never shall do so again.

# JUVENILE PSYCHOSIS

## REPORT OF A CASE *

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The literature on the subject of juvenile psychosis is exceedingly scant, but from the best information available, it would seem that the condition is regarded to be relatively rare. Statistics quoted by Spitzka indicate that one in 70,684 children annually lose their reason.

Personally, I am inclined to believe that it is a very much more prevalent disorder than is usually conceded. I am quite sure that not infrequently a definite psychosis has developed in childhood which was diagnosed by an inexperienced observer as an attack of "nervous exhaustion," "feeble-mindedness" or some kindred malady.

In tracing the medical histories of adult mental patients, I have noted, in not a few instances, that the individual in question had in early youth suffered a similar attack, though of a much milder nature, and I have, on careful inqury, elicited the interesting information that the former disturbance was characterized by unmistakable mental manifestations.

During the past ten years, I have had under observation seven cases of juvenile psychosis, and I am familar with three others which occurred in the practice of medical confrères in Cleveland. One of these patients in particular became so unmanageable that the condition finally was made the subject of a probate court hearing. The little patient, a lad aged 14, was committed to the observation department of the Cleveland City Hospital, and I understand has made a slow, though satisfactory recovery.

Many superintendents of state hospitals, to whom I have spoken in this regard, admitted having treated or examined insane children, but most of these cases are unknown to medical literature.

Furthermore, I find in the eleventh volume of the census of England and Wales for 1911, which has just been issued, that the largest percentage increase in the insanity-rate occurred in the case of children under 15 years of age.

It therefore seems to me that the number of children who lose their reason is much larger than the perusal of modern statistics would indicate, owing to the fact that a great percentage of cases are not reported.

Insanity of childhood may occur in very young infants, if we credit the case recorded by Greeding of a child that was a raving maniac at birth. Sachs, however, intimates that this story should be taken with a grain of salt, and I dare say that most of us entertain the same impression.

Attacks of acute mania were observed by Rush in a child of 2 years; by Liebers in a boy aged 5, and Sinkler noted a similar condition in a child of 3 years. Paul Rasmus reported an acute psychosis in a child of 1 year and 9 months. In my experience, it is most commonly encountered between the ages of 10 and 16.

The symptomatology of juvenile psychosis apparently does not differ much from the condition occurring in adult life. In early years susceptible children may become victims of hallucinations, as their sense impressions are deep and lasting. But the youthful

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mind cannot ordinarily construct fixed and systematized delusive conceptions such as we find in the adult, because the child's knowledge does not extend beyond his limited experience, and the large and complicated problems of life are unknown to him.

In all the cases that have been reported, a faulty inheritance stands out as the most potent cause. In the acquired conditions, traumatism of the skull and intellectual overpressure are accorded first place. In my seven cases, four were the offspring of pronounced psychopathic antecedents. Two were the descendants of neuropathic stock, but their mental downfall seemed to be closely related to a severe cranial insult. At all events, the psychosis in both instances followed directly after a severe head injury. In one, the antecedent history, so far as could be ascertained, was negative, but shortly after an attack of diphtheria an acute mental disorder developed. Of these patients, the youngest was 11 and the oldest 16 years of age. Four were boys; three were girls.

Meningitis occurring in early youth, profound emotional strains, fatigue, acute infectious diseases, depraved home surroundings, inadequate nutrition, overstudy at school, cruelty, religious excitement and chorea are elements which must be reckoned with in the etiology of these interesting conditions. One of my patients whose affliction first appeared at the age of 13 is now an inmate of an Ohio state hospital, his case being classified as dementia praecox. Another case was that of a girl aged 14 who developed a definite psychosis during an attack of chorea. The condition ended fatally.

Masturbation can hardly be termed a true causative factor, but I am fully convinced that when practiced to excess it does exert a most baneful influence on the mentality of sensitive youths and is, indeed, the means oftentimes of precipitating states of remorse, depression and timidity which are at least antagonistic to full mental vigor.

I am frank to say that in my judgment the significance of depraved habits and other abnormal tendencies occurring among children is not receiving the attention it deserves. The voluntary appeals of several otherwise promising boys—and girls too, for that matter—who found themselves in the throes of uncontrollable, vicious practices, from which they earnestly wished to escape, has frequently set me thinking. Prudery more than anything else has prompted many physicians to side-track or underestimate these faults, but there is no denying the fact that unnatural habits are demoralizing to psychic health, and are very apt to induce a state of fatigue which, after all, is the first step taken by the nervously unstable toward mental disorder.

The case which I have chosen for the subject of my thesis concerns a young lad, aged 11, who resided in a village suburban to Cleveland. May 10, 1911, I was asked to visit him, and the following information was obtained:

*Family History.*—The father was a robust man, well-developed, and claimed always to have enjoyed good health. By occupation he was a railway ticket-agent. His parents were still living and well. His only brother for many years had been periodically addicted to the excessive use of inebriating beverages. In 1909, he took a "cure," and since that time he has led a strictly temperate life.

The mother was a rather puny woman, of small frame and stature. From her conduct and conversation, I at once gained the impression that she was at least eccentric, and this presumption was afterward confirmed by relatives and friends whom I met. She nevertheless regarded herself as well and stated that both of her parents were living and in good health. They resided on a farm in the central part of Ohio. Her father, she said, was active, and working every day. Her mother, however, was known to be peculiar, difficult to get along with, and at the age of 33, was confined for several weeks in a private sanatorium for a mental disorder. Since the advent of the menopause, eleven years ago, she has suffered from recurrent attacks of a maniacal character. For many years she has been actually morbid on religious subjects and has been known to pray for hours. She was the mother of four children, three of whom died at an early age. One succumbed to pneumonia, another to typhoid fever and the other to meningitis.

*Personal History.*—My little patient was born at full term, the delivery being normal. No instruments were used. During pregnancy, the mother enjoyed the best of health, and was not upset by any undue emotional disturbance. To quote her own words, she was particularly proud and happy at the thought of becoming a mother. As a babe, the patient was robust, and thrived on his mother's nourishment. At the age of 11 months be began to walk and to talk when 1 year old. He was regarded a bright and mentally alert youngster. The period of teething was passed uneventfully, but at the age of 5 years he contracted a lobar pneumonia of the right lung, from which he made a good recovery.

When 7 years of age, he started to school and progressed normally. His teacher, however, had frequently commented on his scrupulosity and hypersensitiveness. He was not quarrelsome, but occasionally exhibited traits of stubbornness, and was easily offended. The usual sports appealed to him but he seemed to hold aloof from the more vigorous, though commonplace contests of youth.

On the whole, he was of the affable type, but not always the obedient and respectful boy his parents had hoped him to be. As he grew older, he became subject to emotional variations. At times, he was actually hateful, unreasonable and on several instances his attitude toward his parents was that of defiance. Then the storm would abate, and a more affectionate, penitent and winsome little fellow would be difficult to find.

The mother remarked that she had in no manner pampered him, but on the contrary, had aimed to develop in him manliness and strength. She voluntarily added that perhaps she had been overzealous in his religious training; that most of the story-books she had given him were of a biblical nature, and that during the past year or so, she had thought that her teachings in this respect were having a most unfavorable effect on him. Many nights, she said, he had been awakened by terrifying dreams, all of which were centered around the religious stories she had told him, or of which he had read. The father, on the other hand, was religiously indifferent, and frequently rebuked his wife in the presence of the boy for what he termed "religious slush." He desired, he said, that his child should have a proper Christian training; that religious matters should be imparted to him calmly, rationally and practically, for he saw danger in the emotional and mystic side of the subject. In this regard I quite agreed with him, as it is well known that overreligious training of the mentally susceptible, or those possessing strong, innate religious instincts, is very apt to end disastrously. Suffice it to say that the parents were at constant variance with each other, and thereby created an environment which was not conducive to the best interests of this mentally unstable youth.

In January, 1911, the patient complained of severe frontal headaches, was sleepless and did not eat well. An optician was consulted who prescribed glasses, but no relief followed. Finally, the family physician took charge of the case and the little fellow gradually returned to what the parents thought was normal. In March, 1911, the family for the first time became concerned as to his mental condition, having noted a decided change in his personality. He lost his former aggressiveness and grew surly; did not wish to go to school and would not attempt to prepare his lessons. For a period of two weeks he remained at home; was wholly indifferent to his surroundings and would not acknowledge the sympathetic solicitation of his parents.

One afternoon, the boy accompanied his father on a jaunt in the woods near their home. For a while everything went well. Suddenly, they heard a strange noise which frightened the boy and he began to weep and clung to his father with all the strength that was in him. Finally, they started homeward, but the terror-stricken youngster was intensely on the alert, and kept looking in all directions. Near the edge of the woods they approached a large tree which the boy refused to pass. The father endeavored to convince him that his suspicions were ungrounded, and that he was safe from all harm. The boy insisted that some one was watching them from behind the tree. Nothing would do but that they should walk in another direction, so they emerged from the woods by a circuitous route. As their home loomed in sight, the lad started to run and when he reached his mother he was completely exhausted.

The family physician, unable to elicit a physical explanation for the boy's distressing condition, proceeded to correct what he termed a toxemia arising from the long-standing gastric and intestinal torbidity. In this connection, it may be said that since infancy this patient was troubled with a persistent and rebellious constipation.

May 10, 1911, when I entered the home, the lad was not approachable, and ran into an adjoining room where he hid himself. He was fearful that I would harm him, and he repeatedly besought his father to take me away. Gradually, I drew near to him, but he persisted in taking shelter behind his father. Finally, he exclaimed that he was not sick, and would not take medicine because he did not need it. A physical investigation was quite out of the question, and none was attempted. I succeeded, however, in obtaining a sufficient insight into his condition and its needs, to realize that, first of all, a new environment should be sought and his case placed in the hands of strangers, preferably, in a hospital. Before I departed, it was agreed that he be taken to Cleveland, to the home of a widowed aunt. A sedative was prescribed, there being no bathing facilities in the home. May 19, 1911, he reached Cleveland, after a short but troublesome journey, and it was necessary actually to drag the little fellow from the train. He was suspicious and fearful of everything he saw or heard.

Immediately I placed a competent nurse in charge, who faithfully carried out a plan of prolonged hot packs, to which he nobly responded. His psychomotor unrest slowly abated and he remained quietly in bed but had little, if anything, to say.

A careful physical examination was accomplished, but no objective abnormality was discovered. He was an exceedingly well-developed youngster, and adequately nourished. No deformities or anatomic stigmata were found. His heart, while excitable in action, was not structurally affected; pulse-rate averaged 90 per minute, and the blood-pressure measured 105 mm. in both arms. The lungs were clear; respiration full and unembarrassed. Nothing noteworthy was found in the liver, stomach or intestinal tract, other than the constipation heretofore referred to. The tongue was still slightly coated and the breath somewhat fetid. No tympanitis prevailed; no rigidity of the abdominal musculature was elicited and no pain or tenderness was complained of. Since his arrival in Cleveland, saline cathartics were used daily, and on one occasion a high enema was resorted to. The urinalysis was negative, with the exception of a heavy precipitate of phosphates. The reflexes, both deep and superficial, responded sharply but would not be considered exaggerated. Surface sensibility over the entire body was well preserved in all of its qualities.

The pupils were widely dilated, but reacted promptly to light and distance. The ophthalmoscopic examination was negative. The senses of taste, smell, vision and hearing were in no wise impaired. The grasp of his hands was strong, and the power of both arms and both lower limbs was vigorous for one of his years.

He had control of all bodily movements, and no incoordination, spasticity, paresis, paralysis, clonus, Rombergism, Babinski phenomena, or other indications of structural nerve disease were detected.

On the fifth day, May 24, 1911, he entered into a state of pronounced confusion, although I was inclined to believe he was cognizant of much that was going on about him. He totally ignored interrogations; refused to take nourishment and tightly clenched his teeth when a glass of milk was offered him. For hours he would lie almost motionless; would stare into space and apparently was in a state of negativism. We tolerated this condition for forty-eight hours, during which time not a drop of water or liquid food crossed his lips. His bowels were evacuated by enema, and it was necessary to catheterize him. With considerable difficulty he was "tubed" night and morning for three days, after which he reluctantly consented to take his nourishment. This, however, was a tedious process, as he accepted only a spoonful at a time, and each meal consumed almost an hour. Fortunately, he slept moderately well, and was not otherwise disturbed. Patient remained in this condition until about June 10, 1911, when he again began to display signs of agitation and unrest. The sounds of passing vehicles, or the noise of some one entering the home would intensely alarm him. He became quite talkative, would scream for help and would often plead for his father to come and protect him. He was extremely suspicious and all manner of hallucinations were constantly before him. He saw animals crawling over his body and was continually expectorating imaginary small fishes and insects from his mouth. The toot of an automobile horn gave rise to the belief that the police had arrived to take him away. He often thought that some enemy was hiding behind the nurse, and he persisted in commanding her to turn around and keep her hands where he could see them.

The condition for a while was pitiable and no manner of persuasion or suggestion was sufficient to convince him that he was safe from all harm. In his sleep he would mumble indistinct sounds and unconsciously would push aside imaginary objects from his face. Frequently, he awakened with a start and would impulsively get up and look under the bed and between the sheets. At times, he would appear almost panic-stricken; the pulse-rate became greatly accelerated and his body was bathed in profuse perspiration.

Prolonged hot packs were again resorted to, and again such means proved their worth. Little by little his agitation and apprehension subsided, and on the 29th day of June, 1911, a marked improvement was noted and he seemed to be, at last, on the road to convalescence. His appetite returned; he relished his meals and finally expressed a wish for some of his mother's favorite dishes. At night-time, he invariably was restless, but hot baths prior to retiring rarely failed to induce from five to eight hours' sleep. Gradually he began to regain his former poise and control, cultivated a strong attachment for his nurse and displayed a lively interest in his surroundings.

Every now and then some strange or unusual noise would alarm him, but he was now amenable to suggestion, and his fears and suspicions were easily allayed. I had a most satisfactory conversation with this little fellow, July 2, 1911, and I was surprised to discover that he had very little insight or recollection of what had happened during his illness, other than the frightful hallucinations which had so tenaciously haunted him. Once I referred to the Bible, and immediately his face flushed and he was quite alarmed. I quickly dropped the subject, realizing that I was trespassing on dangerous ground. July 4, his parents were permitted to visit him and the meeting was indeed a pathetic one. They were admonished to make no reference to his illness, nor were they to refer in any manner to matters pertaining to religion.

From this time on, the patient's progress was rapid. The nurse took him out for short walks daily, and a friend favored him with automobile rides in the parks. He asked for something to read, and was permitted to peruse certain monthly periodicals. At other times, his nurse or aunt would read to him. He finally deserted his room and spent much of his time out of doors, but care was taken to keep him away from influences which might excite him. He went early to bed and slept fairly well. The baths were continued more or less regularly.

July 18, 1911, he accompanied his father to Wisconsin for a month's stay at a friend's farm. This proved most beneficial, and on August 23, 1911, he returned to Cleveland fully recovered and apparently none the worse for his strenuous experience. He talked freely on most subjects and expressed fond anticipation of getting home to see his mother and other relatives. In the meantime, I had much to say to the parents as to the future training of their son whose mental instability was directly due to causes beyond his control. I have since learned that the lad's misfortune was, after all, a blessing in disguise, as a happy family had resulted, and a new environment had been created which ought to have a favorable influence on the boy's future development.

The father has kept me posted in regard to the boy's condition since he left my observation, and with the exception of a mild recurrence of insomnia, he has continued to enjoy good health, both physically and mentally. I understand he returned to school in January, 1912, and has made up many of the studies in which he fell behind. Three months ago, his father wrote me that the lad was now taking a correspondence course in "cartoon drawing," and was becoming quite proficient. It appears that he has shown considerable aptitude for this kind of work, and I have urged them to permit him to continue it, unless indications to the contrary arise.

The recovery in this instance seems to be complete, but what the future holds in store for this young lad, no one can positively foretell. I believe, however, that the parents have learned that their only son, whom they brought into this world handicapped mentally, must be protected from undue strains and stress, and that their conduct and attitude toward him in the future must be very different from what it has been in the past. If they will do their part, and throw the proper safeguards about him until he has fully matured and developed, it is possible that he may escape a recurrence.

We are in the midst of a campaign of preventive medicine, and it would seem that in psychiatric practice preventive measures, to be effectual, cannot be applied any too early.

My object in bringing this report to your attention is to encourage the publication of all cases of insanity in children, in order that we may have reliable statistics to guide us. When this is accomplished, I feel sure that the prevalence of juvenile psychosis will be found to be such as to justify a definite plan of education which will have for its purpose the recognition of danger-signals and the avoidance of such elements which are harmful and destructive to the mental health of developing youth.

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## ABSTRACT OF DISCUSSION

Dr. Walter B. Swift, Boston: I recall one case of infantile psychosis that took the form of general paralysis, in which the result of treatment is interesting. A girl about 8 years old had most of the typical signs of paresis, and, as well, a clearly marked state of confusion, with cloudy eyes, drooping expressionless face and inability to think. Her Wassermann was positive. Salvarsan was given and as a result the confusion, facial signs and thinking-power all cleared up. That the organic signs still persisted would lead one to suppose that there were two processes: (1) an old degenerative nerve-lesion and (2) an active process reached by the treatment. The degeneration and the improvement have both persisted since.

Dr. Frank P. Norbury, Springfield, Ill.: A few years ago, I went over my case records and in over 16,000 mental records there were but about twenty-five cases of genuine juvenile psychosis. I excluded the juvenile type of paresis, the constitutional degenerative types, the toxic-delirium cases and the border-line compulsory neuroses as seen in children. I considered only those cases which were almost exclusively manic-depressive or allied states, because I believe we must define these cases clinically as genuine juvenile psychosis. When we study many of our cases, we find early manifestations, even in childhood, that are unrecognized. Especially is this true of the depressive rather than the manic phase. I recall one child who showed the manic phase as early as 6 years of age. I had the patient under observation for some time, even after her recovery and return to her home. Eight years have elapsed without recurrence. I now have two depressive cases under observation, both girls and being cared for in their respective homes. In one, aged 11, the question of differential diagnosis is between dementia praecox and an aberrant form of depression. The age of the other patient is 13. The case suggests an organic basis, possibly involvement of the hypophysis and yet on close analysis it would seem also to suggest an aberrant form of depression. Many children and also adult patients have not been studied from the beginning of their troubles, especially during the years of 6, 8, 11 up to the period of puberty. We can get the history of these cases after the period of puberty, but it is the nascent period of childhood which needs observation for the early manifestations in many cases of manic-depressive psychosis. Few patients at this age ever reach the hospital and comparatively few receive the intelligent and prolonged care they deserve.

Dr. C. R. Woodson, St. Joseph, Mo.: A case came under my observation last year in which the child had a pronounced and typical scarlet fever. About six weeks after the initial symptoms of scarlet fever had appeared, I was called to see the patient. So far as the scarlet fever was concerned the child had gotten along well. There had been no kidney lesions, but the patient was in a state of mental and muscular agitation, with pronounced insomnia. The attending physician was disposed to diagnose the case as one of meningitis. There was no rigidity of the neck muscles, Kernig's sign was absent, there was no fever and had not been for three or four weeks. A lumbar puncture was made, but no fluid was obtained, and afterward the case was diagnosed as polioencephalitis. I did not believe that the condition was polioencephalitis, for there was no paralysis; but the child was extremely agitated. It was during the excessively hot weather that prevailed in the middle west. We did not use hot baths in this case, but kept the child almost constantly in a pack at body temperature by means of two sheets which were simply turned over the child, and which, by means of a small vessel of water, were kept at about the temperature of the patient. Sometimes, toward evening when it was a little cooler, it may have brought the temperature down to 97.5, but not very often. After some two or three weeks the child ceased to be noisy and agitated, began to recognize and want its mother. During the time I saw the patient there were no manifestations due to the scarlet fever, the kidneys and skin functioning well. The process of bathing and packing was kept up for one and one-half months. In two months the child made a good recovery. She was a child of normal intellect and good parentage, but was pronouncedly as exalted and excited as any case of manic depressive insanity that I have seen.

Dr. T. D. Crothers, Hartford, Conn.: In an experience of forty years, in the study of drink and drug neurotics, I have found infantile psychosis, palsies and degenerations very common in the children of such persons. The causes of juvenile psychosis are very often traceable to the toxemias of parents. I have observed that these psychoses change materially at puberty and settle down into some uniform condition, which remains about the same until the climacteric period, when there is an outbreak, and acute and chronic degeneration sets in that never changes. I am inclined to believe that the study of heredity will reveal many of the active and contributing causes of these psychoses. I am not prepared to state what percentage of juvenile psychosis is traceable to this cause, but I am sure the proportion is large.

**Dr. Tom A. Williams**, Washington, D. C.: Many psychoses exist in children which are overlooked because clinicians are in the habit of ignoring the child's subjective symptoms as expressed in interrogation. I think that is a great error. It is very unwise to put down such a case as one of mere indulgence, allowing it to pass and not analyzing it thoroughly. I believe, however, that quite frequently one will find psychotic conditions in children arising from a purely psychologic source. For instance, a little girl of 11 whom I saw some years ago had become very much disturbed, would not speak to her parents or to other children, and became very violent tempered at times. The whole situation was psychologic in its source and found to be due to the child's idea that she was not loved any longer by her parents. When the condition was rectified in the minds of the parents the girl began at once to improve and returned to school in two weeks. Judging from the frequency with which, in the few cases I have seen, (*Am. Jour. Med. Soc.*, 1912. xi), psychologic factors have been easily found, I should say they must be very abundant, and I should like to appeal to those who see many children that they endeavor to analyze them. For example, last month in Tennessee I saw a child of 6 who was very much disturbed and had been for several years, and yet in that child one could analyze the situation as being due to occurrences which had taken place at the age of 2 and which had discolored the whole life of the child up to the age of 6. This showed itself in the dreams of the child, who, at the age of 6, was capable of extraordinary penetration. Dr. C. L. Greene, chairman of the Section on Practice of Medicine, told me that he was much impressed with the judicial sense of children, and I agree with him.

**Dr. Alfred Gordon**, Philadelphia: In the cases presented by Dr. Drysdale, Dr. Norbury, or Dr. Woodson, the conditions found are almost identical, which bears out my experience with juvenile psychosis, excluding juvenile paresis and dementia praecox. In psychoses occurring in very young children, I have found almost exclusively, a confusional state. It is true we find some manifestations of mania or of depression, but the cases are essentially those of confusion and delirium. Sometimes we will find a stuporous state, but a state of confusional insanity predominates. I find also that all these cases are acute and temporary, and recover very soon. They are nothing else but confusional states following infectious diseases or any other condition due to an infection of some sort.

**Dr. J. T. Fisher**, Los Angeles: Those who see large numbers of insane people not infrequently find such cases as Dr. Drysdale has cited. I recall seeing six or eight cases at the Psychopathic Hospital in Los Angeles which were very similar. They have excited our curiosity quite a little because of the feeling that we often had that perhaps they were cases of beginning dementia praecox. Some of the patients got well, however, and some of them went into a state which required their being put in a state institution. I see no particular reason why a child should not develop a psychosis as well as an adult, and I am a little surprised to note, in a series of several thousand cases, that we have not had more cases of juvenile psychosis. I do not feel that the cases spoken of by Dr. Crothers necessarily come from alcoholism in the parents. I think that the psychoses of children may result from the same causes as do cases in adults.

**Dr. H. H. Drysdale**, Cleveland: Dr. Swift refers to a case of paresis in a child. My experience with this comparatively rare condition is limited to one case which presented the cardinal physical manifestations of the disease. The Wassermann reaction was positive. Mentally this patient expressed no delusions, but on the contrary was stupid, confused and apathetic. Dr. Norbury brings out an extremely instructive point when he refers to the early signs of mental alienation appearing during childhood. If physicians were more alert in recognizing, in children, certain factors which are antagonistic to normal mental development, many a psychosis would undoubtedly be prevented. Viciousness, irritability, lack of control, temper so-called, etc., are often forerunners of mental disaster. The modern treatment of mind disorder is prophylactic and childhood offers a fruitful field for its proper application. Dr. Woodson refers to the efficacy of hydrotherapy in these conditions. I believe that this is the only treatment. Hot and cold packs will suffice in most cases. Dr. Crothers states that a morbid inheritance is the chief etiologic factor in the psychoses of childhood. It is true, of course, that generally we do find a definite psychopathic taint. On the other hand one of my patients, whose antecedent history was excellent, developed a serious mental disturbance at the age of 13 and is now chronically insane. Dr. Williams refers to the psychogenetic origin of the juvenile psychoses. There can be little doubt but that such is the case, in a large number of instances, not only in the psychoses, but also in the psychoneuroses. When I first saw this lad he was so agitated and disturbed that a psychanalysis was quite out of the question. Should this patient suffer a recurrence and come under my observation again I shall attempt to discover a psychic explanation for his affliction.

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# BERIBERI

J. M. LITTLE, JR., M.D.
ST. ANTHONY, N. F.

The fact that hens, if fed exclusively on white flour, develop a staggering gait and die with paralysis is known to the natives of Newfoundland and Labrador. It is the custom in North Newfoundland and Labrador, in winter, for the natives to take their hens into their cabins, and to keep them in small coops in the living room. Consequently the natives have a good chance to become acquainted with polyneuritis gallinarum. They say that unless some food other than white bread is given, the hens "get leery and give up" (become dizzy and die).

In The Journal of the American Medical Association for June 29, 1912, I published a short paper giving the clinical facts that warranted the assumption that beriberi is caused by white flour as well as by polished rice. The fact that beriberi seemed common here, together with the facts as already stated about the hens and the knowledge of the work being done on beriberi in rice-eating countries, led me to wish to repeat the experiments being made with rice, but to use white flour instead. It seemed impossible to get fowls and guinea-pigs for experimental purposes at St. Anthony. Therefore, I decided to do the experiments where the facilities were better. Mr. W. Richard Ohler, who at the time was one of my assistants, kindly undertook the work, and was extended the privileges of the laboratories of the Harvard Medical School, with the endorsement and kind cooperation of Professor Rosenau and Professor Wolbach.

The object of this paper is to present some statistics with regard to beriberi in this country, together with such observations and conclusions as I have made, as introductory to the work done by Mr. Ohler.

## HISTORY

The first references to beriberi in Newfoundland that I find are in the reports of cases on the Newfoundland Grand Banks by Putnam of Boston and Birge of Provincetown (1898). A large number of the fishermen even on American vessels were Newfoundlanders and in this report we find that there were cases among those making "shore trips." Dr. Grenfell, having encountered the disease in Labrador among those on vessels and those living on shore, made enquiry of Dr. R. A. Brehm, Medical Health Officer of Newfoundland, concerning the incidence of the disease. Dr. Brehm forwarded a report of thirty-eight cases of well-marked beriberi observed during the two years previous to 1908 by Drs. O. V., and S. S. Smith. There were a few other cases reported. Since 1907 I have constantly seen the disease and, I think, with increasing frequency.

### DISTRIBUTION

Beriberi among deep-sea fishermen is uncommon except on vessels in which the standard of diet is low. On American fishing-vessels, even on the halibut catchers which are out for long periods, beriberi is practically unknown; but these vessels are well supplied with foods that we now know prevent beriberi. On Newfoundland vessels in the shore fishery, symptoms of beriberi are common and the severer forms not uncommon. The food on these vessels is practically the same as that of people living ashore and consists continuously of tea and bread, fish, salt meat and occasionally duff with raisins. Some have potatoes and turnips at times. It is on the vessels that go north away from the base of supplies and the land of vegetables, that we find beriberi. Also it is "down north" that we find beriberi among the people living on shore, but always among those who on account of custom and ignorance or their economic and geographical position are, at certain times of the year, almost entirely dependent on white flour for food. So far as I know, the Eskimo and Indian do not have beriberi but they eat plenty of fresh meat.

In the last 5,000 cases seen in the out-patient department of the St. Anthony Hospital, the diagnosis of beriberi has been made 220 times. One hundred and seventy-five of these cases were in men and forty-five in women. Ninety-three patients have been admitted to the hospital. Of these, seventy-five have been men and eighteen women. Of these eighteen women, in one the disease came on during pregnancy and was cured before childbirth; in five it came on suddenly and soon after childbirth. In one case the child died of an unknown cause before admission to the hospital.

The average age among the males was 34 years 4 months; the oldest was 77, the youngest 15. Of the females, the oldest was 57, the youngest 12, and the average age, 28 years 2 months.

There have been six deaths, all in men, all in acute cases from heart-failure or failure of respiration; three each in so-called "wet" and "dry" cases. One woman discharged thoroughly recovered, died at a later date of the same trouble.

The average time from beginning of symptoms to entering hospital was seventeen weeks, but the significance of this figure is very vague, as cases were admitted in all stages of the disease, and it is difficult to determine the time of onset as the preliminary symptoms are so indefinite.

Shortness of breath was a marked feature in 58 cases, and irregularity, increase in dulness on percussion, or murmurs of the heart were noted in 57. Edema was noted in 28 cases. There was paralysis of the lower extremities or some of the leg muscles in 83 cases and 39 of these showed some affection also of the upper extremities. In only three histories in the series were no disturbances of sensation noted and I am inclined to think this is due to omission in the history taking. Forty in the series gave definite history of previous symptoms or attacks.

Only one necropsy was obtained in a man sick a very short time who died of paralysis of the respiratory organs. Besides cloudy swelling of the kidney, the necropsy revealed nothing. The nerves were not examined microscopically.

### ETIOLOGY

It is a lately accepted fact that beriberi in its commonest and most well-known form, among rice-eating people, is due to the absence of certain necessary elements in the diet. These have been called "vitamins" (by Funk) and when "milled" rice is used, these vitamins are absent. It is not so generally recognized that in a wheat diet, restricted to "milled" flour the vitamins are also absent and the same disease develops with the same certainty.

Whether or not polyneuritis gallinarum and beriberi are identical, the study of the former (notably the experiments of Frazer and Stanton) has been the means of establishing correct knowledge of the etiology of beriberi. Although in recent text-books beriberi is still classed among the infectious diseases, the infectious theory of the disease has been given up.[1] (Action of recent International Medical Congress in London.)

It may not be possible to include all forms of polyneuritis in one group under the heading "beriberi"; as, for instance, that form so closely associated with malaria and that reported from Brazil, in which we are assured the diet is lacking in no particular. The time has come, however, when a group should be recognized and separated, in which polyneuritis is caused by a deficiency of this particular substance in the diet.

The old idea, still very prevalent, that ship beriberi is a different disease from true beriberi is false. The deficiency in diet, the actual cause, is the same. Moreover, so-called ship beriberi is more frequent on land than on ships. The fact that beriberi arises through a deficiency in rice or flour, or in lack of potatoes[2] makes no difference except in degree, and the maintenance of this old nomenclature obscures the etiology and retards knowledge as to the cause, prevention and treatment of the disease.

Apparently, the multiple neuritides should be classified broadly under three headings: 1, Toxic, which would include that due to alcohol, diphtheria, etc.; 2, "deficiency" or "avitaminic," and 3, cause unknown. In this last, the burden of proof would now seem to rest with those who would exclude a multiple neuritis from Groups 1 and 2. We do not yet know the way in which the lack of these vitamin substances acts or whether the disease caused by their absence is "toxic" or not.

Beriberi is then, one of the deficiency diseases and develops whenever man is, for sufficient time, deprived of certain elements of his diet which have been called "vitamins." These vitamins are present in various foods. In different parts of the world men depend on different foods for this supply. Among rice eaters who use milled rice, and not enough of other forms of food, it develops from the lack of these vitamins which have been removed from the grain. Among wheat eaters who do not eat enough of other forms of foods (for instance meat, potatoes, beans, etc.), beriberi develops when milled wheat, the ordinary fine flour, is used.

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[1] Motions adopted by the section of Tropical Medicine and Hygiene of the Medical Congress held in London, August, 1914:

"B. (a) That the section is of the opinion that beriberi amongst natives who live principally on rice is brought about by continuous and too exclusive use of rice submitted to a too complete milling, which removes the cortical and subcortical layers of the grain.

"(b) The section urges all authorities charged with the health of native communities to restrain by every means in their power the use of this rice in the dietary of coolies.

"(c) In view of the proved non-infectiousness of beriberi the section suggests that all port and sanitary authorities should abolish foreign quarantine and other destructive measures against the disease."

Section (c) in the above is referred to. I believe this was also adopted by the congress as a whole before they adjourned.

[2] Holst, A.: Christiania, Personal Communication.

Contributory to the development of the disease at any time, may be and often is, some added stress such as exposure, trauma, hardship, chilling, pregnancy, overcrowding, bad hygienic conditions, infection or intercurrent disease. In this respect, beriberi does not differ from many other forms of disease.

In the following paragraphs the symptoms, diagnosis and treatment of the disease beriberi as seen in North Newfoundland and Labrador will be discussed. The observations and conclusions may or may not be in accord with those of other workers in the same field; the point which I wish to make is that they are drawn from personal observations of actual cases as seen in this locality.

### SYMPTOMS

The time of onset depends on the length of time a person has been on an insufficient diet and the degree of insufficiency in vitamin of that diet. Endemic, seemingly epidemic, and seasonal outbreaks depend on variation in food-supply. It may occur at any time in a people or in persons among whom nutritional instability is chronic. Among such, what has been called the incomplete or rudimentary form is more common than is recognized. It is better not to regard these patients as showing a separate form of the disease but as suffering from premonitory symptoms and in danger of severer attack.

These premonitory symptoms are due mainly to functional derangement of nerves or groups of nerves, with special susceptibility of the vagus and nerves of the lower extremities. Single or unusual nerves may be first or only involved. For instance, in one young man, the earliest symptom complained of was paralysis of the right sixth nerve. This was followed by double optic neuritis. A decompression operation was done. Later he developed typical beriberi of the dry form which went an ordinary course to complete recovery under proper treatment. But it was found that he had previously had night blindness which up here is so common that he had not thought to mention it. The importance of the peculiar and protein paresthesia as indicating nutritional fault and danger of severer involvement, is not appreciated by the people, as familiarity breeds contempt. Nor is their significance or frequency ordinarily known to the physician. They may be fairly common when the later manifestations of the disease are unknown or unrecognized.

The more advanced stages are well described in the various text-books and do not differ essentially in symptoms from what one would expect from the "regressive changes" in nerves, whether in beriberi or other forms of multiple neuritis.

The clinical course will depend on whether the nerves of the extremities or those to the more vital organs are most affected, and on the extent of the affection. In the dry form there will, almost always, at some stage, be more or less edema of the most affected parts, as is seen in so many forms of peripheral neuritis. It may be very slight and transient. In almost all cases there will also be tachycardia and shortness of breath due to functional involvement of the vagus and pneumogastric or phrenic. If the vagus, pneumogastric or phrenic bears the brunt of the attack, there may be uneasy precordial sensations followed by tachycardia and shortness of breath, followed by the usual signs of broken compensation, as the involvement of the nerve advances beyond the functional stage. This constitutes the "wet" form, and, in rapid onset, the culminative, acute, pernicious or cardiac form. Except when this last is extremely acute, there will almost always be observed some involvement of the extremities.

There are, then, two forms of edema; one primary, due to involvement of the peripheral nerves of the extremities, and another, secondary, due to broken heart compensation following involvement of the vagus. In the most pernicious variety, without edema, the respiratory nerves are probably at fault. Some edema may be due to intercurrent kidney affection.

The disease may be clinically divided in another way into two stages: (1) active, in which there is nutritional fault and nerve involvement is taking place or progressing, with all its various symptoms; (2) passive, in which the patient suffers only from disabilities due to the damage already done to the nerves with resulting changes, and in which there is nutritional sufficiency and no further nerve degeneration taking place. In the forms in which the extremities bear the brunt of the attack, degeneration can go to greater lengths than in the other forms without danger of death or such alarming symptoms. Regeneration of these nerves and their associated muscles is no quicker in this than in other forms of peripheral neuritis with paralysis, and these are the protracted cases.

### DIAGNOSIS

The diagnosis is easy in most cases, especially when the disease is common or when there is an outbreak. The important thing is to recognize the premonitory symptoms and atypical forms. The possibility of intercurrent disease must be kept in mind as well as the other deficiency diseases. Whatever the underlying cause of scurvy, and it is probably similar, the two diseases should not be confounded. Whenever there is nerve involvement, as shown by functional or degenerative symptoms, beriberi or avitaminic neuritis should be diagnosed. Some symptoms associated generally with scurvy, are probably rather due to this form of neuritis; such, for instance, as night-blindness, edema of the legs without hemorrhages and perhaps shortness of breath. If involvement of the nerves is kept in mind as the criterion, there will be little difficulty in differentiation, even when the diseases are concomitant, as may be the case.

The well-known toxic causes of neuritis are generally easily eliminated. Postdiphtheritic paralysis sometimes may be difficult to exclude. One young man, who had had in the past the early symptoms of beriberi, who had lately had ulcerated sore throat in which bacterial examination had failed to show diphtheria though there had been diphtheria in the vicinity, came to hospital with signs of bulbar involvement, unable to swallow or chew. There was known to be a case of syphilis in his family and his symptoms rapidly cleared up under large doses of potassium iodid.

Poliomyelitis is differentiated in the same way as other forms of peripheral neuritis and presents no special difficulties. In older patients with ataxic symptoms, the rapidity and mode of onset should be considered and the general course of the trouble. After all. it is only in the atypical cases, those involving special and unusual groups of nerves, that difficulty arises. In these one should watch for the slightest sign of involvement of the more commonly affected nerves. The clinical course will clear up the difficulties.

### PROGNOSIS

This depends on how much damage has been done, to what nerves, in what length of time, and the ability to procure the elements needed in the diet of the patient. The danger is great while the diet is defective, while the nerves to the heart and lungs show most involvement, and when the onset has been rapid. Recovery will be complete if proper diet is instituted and maintained, no vital nerve has been affected sufficiently to cause death, and no other disease carries off the patient. If former habits of diet are resumed, recurrence in aggravated form is probable.

### TREATMENT

Whenever an unbalanced diet is used, an attempt should be made to regulate it better. When people depend mainly on bread, whole-wheat flour should be used. Fresh meat, vegetables and other articles should be added when possible. Such foods as beans should be used when fresh meat and vegetables can not be obtained; and attention should be given to the method of cooking so that the preventive substances are not destroyed. Canned goods probably have these destroyed by heat.

A patient with beriberi, whose symptoms have not gone so far as to be immediately dangerous, if put on a diet including fresh meat, whole-wheat bread, beans, peas, macaroni and potatoes, will, within ten days, recover from all functional symptoms. His perfect recovery will depend only on the length of time necessary for the regeneration of the nerves already affected, together with the correction of such pathologic conditions of deformity, wasting, anemia, etc., as have supervened.

Absolute rest in bed is important at first in all cases. During acute attacks, such supportive treatment as is indicated should be instituted, along with the attempt to introduce such food as will supply the lacking elements. When the stomach rebels, milk from mash-fed cows should be used. Digitalis must be used with care. Strychnin and quinin seem indicated by clinical and experimental observation (Cooper). All electric treatment and massage should be delayed until such time as progressive degeneration has ceased.

While the antineuritic substance is curative in minute quantities and has been separated, its preparation is too complicated at present for general use, and the use of proper foods is still the best way. In the severer cases, such a preparation would be life saving. It is to be hoped that in the future, it may be prepared in some stable form capable of distribution.

There is, possibly, a broader significance to the subject of deficiency neuritis than may be apparent to the average practitioner. Beriberi is thought of as a sort of extra disease that he doesn't have to bother with, a sort of tropical disease he will never see. It is easy enough to recognize in its "overforms," such as we see when a diet is obviously one sided. The vaguer symptoms and results may be present when the diet is not so considered. Meat is getting dear, however, and foods are coming to be more and more denatured by modern methods. I do not know whether affections of the nerves are correspondingly on the increase, but the text-books are significantly silent or unenlightening on the etiology of functional and degenerative diseases of the nerves. It may be that the recognition of neuritis as a deficiency disease, due to a one-sided diet in which ordinary white flour is the principle factor, may clear up some previously unexplained cases of functional nerve trouble, neuritis, and trophic disturbance.

The cause of beriberi among rice eaters is an accepted fact. It is not generally recognized among wheat eaters. Because of this fact Mr. Ohler has attempted to repeat with wheat, some of the experiments which have been accepted by the profession as proof in the case of rice. A report of these experiments will be found in the *Journal of Medical Research*.[3] Their full significance remains to be worked out.

St. Anthony Hospital.

# THE PATHOLOGIC AFFINITIES OF BERIBERI AND SCURVY

S. T. DARLING, M.D.
ANCON, CANAL ZONE

### INTRODUCTION

During a recent visit to South Africa and Rhodesia with General Gorgas, advantage was taken of the favorable opportunities there for observing scurvy. A number of post mortems were made and some pathologic material collected.

I was struck at the first necropsy by the remarkable appearance of the heart, for it suggested at once the picture seen in a well-marked case of right-sided hypertrophy and dilatation in beriberi.

Since my return, I have examined miscroscopically the vagus and its branches, as well as the heart muscle, in some of the cases, and found degenerative changes of the same type seen in beriberi.

Each necropsy presented the same cardiac lesion, and following up the observations, a number of clinical, pathologic and epidemiologic observations have been made which show family relationships between scurvy, a classical example of a food deficiency cachexia, and beriberi, and also as Watkins-Pitchford[1] pointed out in 1912 with certain other members of the group of dietetic cachexias.

At one extreme is rickets, a type of pure "osteocachexia," to use Watkins-Pitchford's term; at the other extreme a pure "neurocachexia," such as polyneuritis gallinarum. Between these two types are scurvy, infantile scurvy, the experimental scurvy of guinea-pigs, ship beriberi, beriberi (two or more types), infantile beriberi, and epidemic dropsy and neuritis.

The accompanying diagram shows qualitatively the affinities of the differnt types of food deficiency cachexias; and following is a brief diagnosis of the types:

*Rickets.*—A disease of infants characterized by defective nutrition of the body and diminution of lime salts in growing bones, particularly the ends of the long bones and ribs at the junction of the ribs with cartilage ("rickety rosary" and "craniotabes"). Rapidly repeated pregnancies and suckling a child during pregnancy (according to Osler) seem to be important factors in the production of the disease. It is most common in children fed on condensed milk and food poor in fat and animal proteins (Cheadle).

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[3] Jour. Med. Research, xxxi, No. 2.

[1] Watkins-Pitchford: Transvaal Med. Jour., May, 1912.

*Infantile Scurvy.*—A cachexia of infants or children in which there is profound anemia, subperiosteal, subplural, and other hemorrhages; spontaneous separation of epiphyses from shafts of femur and tibia, and separation of ribs from cartilages, as in extreme cases of scorbutus. The gums, if the teeth have erupted, may be spongy. It is caused by proprietary foods, and there are instances, as in one of my necropsies, of its developing in breast-fed babies.[2]

*Scurvy.*—A disease occurring among laborers, or soldiers, in barracks and camps, or inmates of asylums, etc., and in times of famine; following the continued consumption of a one-sided or overcooked diet and one free from fresh vegetables. It is characterized by muscular joint subserous and subperiosteal hemorrhages; anemia, gingivitis, necrosis of bones, separation of costal cartilages from ribs in extreme cases, and [right-sided cardiac hypertrophy, dilatation and fatty degeneration, with degeneration of the vagus and its branches (personal observation)]. Certain epidemics display symptoms which disclose affinities with beriberi.

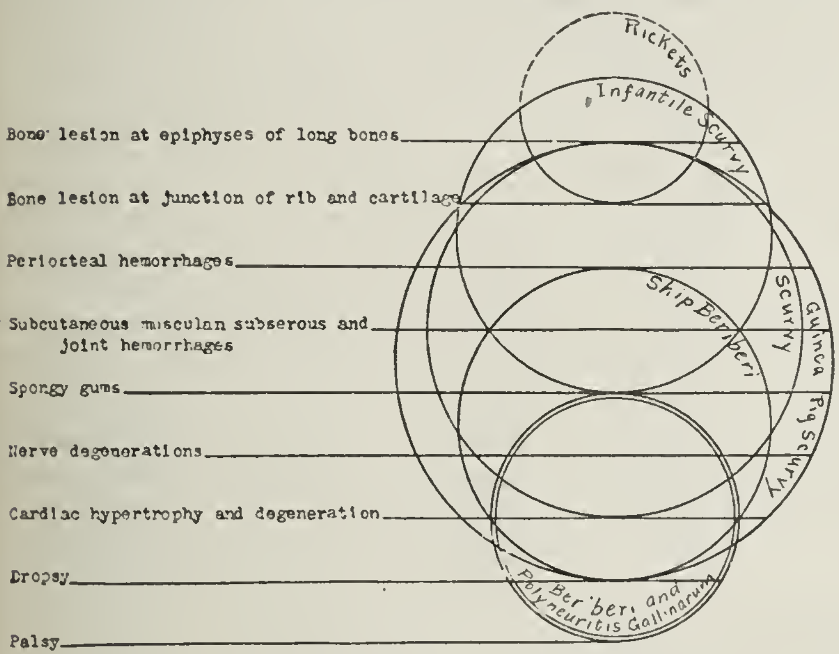
Rickets
Infantile Scurvy
Bone lesion at epiphyses of long bones
Bone lesion at junction of rib and cartilage
Periosteal hemorrhages
Subcutaneous muscular subserous and joint hemorrhages
Spongy gums
Nerve degenerations
Cardiac hypertrophy and degeneration
Dropsy
Palsy
Ship Beriberi
Scurvy
Guinea Pig Scurvy
Beriberi and Polyneuritis Gallinarum

Chart showing affinities of the food deficiency syndromes.

*Experimental Scurvy of Guinea-Pigs.*[3]—A disease, resembling Barlow's disease, produced in guinea-pigs by feeding a one-sided, or overcooked and unaccustomed diet of various sorts of grain, groats, and bread. There are hemorrhages, muscular, subperiosteal, and subcutaneous, often of the hind legs and ends of the ribs and between rib and cartilage, loose teeth and fragility of bone, and rarely polyneuritis and fatty degeneration of the heart. It is favorably influenced by "antiscorbutics."

*Ship Beriberi.*—A disease appearing usually on board sailing ships during long voyages, which may be due to eating preserved, dried, or tinned food in the absence of fresh vegetables. Symptoms are: weakness, shortness of breath and "other symptoms of weak heart causing often sudden death from acute paralysis of heart," edema of legs, and other parts of body. In a few cases sore gums, cutaneous and intramuscular hemorrhages, and peripheral neuritis are seen. It often appears in spite of the use of lime juice. Recovery is rapid when fresh food is supplied.

*Beriberi.*—A disease due to eating exclusively polished rice or other food from which some unidentified principle or "vitamin" is absent. It occurs endemically in certain tropical or subtropical regions and is characterized chiefly by degenerative changes in the peripheral nerves with motor and sensory disturbances, dropsy, right-sided cardiac hypertrophy and dilatation with fatty degeneration. There are undoubtedly several types of this disease such as infantile and asylum beriberi, wet and dry[4] beriberi, and that seen in Brazil (Lovelace)[5] "endemic dropsy," and endemic peripheral neuritis, etc. Dechambre described an epidemic of scurvy as occuring during the Siege of Paris, in which a few cases displayed beriberi symptoms.

*Polyneuritis Gallinarum of Eijkman.*—A disease produced in birds by feeding overcooked food and wheat flour, etc. Paralytic symptoms rapidly develop with subcutaneous edema, especially of the legs, and fatty degeneration of muscles of the heart; a disease resembling tropical beriberi rather than ship beriberi, neuritis being present more frequently than in ship beriberi.

Table 1 is meant to display the chief pathological features of the different diseases in this group in such manner that the affinities of the group may be seen at a glance.

Funk[6] mentions five groups of symptoms observed in diseases caused by food theoretically deficient in "vitamins":

1. Nerve degeneration with paralysis and contractures.
2. Cardiac: dilatation of right heart, dyspnea, cyanosis, oliguria.
3. Anasarca, hydropericardium, hydrothorax, ascites.
4. Scorbutus with mouth lesions, skin, subperiosteal hemorrhages and bone lesions.
5. Pellagra syndrome, stomatitis, gastro-intestinal lesions, skin erythema and multiple nerve symptoms.

While Funk may be right about the etiology of Groups 1, 2, 3, and 4, it would seem to be unwise to include pellagra in this group, for among other reasons, while pellagra is a disease "occurring in maize-eating countries *par excellence*" the eating of overcooked, undercooked and overmilled, kiln-dried maize in large quantities takes place among negro laborers and natives in South Africa to an enormous extent, for it is frequently their sole article of diet. Yet pellagra is practically unknown among that class.[7] *They do, however, suffer from scurvy.*

### THE CARDIAC AND NERVE DEGENERATIONS IN BERIBERI

It it can be shown that scurvy, a typical example of a food deficiency cachexia, possesses certain pathologic features identical with those of beriberi, about which the etiology in the minds of some is as yet undetermined, it will help to establish a place for beriberi among the dietetic cachexias.

It is well known that in beriberi the heart is usually enlarged; the enlargement is especially common on the right side, the right ventricle being usually hypertrophied and dilated, this abnormal size of the right heart being often the only striking feature of the necropsy. There is some fatty myocardial degeneration. These changes are thought to be due to degenerative changes in the vagus and its cardiac branches.

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[2] It may be noted in passing that both infantile beriberi and infantile scurvy may develop in breast-fed babies.

[3] Holst and Frölich: Ztschr. f. Hyg. u. Infektionskrankh., May, 1912.

[4] Vedder and Clark: Philippine Jour. Sc., Sec. B, 1912, vii, 423.

[5] Lovelace: Peripheral Neuritis in the Amazon Valley, Am. Jour. Trop. Dis., 1913, i, 140; The Etiology of Beriberi, THE JOURNAL A. M. A., Dec. 14, 1912, p. 2134.

[6] Funk: München. med. Wchnschr., 1913, No. 47.

[7] Swift and Brown: Jour. Trop. Med. and Hyg., June 1, 1914, report six cases of pellagra in eight years at Bloemfontein Asylum.

Hypertrophy and dilatation of the right heart is recognized as being due to such mechanical processes as stenosis of the pulmonary artery, reduction of the vascular area of the pulmonary artery, as in emphysema and interstitial pneumonia, valvular lesions on right side, tumors and aneurysms pressing on the pulmonary artery, and adherent pericardium.

In addition to these, this lesion is constantly found in beriberi and the Rand type of scurvy.[8] It is the type known as excentric hypertrophy or hypertrophy and dilatation characterized by thickening of the muscle and an increase in the size of the cavity. It seems to be due to a gradual strain on the right ventricle from loss of vagus innervation.

According to Scheube, Ellis found the average weight of the heart in beriberi in 125 post mortems to be about 13.37 English ounces, or 378 gm., while in 204 other cases it was but 9 ounces, or 254 gm. This increase is due chiefly to the hypertrophy of the right ventricle.

Jojot[9] records ten necropsies in the cardiorespiratory form of disease (beriberi) at Camp Saint Jacques. Symptoms: dyspnea, intense cardiac erethism, extreme anxiety, and sudden death by syncope. Jojot notes the occurrence of hydropericardium, 180 c.c., and cardiac hypertrophy, 310 to 490 gm.

Pekelharing and Winkler,[10] state that "hypertrophy of the right heart is always present and associated with dilatation, sometimes small, sometimes great, and not infrequently enormous." The muscular coat of the heart is often pale. Of 64 necropsies,

| | | | |
|---|---|---|---|
| 5 | hearts weighed | 250 to 300 | gm. |
| 42 | hearts weighed | 300 to 350 | gm. |
| 10 | hearts weighed | 350 to 400 | gm. |
| 7 | hearts weighed | 400 to 450 | gm. |

according to Hamilton Wright.[11]

Observed atrophy in the terminations of the vagal inhibitory fibers in the heart muscle, axonal reaction in the cells of the ambiguous and vagal portion of the combined nuclei in the bulb, together with axonal reaction in the cells of the intrinsic cardiac neuroses, and in cells of the postganglionic accelerator fibers are conclusive evidence that almost the entire cardiac nervous system is affected by the beriberi virus in acute pernicious beriberi.

So extensive a poisoning of both inhibitory and accelerator systems accounts for a large measure of the cardiac symptoms in the latter class of cases. The loss to the heart of the control normally effected through the accelerator and inhibitory systems leaves the organ in practically the same state as the heart of a lower animal experimentally isolated from its guiding nerves.

The rapidity of beat seems to indicate that the inhibitory mechanism is first attacked. Partial exhaustion and dilatation of right heart soon follows. Arhythmia occurs. The right heart fails to empty itself and the pulmonary and venous circulation becomes surcharged. Dilatation of right side increases.

### CLINICAL OBSERVATIONS ON SCURVY OF THE RAND TYPE

My first impression of the cases of scurvy in South Africa was that the disease was of an infectious nature, but that rapidly gave way to a confirmed opinion that it was due to dietary errors.

The diet of the negro laborers was certainly one-sided, considering the amount and character of the labor required of them. It consisted, as General Gorgas[12] has pointed out, too largely of carbohydrates. Five to eight feet of rock is no mean task to drill through in a day on a diet composed chiefly of cornmeal. Looking over the dietary, it was seen that the disease apparently had some relation to the following factors: Overmilled corn as the chief article of diet; overcooked corn as well as overboiled food of whatever kind; roasted meat, the natives customary way of cooking, was never supplied; and insufficient and overboiled vegetables.

Cases, too, very definitely came on during a drought and in locations where it was impossible to supply fresh vegetables and fresh meat. Several types would appear. Dr. Peall, of Arcturus, Southern Rhodesia, reported the appearance of neuritis and ataxy with enlarged right heart and edema of tibiae. Thus confirming the observations of Balfour of Khartoum and other African observers in this particular.

An interesting feature of the disease was brought out by ascertaining the incidence and death-rate among different types of natives, for during the year 1913, at one of the mines, the incidence per 1,000 per year was 12.37 among Cape Colony "boys," while it was

TABLE 1.—SHOWING AFFINITIES AND PATHOLOGIC FEATURES OF SCURVY, BERIBERI, ETC.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Bone lesions at epiphyses of long bones | Rickets | Infantile scurvy | * | Guinea-pig scurvy | | | |
| Bone lesion at junction of ribs and cartilage | Rickets | Infantile scurvy | Scurvy | Guinea-pig scurvy | | | |
| Subperiosteal hemorrhages | | Infantile scurvy | Scurvy | Guinea-pig scurvy | | | |
| Joint, subserous, subcutaneous and muscle hemorrhages | | Infantile scurvy | Scurvy | Guinea-pig scurvy | Ship beriberi | | |
| Spongy gums | | Infantile scurvy | Scurvy | Guinea-pig scurvy | Ship beriberi | | |
| Nerve degeneration | | | Scurvy | Guinea-pig scurvy | Ship beriberi | Beriberi | Polyneuritis gallinarum |
| Cardiac hypertrophy and degeneration | | | Scurvy | Guinea-pig scurvy | Ship beriberi | Beriberi | Polyneuritis gallinarum |
| Dropsy | | | | Guinea-pig scurvy | Ship beriberi | Beriberi | Polyneuritis gallinarum |
| Palsy | | | | | | Beriberi | Polyneuritis gallinarum |

* May occur during adolescence but probably is not encountered in adults.

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[8] Buzzard, in Reynolds System of Medicine, 1870, Vol. I, notes cases of scurvy with fatal syncope and attributes it to the muscular structure of heart being weakened by malnutrition. Thus, cardiac syncope is also a feature common to beriberi and scurvy.

[9] Jojot: Ann. d'hyg. et de méd. coloniales, 1911, No. 1, p. 88.

[10] Pekelharing and Winkler: Beriberi, 1887.

[11] Wright: Studies Inst. Med. Research, Federated Malay States, 1903, ii, No. 2.

[12] Gorgas, Sanitation on the Rand, The Journal A. M. A., June 13, 1914, p. 1855.

7.45 among "tropicals," yet the death-rate was only 0.19 per 1,000 per annum among the former, while it was 2.66 among the tropicals, or 14 times as great. The tropical negro therefore gets scurvy in far more serious form. This may be explained from the observation that the scorbutic "tropical boy" had not yet begun to vary the monotomy of his diet by purchase of food at Kaffir stores outside the mine compound.

The clinical cases of scurvy seen varied in severity from those that had only spongy gums and very slight infiltration of calves, to others with severe and extensive hemorrhages of the muscles, joints, and serous membranes, or bone and cartilage lesions. The appearance of the patient was apathetic; many of them had been in bed six to nine weeks. Motion and locomotion were impaired, the recovering cases walked with a slight straddle, but there was no foot drop. The sick ones were either unable to stand or perhaps stood well with one leg, while the other was partly flexed, i. e., the heel elevated, the toes and ball of foot resting on the ground, apparently due to infiltration and atrophy of leg muscles. Their gums were swollen and pouting at the margins, which were bright red and fungating. On pressure, the blood spurted on the adjoining teeth. The muscles of both legs were uniformly, or unequally infiltrated and the overlying skin was smooth and shiny. After the infiltration had subsided, there was atrophy of the calves with wrinkled shiny skin. The knee-jerks in those examined were generally slightly exaggerated in all save one case. In this, the right was normal, the left practically absent. Several cases, on auscultation, disclosed tachycardia as in beriberi.

At Bulawayo, through the kindness of Dr. Eaton, a case was seen in which the gums at the time of examination were negative, the legs and tibiae were also negative, yet the sternum had collapsed, due to separation of the costal cartilages from the ends of the ribs. One could feel the cup-shaped depression in the ends of the ribs. There was also a big hematoma over the left scapula and shoulder.

Doctors at Bulawayo describe a condition known as "big leg," a condition of edema following active exertion, such as marching to the mine, occurring in some cases after three weeks in the detention camp. This is of interest, because undue exercise seems to have been an exciting or accelerating factor in precipitating attacks of beriberi and scurvy, as in soldiers after a march.

Not only has the Rand type of scurvy affiliations with beriberi, in that cardiac degeneration and degeneration of the vagus occur in typical scurvy as well as in beriberi, and by reason of the appearance of beriberi or neuritic features in certain epidemics of scurvy, but Dr. G. P. Turner of Johannesburg has observed that many of the negro miners dying of various diseases, at necropsy disclose slightly edematous calves without any other sign of scurvy or beriberi. Scurvy has definite affiliations with rickets, and infantile scurvy too, for in the case seen at Bulawayo there had been extensive destruction of the chondrocostal junction, with depression of the entire sternum.

Couvy[13] gives an interesting account of an outbreak of beriberi and of scurvy in a garrison of soldiers at Akjoucht (Mauritanie, May-September, 1908). There were 150 natives and eleven Europeans. Beriberi appeared first among the natives; later cases of scurvy appeared among them. The officers, however, during the same period, had only scurvy, with no symptoms of beriberi.

TABLE 2.—DIET AT OUTBREAK OF DISEASE ....

| Diet of Native Soldiers | Kilos | Diet of Europeans | Kilos |
|---|---|---|---|
| Rice | 0.500 | Flour | 0.450 |
| Fresh meat | 0.500 | Fresh meat | 0.500 |
| Salt | 0.015 | Fat | 0.020 |
| Sugar | | Coffee | 0.025 |
| | | Sugar | 0.030 |
| | | Salt | 0.010 |
| | | Wine, dried beans and preserves | |

Among those suffering from beriberi, as well as scurvy, the suppression of rice from their diet and its replacement by other articles was followed by the disappearance of cardiac troubles, asphyxia, pulmonary edema, and subcutaneous edema, but had no effect on the classical lesions of scurvy—spongy gums, muscular pain, and induration of limbs.

This instructive observation of Couvy illustrates the personal racial or idiosyncratic factor of this group of diseases, for, as far as can be ascertained, following the use of meat with one other article of food (polished rice), and associated with excessive consumption of salt[14] (saline spring water), two distinct syndromes appeared among the men who were getting the same ration (native soldiers).

This constitutional, or idiosyncratic, factor in the production of these diseases does not seem to have been sufficiently emphasized and certainly has not yet been explained. For example, a certain exclusive diet will cause scurvy in guinea-pigs, yet the same diet causes polyneuritis in pigeons. On the other hand, a deficient dietary in a tropical African negro mine laborer causes severe scurvy, in a Cape Colony African negro mine laborer, mild scurvy, and in some African negroes a diet that causes scurvy in one set of men causes neuritis in others. Furthermore, an exclusive diet of rice, which usually causes beriberi in man, has caused scurvy in certain instances, for Hölst and Frölich[15] call attention to the fact that "rice which is so often supposed to be the cause of tropical beriberi occasionally has provoked scurvy." Delpech[16] mentions in his article on scurvy in Paris, 1870-71, "a patient who got the disease who for four months had eaten meat only four times; besides this he had nothing but rice." Other scurvy patients, described by Bucquoy[17] had eaten rice or bread almost exclusively.

## NOTES ON THE PATHOLOGY OF SCURVY

Three severe cases of scurvy, practically free from complication (one had a little tuberculosis), came to necropsy at one of the hospitals. The anatomic findings were closely similar and may be summarized in a composite anatomic diagnosis:

Hemorrhagic extravasation into muscles of both legs, left forearm and left psoas muscles, involving the muscle fascia between muscles, old and recent.

Subperiosteal hemorrhage, shaft of left femur.
Hemorrhage into left knee joint.
Old subcapsular hemorrhage (knee joint).
Ulcerative gingivitis with hemorrhages.
Separation of mandibular periosteum.
Anemia of all viscera.
Hypertrophy and dilatation of right heart.
Fatty degeneration of musculature of right heart.
Hyperplasia of femur marrow.
Edema of lungs.
Scaly desquamation of both legs.

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[13] Couvy: Ann. d'hyg. et de méd. coloniales, 1911, No. 1, p. 97.

[14] It would be interesting to ascertain experimentally what modification in the syndromes might be induced by adding *excessive amounts of salt* to the vitamin-free diet of animals.

[15] Hölst and Frölich: Jour. Hyg., 1907, vii, 667.

[16] Delpech: Ann. d'hyg., 1871, xxxv, 295.

[17] Bucquoy: Union méd., September-October, 1871.

This is purely a picture of scurvy, without a single beriberic feature save, of course, the cardiac change. The picture presented by the heart in these cases is very striking. It is seen to be enlarged and very pale, but as it is lifted from its bed, the pallor of a yellowish tint is sharply limited to the broad right ventricular wall. The left ventricular wall externally is of good color. This is striking, but becomes accentuated when the heart is sectioned, for the left ventricle is seen to be of normal thickness and capacity, contracted, not dilated, and the muscle of good deep color; while the right ventricular wall is definitely thickened 8 to 10 mm. more or less in thickness, and of a yellowish pallor. The chamber is dilated and the muscle stands stiffly out from the septal wall and does not collapse on it as in a normal heart. This lesion appears to be pathognomic of the Rand type of scurvy and it brings this type of the disease into relation with beriberi and other dietetic cachexias.

An examination of the cardiac muscle and of the vagus nerve and its branches (Marchi preparations) shows that there had been extensive diffuse fatty degeneration of the musculature of the right ventricle, the muscle cells being stippled over with small fat droplets. There are also small areas in which the droplets are larger. The intermuscular stroma contain many extracellular small droplets of fat. The cardiac nerves do not appear to be degenerated. The sections of the vagus at different levels all show considerable degeneration of the fibers. This is different from the finding of Pekelharing and Winkler in beriberi, who state that the nearer one approaches the periphery of the nerves, the greater the nervous degeneration; the nearer one gets to the center, the less distinct it is, and in the great nervous trunks and in the roots no changes are found in beriberi.

It may be urged by some that there is latent beriberi on the Rand and that many of the cases of scurvy overshadow the beriberic symptoms. This can definitely be ruled out, for in all the cases I examined with regard to this point the knee-reflexes were exaggerated, not absent, as in beriberi; there was no anasarca, and no paralysis or extreme general atrophy as in beriberi. Besides, the pathologic material examined was taken from cases which anatomically were uncomplicated scurvy.

Searching the available literature on scurvy for descriptions of this very striking cardiac lesion, it was seen that fatty degeneration had been described, but no one seems to have noted the peculiar features of the cardiac hypertrophy and degeneration of the vagus. This may be accounted for in the following way. From a comparative study of the pathologic features of the various dietetic cachexias it is seen that there is a relationship among them. Scurvy shades off into ship beriberi in one direction and towards rickets in an other.

All outbreaks of scurvy are not alike. Some appear in apparently well-nourished laborers of robust physique, while others appear in conditions of severe starvation as in time of famine, in campaigns, in jails, asylums, etc. In some outbreaks there are very definite beriberic features, in others they are quite absent. We may presume then, that in certain outbreaks, or in certain cases of scurvy, the cardiac hypertrophy and degeneration which I have described may be seen, in others, it may be absent. As a matter of fact, I have seen one well-marked case of asylum scurvy associated with tuberculosis in which the peculiar cardiac hypertrophy was absent. It is likely that cardiac hypertrophy may not occur in scorbutic persons debilitated by starvation and associated chronic disease. Again the type of scurvy seen among tropical negroes on the Rand and in Rhodesia appears to be different from that observed among troops, in jails, asylums, and in time of poverty and famine in that the former does not yield so readily to treatment as the latter is said to do.

### CONCLUSIONS

The striking excentric hypertrophy and dilatation of the right heart with extensive fatty degeneration of the same musculature, the left heart remaining apparently normal, and the severe degeneration of the vagus nerve described here from several fatal cases of scurvy from the Rand furnish new and additional facts which show the intimate relationship between scurvy and beriberi as to etiology. The affinities between these two diseases and certain other cachexias lends emphasis to the opinion that they are all the result of the continued use of one-sided and deficient diet.

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# A COMPARISON BETWEEN THE UROCHROMOGEN AND DIAZO TESTS IN THE PROGNOSIS OF TUBERCULOSIS*

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As a result of personal dissatisfaction with the prognosis of tuberculosis, my attention was drawn to an abstract of an article by Moritz Weiss,[1] in which the prognostic value of Ehrlich's diazo reaction in the urine of tuberculous subjects is emphasized. He also describes a test of greater reliability and simplicity which was evolved from study of the diazo reaction. In the original article Weiss refers to his earlier writings on the subject, which date back to 1906. During seven years' observation he has confirmed the ideas of Koch and others by observing that death invariably followed the persistent presence of the diazo reaction in the urine of the tuberculous. In addition to his own work, Weiss refers to that of Dr. Heflebower, who reported similar results at the United States Government Sanatorium at Fort Bayard, N. M. Dr. Heflebower's article[2] reviews the general literature and mentions Gwerder's use of potassium hypermanganate with the diazo reagent. Heflebower, using the technic of Weiss, carefully compares his test with the diazo and demonstrates the superiority of the former.

Early in his observations, Weiss was puzzled by the occasional absence of the diazo reaction in obviously advanced cases and its frequent disappearance just before death. This led him to suspect that the unknown substance on which the diazo reaction depends was derived from an antecedent which does not give a positive reaction. On adding a 1:1,000 solution of potassium permanganate drop by drop to positive specimens and the reagent combined, he noted that the characteristic red of the reaction became brown; also, when the permanganate solution was added to positive specimens alone, a canary yellow was produced. In addition, the last reaction occurred in specimens which had become negative to the diazo but never appeared in normal urine. He identified the yellow body as urochrome and felt that he had oxidized its antecedent or chromogen, so he called this urochromogen and concluded that it was the principal substance causing the diazo reaction and that its precursor was the body which did not react to it. Thus, the urochromogen test should be positive when the diazo is positive, and by being positive when the diazo is negative, should show the presence of the antecedent of the substance on which both tests depend. Weiss attributes the presence of urochromogen to disintegration of tissue with excretion of incompletely oxidized material in toxic patients of low vitality.

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* Read before the Philadelphia Pathological Society, May 28, 1914.

[1] Weiss, M.: Aid in Prognosis in Pulmonary Tuberculosis, Wien. klin. Wchnschr., 1913, xxvi, No. 42; abstr., The Journal A. M. A., Nov. 22, 1913, p. 1943.

[2] Heflebower: Am. Jour. Med. Sc., 1912, p. 221.

In January, 1914, I began to use the diazo and urochromogen tests at Pennsylvania State Tuberculosis Dispensary No. 21. The results are shown in the accompanying table. It occurred to me that the low percentage of positive reactions was due to the fact that all of the subjects were ambulant cases. In February, through the courtesy of Dr. Rosenberger, I was enabled to extend my observations to the laboratory of the Philadelphia General Hospital. Here I had the opportunity of studying specimens from a large number of advanced cases. The positive reactions are seen to be much more numerous. The significant features are the difference in mortality percentage between the positive and negative cases and particularly the high death-rate among those with a negative diazo and positive urochromogen.

COMPARISON OF DIAZO AND UROCHROMOGEN TESTS

| | No. | Dead | Per Cent. |
|---|---|---|---|
| STATE DISPENSARY CASES | | | |
| Positive to both tests | 15 | 1 | .. |
| Negative to both tests | 75 | 1 | .. |
| PHILADELPHIA HOSPITAL CASES | | | |
| Tuberculosis: | | | |
| Positive to both tests | 38 | 16 | 42 |
| Negative to both tests | 137 | 21 | 15 |
| Positive U. but neg. D. | 13 | 7 | 58 |
| Positive D. but neg. U. | 2 | 1 | .. |
| Pneumonia: | | | |
| Positive to both tests | 2 | 1 | .. |
| Negative to both tests | 14 | 4 | .. |
| Positive U. but neg. D. | 1 | .. | .. |
| Erysipelas: | | | |
| Positive to both tests | 8 | 1 | .. |
| Negative to both tests | 38 | 1 | .. |
| Positive U. but neg. D. | 2 | .. | .. |
| Pertussis: | | | |
| Positive to both tests | 2 | .. | .. |
| Negative to both tests | 14 | .. | .. |
| Measles: | | | |
| Positive to both tests | 2 | .. | .. |
| Negative to both tests | 11 | .. | .. |

An interesting incident occurred in the removal of a patient from the dispensary list to the hospital because of progressive illness. While coming to the dispensary his urine was positive to both tests, which was also the case on admission to the infirmary; a few days later, however, it became negative to the diazo but remained positive to the urochromogen test; death occurred two weeks later.

The technic of Weiss requires a small amount of fresh, limpid urine diluted with water to three times its volume, divided into two test-tubes, to one of which 3 drops of a 1 : 1,000 solution of potassium permanganate is added, the other tube being used as a control. Many of my specimens were turbid and of different shades of amber or red, but the turbidity and original color appeared to have little effect on the reaction. I recognized as a positive reaction only a distinct canary yellow which remained fairly permanent, although there were frequent slightly yellow reactions which soon disappeared.

In addition to specimens from the tuberculous, I tested urine from patients with some of the other diseases in which the diazo has been found, as well as a large number of normal specimens. The results in the former were insufficient, and in the latter always negative.

Although these figures are meager and not conclusive, I hope that they may be sufficiently suggestive to arouse interest. The tests were performed in most cases only on admission, and all the deaths recorded have occurred within four months. The majority of the cases giving a positive reaction were afebrile. A later report will deal more particularly with the length of time between the first appearance of positive reactions and death and will note the incidence of fever.

The object of this preliminary report is to induce others to adopt this simple test as part of routine laboratory procedure for at least sufficient time to demonstrate its worth.

4719 Baltimore Avenue.

## New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

**MENINGOCOCCUS VACCINE.**—(See N. N. R., 1914, p. 252).

E. R. Squibb and Sons, New York.

*Meningococcus Vaccine, Immunizing.*—Marketed in boxes of 3 syringes containing 100, 500 and 1,000 million killed meningococci.

*Meningococcus Vaccine, Curative.*—Marketed in boxes of 4 syringes containing 100, 200, 400 and 500 million killed meningococci. Also in boxes of 2 syringes containing 100 and 500 million killed meningococci; boxes of 6 ampoules containing 100, 100, 500, 500, 1,000 and 1,000 million killed meningococci, with a syringe, and boxes of 2 ampoules containing 100 and 500 million killed meningococci, with a syringe.

**PNEUMOCOCCUS VACCINE.**—(See N. N. R., 1914, p. 253).

E. R. Squibb and Sons, New York.

*Pneumococcus Vaccine.*—Marketed in boxes of 4 syringes containing respectively 100, 200, 400 and 500 million killed pneumococci; boxes of 2 syringes containing respectively 100 and 500 million killed pneumococci; boxes of 6 ampoules containing 100, 100, 500, 500, 1,000 and 1,000 million killed pneumococci, with a syringe, and boxes of 2 ampoules containing 100 and 500 million killed pneumococci, with a syringe.

**STAPHYLOCOCCUS VACCINES.**—(See N. N. R., 1914, p. 254).

E. R. Squibb and Sons, New York.

*Staphylo-Acne Vaccine.*—Marketed in boxes of 4 syringes containing 100 million killed staphylococci and 25 million killed acne bacilli, 200 million killed staphylococci and 50 million killed acne bacilli, 400 million killed staphylococci and 100 million killed acne bacilli, and 500 million killed staphylococci and 200 million killed acne bacilli; boxes of 2 syringes containing 100 million killed staphylococci and 50 million killed acne bacilli and 500 million killed staphylococci and 200 million killed acne bacilli; boxes of 2 ampoules containing 100 million killed staphylococci and 50 million killed acne bacilli and 500 million killed staphylococci and 200 million killed acne bacilli, with a syringe.

*Staphylococcus Vaccine.*—Marketed in boxes of 4 syringes containing 100, 200, 500 and 1,000 million killed staphylococci; also in boxes of 2 syringes containing 100 and 500 million killed staphylococci; boxes of 6 ampoules containing 100, 250, 500, 500, 1,000 and 2,000 million killed staphylococci, with a syringe, and boxes of 2 ampoules containing 100 and 500 million killed staphylococci with a syringe.

**STREPTOCOCCUS VACCINE.**—(See N. N. R., 1914, p. 257).
E. R. Squibb and Sons, New York.

*Streptococcus Vaccine.*—Marketed in boxes of 4 syringes containing 100, 200, 500 and 1,000 million killed streptococci; also in boxes of 2 syringes containing 100 and 500 million killed streptococci; boxes of 2 ampoules containing 100 and 500 million killed streptococci, with a syringe.

**TYPHOID VACCINE.**—(See N. N. R., 1914, p. 259).
E. R. Squibb and Sons, New York.

*Typhoid Vaccine, Curative.*—Marketed in boxes of 4 syringes containing 100, 200, 500 and 1,000 million killed bacilli. Also in boxes of 2 syringes containing 100 and 500 million killed bacilli; boxes of 6 ampoules containing 100, 100, 500, 500, 1,000 and 1,000 million killed bacilli, with a syringe and boxes of 2 ampoules containing 100 and 500 million killed bacilli, with a syringe.

*Typhoid Vaccine, Immunizing.*—Marketed in boxes of 3 syringes containing 500, 1,000 and 1,000 million killed bacilli.

**VACCINE VIRUS.**—(See N. N. R., 1914, p. 245).
E. R. Squibb and Sons, New York.

*Small-pox (Variola) Vaccine (Glycerinated).*—Each dose in separate aseptic sealed glass tube, with bulb and needles. Boxes of 5 and boxes of 10 tubes.

**SERUM ANTIDIPHTHERICUM AND ANTIDIPHTHERIC GLOBULINS.**—(See N. N. R., 1914, p. 236).
E. R. Squibb and Sons, New York.

*Diphtheria Antitoxin.*—Curative doses, marketed in syringes containing 2,000, 3,000, 4,000, 5,000, 7,500 and 10,000 units.

**ANTIDYSENTERIC SERUM.**—(See N. N. R., 1914, p. 238).
H. K. Mulford Co., Philadelphia.

*Antidysenteric Serum.*—Marketed in vials containing 50 Cc.

**ANTIPNEUMOCOCCUS SERUM.**—(See N. N. R., 1914, p. 239).
H. K. Mulford Co., Philadelphia.

*Antipneumococcic Serum, Polyvalent.*—Marketed in syringes containing 20 Cc. Also marketed in vials containing 50 Cc.

**ANTISTREPTOCOCCUS SERUM.**—(See N. N. R., 1914, p. 240).
H. K. Mulford Co., Philadelphia.

*Antistreptococcic Serum, Polyvalent.*—Marketed in vials containing 50 Cc.

*Antistreptococcic Serum, Scarlatinal, Polyvalent.*—Marketed in vials containing 50 Cc.

**SEROBACTERINS.**—(See Supplement to N. N. R., 1914, p. 12). The Council has at present no means of determining the identity and purity of serobacterins; they must be used on the guarantee of the manufacturer alone.

*Typho-Serobacterin Mulford, Immunizing.*—Each package contains 3 syringes of Typho-Serobacterin graduated as follows: First dose, 1,000 million killed sensitized typhoid bacilli; Second dose, 2,000 million killed sensitized typhoid bacilli; Third dose, 2,000 million killed sensitized typhoid bacilli.

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**Habit as a Physiologic Factor.**—Cells, organs and tissues all collaborate together to maintain the specific structural and other activities of the individual organism. The fact that an organism (or other organic part) tends to resist distortion, and to persevere in a definite line of activities, has been ascribed to a *vis medicatrix Naturae;* this is, however, merely a name given to a special aspect of the organism's behavior, and is not to be looked on as a "force" *per se*. The simple fact is that each organism tends to maintain such and such specific activities, and in ascribing the original causation of these, or their persistence, to any material "force," we introduce an unnecessary complication into the nomenclature.—Arthur J. Brock, *Edinburgh Med. Jour.*

# *Therapeutics*

## PREVENTION IS GREATER THAN CURE

*(Continued from page 1205)*

### III

### ACUTE ACIDOSIS; AUTOINTOXICATION

Whether a lessened alkalinity of the blood and tissues, or whether an absorption of maldigestive or germ toxins is the first factor in this condition, it seems to be a fact that the subsequent symptoms are largely those of acid intoxication. Any chronic disturbance may promote acute attacks of this condition, such as that due to adenoids; to chronically inflamed tonsils; to chronic appendicitis; to maldigestion of fat; to long privation from carbohydrates or to an insufficient amount of carbohydrate food; to profuse continuous vomiting (starvation acidosis); to imperfect liver function; to chronic pain as a preventive of proper digestion as occurs in ovarian and uterine pain; to severe headache (eye-strain, very frequently), besides the acidosis recognized to occur in kidney disturbances and in diabetes.

All persons are liable to this acid intoxication, as even so-called bilious attacks, sick headaches and acute indigestions cause this condition. Children frequently suffer from such disturbances.

The primary symptoms are often quite similar to those in the beginning of an acute infection, such as diphtheria, tonsillitis, scarlet fever, or even pneumonia; hence, the immediate diagnosis must be guarded. A history of repeated attacks will aid in the diagnosis. Of all causes, not only in adults, but also in children, among the most frequent is eye-strain, not recognized for a long time as a cause. The most frequently assigned cause is indiscretions in the diet; but though such are often causes, especially in young children, various articles of food are quite frequently unjustly accused. It will often be found that an eye pain or a headache preceded the other symptoms, and that these attacks may follow definite overuse of the eyes, such as looking at moving pictures, seashore or mountain height eye-strain (that is, long distance vision), or close observation of moving objects, or the addition of long columns of figures, or too much kindergarten work, etc.

The "morning after" nausea and vomiting from overindulgence in alcohol is probably largely an acid intoxication, although small doses of alcohol in the acidosis of diabetes are beneficial when a sufficient amount of starch has not been ingested.

The symptoms of acid poisoning are loss of appetite; coated tongue, or perhaps the tongue may be abnormally red; often nausea and vomiting; constipation; the face is pale, or perhaps flushed; there is headache; generally some fever (not often above 101 F.) in children; the surface of the body is often cold in adults; there may be dizziness in adults and excessive nervous irritability and excitement in children. The skin may show urticaria, erythema, or a punctate rash, or a dark mottling. Some attacks of the above character are really anaphylactic attacks, and may occur repeatedly after certain foods, but others are due to hyperacidity, as evidenced by the sweet breath and the urinary findings of acetone, diacetic and oxybutyric acids. The excretion of urine is almost invariably diminished, except perhaps in a real migraine attack, and it may show albumin and even casts. The duration of these attacks varies from a day to a week, depending on the character of the exciting cause.

The immediate treatment is the administration of cathartics, alkalies and large amounts of water; high enemas, at first for colon washing and later to introduce physiologic saline and alkalies (such as sodium bicarbonate, sodium citrate and potassium citrate) for absorption into the blood. Stomach washing is often of benefit.

As soon as vomiting ceases, oatmeal gruel or other thin cereal and milk-sugar or glucose should be given. The fruit juices, such as orange and lemon, are of value. Rest, a bland diet, and daily free movements of the bowels and plenty of water taken soon cause a complete return to health.

The preventive treatment is to seek the etiologic factor and eradicate it if possible; if not possible, then to prevent the subjective exciting cause, such as a misuse of the eyes, ill-advised food, too much fat in the food, alcohol, coffee, tea, tobacco, etc. Bad teeth and bad throats must be treated.

### BATHING

As a hygienic measure, bathing goes back to most ancient times. Warm and cold water baths, and even medicated baths are mentioned in early Grecian periods. In the middle dark ages, after the Roman period, bathing as a hygienic and therapeutic necessity seems to have been forgotten. Interest in public baths and medicinal bathing and the hygienic popularity of frequent bathing has only within the last thirty or forty years been slowly reviving.

Frequent bathing is essential to remove dirt, sweat and skin excretions. Irritating decomposition and offensive odors are caused by the neglect of bathing, to say nothing of such neglect causing many skin diseases. Proper bathing increases normal excretions from the skin and promotes the health of the skin. Hot water bathing relieves the congestion of internal organs, improves the general circulation, and cold water bathing tones up the vasomotor system. A normally bathed skin is a better regulator of the internal temperature, a better excretor, and has more normal sensations (heat, cold, esthesia). Soap, hot water and friction are essential to remove dirt and sweat. A simple plunge or shower bath, if taken daily, and followed by rough-towel friction, may keep the skin clean and healthful, but even then a hot soap bath is more or less frequently essential.

The daily cold plunge does not necessarily place a man "next to the Gods," as he so frequently thinks it does. Such cold plungers are often very proud of their accomplishment and sneer at those who do not take this daily treatment, and the plunger is likely to "thank God that he is not like other men." Very many times daily cold plunges or cold showers are harmful, especially to those who are underweight or are losing too much weight. A daily or nearly daily bath of some kind, however, is essential for almost every one in order to promote the best of health and to prevent some diseases.

It is not our purpose to describe, or even to discuss the various kinds of baths, or hydrotherapy. Medicated baths, various sweating baths or so-called baths (electric light or body baking), mud baths, etc., have all their valuable uses, but are not necessary for the promotion of health in the well, that is, are not hygienic measures. The cold bath may be from 80 to 70 F. or below. The tepid bath may be considered anything from 80 to 100 F.; anything much over 100 F. is a hot bath.

Whenever possible, every family should have a set bath tub. Every city should have public as well as private bath houses and swimming pools, except where the climate is warm the year around and good water for bathing (fresh or salt) is near at hand. Every child should be taught to swim.

The family physician should be consulted as to the kind of bathing each individual should take, and many serious errors would not occur. It is not advisable to bathe directly after a meal. Good fresh air is as essential for bathrooms as for any other part of the house. One respires more while bathing (hot or cold), and hence the air should be pure. Friction is a valuable adjunct to bathing.

The medical value of salt water bathing has been overestimated; it is a pleasure, and it is more exercise, especially in surf bathing and swimming, and thus it is valuable for the well and strong. The cold air at the seashore after the person leaves the water is tonic, but may cause chilling in the weak.

### MEAT INSPECTION

This is to urge the necessity for the state employment of skilled meat inspectors for animal food slaughtered for local use. The government inspects only for interstate and export commerce. Besides tuberculous beef, the danger of the human being acquiring tapeworms from cysticercus-infected beef and pork, and the danger from trichinae should be emphasized. It should be known that sheep may also be infected by the cysticercus (from dog infection) though this is not transmitted to man. Swine, at least, are often infected with lung fluke disease. Esthetically, however, it is not pleasant. The danger lurking in ancient cold-storage fowls and turkeys and stale shellfish, and shellfish gathered or fattened in sewerage-polluted water, only emphasizes the need of local food inspectors, backed by bacteriologists employed by local boards of health.

### IMMUNITY TO DISEASE CAUSED BY PROPER FOOD

Too much fat in food causes the formation of too many soaps and a loss of calcium from the body through the stools. This leads to acid intoxication, and frequently occurs in infants. While carbohydrates tend to prevent acidosis, too much carbohydrate in children is said to cause a surplus of water in the tissues, and this creates a tendency to acquire disease. Whether or not this suggestion is true, certain it is that a properly mixed diet gives children and adults much better power, apparently, to ward off and fight disease. A milk diet, for instance, too long continued is bad for both child and adult. Young children should receive milk, starch and maltose or lactose, and later more protein, and they are less likely to acquire infection. It is quite probable that the building up of more antibodies by richer protein food may be the reason that in adults the infection of tuberculosis is generally at first local, while in young children the infection is likely to be immediately general.

A well, healthy infant rarely has thrush, while by the sickly infant it is readily acquired.

*(To be continued)*

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SATURDAY, OCTOBER 10, 1914

## THE WRAPPING OF BAKER'S BREAD

It has been said that the making of a perfect loaf of bread is the goal of all those who aspire to excel in cookery. Certainly bread, which forms a part of every well planned meal, is a food of which the palate never tires. Let the loaf be ever so satisfactory, however, with respect to size and symmetry, crust and crumb, when it leaves the baker's oven, it may nevertheless experience subsequent changes which sooner or later render it less attractive, palatable, or wholesome. Stale bread does not appeal to the taste in the same way that fresh specimens of the "staff of life" do; but in addition to the development of staleness bread may also develop so-called bread diseases caused by micro-organisms, rendering the product unfit for human consumption. Furthermore, like many other unprotected and carelessly handled articles of food, exposed bread may become a purely mechanical carrier of objectionable organisms.

The recent agitation in behalf of improved conditions in the food industries has involved not only the adulteration of the products entering into the ration of man and the domestic animals, but likewise the cleanliness of the articles of diet intended for human consumption. The plea for clean milk is becoming more prominent than the propaganda for pure milk. Sanitary food legislation is beginning to aim at food that is clean from the point of view of the hygienist.

The demand for clean bread has promptly followed the cry for clean milk and unpolluted water. Already in many communities regulations are in force which compel the protection of bread and bakery products between the oven and the home. Bread wrapped with either porous or paraffined paper is now a common sight even in small villages of the United States. From the sanitary point of view it is of no small value that an article of diet so extensively employed as bread is, should be practically sterile both in the interior and on the surface of the loaf as it leaves the oven. Bacteriologic studies reported at various times leave no doubt that unprotected bread subsequently acquires a microbial flora frequently extensive in variety and number. It has been stated, for example, that the colon bacillus was present on the surface of 17 per cent. of unwrapped samples examined in one investigation and that in addition to this number 12.5 per cent. showed the presence of such large numbers of bacteria as to be classed as of doubtful quality.[1] On the other hand, samples of wrapped bread showed relatively low bacterial counts and the absence of pathogenic organisms.

The wrapping of bread involves something more than the mere exclusion of living organisms and inert dirt. It necessarily interferes with the passage of moisture from the loaf. The change in the distribution of moisture in a loaf of bread is attended by the development of a different odor and flavor which is familiar under the name of staleness. Few persons are as readily satisfied with stale bread as with that which possesses the qualities referred to by the designation of fresh. Some bakers have expressed themselves as opposed to the wrapping of bread, in the firm belief that when it is kept in a close, warm, moist atmosphere from the time of baking it is far more likely to develop sourness and mold than if stored where it may cool rapidly and lose any excess of moisture.

It is not easy at present to describe the change which results in staleness. The suggestion has been offered that the starch particles composing the crumb are colloids which hold considerable quantities of water in combination. Fresh baked bread contains much more water in the interior than in the crust of the loaf. The interior crumb is in a colloidal condition with a rather high moisture content; but, as the bread grows old, the ratio of the water content between crust and crumb is changed, the water of the latter leaving it to be absorbed by the relatively drier crust. The arresting of the passage of moisture through the crumb and the concentration thereof in the crust is injurious to the latter, and may likewise detrimentally affect the interior of the loaf. Other factors such as a development of increasing acidity with age may unquestionably enter into the problem of staleness.

Although the use of the bread wrapper has met with public approval in many quarters, it is evident that the claims of injury to the quality and palatability of the loaf demand consideration along with the possible sanitary advantages. A chemical investigation of the subject has been completed in the department of food and drugs of the Indiana State Board of Health by Barnard and Bishop.[2] The data confirm the observations on the physical appearance of wrapped and unwrapped loaves. The wrapping of the bread, either in semiporous waxed or paraffin paper retards the escape of moisture and tends rather to the preservation of that "colloidal condition and physicochemical equilibrium," the destruction of which results in staleness. The belief that the moisture of the crumb is imparted to the crust, which thereby loses its crispness and becomes soft, is not borne out by the work of the Indiana chemists. Whereas unwrapped bread loses its freshness after the first day, the early keeping quality both as to condition of crumb, flavor and odor is enhanced by the use of wrappers. There is, accordingly, no occasion at present for discarding what has seemed to many to be a wholesome innovation in the distribution of bakery products.

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[1] Sadtler: Rep. Sixteenth Convention Nat. Assn. of Master Bakers, 1913.

[2] Barnard, H. E., and Bishop, H. E.: The Effect of Bread Wrapping on the Chemical Composition of the Loaf, Jour. Industrial and Engineering Chem., 1914, vi, 736.

## THE INCREASED FAT-LIPOID CONTENT OF THE BLOOD IN PREGNANCY

By means of the precipitin test it is now a comparatively easy matter to determine the species from which a sample of blood is derived. Spots and stains of human blood can be differentiated readily from those made by the blood of all kinds of animals, and it is possible to differentiate the blood of closely related species. As yet it is not possible to identify the individual from examination of his blood, but even that may become feasible, because the more blood is studied by newly devised methods, for example, isoagglutination, tests for digestive ferments and antibodies of diverse action, as well as by established chemical and microscopic methods, the more definite becomes the fact that the blood of each individual is more or less peculiar. We know now that human beings are permanently separable into three or four main groups depending on the agglutination of their red corpuscles by human serum. The blood of pregnant women appears to have in it a digestive ferment directed specifically against the placental tissues (Abderhalden's test), and the blood of a person who recently has had typhoid fever is different from that of a person who has not had typhoid fever and has not been inoculated with typhoid bacilli. Many other examples of like import might be cited, but what has been said is enough to make it clear that in time we may learn to estimate the peculiarities of the blood of an individual so accurately and completely as to determine thereby his identity. In connection with this general question it is interesting to note that recently it has been found that the difference in the fat and lipoid content of the blood of the mother and the new-born child is so great that under certain circumstances it may serve to differentiate the maternal blood from that of the new-born. Hermann and Neumann,[1] to whom we owe this demonstration, found that in normal women the fats and lipoids equal 5.9 gm. in a kilo of blood, in women in the later stages of pregnancy 7.8 gm., and in the new-born 4.365 gm. In pregnancy the amount begins to increase in the third month, and after birth the normal condition is reached in about the second week in women who nurse, somewhat later in those who do not. As there occurs a distinct lipemia and lipoidemia in old women and after removal of the ovaries, it would appear that the condition is dependent, in some way, on suspension or change of activity of the ovaries, and that in pregnancy there is a suspension or change in the actions of the ovarian apparatus. As the tests necessary to distinguish the blood of the child from that of the mother on the basis of the difference in fat and lipoid content are very simple,[2] it is believed that under favorable circumstances they will prove of practical value when the question arises whether certain blood spots are of maternal or fetal origin (Vollhardt).

The chief interest of the demonstration of the high fat-lipoid content of the blood in pregnancy, lies, however, in the light it throws on the functions of the ovaries. At the same time it forms a new illustration of the changing peculiarities to which the blood is subject.

## INTESTINAL OBSTRUCTION

During the past two or three years or longer, the cause of death following intestinal obstruction has been the subject of active investigation in a way that bears witness to the excellent spirit in which medical research is at present being pursued in the United States. The fatal outcome of interference with the normal passage of intestinal contents is usually too rapid to be attributable to starvation. Various theories, proposed to account for the characteristic symptoms, have been championed by different workers with the result that the interchange of criticism and the analysis of the results already achieved have become a stimulus to new experimentation. Thus the work of Draper, Murphy, Hartwell, Whipple and their collaborators — to single out a few names — has already greatly increased our knowledge of the problems of intestinal obstruction and brought them much nearer to solution than they were prior to the activity of these American investigators. In referring more specifically to one of the most recent contributions by Hartwell, Hoguet and Beekman[1] we have no intention of implying that it represents the final word; but it does lend emphasis to certain facts and shift the burden of proof in a new direction.

The theory of a bacterial infection of the organism by the passage outward of bacteria from the intestinal lumen has had much to support it. The newer experimental evidence clearly shows, however, that despite the activity of micro-organisms within the bowel, they are not a necessary factor in determining either the symptoms or the fatal outcome of intestinal obstruction. The assignment of the responsible rôle to bacteriemia is no longer tenable, and this feature is excluded as the essential cause of death. Likewise the view that a disorder of the nervous system controlling the cardiac and vasomotor systems is the primary fault has nothing more than indefinite analogies to support it.

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[1] Hermann and Neumann: Ueber Lipoidgehalt des Blutes normaler und schwangerer Frauen sowie neugeborener Kinder, Biochem. Ztschr., 1911, xliii, 47.

[2] Compare Hermann and Neumann, Reference 1. Vollhardt: Die Bedeutung neuerer Methoden zur Unterscheidung mütterlichen und fötalen Blutes für die gerichtliche Medizin, Vrtljschr. f. gerichtl. Med., 1914, xlviii, 1.

[1] Hartwell, J. A., Hoguet, J. P., and Beekman, F.: An Experimental Study of Intestinal Obstruction, Arch. Int. Med., 1914, xiii, 701. In this paper the literature of the subject will be found referred to in considerable detail. The Consequences of Intestinal Obstruction, editorial, The Journal A. M. A., Nov. 29, 1913, p. 1988.

The point most vigorously debated concerns the possibility of an intoxication from poisonous substances engendered and imprisoned in the obstructed portions of the intestine. Certain it is that the intestinal contents may exhibit an intense toxicity. Whether this remains unchanged when the material has been rendered sterile is perhaps not equally positive. Living bacteria may, of course, kill if they gain entrance into the peritoneal cavity. On the other hand, we are reminded that the mere presence in an obstructed intestinal tract of substances which act as poisons when introduced directly into the circulation is no indication that these substances cause the death resulting from an obstruction, since such substances may be found in the intestine in conditions of continued health. Hartwell, Hoguet and Beekman insist that to accept the view that death results from toxemia it must be conceived either that new poisons are elaborated and absorbed or that an abnormal absorption of normally present products takes place. Whipple, Stone and Bernheim,[2] though unable to isolate any poisonous material from the normal intestine, have obtained toxic products from closed or obstructed loops of bowel. They believe that the harmful substance with which they were dealing is elaborated in the mucosa and that some as yet unknown agency is at work which profoundly alters the intestinal epithelium under conditions of obstruction. Hartwell and his colleagues, on the other hand, cannot justify these claims. They believe that the alleged toxic substances are derived from damage to the intestinal wall. Quoting them, the essential factor in causing the symptoms and death in intestinal obstruction does not lie in the poisons *per se,* but in the production of lesions which favor their abnormal absorption. Lacking these lesions individuals die only from lack of water or from starvation, if dehydration is prevented.

The damage localized in the bowel is believed to result largely from the trauma inflicted by the overdistention with contents acting to impede the circulation. The chemical action of digestive enzymes stagnating above the obstruction may also be of moment. Such a damage having resulted, Hartwell and his colleagues picture a bacterial invasion into the bowel wall with a death of tissue cells which is invariably demonstrable by histologic examination. In this localized deterioration the poisonous substances appear to be elaborated. The loss of water characteristic of intestinal obstruction is caused by the excessive drainage into the intestinal lumen followed by vomiting. It is the merit of Hartwell and Hoguet[3] to have clearly shown that this unexpectedly significant factor is entirely under therapeutic control and can be rendered harmless by subcutaneous administration of physiologic saline solution, for example, by continuous hypodermoclysis.

The evidence with reference to the poison or poisons involved in the fatal conditions is still indirect and inferential. The salutary effect of the replacement of lost water is manifested only so long as the intestinal mucosa remains intact. Obstruction of the lower bowel is less productive of dehydration because there is a long intact intestinal surface through which reabsorption can take place, the vomitus being thereby reduced in amount. This may explain why high intestinal obstruction in man is so much more acute than low obstruction. In the latter, mechanical conditions render the damage factors prominent. The clinical applications of the newer experimental studies need to be worked out in their details, but there can be no doubt that they will furnish a valuable contribution to practical medicine.

## THE HISTORICAL PERSPECTIVE IN MEDICINE

We seldom realize the importance of a historical perspective in medicine and surgery. Many a discovery proclaimed as "new" proves, in the light of historical knowledge, to be nothing more than a statement of some previously announced discovery subsequently demonstrated to be of little or no service. Last year Karl Sudhoff[1] of Leipsic, in his paper "On the Origin of Syphilis," besides relegating again into the background the recently revived idea of the American origin of syphilis, called particular attention to the treatment of syphilis by mercury which had developed before the discovery of America. He reminds us that several times in medical history arsenic has been recommended as a triumphant substitute for mercury. It has always, however, failed to justify the claims of its adherents; and experience with salvarsan has seemed to emphasize this tradition.

Sudhoff confesses that he cannot settle the question of the absolute origin of syphilis, though he thinks that he has been able to show the scientific recognition of syphilis and its therapeutics. Syphilis differs in this from all the other "new" diseases that have been reported. We find in the history of European medicine at the same period, both the recognition of the disease and the development of a genuine therapy for it. As Professor Sudhoff says, the discovery and detailed study of this method of treatment is a most interesting chapter of medical history. He remarks that it is "the method of treatment which even to-day —in spite of the often tried and ever successively abandoned method of treatment by means of arsenic—remains the surest, and, with slight modifications, still in our time after 400 years of experience, maintains its vogue." He calls this discovery of the use of mercury one of the greatest ever made in therapeutics. He proclaims the French physicians and surgeons of the fourteenth century who pointed out its exact indications, as among the greatest of therapeutists. Perhaps, he adds, they owed some of their knowledge to the Italians of the end of the thirteenth century, but in any case it is to the careful French observers that medicine owes probably this greatest of its triumphs in healing.

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[2] Whipple, Stone and Bernheim: Jour. Exper. Med., 1913, xvii, 286.

[3] Hartwell, J. A., and Hoguet, J. P.: Experimental Intestinal Obstruction in Dogs, with Especial Reference to the Cause of Death and the Treatment by Large Amounts of Normal Saline, The Journal A. M. A., 1912, lix, 82.

[1] Sudhoff, Karl: Der Ursprung der Syphilis, Seventeenth Internat. Cong. of Med., Section, History of Medicine, London.

Arsenic has indeed a most interesting therapeutic history and at various times has been in vogue for different diseases. Again and again it has been advanced as a rival to mercury in syphilis. It is almost the only drug that has ever been seriously advocated as a competitor of quinin in the treatment of malaria. It has been particularly recommended in chronic malaria, though occasionally, even in acute stages, some special form of arsenic has been recommended. Now that we know that syphilis is due to a parasite biologically resembling the *Plasmodium malariae,* that is, an animal rather than a plant parasite, this effect of arsenic is not surprising. It has, however, in malaria, never achieved the success of quinin.

The knowledge of the many previous experiences with arsenic should prevent enthusiastic acceptance of any new form of arsenic therapy until it has been thoroughly tried. Though known and feared as a deadly poison, it has been recommended many times for many different diseases, usually with a great blare of trumpets. At best, even with our present knowledge, it can be classed only as one of the alterative drugs whose effect is so subtle that it can only be characterized as an "alteration in metabolism." There could scarcely be a more generic classification of a drug. It seems probable, however, that the mystery of the apparent manifold usefulness of arsenic is due to its toxic effect on animal parasites. Unfortunately for the enduring success of the arsenical remedies, most of these animal parasites seem, like the human being himself, to acquire a tolerance for it after a time. At least, some sort of an immunity against its effects seems to develop that sadly hampers its subsequent therapeutic usefulness. The chapter of previous experiences with remedies is one of the most interesting and valuable in the history of medicine.

## WINTER SPORTS AND HEALTH

In several respects mountain-climbing is a peculiarly wholesome form of athletic sport for the large number of persons whose vocations are sedentary. The indoor life which these persons commonly lead and the protection from even the slightest rigors of climate which their mode of housing and places of work afford them are more than likely to render them oversensitive to the extremes of weather. It is for precisely such unexposed persons that an occasional trip to the highlands and an alpine excursion has most refreshing recuperation and stimulus in store. The heart is called on to exert itself to a degree which, in an otherwise healthy subject, will be followed only by the invigoration characteristic of most exercise. The advantage is not confined to a single organ; for the respiratory mechanism, the entire musculature of the body as well as the cardiac and circulatory apparatus, and the general metabolic processes apparently benefit in ways not readily definable in accurate scientific terms. In addition to an indefinable feeling of well-being, considerable skill is acquired in certain of the performances of mountain-climbing or other feats of alpine sport. The combination has shown its wholesome and invigorating influence on many an individual suffering from the "fag" of a life of physical inactivity.

There was a time when the patronage of the mountain resorts was confined to the summer months. To-day winter sports attract visitors to the same surroundings. It is not, as a rule, the invalids who sit on porches or the lethargic aged who are found visiting the highland regions in winter, but rather those who are ready to participate vigorously in the pastimes that call for muscular exertion and endurance. Zuntz of Berlin, to whom we owe much of our scientific information with regard to alpine physiology, has recently investigated in a somewhat cursory way the effect of a rather severe outing and mountain climb in the depths of winter, on a large group of physicians ranging in age from 30 to 60.[1] Their testimony may be assumed to be based on intelligent, trained observation. The evidence indicated that even very unusual degrees of muscular activity under environmental conditions making extreme demands on the heat-regulating apparatus of the body — as happens during mountaineering in a snow-storm — are as a rule without detriment to the participants. On the contrary, even a sedentary person unaccustomed to either the exercise or the rigor of the climate may actually exhibit benefits. Those who are free from addiction to alcoholic beverages and are somewhat used to moderate daily exercise seem to enjoy the exhilaration most keenly. Even the untrained, however, who have found the unusual demands on their muscular and circulatory apparatus rather strenuous and sometimes unpleasant, may feel the beneficial after-effects, expressed in improved cardiac and vasomotor functions.

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[1] Zuntz, N.: Zur Kenntnis der Einwirkung des winterlichen Höhenklimas auf den Menschen, Ztschr. f. Balneol., Klimatologie u. Kurort-Hyg., 1914, vi, No. 18.

It is not intended here to maintain that the "snow sports" are ideal for all. Common sense would forbid such a sweeping dictum; but precisely as the night air, and sleeping in the open all year around have been shown by modern practices to be without danger, so winter sports even in a severely cold climate may be utilized in outdoor life, even without preparatory training for a supposedly dangerous hygienic undertaking.

## THE NEW PUBLIC HEALTH IN NEW YORK

Numerous attempts have been made to crystallize in legislative form the conclusions drawn from recent advances in preventive medicine. Sometimes these attempts have taken detailed form, as in the legislation against the common drinking-cup and roller towel, but there is evidence that it is now passing into the broader phase of general public health organization. The development of this movement is of the greatest importance to the medical profession. If it tends to reduce illness and disease of certain kinds and so in a sense curtails the opportunities of the medical practitioner, it also opens up the possibility of a new career in which service to the individual will be replaced by service to the state. The recent reorganization of public health administration in the state of New York is in many ways a significant step.

The working of that part of the new public health law of New York State which delegates to a public health council of seven members the power to establish a sanitary code for the state (outside of New York City) will be watched with particular interest. The conferring of such powers on the boards of health of cities is a common phenomenon, and in state legislation the same principle has been applied to industrial problems. It is as yet, however, novel in the field of state hygiene. The responsibility conferred on a small body by such a plan is a serious one, but the personnel of the New York Public Health Council is such as to inspire confidence in its discretion. Physicians will recognize Commissioner Biggs, Dr. Simon Flexner and Dr. T. M. Prudden as eminently qualified to represent the medical profession of the state; and of the three lay members, Mr. Homer Folks is well known for his many services to the cause of social reform, particularly in connection with the campaign against tuberculosis; H. N. Ogden is professor of sanitary engineering at Cornell University, and Mrs. Elmer Blair is the chairman of the health committee of the National Federation of Women's Clubs.

The first sections of the sanitary code, dealing with communicable diseases, which went into operation May 1, declare twenty-four diseases to be "communicable" and therefore notifiable, including some diseases like dysentery and streptococcus sore throat, about which it is highly desirable that we should acquire more precise information, and omitting cancer and pneumonia, which have been made notifiable in some communities without sound reasons. The physician is required to report these diseases to the local health officer within twenty-four hours, as is the "superintendent or person in charge of every hospital, other institution or dispensary." Special duties as to reporting are laid on teachers and school principals, proprietors or keepers of hotels, boarding houses and lodging houses, visiting nurses and public health nurses, and persons in charge of labor or other camps, and the masters or persons in charge of vessels.

The code is essentially modern in emphasizing isolation rather than quarantine. Households are to be quarantined *en bloc* only as a last resort when neither proper isolation on the premises nor removal to a hospital can be accomplished. Minimum periods of isolation for various diseases are specified for the patient himself, and maximum periods of incubation for those exposed; but the prolongation of the former and the shortening of the latter are left to the discretion of the local health officer. Exposure of children or minors to persons affected with measles or whooping-cough, as well as diphtheria, scarlet fever and small-pox, are specifically prohibited, and stringent regulations forbid the handling of milk or other foods by persons suffering from communicable disease.

The attitude of the Public Health Council toward disinfection is another notable indication of present-day tendencies in sanitation. Particular weight is laid on the prompt disinfection of excreta in the intestinal diseases and of discharges from the nose, mouth and ears in the others, and the physician is required to give detailed instructions on this subject on his first visit. The health officer must furnish special circulars of instruction to the family. On the other hand, at the termination of the disease, rooms, furniture and belongings are required to be cleansed, renovated and disinfected only "when deemed necessary by the local health officer, or required by this code, or otherwise by law," the last two clauses pointing to hypothetic future requirements and not to any now in existence.

These sections of the code are published as Special Bulletin No. 2 of the New York State Department of Health in conjunction with a series of regulations for cleansing and disinfection which state in detail the procedures which the department considers necessary under various circumstances. Together they form a sane and well-balanced digest of the best practice in modern preventive medicine. The first instalment of the work of the Public Health Council goes far to justify the high hopes which have been entertained of the work of that body, and its enforcement should make possible a control of communicable disease such as has never yet been attained in the United States, outside of a half dozen of the larger cities.

## Current Comment

### DEPARTMENT OF HEALTH BILL ABANDONED

According to Washington correspondents, President Wilson has announced a legislative program for the remainder of his administration. Greatly to the regret of his many supporters and admirers in the medical profession, he has not considered it advisable to include in his program a bill for the creation of a national Department of Health. This measure, endorsed by the Democratic party at Baltimore, is one of fourteen propositions thrown overboard. If reports are correct, the President for the remainder of his term will urge the passage of only four measures: a bill regulating the development of water power in navigable streams; a bill providing for the leasing of mines and other resources on the public domain; a bill providing for eventual independence of the Philippines, and a bill providing for the purchase of merchant vessels. The proposition for the creation of a national Department of Health is the last subject but one on the list of fourteen discarded measures. Mr. Wilson, during his term of office, has secured much important legislation. He has also guided the nation through the intricacies of the Mexican and Japanese situations and the present European war muddle. These might well be regarded as sufficient accomplishment for two years. In seeking to limit his activities during the rest of his term to a few measures which can be passed, rather than to a large number of doubtful propositions, Mr. Wilson is acting wisely. The only difference of opinion which can arise is the relative importance of the four subjects selected as compared with those rejected. The development of water power and the control of natural resources are in line with the conservation campaign which has received support throughout the country. The purchase of merchant vessels is an emergency measure brought about by the present European war. The independence of the Philippines is a moral rather than a political question. The selection of these four subjects does not necessarily indicate that they are, in the minds of the administration, of paramount importance, but rather that, in proportion to their importance, they are, perhaps, more fully supported by public opinion. Yet it is a strange paradox that the conservation of water power and mineral wealth should be placed before the conservation of human life. Perhaps if we had no federal health machinery of any sort, the situation might be regarded as more urgent. As a matter of fact, our Public Health Service has developed into a most efficient bureau, and is doing excellent work. It is not a question, however, of the value of the present organization, but whether a better one might not be obtained. Yet the very efficiency of the Public Health Service may have been one of the factors which led Mr. Wilson to abandon, for the present, efforts for a national Department of Health. Whatever may have been the reasons, it is to be regretted that this measure has been temporarily given up by the administration. Its endorsement by the Democratic party and its support by Mr. Wilson aroused strong hopes that it would be taken up as an administration measure and pushed to practical consummation. Apparently, such expectations must be temporarily abandoned. It is to be hoped that before the next presidential campaign the popular demand for advanced public health legislation will be so strong as to lead all of the national parties to include an endorsement of this measure in their platforms. In the meantime public education must continue, with a view to ultimate rather than immediate results.

### THE VASOMOTOR APPARATUS IN PNEUMONIA

There is a wide-spread belief that the vasomotor cells of the nervous system are peculiarly susceptible to the harmful effects of a variety of toxic agencies. Apparent failures of the circulatory apparatus to respond in a normal way to the demands made on it in certain abnormal conditions are very commonly charged to inefficiency or fatigue of the vasomotor center, which has accordingly been made responsible, in the lack of more tenable explanations, for pathologic manifestations of varied sorts and diverse origin. In pneumonia, cardiac failure is generally ascribed to the effect of the toxins on the heart, although less commonly complicating conditions such as pericarditis and collateral edema or previous organic disease of the heart are called to account for the symptoms. Vasomotor paresis affecting the splanchnic area is further charged with being a factor in the heart exhaustion. One of the foremost American investigators of the physiology of the circulation, Prof. W. T. Porter of the laboratory of comparative physiology in the Harvard Medical School, now denies the long-maintained proposition that the toxins of pneumonia specifically injure the vasomotor cells of the organism. He and his colleagues[1] have subjected this important question to study in animals in which experimental pneumonia was produced either by injection of cultures of infective organisms down the trachea into a bronchus or by introduction of pneumococci directly into the circulation. The condition of the vasomotor center can be determined by measuring the reflex change in blood-pressure produced by stimulating various afferent nerves. The Boston investigators admit that earlier experimenters, using the methods of their day, have failed to show a normal change of blood-pressure in this way; but with more perfect methods they have now demonstrated a normal vasomotor reflex in individuals with almost wholly consolidated lungs and about to die. Thus, even in fatal pneumonia, the experimental evidence proves that the vasomotor center is not impaired. To those who are inclined to place disease symptoms and their etiology in man on a plane by themselves it may be of interest to add that it was possible, in the types of animals studied, to imitate many of the phenomena seen in the human forms of pneumonic invasion. In some there were acute inflammatory processes of the lung-tissue, of the bronchopneumonic type; in others there were the familiar areas of consolidation, easy of clinical recognition. The vasomotor reactions were comparable in all.

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[1] Porter, W. T.; Newburgh, L. H., and Newburgh, I.: The State of the Vasomotor Apparatus in Pneumonia, Am. Jour. Physiol., 1914, xxxv, 1.

## THE ASSOCIATION PROTECTS THE PUBLIC

In the Propaganda for Reform department of this issue there is a brief notice of the unsuccessful attempt on the part of Dr. Peter P. Duket to persuade the citizens of Las Vegas, New Mexico, to capitalize his worthless scheme. Fortunately through The Journal, the medical profession of the town had been made familiar both with Duket's methods and his worthless "cure." As a result, the business men of Las Vegas gave short shrift to the faker. The case is merely one of many in which The Journal has been the means of protecting both individuals and communities against fraud. The cases are so common that we seldom give much thought to the problem involved, the work of the Association in this direction being taken as a matter of course. It is worth while, occasionally, to call attention to the fact that there is at present no other agency doing this work. It is fair to assume that had The Journal not investigated and exposed the methods of Duket he would have been successful in persuading the business men of Las Vegas to help finance his scheme. Here then is a scientific organization performing an altruistic and very real service to the public—a service that is not measurable in mere dollars and cents. And for such work as this the beneficiaries of medical frauds vilify the American Medical Association.

## THE FATE OF THE YELLOW PLANT PIGMENTS, CAROTIN AND XANTHOPHYLLS, IN THE BODY

Among the pigments which have a wide-spread occurrence in food materials of both animal and vegetable origin are the xanthophylls and carotin, the relation of which to the yellow lipochrome of milk-fat, body-fat, blood-serum and the corpus luteum has already been reviewed in The Journal.[1] Xanthophylls are quite as widely distributed in green plants as is carotin, yet the latter preponderates in the pigment collections which are found in the animal tissues of such species as the cow that ingest the plant pigments. The reason for this is suggested by the investigations of Palmer and Eckels at the University of Missouri,[2] according to which the appearance in the system of carotin when fed in excess may be explained on the ground of its greater stability toward the digestive processes as shown by the digestion experiments and the abundant appearance of the pigment in the feces. The failure of the xanthophylls to appear to any extent in the system may be due similarly to the fact that they are apparently more easily destroyed during digestion. If fat is present to any extent some of the xanthophylls will undoubtedly be taken up and enter the circulation dissolved in the fat. There is, in fact, evidence to show that what xanthophylls can be found in the blood are present dissolved in fat. In those species in which fat plays a greater part in the food than it does in cattle, xanthophylls are likely to appear to a greater extent in their bodies, since it can be more readily transported therein. This seems to be the case in man; for although the fat of human milk may be tinted by both carotin and xanthophylls, the relative proportion of the latter is usually greater than in the familiar carotin-rich fat of cow's milk.

## WHAT'S IN A NAME?

A large, gray stone building stands in a garden plot, its red tiled roof and striped awnings giving a sense of alertness and vivacity. Under its spreading trees on benches and on the cool green lawn sit groups of aged men and women with here and there a younger one in a rolling chair or reclining seat. The observer passing by stops to smile at the serenity and peace of the scene. And then as he passes the door there blazons up before him in glaring letters the words "Home for Incurables." Mingled with his feeling of pity there comes something of shock. Some institutions—why not all?—are called by non-committal and inviting names like "Rest Haven," "Placid Retreat" and "Shadow Lawns." To its inmates and even to visitors the hospital, home or sanatorium will be more pleasant under a more attractive title suggesting rest and quietude.

## GLYCO-THYMOLINE—NOT A HARMLESS FRAUD

In the Propaganda Department this week, the Council on Pharmacy and Chemistry publishes a report on Glyco-Thymoline. To many of our readers, doubtless, the thought will come: Why devote space to a product that is comparatively harmless while there are so many really vicious frauds on the market? The answer is that Glyco-Thymoline is not harmless but vicious as at present exploited. The stuff, as every physician knows, is a mild, alkaline antiseptic practically devoid of germicidal power. As such it doubtless has a place as a simple home remedy, to be used as a mouth wash or cleansing agent. Undoubtedly, this is what the stuff is largely bought for, and if the manufacturers confined their claims for it within these limits there could be no reasonable objections to it. Unfortunately, however, the "patent medicine" business has been steeped in falsehood and fraud for so many years that it is seemingly impossible for those engaged in it to play fair with the public. Glyco-Thymoline is inferentially recommended in such serious conditions as diphtheria, ophthalmia in the new-born, consumption, etc. The danger of such recommendations, even though made indirectly rather than directly, are patent to every thinking physician. Yet, the wide sale of Glyco-Thymoline can be charged wholly to physicians. So far as we know, the manufacturers have never advertised directly to the public. Their periodical advertising has been in medical journals, and the doctors, who have prescribed the stuff—with the name blown in the bottle and the suggestions for medication in the pamphlet around the bottle—have done the rest. Physicians, therefore, must shoulder the responsibility. This is the excuse, if excuse is needed, for the Council taking up for consideration a product, which however harmless in itself, is, through its method of exploitation, a menace to public health.

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[1] The Natural Yellow Pigments Occurring in the Body, editorial, The Journal A. M. A., Sept. 12, 1914, p. 948.
The Relation Between the Color of the Body-Fat and the Breed of Cattle, editorial, The Journal A. M. A., Oct. 3, 1914, p. 1210.

[2] Palmer, L. S., and Eckles, C. H.: Carotin—The Principal Natural Yellow Pigment of Milk Fat: Its Relations to Plant Carotin and the Carotin of the Body Fat, Corpus Luteum and Blood Serum. IV. The Fate of Carotin and Xanthophylls during Digestion, Jour. Biol. Chem., 1914, xvii, 237.

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## *Medical News*

### COLORADO

**Nomination of Dr. Work for Senate.**—Dr. Hubert Work, Pueblo, is a candidate for the United State Senate on the Republican ticket, having been nominated at the direct primary by a large majority over the other candidates.

### DISTRICT OF COLUMBIA

**No Epidemic of Typhoid.**—Dr. William I. Woodward, health officer of the District of Columbia, calls attention to a statement that an epidemic of typhoid was taking place there. He says that on September 30 there were in the District of Columbia ninety-six cases of typhoid fever, a record which is better than for any of the years from 1910 to 1913. The population of the District of Columbia, as determined by a census taken in the spring of 1913, was 353,297. The conditions must, therefore, be considered as quite favorable.

### ILLINOIS

**Zone of Quiet for Hospitals.**—An ordinance was introduced in the city council of Quincy, September 24, providing for a zone of quiet within 200 feet of all hospitals.

**Personal.**—Dr. Catherine B. Slater, Aurora, has returned from abroad.——Dr. Charles N. Hazelton, Morrison, announces his retirement from active practice.

**New Hospital.**—Work on the new Lutheran Hospital between Rock Island and Moline will commence in the early spring. More than $40,000 of the $50,000 required has already been raised.

**Diphtheria in Barrington and Oak Park.**—In Barrington it is reported twelve children are sick with diphtheria. In Oak Park Mr. W. H. Hatch, superintendent of schools, has ordered the Washington Irving School closed for a week to prevent the spread of diphtheria, as cases have recently been reported among pupils of that institution.

**Clinical Pediatric Meeting.**—The Chicago Pediatric Society will hold a clinical meeting for physicians interested in diseases of children in Chicago on October 29-31. Clinics will be held at Wesley, Michael Reese, Children's Memorial, Cook County, Presbyterian and Anna Durand Hospitals and at the Home for Destitute Crippled Children. Arrangements also will be made for visiting the stations of the Infant Welfare Society. A more definite program with schedule will be sent to those who desire it.

**Merger of Boards.**—The consolidation plan outlined by the State Efficiency and Economy Commission was discussed at a joint meeting of the commission, the State Board of Health, State Water Survey, Food Commission, Illinois State Medical Society, Illinois Homeopathic Medical Association, Chicago Medical Society and Chicago College of Medicine and Surgery, September 29. The plan was generally agreed to.

#### Chicago

**Personal.**—Dr. Winfield Scott Hall and family returned from Europe September 15, after nearly a month of effort to cross belligerent countries and reach the port of embarkation.——Dr. Albert J. Ochsner, who has been suffering from an infected finger in the Hospital of Good Shepherd, Syracuse, for several days, is reported to be improving.

**Tablet Dedicated.**—The Sisters of Mercy, in a celebration of the sixty-eighth anniversary of their arrival in Chicago, placed a tablet at the Mercy Hospital in memory of the late Ferris S. Thompson, who died in France nearly two years ago, leaving $300,000 to the hospital.

**Demands Colony for Defectives.**—Dr. William J. Hickson, head of the Municipal Psychopathic Laboratory, stated to the members of the City Council on Crime, September 26, that crimes committed by morons, sociopaths, feeble-minded and morally weak individuals, are not to be regarded as such, but that such persons should be placed in a colony maintained by the state, county or city. He estimated that the colony could be established for about $900 a bed and should have accommodations at first for 1,000 patients.

**Health Ruling Sustained in Ruling on Motion-Picture Theater Ventilation.**—On Sept. 22, 1913 air samples taken in a picture house showed a pronounced violation of the ventilation ordinance. As the proprietor would not comply with the order of the Health Department, his theater was closed. He obtained an injunction restraining the city from interfering with the operation of the theater until the case was tried in court and the validity of the case tested. A decision was rendered Sept. 22, 1914. The decision sustained the action of the Health Department in closing the theater, and also sustained every portion of the ordinance with exception of the relative humidity clause, which the court decided was unintelligible on account of typographical errors in printing. The Chicago *Health Bulletin* states:

> Over 2,800 pages of testimony were taken from experts, not only from Chicago, but from other states as well. All features of the ordinance were thoroughly investigated, the quantity of air required per person; the carbon-dioxid content and the matter of prevention of draft received the closest scrutiny; the methods employed in analyzing the same were gone over; in fact, samples were analyzed by the department's chemist in the presence of the master. These samples were taken in various places; in the master's room and in various other indoor localities; also samples of outside air, which were sealed and analyzed by the chemist without his having any knowledge as to where they were obtained. In short, the entire case from beginning to end was marked by its comprehensiveness and attention to detail.
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> The theater-going public is to be congratulated on the fact that every contention of the department and every provision of the ordinance were sustained in spite of the long-drawn-out fight that was made against it.

### INDIANA

**Personal.**—Dr. Arthur E. Guedel has been appointed superintendent of the Deaconess Hospital, Indianapolis, succeeding Dr. Augustus L. Marshall, who has resigned in order to devote himself to private practice.

**Housing Law to Be Enforced in South Bend.**—A rigid enforcement of the Indiana housing law is to be inaugurated by the board of public health in South Bend. An investigation conducted by the mayor and Dr. Charles S. Bosenbury showed that in certain tenement districts of the city, both municipal and state housing laws were being violated.

**Tuberculosis Camp Opened.**—The new Tuberculosis Sanatorium for St. Joseph County, near South Bend, has been opened and now has eleven patients. When fully equipped the institution will accommodate thirty-two patients. Dr. James A. Duggan, formely of Baltimore, is superintendent of the institution. The hospital has been built at a cost of $20,000 and is located on a site of 93 acres. It will be formally opened some time this month.

**Whiting Establishes New Health Service.**—The city council of Whiting has made a liberal appropriation to be used by its health department in employing assistants to the commissioner. A department of hygiene and sanitary instruction has been instituted and Miss May H. Cox, a visiting nurse of Chicago, who has had experience in school work with the health department of that city, has been placed in charge of similar work in Whiting. Dr. E. L. Dewey, the commissioner, is convinced that great good will be done in the interest of the public health and child welfare with the assistance given by the new appropriation.

**Disease Prevention Day.**—Disease Prevention Day held in Indiana, October 2, was everywhere characterized as a great success. In Indianapolis more people viewed the street parade than have ever assembled for any parade in that city. The good this demonstration will do as an educator of the people concerning the value of disease prevention may be regarded as enormous. As a spectacle, the parade was a tremendous success. Schools were dismissed for the occasion and everyone entered enthusiastically into the work. The Public Health Nursing Association, the Children's Aid Association, the Marion County Graduate Nurses' Association, the Indianapolis Day Nursery, the Sisters of Charity, colored hospital, the colored tuberculosis camp, the local council of women, the State Board of Health, the Manual Training High School, the musicians' union, the W. C. T. U., as well as many other organizations, contributed floats of great interest. Many business firms contributed elaborate floats representing the expenditure of much time and money. The Indianapolis Humane Society made an important contribution showing the care of animals. Many automobiles containing prominent physicians of the state, were in line as well as contingents of police, militia and schoolchildren. Dr. J. N. Hurty, secretary of the State Board of Health, gave an address on the study of disease prevention to the students of Butler College. Merchants of the state placarded their windows and in their advertisements in the daily newspapers called attention to methods of disease prevention embodied in their plants. In Brazil disease prevention day was observed in the public schools and speeches were made in the high schools. In Marion, Dr. Ada E. Schweitzer, Indianapolis, of the city department of public health, gave two addresses on the observance of disease prevention. Marion physicians spoke in all the grade schools. In Gary, Ind., several thousand persons took part in the day's observance. Five thousand were in the parade. In New Albany the demonstration included a street parade and numerous public meetings. In Fowler, Huntington and Greencastle there were large parades, and speeches by physicians and public officials. Important programs were also followed in Terre Haute, Columbus, Petersburg, Greenfield and Claremont. The entire celebration is significant of the public interest in its health being built up in this progressive state and as showing what may be accomplished when the public itself demand that health interest be primary.

## LOUISIANA

**Organization of New Parish Medical Societies.**—The following parish medical societies have been organized: On September 24, Concordia Parish, Ferriday; the officers being Dr. Marcus C. Reeves, Vidalia, La., president; Dr. Charles H. Burley, Monterey, La., secretary and treasurer. On September 28, Washington Parish Society, Bogalusa, the following officers were elected: Dr. Elbert E. Lafferty, president; Dr. Joseph S. Kopfler, secretary and treasurer. The former society was aided in its organization by Dr. Oswald W. Cosby, councilor of the state medical society, and the latter by Dr. J. W. Lea.

**Itinerary of Louisiana Health Car.**—The health car of the State Board of Health of Louisiana, of which the first trip was announced in The Journal for September 26, has completed an itinerary of two weeks, during which time it visited four important states. The response on the part of the community was all that could be desired. The car contained a creditable plague exhibit, including infected and normal rats, slides and other laboratory preparations. No attempts were made to advertise the car, but during its stay in each town, Dr. Oscar Dowling, Shreveport; Dr. William H. Seemann, New Orleans; Dr. Charles C. Bass and Mr. A. J. Terhune held conferences with interested physicians. Several councilors of the state medical society joined the car in their respective districts. During its trip 6,350 visitors passed through the car, and 186 physicians. Thirteen lectures were delivered for white auditors. There were 3,860 present, and at twelve lectures for colored listeners 5,060 persons were present. Forty talks to physicians and the public were given in all.

## MARYLAND

**New Surgical Equipment.**—Improvements have been inaugurated in the surgical department of the Maryland General Hospital, which will be entirely renovated by members of the ladies' auxiliary of the institution.

**Medical Society Entertained.**—The Baltimore County Medical Society was the guest of Drs. G. Carville McCormack and Frank C. Eldred, Sparrows Point, president and treasurer of the association, respectively, at an outdoor oyster roast, September 16.

**Johns Hopkins Medical School Opened.**—The Johns Hopkins Medical School opened October 6. A new record of registration was made, the total of new applications reaching 214. There are 30 women students, one of whom is Chinese. The four classes total 366 members, as follows: 94 in the first year, 92 in the second year, 89 in the third year and 91 in the fourth year.

**To Erect Phthisis Hospital.**—Steps have been taken toward the establishment of a sanatorium for the care and treatment of indigent persons suffering from tuberculosis in Montgomery County. The Montgomery County Tuberculosis Commission and the Social Service League have charge of the project. At the last session of the legislature, $5,000 was appropriated for the establishment of a sanatorium in this county provided $10,000 were raised by the citizens. The law also provides for an annual maintenance appropriation by the state on condition that the county raise double the amount. It is estimated that it will cost $15,000 to purchase a site and erect and equip the necessary buildings.

**Joint Meeting of Medical Societies.**—The Maryland Psychiatric Society and the Washington Society of Nervous and Mental Diseases held a joint meeting October 2, at Chestnut Lodge Sanitarium, Rockville. The program included a general discussion of paresis and tabes, opened by Dr. Sydney R. Miller, Baltimore, of the Phipps Psychiatric Clinic, followed by Drs. William Hough and William A. White of the Government Hospital, Washington; Dr. Adolf Meyer, Baltimore, of the Phipps Clinic and Dr. Tom A. Williams of Washington. Dr. Ernest L. Bullard presided and Dr. William Rush Dunton, Jr., and Dr. John J. Madigan were secretaries, respectively, of the Maryland and Washington societies.

## MASSACHUSETTS

**State Health Commissioner Appointed.**—Surgeon Allan J. McLaughlin, U. S. P. H. S., has been appointed health commissioner of Massachusetts at a salary of $7,500 for a five-year term.

**Maternity Hospital Donated.**—An anonymous gift of $100,000 for the erection of a maternity hospital on the site near the Boston University School of Medicine, was announced at the opening exercises of the school.

**Milk and Baby Hygiene Association Appeals for Funds.**—The treasurer of the Milk and Baby Hygiene Association, Boston, announces that $8,000 is actually needed to complete the year's work of the association and if this amount is not received, curtailment of the society's efforts will be necessary.

**Ether Day.**—The trustees of the Massachusetts General Hospital announce that the sixty-eighth anniversary of Ether Day will be celebrated at the Hospital Amphitheatre of the outpatient department of the hospital on October 16. The address will be made by Dr. John M. T. Finney, Baltimore.

**Floating Hospital Ends Work.**—The Boston Floating Hospital has ended its work after a very busy season. Dr. Paul Waldo Emerson, St. Louis, house physician, has not yet decided on his work for the winter; Dr. Meredith R. Johnston, senior house officer, will go to the Children's Hospital, and Dr. Joseph A. Levek to the Massachusetts General Hospital.

**Bulletin of the Massachusetts State Board of Insanity.**—The board has voted to issue bulletins each month to inform the state hospital trustees, members of the several staffs and others interested with regard to the progressive and constructive work being done in individual institutions. In the first bulletin, dated September, the announcement is made that it is not the policy of the board to approve the appointment of any staff physicians who have not had previous experience in the care or treatment of the mentally ill or who have not taken special courses in such work. Arrangements have been made with the psychopathic department of the Boston State Hospital to give special courses of from three to six months to prospective candidates who could not otherwise qualify. Such men will be taken as interns and given free instruction and board but no salary until they are fitted for positions as members of the staffs. If a candidate seems unfitted for the position at the end of from three to six months, he is to be definitely rejected. The board has undertaken a survey of outpatient work by the hospitals and now recommends that such work be extended and made to cover the care of discharged patients. The following changes are announced as having occurred in staffs of the different institutions during August: Dr. Thomas H. Haynes resigned from the psychopathic department; Dr. William H. Lane, Waverly, resigned from the Massachusetts School for the Feeble-Minded; Dr. R. Grant Barry, King Park, N. Y., appointed physician at Worcester Hospital; Dr. Chester A. Van Cor appointed physician at Gardner Colony.

### MISSISSIPPI

**Home from Abroad.**—Dr. Donald P. Street, Vicksburg, has returned after a three-months trip abroad, and has resumed practice.

**State Public Health Meeting.**—The annual convention of the Mississippi Public Health Association will be held at Jackson, October 27 and 28, under the presidency of Dr. Walter S. Leathers, University. Among the more prominent topics for discussion are malaria, bubonic plague and tuberculosis.

### MISSOURI

**Lack of Medical Inspection Blamed for Diphtheria.**—Seven cases of diphtheria were found in a single day near the end of September in the Irving School, Kansas City. The health department attributes the danger of an epidemic to false ecomony on the part of the city administration. Medical inspection, such as is required in other cities of the Middle West, would probably have averted the danger.

**Free Dispensary Established.**—A free clinic and dispensary for children and mothers has been established in Kansas City. The dispensary will be for the treatment of children up to 14 years of age, and will furnish instructions to mothers regarding the proper care of infants. Especial attention will be given to treatment of eye, ear nose and throat diseases. The fifth floor of the Waterworks Building has been leased for its use.

### NEVADA

**Home from Abroad.**—Dr. A. Miniggio, Reno, returned September 22, after a year in Italy.

**State Society Meeting.**—The eleventh annual meeting of the Nevada State Medical Association will be held in Reno, October 13 to 15, under the presidency of Dr. Arthur P. Lewis, Reno.

**New Hospital.**—Plans have been made and bids have been asked for the construction of the new hospital at Asheville. The building is to be located near the present buildings of St. Joseph's Infirmary, it is to be brick, reenforced concrete and to cost $100,000. It will be under the charge of the Sisters of Mercy.

### NEW JERSEY

**Free Vaccination to Be Discontinued in Trenton.**—The health department discontinued free vaccination September 23. It was estimated that 8,000 persons had been vaccinated during the summer.

### NEW YORK

### New York City

**Sail for Red Cross Duty.**—Drs. Archibald McI. Strong, Sumner Everingham, Robert F. Corry, Lester B. Rogers, Richard Derby and Joseph P. Hoguet have sailed for Europe to join the field staff of the American Ambulance, Paris.

**Harvey Society Lecture.**—The first lecture of the Harvey Society series for the year is given at the New York Academy of Medicine, October 10, by Dr. Frederick P. Gay of the University of California, Berkeley, on "Experimental Studies on Methods of Antityphoid Immunization."

**Guard Against Cholera.**—On account of the report of the appearance of cholera in epidemic form in Europe, Dr. Joseph H. O'Connell, health officer of the Port of New York, has instructed boarding officers to make careful inspection of all vessels, passengers and crews coming from infected ports.

**Septic Sore Throat Reportable.**—Owing to the numerous epidemics of septic sore throat that have occurred during the past year, and especially on account of the recent experience at Rockville Center, L. I., the Sanitary Code now requires that this disease be reported to the Department of Health. It is incidentally pointed out that these epidemics furnish an additional argument in favor of the pasteurization of the milk-supply.

**Personal.**—Dr. Oliver W. H. Mitchell, formerly of the University of Missouri, has been appointed professor of bacteriology at the College of Medicine of Syracuse University. Dr. Edward D. Clark, Buffalo, has been appointed assistant professor of preventive medicine at the same institution and Dr. Howard L. Van Winkle, Glen Olden, has been appointed instructor in preventive medicine.——Dr. Lawrence S. Bartlett, Rochester, and Dr. and Mrs. James M. Wicks, Jamaica, L. I., have sailed for Europe.

**Adenoid and Tonsil Operations.**—There are now four clinics maintained by the Department of Health for the treatment of schoolchildren with adenoids and enlarged tonsils who are unable to afford a private physician. These clinics, which were formerly only open three days a week, are now in operation every day. During the week ending Sept. 5, 1914, 137 nose and throat operations were performed at these clinics. The average number of operations performed for three weeks preceding the inauguration of daily operations was seventy-seven.

**Mayor Upholds Dog Order.**—After a conference with Dr. Sigismund S. Goldwater, Mayor Mitchell announced that he stands on the side of the health commissioner in regard to the order of the Health Department that all dogs must be muzzled or kept on the leash. It is stated that this order, which has aroused considerable antagonism, is not necessarily permanent, but seemed necessary because of the increase in rabies. It was also explained that the order of the department forbidding the keeping of chickens within 75 feet of a dwelling was aimed at tenement dwellers and not at suburbanites.

**Notifiable Diseases in New York City.**—An amendment to the Sanitary Code passed the meeting of the Board of Health on August 25, requires that every case of infectious disease must be reported to the Department of Health within twenty-four hours from the time it is first seen. There are now twenty-nine infectious diseases reportable in this city. They are as follows: anthrax, asiatic cholera, diphtheria (croup), dysentery (epidemic), epidemic cerebrospinal meningitis, glanders, gonorrheal ophthalmia, hookworm disease, leprosy, malarial fever, measles, mumps, paratyphoid, plague, acute anterior poliomyelitis, pulmonary tuberculosis, rabies, rubella (German measles), tetanus, trachoma, tuberculous meningitis, typhoid fever, varicella (chicken-pox), whooping-cough and yellow fever.

**Supervision of Typhoid.**—All cases of typhoid fever reported in the borough of the Bronx will hereafter be investigated by the district nurses of the Bureau of Infectious Diseases. In every case the district nurse will be expected promptly to secure the epidemiologic data called for by the department's history card. In addition to this, she must learn what persons are exposed to infection and how many of these would accept immunization. In every case the attending physician will be requested by telephone to permit the Department of Health to immunize the exposed individuals, or to do so himself, the department offering to furnish the necessary culture free of charge. When no trained nurse is in attendance on a case, the nurse must make sure that excreta are properly disinfected and disposed of and that the person caring for the patient does not cook or handle the food for the family. If the family cannot carry out the necessary requirements, it may be necessary to have the sanitary policeman warn the family or forcibly remove the patient to a hospital. Wherever two or more families at different premises have typoid fever and the same milk-supply is being used, an immediate investigation of that milk-supply will be made.

### NORTH CAROLINA

**Antityphoid Vaccination.**—The State Laboratory of Hygiene reports a heavy demand for free antityphoid vaccination during the summer. During the early part of the summer, the demand exceeded the power of the laboratory to supply it. Arrangements for increasing the output have been made in anticipation of an extended demand from schools and colleges at the time of their opening.

### OKLAHOMA

**Diphtheria Antitoxin to Be Distributed by the State.**—Dr. J. C. Mahr, state health commissioner, is preparing to distribute diphtheria antitoxin through the local drug stores. It will be supplied free to those unable to pay for it and at reduced rates to others.

### PENNSYLVANIA

**Personal.**—Dr. George R. S. Corson, Pottsville, has been elected secretary of the Anti-Tuberculosis Society of Schuylkill County.——Dr. Harry W. Salus, Johnstown, has been appointed state medical inspector for Cambria County.——Dr. James P. Brallier, Alexandria, has returned from Europe.

**Hospital and Sanatorium Notes.**—The Ladies' Auxiliary of the Columbia Hospital has decided to purchase a Roentgen apparatus for use in that institution.——The Neversink

Mountain Sanatorium reports that it has twenty-five patients in the institution and an awaiting list of twenty-eight, and has asked the Burke County Tuberculosis Society at the annual meeting to increase its membership that these sufferers may have the benefit of the treatment.——The State Sanatorium at Hamburg was opened to receive patients the second week in September.

**Optometrists Win Legal Point.**—Under an equity decision handed down by President Judge Wilson, the Pennsylvania Optometrists' Association, claim to have won the first round of their fight against the State Board of Medical Education and Licensure, which is endeavoring to bring them under absolute medical supervision. The court by this decision admits merely that the optometrists have a right to an injunction if they can prove that all the claims put forward in their original bill are just. These claims will be the subject for a further equity hearing, the date for which has yet to be set. As the state board insists that the optometrists be licensed after November 1, it is expected that a hearing will be held this month.

**State Association Meeting.**—The Medical Society of the State of Pennsylvania held its sixty-fourth annual meeting concerning which note was made last week in Pittsbugh, September 22 to 24, under the presidency of Dr. Edward B. Heckel, Pittsburgh. The following officers were elected: president, Dr. John B. McAlister, Harrisburg; vice-presidents, Drs. G. Franklin Bell, Newberry; Walter S. Stewart, Wilkes-Barre; Jacob R. Lehman, Mountville, and Otto C. Gaub, Pittsburgh; secretary, Dr. Cyrus L. Stevens, Athens (reelected); assistant secretary, Dr. William H. Cameron, Pittsburgh; treasurer, Dr. George W. Wagoner, Johnstown (reelected); trustees, Drs. William T. Sharpless, West Chester; Frederick L. Van Sickle, Olyphant, and Alem P. Hull, Montgomery. The section on medicine elected Dr. Thomas G. Simonton, Pittsburgh, chairman, and Dr. J. Wesley Ellenberger, Harrisburg, secretary; the section on surgery, Dr. Floyd E. Keene, Philadelphia, chairman, and Dr. Albert R. Matheny, Pittsburgh, secretary; and the section on eye, ear, nose and throat, Dr. Robert Milligan, Pittsburgh, chairman, and Dr. John F. Culp, Harrisburg, secretary. Philadelphia was selected as the place of meeting for 1915.

### Philadelphia

**Medical Institutions.**—A one-story addition, 30x40 feet, to the accident ward of the Methodist Episcopal Hospital, is to be built. The structure is to be of brick and terra cotta and will cost about $6,000.

**Pemphigus, Not Leprosy.**—Careful investigation by the health authorities into the cause of the death of Owen Hall, supposed to have died from leprosy, has demonstrated that the death was due to pemphigus.

**Appropriation for Hospitals.**—Director Richard H. Harte of the Department of Health received from councils, September 17, an appropriation of $272,000 for the improvement of the Municipal Hospital, the completion of the Byberry Farms and the City Institution at Holmesburg.

**For Sane Fourth.**—The executive committee of the Reconstructed Fourth Association met at City Hall, September 30, and the following officers were elected: chairman, George McCurdy, president of common council; vice-chairman, Mrs. Samuel B. Jarden; honorary vice-chairman, Mrs. Rudolph Blankenburg; treasurer, the Rev. H. W. Hathaway, and secretary, James J. Hiatt.

**Rat Extermination.**—Director Richard H. Harte of the Department of Public Health and Charities invited several hundred business men to a conference on the extermination of rats, September 28. Assistant Surgeon-General Leland E. Cofer, Washington, Surgeon Fairfax Irwin, U. S. P. H. S., addressed the meeting and a special appeal was made for the cooperation of business men and property owners in the campaign against rats.

**Personal.**—Dr. Frank H. Hustead has been elected surgeon-general of the American Veterans of Foreign Wars.——Dr. Hunter W. Scarlet is on duty at the American Hospital in Paris.——Dr. Arthur A. Stevens has been appointed attending physician at the Philadelphia General Hospital, to succeed Dr. Augustus A. Eshner, resigned.——Dr. James M. Anders, who was in Frankfort, Germany, when war was declared, arrived home September 22.

**Regional Tuberculosis Conference in Philadelphia.**—The first North Atlantic States Conference on Tuberculosis, including New York, New Jersey, Pennsylvania, Maryland, Delaware, Virginia and the District of Columbia, will be held in Philadelphia under the direction of the National Association for the Study and Prevention of Tuberculosis on Friday, October 16. The executive secretary states the object of the conference is "the mobilization of those who are engaged in the war against tuberculosis for the coming fall and winter campaign which we are planning to wage against this disease."

**Colleges Open.**—The opening exercises of Jefferson Medical College were held September 24, at the Clinical Amphitheatre. William Porter, president of the board of trustees, presided, and the introductory address to the ninetieth annual session was delivered by Dr. Jacob Parsons Schaeffer, New Haven, Conn., the newly elected professor of anatomy.——The University of Pennsylvania officially began its one hundred and seventy-fifth year on September 25, when the officers, faculties and entire undergraduate body assembled in Weightman Hall for the historic first chapel exercises. Provost Edgar F. Smith, Vice-Provost Josia H. Pennyman and the deans of the various departments addressed the students.

**Faculty Changes.**—Dr. Herbert H. Cushing has been made professor of practical anatomy. Dr. Ardrey W. Downs, professor of experimental physiology; Dr. Vernon K. Suydam, professor of physics; Prof. Charles E. Vanderkleed, professor of analytical chemistry; Dr. John H. Small, associate professor of bacteriology; Dr. Eugene A. Case, associate professor of pathology; Dr. Philipp Fischelis, associate professor of histology and embryology; Dr. Guy Hinsdale, associate professor of climatology, and Dr. Arthur C. Morgan, associate professor of medicine; Dr. J. Stewart Rodman and Dr. John J. Gilbride, associate professors of surgery; Drs. Howard L. Jameson and Andrew Callahan, associates in medicine, and Dr. Robert F. Ridpath, associate in laryngology, in the Medico-Chirurgical College of Philadelphia.

## VERMONT

**Epidemic of Infantile Paralysis.**—The present epidemic of infantile paralysis in this state, which has been running for eight or nine weeks, exceeds that of any previous outbreak of the disease here in number of cases and mortality rate. One hundred and forty cases have been reported since August 15. The mortality in the state has been about 20 per cent. The area affected is a large one. The disease is especially prevalent in the northern part of the state, from Rutland to the Canadian line. The largest number of cases has occurred in Barton (40) and the next largest in Burlington (37). The State Board of Health has succeeded in keeping all the cases under strict quarantine and is carefully keeping the history of all cases.

## WASHINGTON

**Personal.**—Dr. William A. Taylor, Ellensburg, and Dr. and Mrs. W. G. Cassels, Seattle, have returned from abroad.

**Medical Defense Fund Low.**—At the annual meeting of the Washington State Medical Association, the legal defense fund dues were raised from $5 to $10 because of the increase in malpractice suits due to the operation of the industrial insurance law.

**State Association Meeting.**—The twenty-fifth annual meeting of the Washington State Medical Association was held in North Yakima, September 21 to 23, under the presidency of Dr. Cornelius J. Lynch, North Yakima, and the following officers were elected: president, Dr. Casper W. Sharples, Seattle; president-elect, Dr. John R. Brown, Tacoma; vice-presidents, Drs. Harry E. Allen, Seattle, and Charles F. Eikenbary, Spokane; trustees of first district, Drs. James R. Yocom, Tacoma, and Richard J. O'Shea, Seattle; trustees of second district, Drs. Frederick Epplen, Spokane; Frank E. Culp, Wenatchee; and delegates to the American Medical Association, Drs. Edward A. Rich, Tacoma, and Guy E. Peterkin, Seattle. Tacoma was chosen as the place of meeting for 1915.

## GENERAL

**Red Cross Needs Funds.**—The American National Red Cross reported that of the $325,000 received up to September 26, $280,000 has already been expended and that more funds are urgently required.

**Ohio Valley Physicians to Meet.**—The annual meeting of the Ohio Valley Medical Association will be held in Evansville, Ind., November 3 and 4, under the presidency of Dr. Argus B. Willmoth, Louisville.

**Cholera in Manila.**—On September 25 it was reported from Manila that an outbreak of cholera had occurred, the first in twelve years, and nearly one hundred cases have developed in two weeks and fifteen deaths, all natives, have been recorded. Every district of the city is infected with the exception of the American residential districts of Ermita and Malate.

**Meeting of Mississippi Valley Physicians.**—The fortieth annual meeting of the Mississippi Valley Medical Association will be held in Cincinnati, October 27 to 29, under the presidency of Dr. D'Orsay Hecht, Chicago. The oration in medicine will be given by Dr. Charles F. Hoover, Cleveland, and that in surgery by Dr. Lewis S. McMurtry, Louisville. The headquarters, places of meeting and exhibit hall are all in the Hotel Sinton.

**Plague in New Orleans.**—Since the report in The Journal of October 3, the plague situation has changed but slightly. The total number of rodents captured up to September 26 was 96,794; the total number of rodent cases up to October 1 was 177. The death is reported of case number 26, Clemence Alexander, who died at the Emergency Hospital, Sept. 30, 1914. This case was reported as suspicious on September 21, and diagnosis confirmed September 22. The total number of deaths up to October 1 is 8.

**China Appeals for Aid for Sufferers from Famine and Drouth.**—The American Red Cross has transmitted to the state department an appeal from China for help. Famine and drouth are causing great disturbances in Kiangsu, Hunan and other provinces. Conditions are serious in Kwangtung where the loss of human and animal life has been great. The Red Cross was prompted to take up the matter by a petition presented to the American minister in Pekin by merchants of Kwangtung province residing in Shanghai.

**Social Hygiene Conference.**—In connection with its annual meeting in New York City, October 9, the American Social Hygiene Association has arranged a conference on social hygiene jointly with the Society of Sanitary and Moral Prophylaxis. The program includes addresses on social hygiene in relation to departments of public correction, life insurance, the church and its organizations, boys' and girls' organizations, departments of public health, education and the like. The public sessions will be held at the Assembly Hall of the Metropolitan Life Insurance Company's Building. A visit to the venereal-disease clinic of the New York City Department of Health has been arranged.

**New Refrigerators for Conveying Milk.**—The Baltimore and Ohio Railroad has installed four sanitary dairy refrigerator cars to handle milk daily between points in Ohio and Pittsburgh. Health authorities and railroad officials, who have examined the new cars, state they will retain uniform temperature for forty-eight hours with but a single icing when the thermometer registers 90 degrees and that the growth of bacteria while milk is in transit is inhibited. The cars are so constructed as to provide hermetic sealing and are finished in white enamel on the inside so they may be easily flushed. In each end are ice-bunkers extending from floor to roof and containing six brine tanks in which are carried ice and salt.

**Meeting of Military Surgeons.**—The twenty-third annual meeting of the Association of Military Surgeons of the United States was held at Cincinnati, September 29 to October 2. In the absence of Brigadier General Charles Adams, M. C., Ill. N. G. (retired), Col. Jefferson R. Kean, M. C., U. S. A., presided. A committee on membership was appointed, composed of one officer from each of the public services and one from the National Guard of each state. Washington, D. C., was selected as the next place of meeting. The following officers were elected: president, Col. Jefferson R. Kean, M. C., U. S. A.; vice-presidents, Surgeon-General Rupert Blue, U. S. P. H. S.; medical inspector, George A. Lung, U. S. N., and Col. Henry Allers, M. C., N. J. N. G., Harrison, N. J.; and treasurer, Major Herbert A. Arnold, M. C., Pa. N. G., Ardmore, Pa. (reelected).

## FOREIGN

**Guatemala Raises Quarantine.**—The Guatemala government has raised the seven-day quarantine regulation declared against New Orleans at the outbreak of bubonic plague.

**Trachoma Inspection Lax in Porto Rico.**—On September 17 a proclamation was issued by the director of sanitation suspending examinations of the eyes of schoolchildren for trachoma and stating that eyes will be examined gradually throughout the year. The children will be admitted to the schools without the certificate that they are free from this disease. In an open letter to the governor, Dr. Molina de St. Remy, a member of the Board of Medical Examiners at San Juan, protests against this laxity and points out that trachoma is practically epidemic in the island.

**Jubilee of Public Health Service in Switzerland.**—When in 1889 Dr. Schmid was appointed chief of the newly organized public health service in Switzerland, the enforcement of the regulations to control epidemics was all the work laid out for it. But during the twenty-five years since he has been constantly enlarging its field of work. The present high efficiency of the service, its pure-food work, the higher requirements for a medical license, the widespread system of isolation hospitals and disinfection stations, and the revision of the Swiss Pharmacopeia are all due in large measure to Schmid's tireless zeal, and in token of appreciation a banquet was recently tendered him on the completion of his twenty-five years of service. The International Antituberculosis Association sent its secretary from Berlin to Berne to do him honor, and numerous other local national and international organizations were represented at the jubilee.

## CANADA

**News Items.**—A retired French-Canadian doctor has promised $50,000 toward the cost of equipping a French-Canadian regiment for war services.

**University News.**—Dr. Richard A. Reeve has resigned from the professorship of ophthalmology in the University of Toronto and has been succeeded by Dr. James M. MacCallum. Dr. George R. McDonagh has resigned from the professorship of otolaryngology and has been succeeded by Dr. David J. Gibb Wishart.

**Professor Leathes Leaves Toronto.**—Dr. John B. Leathes, professor of pathological chemistry in the University of Toronto, leaves Toronto in December for Sheffield, England, where he has been appointed professor of physiology in the University of Sheffield. Dr. Leathes came to Toronto only a few years ago from London where he was pathological chemist in the Lister Institute. He was one of the four Fellows of the Royal Society at the University of Toronto.

**Canada's First Contingent.**—With the First Canadian Contingent sailing some time last week went three field hospitals, one clearing hospital, two stationary hospitals and two general hospitals. The medical personnel of a general hospital (520 beds) is one commanding officer, nineteen medical officers, including one registrar; one matron and ninety sisters in the nursing staff. A stationary hospital consists of 200 beds with one officer commanding and six other medical officers. Of the nursing staff there is one matron and sixteen sisters.

**Baby-Saving Campaign in Toronto.**—During June, July and August, 1914, there were 200 less infant deaths in Toronto than in the same period in 1913. This fully justifies the establishment in connection with Toronto's Department of Health, of a section of child hygiene. Ten baby clinics have been at work throughout the summer, at each of which doctors and nurses have been in attendance twice a week. The attendance at these clinics doubled each month; and during the last week in September there were in attendance a total of 952. Over 2,318 babies were regularly taken for boat trips during the past summer. A pamphlet, printed in English, Italian and Hebrew—The Care of the Baby—is supplied to all mothers.

## WAR NOTES

**Gasoline in Berlin.**—The distributing company announces that gasoline will be supplied to physicians who absolutely have to use their own cars.

**English Medal Melted Up for Relief Work.**—Von Behring has donated the Harben gold medal, valued at $500, to the city of Marburg to be expended for relief work.

**Fatalities Among Physicians at the Front.**—German exchanges up to September 10 had listed twelve medical men killed on the firing line, including Dr. Thelen on the man-of-war *Magdeburg,* which was blown up rather than surrender, and also three medical students.

**Contribution for American Red Cross Hospital in Munich.**—A contribution of $1,000 from John A. Roebling, Bernardsville, N. J., has been received by the Red Cross to be transmitted to Ambassador Gerard in Berlin for the maintenance of an American Red Cross hospital for the care of the wounded in Munich.

**British Hospital Ship Fitted Up.**—The Grand Trunk Pacific steamer *Prince George* has been requisitioned by the British admiralty as a hospital ship. The dining-room has been turned into a hospital ward and equipped with operating-tables. Elevators have been installed to permit the sick and wounded to be handled with the least possible discomfort.

**Internists Appointed Consultants on the German Army Medical Staff.**—Up to September, only surgeons and hygienists had been appointed consultants on the general medical staff of the Germany army, but then Kraus and Krehl were called to serve in the chief medical staff for the duration of the mobilization and His was made chief of staff (*Generaloberarzt*).

**Hospital Ship Donated to Great Britain by Indian Rulers.**—The Maharaja Scindia of Gwalior has offered to the Viceroy of India on behalf of himself and the Nizam of Hyderabad, the Begum of Bhopal, the Maharajas of Jodhpur, Rewah and Datia, the Rajas of Dhar, Sitamau, Jhabua and Sailana and other ruling chiefs of India, a hospital ship of 300 beds to be named *Loyalty*.

**Quacks in the War.**—In England the war seems to have stimulated quack medical vendors to make special efforts to attract public attention by way of war advertisements. In its issue of September 26, the *British Medical Journal* calls attention to the great dangers to the English army from the advice of these quacks that soldiers should treat themselves for diarrhea and various venereal complaints.

**The British Red Cross Society.**—The British Red Cross Society is doing adequate work in connection with the care of British troops. The unit at Boulogne has covered nearly the whole of the grounds traversed by the British in their retreat toward Paris. The society has thirty motor ambulances already on the continent and fifty more are to be sent. A hospital of 400 beds is being established at Rouen.

**Free Medical Attendance for Dependents of British Soldiers.**—The British government has accepted an offer from the British Medical Association and the Pharmaceutical Society of Great Britain to give free medical attendance and drugs at cost price to dependents of men serving with the colors whose circumstances justify such relief. The service will be administered through local relief committees which are now being formed in counties, boroughs and urban districts.

**Character of the Wounds.**—The *Berliner med. Wochenscrift* of September 14 states that the French surgeons, Delbet, Raymond, Tuffier and Doyen, have publicly commented on the mild character of the wounds among the French soldiers when vital organs are not involved, and their rapid healing. The same comment as to the mildness of the wounds and the rapid healing among the wounded is made in the official report of the German surgeon-general, referring to the wounds made by the regulation bullets. He states further that the fifth week of the war has passed without epidemics developing in the German army. The first-aid packages have proved efficient. The bandages applied at the front were still in place when the wounded were delivered to the base hospitals, and a large proportion of the wounded are already recovering and clamoring to be sent back to the front.

**Prophylaxis of Epidemics in Germany.**—At Königsberg in eastern Prussia every case, even suspected of being typhoid, typhus or dysentery, must now be reported to the authorities, and also every bacilli carrier. Their dwelling places as also all houses where there is a case of scarlet fever or diphtheria must be marked with a yellow lantern and a placard bearing the name of the disease. The Journal has mentioned at times the systematic campaign that has been carried on during the last decade in southwestern Prussia to stamp out typhoid fever. A series of bacteriologic stations were founded and they have sought out and tried to keep under control every bacilli carrier, and have thus materially reduced typhoid in that district. This part of the country was selected for this attempt at a campaign of extermination on the advice of Robert Koch that it might be well to have this area free from typhoid in case of another war with France.

**German Patents and Trademarks in England.**—The English comptroller of patents has been holding sittings concerning the question of revoking German patents and regranting them to English manufacturers. Early in the proceedings the comptroller said that the general principle by which the court would be guided, was that unless it would prove to be for the public interest, it would not recommend the spread of trade by transfer to other businesses of the device trademarks which were known to be associated with foreign firms. The object was not to confiscate anyone's property, but merely to enable business to go on, which would not be possible without the suspension of patents. Among the applications heard from various British manufacturers were one to take over the manufacture and sale of salvarsan, one to take over the manufacture and trademark of hexamethylenetetramin as urotropin and another for the manufacture of lysol. No decisions were rendered.

## PARIS LETTER

Paris, Sept. 24, 1914.

### Organization of the Sanitary Service

From the beginning of the war temporary hospitals and ambulances have naturally increased. These improvised establishments have not always been perfect. Some have had insufficient equipment and others insufficient staff. It might be preferable to have fewer ambulances but better regulated ones, especially so far as the removal of wastes and the sterilization of soiled linen is concerned.

Medical students who have defects of sight which prevent them from being useful in the army service might be utilized in the hospitals and ambulances. So also might non-military physicians whose services have been rejected by the military authorities because of their age or for other reasons. They might, however, be more useful than some of the Red Cross ladies who have no experience but who flaunt their nurses' blouses and aprons on the streets and in the restaurants.

The following note appears in the daily paper:

"Our illustrious collaborator, Paul Bourget, whose medical knowledge is well known, is putting this at the service of our wounded. Every morning he may be seen at the Clermont-Ferrand Hospital dressed for service. He is especially charged with the duty of giving chloroform to those who are undergoing surgical operations."

I believe that the professional anesthetist would be worth more here than M. Paul Bourget, whose medical knowledge has yet to be proved.

### Definite Results of the Census of Paris

The census which I mentioned in my previous letter has been finished. The population now consists of 1,807,044 inhabitants, or 1,026,307 less than in 1911, and is no more than about two-thirds (63 per cent. to be exact) of what it is in normal times. There are 949,087 women against 585,486 men. There are also 278,471 children of whom 30,906 are less than 15 months old.

### The Water-Supply

Fears have been expressed lest Paris might be deprived of suitable drinking-water because of the great battle which has recently occurred in the vicinity. These fears have not been realized. The measures taken have assured to the population of Paris and the suburbs sufficient potable water. The drinking-water is analyzed several times a day. If it should fail, water from the Seine and the Marne will be treated by hypochlorites for use.

### Sanitation of the Battle-Field

About 1,500 firemen, under the direction of the service of military sanitation, have gone over the field of the battle of the Marne to carry out measures of sanitation intended to relieve Paris of all danger of infection.

## Marriages

James Casper Negley, M.D., Los Angeles, Cal., to Miss Katherine Constance Collins of New York City, at Los Angeles, recently.

Edward Michael Williams, M.D., Norway, Iowa, to Miss Beryl Camery of Traer, Iowa, at Cedar Rapids, Iowa, September 16.

Israel Leopold Glushak, M.D., Washington, D. C., to Miss Annie Gordon of Glasgow, Scotland, August 5.

Raymond Wright Whittier, M.D., to Miss Imogene Cory, both of Mora, Minn., at Minneapolis, September 20.

Howard Engler Harman, M.D., Leetonia, Ohio, to Miss Grace Fanny Burger of Baltimore, Md., October 7.

Arthur James McCary, M.D., Chicago, to Miss Arleen Winifred Joannes of Green Bay, Wis., October 8.

Joseph Wiley Harrison, M.D., to Miss Alta M. Haxton, both of Guthrie Center, Iowa., September 24.

Wyman H. Fisher, M.D., to Miss Minnie Rosenbaum, both of Wanatah, Ind., at Chicago, September 23.

Daniel Irwin Aller, M.D., Merced Falls, Cal., to Miss Merle Orr of Redding, Cal., September 23.

James Edgar Yarbrough, M.D., to Miss Virginia Coffey, both of Erick, Okla., September 27.

Charles B. Cowan, M.D., to Mrs. Mary C. Morris, both of Seattle, Wash.. September 19.

# Deaths

**Lemuel Bolton Bangs, M.D.** College of Physicians and Surgeons in the City of New York, 1872; formerly a member of the American Medical Association; a Fellow of the New York Academy of Medicine; consulting surgeon to St. Luke's, Bellevue, City, St. Vincent's and Methodist Episcopal hospitals; professor of genito-urinary surgery in the University and Bellevue Hospital Medical School from 1898 to 1901; president of the American Association of Genito-Urinary Surgeons in 1895; died at his home in New York City, October 4, aged 72.

**Solon Marks, M.D.** Rush Medical College, 1853; for more than sixty years a practitioner of Milwaukee; one of the organizers of the American Medical Association and American Surgical Society, and for several years president of the State Medical Society of Wisconsin; division surgeon and chief surgeon of the Army of the Cumberland during the Civil War; emeritus professor of military surgery, and fractures and dislocations in the Wisconsin College of Physicians and Surgeons; died at his home in Milwaukee, September 29, aged 87.

**Morris Longstreth, M.D.** University of Pennsylvania, Philadelphia, 1869; Jefferson Medical College, 1876; of Cambridge, Mass.; a Fellow of the American Medical Association, American Association for the Advancement of Science and Association of American Physicians; for many years a practitioner of Philadelphia; professor of pathological anatomy in Jefferson Medical College until 1904, and a member of the attending staff of the Pennsylvania Hospital; died in Barcelona, Spain, September 19, aged 68.

**Washington Emil Fischer, M.D.** Washington University, St. Louis, 1871; a Fellow of the American Medical Association; clinical professor of medicine in his Alma Mater; consulting physician to Washington University Hospital, St. Luke's Hospital and St. Louis Skin and Cancer Hospital, and one of the founders and president of the medical board of the latter institution; died at his home in St. Louis, September 15, from carcinoma, aged 64.

**Charles Francis Gladding, M.D.** California Eclectic Medical College, Los Angeles, 1897; a Fellow of the American Medical Association; for nearly forty years a practitioner of California and once physician to the state penitentiary, Folsom; a member of the Berkeley Board of Health; died at his home in Oakland, Cal., September 15, from cerebral hemorrhage, aged 58.

**Theron Augustus Wales, M.D.** University of Pennsylvania, Philadelphia, 1873; a member of the Medical Society of the State of New York; one of the leading practitioners of Elmira, N. Y.; past president of the Third District Medical Society, Chemung County Medical Association and Chemung County Medical Society; for many years examining surgeon for pensions and a police commissioner; died at his home in Elmira, September 9, aged 72.

**John Hale Taylor, M.D.** University of Buffalo, N. Y., 1869; a Fellow of the American Medical Association; president of the Orleans County, N. Y., Medical Society in 1892; coroner of Orleans County for fifteen years and for one term president of the village of Holley, N. Y., where he had practiced for forty-five years; died at his home September 23, ten weeks after a fall in which he sustained a fracture of the hip, aged 70.

**James Kossuth King, M.D.** College of Physicians and Surgeons in the City of New York, 1877; a Fellow of the American Medical Association; one of the founders and for twenty years medical director of the Glen Springs Sanitarium, Watkins, N. Y.; died at his home in Watkins, September 20, from cerebral hemorrhage, aged 65.

**Cornelius S. Van Etten, M.D.** University of Pennsylvania, Philadelphia, 1873; a Fellow of the American Medical Association; for thirty-eight years a practitioner of Rhinebeck, N. Y., and for many years health officer of that town; died at his home in New York City, September 10, aged 68.

**Jacob Trush, M.D.** Washington University, St. Louis, 1865; a Fellow of the American Medical Association and of the Cincinnati Academy of Medicine; died suddenly at his home in Clifton, Cincinnati, September 11, from heart disease, aged 77.

**Sam C. Pursley, M.D.** Medical College of Georgia, Augusta, 1868; a Confederate veteran and a well-known physician of Jones County, Ga.; died at his home in Clinton, Ga.; September 11, aged 70.

**Wilton Marcellus Mason, M.D.** California Eclectic Medical College, Los Angeles, 1891; of Lodi, Cal.; a Fellow of the American Medical Association; for many years a member of the State Board of Medical Examiners; died in the Morton Hospital, San Francisco, September 19, from aneurysm of the arch of the aorta, aged 49.

**Shannon P. Peck, M.D.** College of Physicians and Surgeons, Baltimore, Md., 1877; a member of the West Virginia State Medical Association; twice mayor of Hinton, W. Va., and for several years chief surgeon of the Chesapeake and Ohio System; died suddenly, September 16, while driving with a friend in his motor car.

**Samuel Fairbank Mellen, M.D.** New York University, New York City, 1884; a member of the Medical Society of the State of New York and American Medico-Psychological Society; assistant physician to the Hudson River State Hospital, Poughkeepsie, N. Y.; died in Poughkeepsie, July 15, aged 60.

**Archibald Thompson Davison, M.D.** Harvard Medical School, 1871; a member of the Massachusetts Medical Society; for many years a practitioner of Dorchester, Boston, and for six years a member of the Boston school committee; died at his home in Cambridge, Mass., September 19, aged 70.

**Clifton N. Infield, M.D.** New York Homeopathic Medical College, New York City, 1883; of Hudson Falls, N. Y.; a member of the Medical Society of the State of New York; died in the Samaritan Hospital, Troy, N. Y., September 16, after an operation for disease of the stomach.

**William Francis Byrns, M.D.** Georgetown University, Washington, D. C., 1873; of Washington, D. C.; a Fellow of the American Medical Association; died suddenly at the home of his brother in Ware, Mass., September 19, aged 67.

**James Neal Murdoch, M.D.** University of Pennsylvania, Philadelphia, 1852; for many years a practitioner and druggist of Parkersburg, W. Va.; died at his home in that city, September 14, aged 86.

**Burtus M. Keeney, M.D.** Long Island College Hospital Brooklyn, N. Y., 1864; for many years a practitioner of New York City; died at his home in Waterford, Conn., September 12, aged 77.

**Martin Thaddeus Joyce, M.D.** College of Physicians and Surgeons, Chicago, 1903; of Waterloo, Wis.; died in a hospital in Chicago, after an operation for appendicitis, September 6, aged 38.

**James Reid Hinkle, M.D.** New York University, New York City, 1860; a surgeon of Indiana Volunteers during the Civil War; died at his home in Sullivan, Ind., September 15, aged 82.

**Albert M. Finch** (license, Indiana, 1897), of Jamestown, Ind.; died in a hotel in Crawfordville, Ind., September 9, it is believed from the effects of an overdose of a drug, aged 62.

**Maude L. Dunn Erstling, M.D.** National Medical University, Chicago, 1905; died at her home in Chicago, August 31, from infection following an operation, aged 44.

**William H. Johnson, M.D.** Medical College of Indiana, Indianapolis, 1877; a veteran of the Civil War; died at his home in Lincoln, Neb., September 5, aged 68.

**William Thomas Wood. M.D.** Western Pennsylvania Medical College, Pittsburgh. 1908; died at his home in Toledo, Ohio, September 9, from nephritis, aged 39.

**Lawson A. Duthie, M.D.** Physio-Medical College of Indiana, Indianapolis, 1900; died at his home in Indianapolis, September 12, aged 47.

**William Monroe Mierley, M.D.** Medico-Chirurgical College of Philadelphia, 1891; of Ottumwa, Ia.; died in that city, September 13, aged 41.

**William Samuel Sanders, M.D.** Missouri Medical College, St. Louis, 1875; died at his home in Clarence, Mo., September 6, aged 64.

**Guy H. Hildebrand, M.D.** King Eclectic Medical College, Des Moines, Ia., 1889; died at his home in Clearwater, September 7, aged 62.

**Bernhard V. Lenderink** (license, Michigan, 17 years of practice, 1900); died at his home in Holland, Mich., September 12, aged 77.

**Manoah M. Woodward, M.D.** Hospital College of Medicine, Louisville, Ky., 1885; died at his home in San Angelo, Tex., September 7.

**Wilber Gray Smith, M.D.** University of Maryland, Baltimore, 1880; died at his home in Oakland, Cal., August 6, aged 55.

# The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

## DUKET REDIVIVUS

### A Gold Brick Consumption Cure Is Offered Las Vegas —and Declined

Peter P. Duket, the "consumption cure" faker, is at it again; this time at Las Vegas, New Mexico. As our readers will remember, Duket first exploited his fraudulent cure for tuberculosis in Findlay, Ohio. Failing there, he attempted to establish a similar business in Colorado, and doubtless would have done so had not the Board of Medical Examiners of that state protected the public against him. Then Duket came to Illinois, obtained a license and interested Bennett Medical College, and through it, William Lorimer, ex-senator and ex-banker.

The Journal investigated and exposed Duket's fraud in the early months of 1913. After spending thousands of dollars of Mr. Lorimer's money, Bennett Medical College admitted, months later, that scientific investigation of Duket's cure demonstrated its worthlessness. These findings apparently were never given the wide publicity that had been given the Duket cure itself. On April 25, 1914, The Journal gave its readers the findings of the Bennett Medical College investigators.

The Las Vegas papers for Sept. 30, 1914, contained a news-item to the effect that an open meeting of the citizens was going to be held that evening to consider a proposition made by Dr. Peter P. Duket to the Board of Directors of the Commercial Club of Las Vegas. To quote:

> "According to the statement made by the doctor to the directors, he expects to erect a two-hundred-room sanitarium here in which he will treat patients with a specific cure for tuberculosis which he has discovered."

Duket was not at all modest in his requests on Las Vegas, for, according to published reports, he suggested that he be given one of the most valuable pieces of real estate in the city and that the improvements on the lot be deeded to him with the land.

The special meeting called to consider the matter was held. Duket was present and gave the audience a glowing description of the advantage to Las Vegas of having a sanatorium operated by him for the purpose of giving his marvelous cure. After Duket had said his little piece one of the Las Vegas physicians asked to be heard. He stated that he had lived in Las Vegas all his life and appreciated the advantages of that city as a suitable place for the erection of a sanatorium and that he was more than willing to do all in his power to aid the founding of any worthy institution of this sort. He suggested, however, that a sanatorium was more than merely a well-equipped building in a favorable climate. Its success and the good it might do the community must depend largely on the controlling spirit behind it. At this point, the doctor proceeded to read the record of Duket and his "cure" from the various issues of The Journal of the American Medical Association. After this, a layman told the meeting that he was one of Duket's alleged cures. He went on to say that the Duket treatment had done him no good and he told the audience of seven or eight patients whom he knew Duket had treated without benefit, three of them in fact being dead. Following these verbal bomb-shells, the chairman did not even take the trouble to put a motion that had been made, and Dr. Duket and his "cure" were given no further consideration. The Las Vegas papers state that following his failure to sell Las Vegas a "gold brick," he left for Silver City, N. M., at which place "he will endeavor to interest the people in the sanatorium proposition."

Duket is quoted as having said when he first reached the city: "The Las Vegas climate is ideal for the treatment of tuberculosis." It is; but the Las Vegas climate is evidently an unhealthy one for "consumption cure" fakers.

## GLYCO-THYMOLINE

### Report of the Council on Pharmacy and Chemistry

The Council, having voted that Glyco-Thymoline be refused recognition, authorized publication of the following report.

W. A. Puckner, Secretary.

Glyco-Thymoline is a typical example of a "patent medicine" advertised to the public through the doctors. Bottles of the mixture with the name blown in the glass are issued to physicians for distribution to patients, and the circular which comes around the bottle more or less directly recommends it for use in almost every form of infectious disease.

#### COMPOSITION AND VARYING FORMULAS

Different formulas for Glyco-Thymoline have appeared. At one time it was said to contain:

> "Sodium 24, Boric Acid 4, Benzoin 4, Acid Salicylic 0.33, Eucalyptol 0.33, Thymoline 0.17, Betula Lenta 0.08, Menthol 0.08, Pini Pumilionis 0.17, Glycerin and solvents, q.s."

Another formula, which appeared about the same time, was:

> "Benzo-Salicyl. Sod. 33.33, Eucalyptol 0.33, Thymol 0.17, Salicylate of Methyl from Betula Lenta 0.16, Pini Pumilionis 0.17, Glycerin and solvents q.s."

A later formula was like the second except that it included "Menthol, 0.08."

Analysis in the chemical laboratory of the American Medical Association showed that Glyco-Thymoline contained borax but no boric acid; sodium salicylate but no salicylic acid; sodium benzoate, but no benzoin; the compound benzo-salicyl. sod. could not be determined, but a mixture of sodium benzoate and sodium salicylate was demonstrable.[1] Later Puckner pointed out[2] that while such a combination as benzo-salicylate of sodium is known, it could not possibly be present in Glyco-Thymoline because the alkalinity of this mixture would decompose the compound. As the manufacturers evidently recognize that false formulas can no longer be made plausible, only vague statements as to the composition are now offered.

Two points should be noted in this connection:

1. Glyco-Thymoline conflicts with Rule 1 of the Council on Pharmacy and Chemistry, which declares that no article shall be accepted for inclusion with New and Nonofficial Remedies unless its composition be furnished.

2. No matter which published formula be accepted as correct, it is at best a weak antiseptic. The antiseptic ingredients present cannot act as germicides in the strength in which they are used, or in the alkaline solution on the unique virtues of which the circular lays so much stress ("the one antiseptic solution based on the alkalinity and saline strength of normal blood"). As shown by Verhoeff and Ellis,[3] undiluted Glyco-Thymoline does not kill *Staphylococcus aureus* in four hours. It evidently, they say, "could have but little if any greater therapeutic value than sterile salt solution."

#### DANGEROUS RECOMMENDATIONS

*In Diphtheria:* "Case-reports" in the advertising pamphlet describe the treatment of diphtheria with Glyco-Thymoline. It is surely unnecessary to point out that, whatever the possible merits of Glyco-Thymoline or its ingredients, they are utterly irrelevant here. But let a "case-report" be quoted:

> "......................., M.D., states: 'I have many an interesting story of Glyco-Thymoline. I just finished up a family in which I was treating five cases of diphtheria—two of which presented diphtheritic membrane in nasal cavity. I decided not to use antitoxin in these cases. I used only the regular constitutional treatment and Glyco-Thymoline as a local antiseptic. I believe the Glyco-Thymoline

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[1] The Formula for Glyco-Thymoline, Pharmacology Department, The Journal A. M. A., Jan. 9, 1909, p. 147.

[2] Puckner, W. A.: Rep. Chem. Lab., A. M. A., 1910, iii, 7.

[3] Verhoeff, F. H., and Ellis, Edward Keith: The Bactericidal Values of Some Widely Advertised Antiseptics, The Journal A. M. A., June 29, 1907, p. 2175.

worked wonders. My cases are all now in good health, with no after troubles. I think it an ideal antiseptic for every trouble in nose and throat.'"

Words of denunciation fall flat before the complacent self-revelation of the physician who "decided not to use antitoxin." Surely if any other physicians have been misguided by this example, there must be many another "interesting story of Glyco-Thymoline" to tell—not to speak of other families that have been "finished up."

*In Ophthalmia Neonatorum:* We gain from the same advertising pamphlet the following information on prophylaxis:

> "The treatment in the past has consisted of instillation of silver nitrate, boric acid, salts of mercury, nucleinated salts of silver and mercury, etc. . . ., but these agents have proved to be failures as an absolute specific. . . . During the past few months experiments have demonstrated the efficacy of a new mode of treatment that is both rapid and thorough, and devoid of danger in its use. This method consists of thorough irrigation of the eyes in fully developed cases of the disease with a solution of Glyco-Thymoline."

At the very best, Glyco-Thymoline is a weak, a very weak antiseptic—not a germicide. To assert, or even to imply, that it is superior to the well-tried and efficacious Credé method of treatment for ophthalmia in the new-born is cruelly wicked.

*In Consumption:* This from the same pamphlet:

> "The indifference of phthisical patients toward the maintenance of sanitary conditions is proverbial.
>
> "That the environment of all such patients should be absolutely aseptic both for the good of the patient and for the welfare of those who are brought into contact with them is a well-established fact."

It is, instead, an ill-established fiction. To talk about maintaining an "absolutely aseptic" environment under any practical conditions of daily life is to talk nonsense; the thing is impossible, even were it desirable. But, not to be distracted from the main issue by subsidiary falsehoods:

> "In Glyco-Thymoline we have an antiseptic which, while mild and soothing . . . is still a powerful agent for promoting asepsis, and a potent factor in the maintenance of sanitary environment in the sick room.
>
> "Inhaled from a vaporizer or a fine spray atomizer, it will loosen the mucus in a marvelous manner and in a wonderfully short time, shorten the paroxysms of coughing to a marked degree, at the same time reducing the danger of contagion to a minimum."

And this is the preparation, it will be remembered—this "powerful agent for promoting asepsis"—which, when applied in undiluted strength, was unable to kill *Staphylococcus aureus* in four hours!

It would be a waste of space to cite further evidence to show that the advertising of Glyco-Thymoline is in conflict with Rule 6 of the Council, which provides that no article shall be accepted "concerning which the manufacturer or his agents make unwarranted, exaggerated or misleading statements as to the therapeutic value." It is further in conflict with Rule 4, against indirect advertising by means of the label, package or circular accompanying the package.

### CLAIMS TO ORIGINALITY

Hatcher and Wilbert have pointed out that from a therapeutic point of view the composition of Glyco-Thymoline is based on the formula of the widely known "compound solution of sodium borate," or Dobell's solution. For the phenol in the original, a mixture of antiseptic acids and volatile oils has been substituted.

### SUMMARY

Glyco-Thymoline is in conflict with Rules 1 and 4 of the Council on Pharmacy and Chemistry, because of its indefinite composition and the method of advertising it to the public. It is in conflict with Rules 10, 6 and 8, in that it is an unscientific, shot-gun mixture sold under unwarranted therapeutic claims and under a misleading name. Altogether it must be considered an unscientific heterogeneous mixture, in which a few valuable ingredients are hidden by the useless shrubbery which surrounds them.

## WINE OF CARDUI

### Still Soliciting Testimonials

*To the Editor:*—I wish to commend your work in exposing "patent medicine" frauds, and I am particularly interested in the "Wine of Cardui" suit. A few days since a winsome young woman from Chattanooga came through this section soliciting the profession for testimonials showing the merits of Wine of Cardui. Such "nerve" is hard to imagine. I am sorry to say — to the shame of the profession — that some of the unsuspecting who had not read The Journal yielded to her winsome wiles and permitted the use of their names in this connection. Later I learned that the young woman is a lawyer and that such testimonials are to be introduced as evidence in the suit of Wine of Cardui versus the A. M. A. and The Journal.

I am giving you this information with the hope that you will issue a warning to all Fellows to be on the *qui vive* for such persons.

Jos. L. McSparran, M.D., Graham, Va.

### How Tennessee Views It

Under the title "Not to Fight Them is to Help Them," the *Journal of the Tennessee State Medical Association* in its September, 1914, issue says:

"The patent medicine 'industry' has long prospered in Tennessee. Chattanooga, Paris, Winchester, Nashville and to a lesser degree, other cities and towns in the state have become more or less 'famous' on account of their 'wines,' 'tonics,' 'liniments,' 'dropsy cures' and other monstrous fakes. There are not quite as many 'medicine factories' now as once were in the state, but there are considerably more than are going to be after a while. The 'bell has rung on' the fakes and the fakers and they are going to have to move some of these fine days. The contributions of 'wine' profits to churches, 'tonic' profits to high schools, and 'soft drink' profits to church universities will not save them.

"It seems, though, that before the final fall comes that some who should know better are going to allow themselves to be soiled by patent medicine influence. We were astounded to hear one of the prominent physicians of a Tennessee city express himself as being entirely out of sympathy with the effort of The Journal of the A. M. A. to expose the fraudulent claims and reprehensible methods of patent medicine manufacturers. Worse than that, we are reliably informed that there are doctors in Tennessee who are unwilling to go on record as endorsing a resolution which uncompromisingly condemns 'wines' and 'tonics.' We can understand the method of reasoning by which some newspapers and 'boards of trade' arrive at the conclusion that it will not do for them to antagonize the patent medicine 'industry'; but we are completely at a loss to discover by what path of cerebration a modern physician can travel and at its end find himself unwilling to condemn—without reserve—an open-faced fake of the patent medicine variety. Men who are worthy to have M.D.—to say nothing of other combinations of distinguishing symbols which some have, or fain would have—after their names, are constitutionally opposed to misrepresentation and fraud. These are the stock in trade of the 'wine' makers, the 'tonic' mixers and the 'dropsy cure' bottlers. Not to condemn these fakes is but to uphold them. God forbid that any member of the Tennessee State Medical Association should compromise with them! God hasten the day when the whole people shall know the truth about the patent medicine frauds, so that their end shall come! And may all who stand with them, fall with them!"

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**Transformation of an Automobile into an Ambulance.**—The *Wiener klinische Wochenschrift* takes the following from *Caducée*, xiv, 64: "At the Swiss Red Cross exercises, a 24 h.p. automobile with four seats was used as an ambulance. The two rear seats were removed and a bridge put in their place in a short time on which, with the aid of six poles and a few ropes, an inclined plane for the admission of three stretchers was set. Two poles were turned lengthwise, two crosswise and two to fasten the frame."

## Correspondence

### Antityphoid Inoculation

*To the Editor:*—The statistics given by Major Russell as to the reduction of typhoid fever in the army by the use of antityphoid inoculations in three doses at ten-day intervals have given an impetus to this vaccine work, so that thousands of persons are being inoculated throughout this country. He reports three cases occurring in ninety thousand inoculated soldiers during last year.

In a small community here in southern Kentucky, in which we have had approximately one thousand inoculations, we have had five of them develop typhoid fever within the next eighteen months.

There have been no reports in the current medical journals of such cases and I feel that these failures should be published from every source, in order that the true status of the procedure may be ascertained.

The cases are:

Case 1.—Miss Lillian H., a pupil nurse in Jennie Stuart Memorial Hospital, inoculated in December, 1912, by Dr. Keith, developed typical typhoid fever in July, 1914, and is still in the hospital with it. The fever is of a rather severe type running to 103.6. Vaccine used—Lederle.

Case 2.—Ray M., white, boy, aged 15, inoculated by Dr. F. P. Thomas in three ten-day intervals, August, 1912, developed typhoid fever in May, 1914, a fever of marked severity, with a relapse after his recovery. Is now rapidly gaining health. Vaccine used—National.

Case 3.—Ben W., white, man, aged 23, inoculated June, 1913, by Dr. F. P. Thomas with three ten-day interval doses, developed typhoid fever in July, 1914, and was intensely ill for three weeks with marked stupor and delirium, and three considerable hemorrhages. He has now recovered. Vaccine used—Parke Davis & Co.

Case 4.—L., white, schoolboy, student at Bethel College at Russellville, Ky., received three injections of typhoid vaccine from Dr. Austin Bell in September, 1913. He developed typhoid fever at his home near Howell, Ky., in July, 1914, in less than twelve months. Vaccine used—Mulford.

Case 5.—Mr. L., a schoolteacher, was inoculated by Dr. W. W. Durham, with three injections, in the summer of 1913. He moved to North Carolina, and there contracted typhoid in the spring of 1914. Vaccine—not known.

These are bona-fide cases of typhoid fever, occurring in persons inoculated less than eighteen months before.

The question is whether these poor results are the fault of using inferior vaccines, or vaccines that have not been properly kept, or whether they go to show that the protection against typhoid by these vaccines is at best but a fleeting one, disappearing in a few months.

It seems to me that there should be some concerted action on the part of the medical profession to obtain a standard vaccine, and see that it is handled from the laboratory to the patient in a manner that will insure its efficacy.

The results of antityphoid vaccination in Christian County, Kentucky, I should say, have not been satisfactory, certainly nothing like those reported from the army. There must be a reason. If others are encountering failures in immunization, they should report their cases in order that accurate judgment may be formed of the value of this procedure.

J. G. Gaither, M.D., Hopkinsville, Ky.

The above letter was referred to the secretary of the State Board of Health of Kentucky, who replies:

Dr. Gaither is one of our best physicians, but his report as to antityphoid inoculations in Christian County does not accord with that of the State Board of Health. Under the direction of this board 6,739 antityphoid inoculations have been made up to July 1, last. Not one case of typhoid fever has developed in them. Many of these persons were immunized during epidemics. The vaccine used in these cases has been kept in a refrigerator in the laboratory until just before using, and I think the proper care of the vaccine has contributed largely to its success. The board furnishes the vaccine in three ampules at 21 cents. In the present state of rural sanitation in Kentucky, the State Board of Health feels that antityphoid inoculation should be especially recommended in every individual between the ages of 15 to 30 years at intervals of two years.

A. T. McCormack, Secretary,
Bowling Green, Ky.

### Beans for Prevention of Pellagra

*To the Editor*:—Since the publication of my report to the Surgeon-General on the "Cause and Prevention of Pellagra" (*Public Health Reports,* Sept. 11, 1914) and of the editorial on "The Etiology of Pellagra" in The Journal, Sept. 26, 1914, I am repeatedly called on to answer substantially the following question: "Our people cannot afford fresh meat, milk and eggs, the year round; how can we, therefore, keep pellagra from recurring?" Tentatively, at least, the answer may be summed up in one word, "beans." The people of the South, especially the poor, must be taught to cook and eat at least as much of the dried (not canned) beans and peas during the winter as they do of the fresh during the summer.

For obvious reasons, I would ask you to give this the necessary space in The Journal.

Joseph Goldberger, M.D., Washington, D. C.
Surgeon, U. S. P. H. S.

## Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

### BONES IN ANCIENT BURYING GROUNDS

*To the Editor:*—In Fielding's "Tom Jones" there is a description of a small riot in a country grave-yard in which skulls were used as missiles and long bones as clubs. While of course this is a work of fiction, I would like to inquire if ancient burying grounds actually have relics of this kind strewn about, and if so why? A. B. C.

Answer.—Before the Christian era burial places were usually extramural. After the advent of Christianity the dead were buried in churches or churchyards, which, in populous cities and districts, soon became overcrowded. Vaults under the pavements of the churches were crowded with coffins and, in the churchyards, coffins were placed one above the other in the graves, almost to the level of the ground. To make room for fresh interments, it is said, sextons would sometimes slyly remove bones and other remains or transfer the contents of entire graves to adjacent pits, the grave-diggers appropriating the coffin plates, handles and nails, which were sold as waste metal. In this way the air and water-supply of churchyards and their vicinities became a source of infection, very dangerous to health, leading, in England, to the Burial Acts of 1855 and later, which closed the churchyards and created the modern suburban cemeteries of wide extent. It is of record that the first to call attention to these matters in reports of Parliamentary committees was Sir Edwin Chadwick in 1843. With these facts in mind, it is easy to see how skulls and bones might have been tossed on the surface of the ground and left there by grave-diggers, as in the "Alas, poor Yorick" scene in Hamlet. The overcrowded condition of the Christian cemeteries was in striking contrast with the cleanly Graeco-Roman process of cremation, and the vast cypress-planted cemeteries of Constantinople which are said to occupy a wider territory than that covered by the habitations of the living. The ossuaries of the Latin peoples, in which temporary graves are rented to the poor for a period, after which all the bones of their dead are hustled pell-mell into a huge open ditch or stone receptaculum, found their most striking example in the catacombs. The *fosses communes* of Paris in which as many as forty to fifty dead bodies were buried at a time seem a variant of the latter idea, which is quite common to the Spanish possessions in both hemispheres. A photograph of such an ossuary from San Juan, Porto Rico, is on exhibition in the Army Medical Museum.

In Swinburne's tragedy of "Bothwell" (Act II, Scene 2), which follows the Scotch historic documents very closely, there is a scene describing Queen Mary's escape with Darnley through the vaults of the ruined abbey of Holyrood:

> "See you, my friends, what valiant hearts are here,
> My lord's and mine, who hardly have crept forth,
> In God's fear only, through the charnel house,
> Among the bones and skulls of ancient kings,
> That thought not shame to stand for stumbling stones
> In their poor daughter's way, [etc.]

### ARTICLES ON BRILL'S DISEASE

*To the Editor:*—Please give references to articles on Brill's disease appearing since 1910. D. K. Briggs, M.D., Blackville, S. C.

Answer.—

Typhus Fever, General News, The Journal, May 2, 1914, p. 1413.
Plotz, H.: The Etiology of Typhus Fever (and Brill's Disease), The Journal, May 16, 1914, p. 1556.
The Transmission of Typhus Fever, editorial, The Journal, June 20, 1914, p. 1966.
Newman, H. H.: A Sporadic Case of Typhus Fever, The Journal, Nov. 1, 1913, p. 1629.
Anderson, J. F.: The Problem of Typhus in the United States, The Journal, June 14, 1913, p. 1845.
Typhus and Diphtheria in New York, Current Comment, The Journal, July 13, 1912, p. 125.
Goldberger, J., and Anderson, J. F.: Some Recent Advances in Our Knowledge of Typhus, The Journal, Aug. 17, 1912, p. 514.
Nicoll, M., Krumwiede, C., Pratt, J. S., and Bullowa, J. G. M.: Four Cases of Typhus Fever in One Family, The Journal, Aug. 17, 1912, p. 521.
Typhus Fever, editorial, The Journal, Dec. 21, 1912, p. 2258.
Patek, A. P.: Typhus Fever: Case Occurring in Milwaukee, *Wisconsin Med. Jour.*, June, 1912.
Musgrave, W. E., and Stanley, C. R.: Typhus Fever in Philippines, *Bull. Manila Med. Soc.*, June, 1912; abstr., The Journal, Aug. 24, 1912, p. 676.
Hirschberg, N.: Frequency of Stupor and Amnesia in Exanthematous Typhus, *Deutsch. med. Wchnschr.*, July 18, 1912.
Charles, E.: Brill's Disease, *Jour. Indiana State Med. Assn.*, November, 1912.
Lee, R. I.: Typhus Fever at Massachusetts General Hospital, *Brit. Med. and Surg. Jour.*, Jan. 23, 1913; abstr., The Journal, Feb. 8, 1913, p. 475.
Durrett, L. P.: Brill's Disease, *Kentucky Med. Jour.*, Feb. 15, 1913.
Nicolle, C., and Conseil, E.: Experimental and Clinical Research on Exanthematous Typhus, *Ann. de l'Inst. Pasteur*, May, 1912; abstr., The Journal, July 6, 1912, p. 71.
Rabinowitsch, M.: Blood Findings in Exanthematous Typhus, *Deutsch. med. Wchnschr.*, Nov. 6, 1913.
Rabinowitsch, M.: Parasite of Exanthematous Typhus, *München. med. Wchnschr.*, Nov. 4, 1913.
Strouse, S.: Brill's Disease in Michael Reese Hospital, *Illinois Med. Jour.*, January, 1913.
Paullin, J. E.: Typhus Fever, with Report of Cases, *South. Med. Jour.*, January, 1913; abstr., The Journal, Feb. 1, 1913, p. 400.
Arzt, L., and Kerl, W.: Small-Pox and Typhus in Bosnian Refugees, *Wien. klin. Wchnschr.*, May 15, 1913.
Müller, P. T.: Bacteriologic Findings in Typhus, *München. med. Wchnschr.*, June 24, 1913.
Markl: Serodiagnosis of Exanthematous Typhus, *Wiener klin. Wchnschr.*, July 24, 1913.
Hegler, C., and von Prowazek, S.: Exanthematous Typhus, *Berl. klin. Wchnschr.*, Nov. 4, 1913; abstr., The Journal, Dec. 13, 1913, p. 2198.
Naunyn, B.: Confusion in Our Views of Exanthematous Typhus, *Deutsch. med. Wchnschr.*, Dec. 4, 1913.
Fraenkel, E.: Exanthematous Typhus and Rose-Colored Spots, *München. med. Wchnschr.*, Jan. 13, 1914.
Ouftugeaninoff: Efficacy of Iodin Treatment of Exanthematous Typhus, *Presse méd.*, Jan. 28, 1914.
Jablons, B.: Serologic Investigation in Typhus Exanthematicus, *Jour. Med. Research*, May, 1914; abstr., The Journal, June 6, 1914, p. 1844.
Anderson, J. F., and Goldberger, J.: Natural and Induced Immunity to Typhus Fever, *Jour. Infect. Dis.*, November, 1912.

### POISONING FROM SUPPOSED "WILD SWEET POTATO"

*To the Editor:*—Have you any knowledge, or experience with *Jatropha macrorhiza* [*septemfida*], a small plant growing in southern Arizona, belonging to the milk spurge family, Euphorbiaceae? I have recently seen sixteen cases of poisoning among Arizona militiamen from eating the root of this plant, and I am in search of information concerning the plant, its alkaloids, if known, cases of poisoning reported, etc. In this instance the root was mistaken for "Wild Mexican Sweet Potato."
C. E. Yount, Prescott, Ariz.

Answer.—The family, Euphorbiaceae, contains a very large number of poisonous plants. In some cases the toxic principles are fixed oils, in others toxalbumins and in others still, cyanogenetic glucosids. Some species such as the castor-oil and the croton-oil plants contain both toxalbumins and poisonous fixed oils. Many species of spurge contain substances which are extremely irritant to the human skin and mucous membranes. In general, all parts of the euphorbiaceous plants are poisonous, although the constituents of the seeds, roots and rhizomes have receive most attention. Apparently the presence of an alkaloid has been reported in but one species of euphorbia and this alkaloid is not claimed to be poisonous. No chemical examination of *Jatropha macrorhiza septemfida* appears to have been reported, although it is stated to possess cathartic properties and to have been used in medicine to some extent for its purging effects. The rhizomes of a related species, *J. angustidens*, growing in Mexico, contains a glucosid which produces hydrocyanic acid on hydrolysis. Another related species is *J. curcas*, the purging nut of Barbadoes. This contains a fixed oil having chemical and therapeutic properties similar to croton oil but less active. Many cases of poisoning have been reported from eating the seeds of this plant.

### PRICE OF "HANDBOOK OF THERAPY"—KEEPING QUALITY OF BLAUD'S PILLS

*To the Editor:*—1. What is the price of the A. M. A. "Handbook of Therapy"?

2. A firm of manufacturing chemists makes the statement that pills or tablets containing Blaud's mass soon change from ferrous carbonate to ferric oxid, thus reducing greatly their therapeutic activity. Is this a fact? George S. Gilpin, M.D., Stoutsville, Mo.

Answer.—1. $1.50.

2. In general there seems to be no reason why a Blaud pill made in accordance with the direction of the U. S. Pharmacopeia and coated with gelatin or sugar should not keep for a long time; specimens have been known to keep at least forty years. A comparison made by the American Medical Association Chemical Laboratory between a specimen of Blaud pill purchased in the open market and a pill containing ferrous carbonate which the manufacturer claimed to be greatly superior in permanence to the ordinary Blaud pill, showed both to be in relatively good condition, thus suggesting that the ordinary market supply may compare favorably with products for which most extravagant claims are made.

### WIRE TO REPLACE PLATINUM WIRE FOR BACTERIOLOGIC PURPOSES

*To the Editor:*—A medical friend recently referred to a note relating to the use of some alloy wire to take the place of platinum wire in the laboratory as used in inoculations for bacteriologic work. We are writing to inquire whether The Journal can give us the information.
V. H. Bassett, M.D., Savannah, Ga.

Answer.—The wire sometimes used for this purpose is a material with a high fusing point, patented and sold under the name of "Meteor" wire. It can be obtained through surgical instrument houses; in Chicago of V. Mueller & Co.

## *Medical Education and State Boards of Registration*

### COMING EXAMINATIONS

Arkansas: Little Rock, November 10-11. Sec., Dr. W. S. Stewart, 404 Citizens Bank Bldg., Pine Bluff. Homeopathic, Little Rock, November 12. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic, Little Rock, November 10-11. Sec., Dr. C. E. Laws, Ft. Smith.

Connecticut: New Haven, November 10-11. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, New Haven, November 10. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

District of Columbia: Washington, October 13-15. Sec., Dr. George C. Ober, 125 B St., S. E., Washington.

Georgia: Atlanta, October 13-15. Sec., Dr. C. T. Nolan, Marietta.

Kansas: Topeka, October 13-15. Sec., Dr. H. A. Dykes, Lebanon.

Louisiana: New Orleans, October 29-31. Sec., Dr. E. L. Leckert, New Orleans.

Maine: Portland, November 10-11. Sec. Dr. Frank W. Searle, 776 Congress St., Portland.

Michigan: Lansing, October 13-15. Sec., Dr. Beverley D. Harison, 504 Washington Arcade, Detroit.

Mississippi: Jackson, October 27-28. Sec., Dr. E. H. Galloway, Jackson.

Nebraska: Lincoln, November 11-12. Sec., Dr. H. B. Cummins, Seward.

Nevada: Carson City, November 2. Sec., Dr. S. L. Lee, Carson City.

New Jersey: Trenton, October 20-21. Sec., Dr. H. G. Norton, Trenton.

New Mexico: Santa Fe, October 12. Sec., Dr. W. E. Kaser, East Las Vegas.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Waco, November 10-12. Sec., Dr. W. L. Crosthwait, Amicable Bldg., Waco.

West Virginia: Clarksburg, October 13. Sec., Dr. S. L. Jepson 81 Twelfth St., Wheeling.

## Book Notices

The Clarion. By Samuel Hopkins Adams. Cloth. Price, $1.35. Pp. 417. Boston: Houghton, Mifflin Co., 1914.

The *Clarion* is a newspaper purchased by Hal Surtaine, the only son of a millionaire "patent-medicine" manufacturer, "Dr." Surtaine. It was bought when the young man was angry because the editor would not publish a retraction of charges that had appeared a few days previously against his father and his father's business. "Dr." L. André Surtaine, the opulent maker of "Certina," had in his earlier days been Andy Certain, a peripatetic quack and nostrum vender.

The son, Hal, is a college-bred man, of more than ordinary ability and of high ideals. He starts out to run his new property with honesty of purpose and without fear or favor. The problems he has to meet and the difficulties he encounters make up the story—and a stirring and strenuous story it is. The book is a wonderfully graphic pen picture of the forces that control journalism, of the unholy alliance between journalism and "business," and of the paralyzing grip of the advertiser on a free press. ". . . . If the newspaper fakes its news, if it distorts facts or if it suppresses them, it is playing false with its subscribers. It is sanding its sugar and selling shoddy for all wool." This was the attitude the young owner of the *Clarion* took toward his property. But it took him some time to see that the advertising pages, no less than the news pages, carry with them a responsibility to the public. This fact, already at work on his subconsciousness, took new life when an advertisement of a "blue-sky" mining proposition, offered by an old friend of his father's, was refused. The mining shark was indignant, and pointed to some other advertising being carried in the current issue of the *Clarion*. To quote from the protests of the gentleman who wanted to advertise his Streaky Mountain mining stock:

> "Why, Streaky Mountain Copy is the Holy Bible compared to what you've got here. Take a slant at this: 'Consumption Cured in Three Months.' 'Cancer Cured or Your Money Back.' Catarrh dopes, headache cures, germ killers, baby-soothers, nerve-builders—the whole stinkin' lot. Don't I know 'em! Either sugar pills that couldn't cure a belly-ache, or hell's-brew of morphin and booze. Certina ain't the worst of 'em, any more than it's the best. I may squeeze a few dollars out of easy boobs, but you, Andy Certain, you and your young whelp here, you're playin' the poor suckers for their lives. And then you're too lily-fingered to touch a mining proposition because there's a gamble in it."

The young newspaper proprietor also got an insight into his father's business when, by accident, he was thrown in contact with his father's confidential adviser, a man who had collected testimonials for the nostrum manufacturer and who knew all that was to be known about the black details of the "patent-medicine" business. This interesting personage was in a volubly alcoholic state when the young man innocently demanded information regarding the number of bottles of his father's nostrum—"Certina"—it would take to effect a "cure." The reply he got was an eye-opener:

> "A real cure couldn't make office-rent," declared the expert with conviction. "What you want in the proprietary game is a jollier. Certina's that. The booze does it. You ought to see the farmers in a no-license district lick it up. Three or four bottles will give a guy a pretty strong hunch for it. And after the sixth bottle it's all velvet to us, except the nine cents for manufacture and delivery."

Not the least interesting part of the book deals with the attempt of the commercial interests of the town in which the *Clarion* is published to handle a serious epidemic. The disease breaks out in a part of the town occupied by old ramshackle buildings and crowded with the poorest of the poor. The authorities, at the behest of the business interests of the town, try to cover up the epidemic so that "trade" shall not be injured—and with the inevitable result.

While it is all fiction, it is fiction founded on fact, and Mr. Adams is, probably, the only writer who could deal with the subject with an actual knowledge obtained by personal experience. For ten years he was a reporter and special writer on one of the leading New York newspapers, and a member of the staff of *McClure's Magazine* when that periodical was doing its best work. But the greatest thing he ever did was the Great American Fraud articles in *Collier's*, attacking vested interests, which required that the author know his facts and have courage to present them. The former he obtained by a personal investigation that covered many months. He visited "patent-medicine" factories, got in touch with the "patent-medicine" promoters and with their dupes; then he presented the data gained in language that was direct and that could not be misunderstood. In preparing the articles that appeared in book form under the title "The Health Master," he made a thorough study of public-health matters; consequently what is touched on in "The Clarion" regarding public health—as, for instance, concerning the epidemic—may be expected to be "true to life"; and the expectations will be realized on reading the book. But while "The Clarion" carries a message, it is also, and primarily, a novel—a story of love and self-sacrifice of compelling power. It is a book that grips one from the start, and it should prove to be one of the "best sellers" of the year. It is a book that will appeal to physicians especially.

A Text-Book of Physiology for Medical Students and Physicians. By William H. Howell, Ph.D., M.D., ScD., M.P., Professor of Physiology in the Johns Hopkins University. Fifth Edition. Cloth. Price, $4 net. Pp. 1020, with 306 illustrations. Philadelphia: W. B. Saunders Co., 1913.

This embodies all the good features of the earlier editions together with valuable additions of those recent contributions in physiologic research which are a distinct and lasting advance in our knowledge of physiology. The work of Tashiro on the metabolism of nerve fibers; of Cannon, Washburn and Carlson on the mechanism of hunger, and of Harvey and Bensley on the probable origin of the free acid in the gastric secretion have received the recognition which they deserve. The chapter on the "History of Protein Food" has been rewritten. Denis' and Folin's contributions have been added to this chapter and the question of the protein minimum discussed from the point of view of the nutritive value of different proteins in growth and maintenance. There are three reasons why this book can be highly recommended: Unlike many text-books of physiology it is up to date and is kept so by the author. In addition, the book contains the most important bibliography pertaining to the subject under discussion. Finally, it is written with a clarity of expression which makes the reading of the book a pleasure.

Surgery of the Vascular System. By Bertram M. Bernheim, A.B., M.D., Instructor in Surgery, the Johns Hopkins University. Cloth. Price, $3. Pp. 104, with 53 illustrations. Philadelphia: J. B. Lippincott Company, 1913.

This little volume may be divided into two parts, the first dealing with the technic of operations on the blood-vessel and the second dealing with the clinical side of the subject. The technic of the operations has been materially simplified in the past two or three years, by eliminating everything except the essentials, and these have been made as simple as possible. The technic is clearly described and well illustrated by excellent drawings. The second part is limited practically to statistics of operations on aneurysms, the statistics being condensed from the work of Monod and Vanvert. To one unfamiliar with the technic of operations on blood-vessels the work will be very valuable.

Taschenbuch der Augenheilkunde für Aerzte und Studierende. Von Dr. Curt Adam, Direktor der Kaiserin Friedrich-Hauses für das Aerztliche Fortbildungswesen. Third Edition. Cloth. Price, $2. Pp. 395, with 80 illustrations. New York: Rebman Company, 1914.

An interesting chapter of this compend is the one devoted to prescriptions for all eye conditions. It comprises 185 different formulas and completely covers the ground of ophthalmic therapeutics. Of rather timely importance is the section devoted to the requirements for entrance into the German and Austrian armies. While the book is but another addition to the rather large list of condensed treatises on the eye, it is, on the whole, a very creditable pocket work on ophthalmology, being complete in a concise and concentrated form.

# Miscellany

### Providing Occupation for Tuberculous Patients

In the *California State Journal of Medicine* for August, Philip King Brown describes the work of Arequipa Sanatorium, a place where tuberculous working girls can be cared for at a cost within their means, but with no element of charity. The death-rate from tuberculosis among the 40,000 working girls of San Francisco is said to be twice as high as among men. Since it was found that women had far less opportunity to recover from tuberculosis than men, most healthful outdoor occupations being closed to them, and since it had been found unsatisfactory to mix the sexes, it was decided to limit the work to women. The intention is to receive only early cases. Such patients are charged $1 a day; and this rate has so far covered the running expenses of the institution. Patients obliged to remain continuously in bed are charged $1.50 a day; but the aim is to avoid receiving such patients. It has been found that third-stage cases in the working classes rarely attain complete recovery; that is, the patients seldom become active factors in the industrial world again. The sanatorium is intended primarily for patients who, after being helped toward recovery and taught how to live, may go back to work without danger of relapse. Patients in the third stage, therefore, are received only when they have shown decided gains and are ready to attempt work.

Many occupations otherwise suitable for convalescents are ruled out in connection with tuberculous patients because the product cannot be sterilized without risk of being ruined. The form of craft chosen here is pottery. No patient is obliged to go to the pottery, and no one is allowed to go who is coughing or who within a week has had a temperature as high as 99 F. When the girls wish to work in the pottery they are allowed to begin on one hour a day at something that requires little effort. The working hours are gradually increased to two or three a day. No one works more than five hours a day, and no work is done Saturday or Sunday. Frequently no gain has been made until the patient began to work; and no girl has had to give up work because of any ill effects. The girls teach each other, so that supervision of the work is reduced to a minimum. In some instances considerable artistic ability has been revealed.

The girls are not paid until their work acquires some actual value, which may not be until a week after beginning. Very few patients have been able to earn their entire support at the sanatorium, but some girls have earned as much as $15 a week for the twenty-five hours of work accomplished before their departure, and as high as $1.15 for a few hours has been earned within a few weeks of beginning the work. The pottery has at times more than cleared expenses; it is hoped, by increasing sales through advertising, to wipe out a present deficit which is being met by friends.

It has been evident from experience that at least one-third of the patients must be helped financially to remain under care as long as it is needed. Employers, the Associated Charities of San Francisco, fraternal and social organizations and private individuals have aided, so that no girl has been compelled to leave for lack of means. It is felt, however, that it will be impossible to meet expenses for the future unless the work is confined to girls so little handicapped by the disease that they can go to work in the pottery soon after arrival, or unless a number of endowed beds are furnished. Brown feels that the most profitable field for extended efforts is educational work along health lines among San Francisco working girls.

### Color Test for Serodiagnosis of Syphilis

Landau's technic is simple and seems to be proving quite reliable. All that is needed is a 1 per cent. solution of iodin in methanetetrachlorid, a clear fluid of constant chemical composition. To 0.2 c.c. of the serum is added 0.01 c.c. of the iodin reagent; they are well mixed and then set aside for four hours at room temperature. The fluid is then a clear, transparent yellow if the serum came from a syphilitic; with normal serum the fluid looks a whitish gray and is opaque. Landau at first used iodized petrolatum for the test, 0.025 c.c. iodin in 50 c.c. of white petrolatum. To 0.2 c.c. of the serum was added 2.5 c.c. of this reagent and the test-tube set aside in a dark place for from five to fifteen hours. Syphilitic serum decolors the mixture while the color persists a reddish yellow with normal serum. With this technic he obtained positive reactions more constantly than with the Wassermann test in ninety syphilitics and thirty-two normal controls as he reported in his first communication in the *Wien. klin. Wchnschr.*, 1913, xxvi, 1702. With the methanetetrachlorid the findings are proving even more reliable.

### Methods of Artificial Respiration

The recommendations of the Committee on Resuscitation from Mine Gases, whose report is published by the federal Bureau of Mines as Technical Paper 77, with regard to methods of artificial respiration, are the following:

"In all cases of suspended or inadequate respiration, as in very slow breathing, the method of artificial respiration which can be most quickly applied should be used at once. In most cases, where good air is present, manual methods of artificial respiration are most immediately useful. Of those the modified prone-pressure method . . . is best. If there is on the victim a local wound that the prone-pressure method may seriously increase, the Silvester method, in which other parts of the body are moved, may be substituted.

"In cases of carbon-monoxid poisoning, oxygen should be given instead of air. If the victim is breathing at approximately the normal rate, oxygen may be given very simply by fastening to the face of the victim a mask supplied with straps to hold it in place, fitted with an outlet valve opening to the air, and also fitted with a tube having an inlet valve and connected with a breathing-bag. Such masks are on the market. The breathing-bag is kept provided with oxygen from a cylinder. If the victim is breathing slowly or irregularly, or has ceased breathing, he should be given the oxygen, in the absence of other means, by a manual method of artificial respiration, preferably the prone-pressure method.

"Of mechanical devices for artificial respiration, the committee has examined the pulmotor and the Dr. Brat apparatus, and disapproves of them, because repeated suction of air from the lungs is not physiologic, and if continued is likely to result in injury to the lungs and inadequate inflation; and disapproves of the pulmotor also because the automatic mechanism is so readily disturbed as to be a frail dependence at critical moments.

"The committee recommends the apparatus devised by Dr. Meltzer because of its certain action, its freedom from sucking in expiration and its lightness, cheapness and simplicity. And the committee suggests that in cases of suspended or insufficient breathing the modified prone-pressure method be supplemented as soon as possible by the use of this apparatus."

### Surgery and Malaria

A. Lara N reports in the August *Revista medica de Yucatan* an instructive case in which a man died a few hours after an operation for chronic appendicitis. He had been in the hospital for several days and was given tonics, as he seemed rather debilitated and had developed grippal bronchitis. After this had subsided, the appendix was removed under chloroform and ether, preceded by a little morphin and atropin. The temperature ran up during the simple operation and was 108 F. as the last suture was taken, and the patient collapsed and died in half an hour. The high temperature had evidently induced fatal congestion in the brain, and examination of the blood revealed the crescent parasites of pernicious malaria in the stage of sexual evolution. The unsuspected latent pernicious malaria had evidently been aroused by the anesthetic, and a paroxysm developed coinciding with the operation, the attack of pernicious malaria in the comatous form proving speedily fatal.

# Medicolegal

## Practicing "Suggestive Therapeutics" Without a Certificate —Constitutionality of Statute

(*State vs. Pratt* (*Wash.*), *141 Pac. R. 318*)

The Supreme Court of Washington affirms a conviction of the defendant of practicing a mode of treating the sick, known as suggestive therapeutics, without having a certificate from the state medical board. The court says that suggestive therapeutics, as practiced by the defendant, consists of a laying on of hands on that part of the body where the trouble is, and, quoting from his testimony, "on certain parts of the spine that control this—these nerves, or the nerves that control the organ; and I give certain suggestions which go from my mind to the mind of the patient, and the mind of the patient controls his own body. That is the way the cure is performed." The claim was also made that by this laying on of hands, certain "vibrations" were sent through the body and were instrumental in effecting the cure. That the mind exercises a powerful and ofttimes controlling influence on the body cannot be denied, and the court is offering no criticism on the defendant's methods. It is concerned only with the fact that it is a mode of treating the sick, and as such can be practiced only after obtaining the proper certificate from the state medical board. No doubt suggests itself to the court but that the facts were sufficient to sustain the conviction.

The defendant's brief was devoted to an argument seeking to establish the unconstitutionality of the law under which the complaint was made and conviction had. It attacked especially the provision included in the words, "or any other system or mode of treating the sick or afflicted," where the law reads: "Any person who shall practice or attempt to practice, or hold himself out as practicing medicine and surgery, osteopathy, or any other system or mode of treating the sick or afflicted in this state, without having, at the time of so doing, a valid, unrevoked certificate as provided in this chapter, shall be guilty of a misdemeanor. . . ." The argument was that such provision denies to those persons engaged in the practice of any system or mode of treatment not embraced within the terms "medicine," "surgery," and "osteopathy," as mentioned therein, the equal protection of the law, in establishing an arbitrary classification and denying to those not within such classification the right to engage in a lawful occupation. The court found the argument of counsel in support of his contention interesting, and read it with much care. It was the same argument, however, made by the defendant in State vs. Greiner, 63 Wash., 46, 114 Pac., 897, in contending that one who followed the method of treatment of the sick known as chiropractic was not within the prohibition of the law, and the method itself not subject to legislative control. The court there said that none of the objections then raised was well founded. On the same reasoning, it expresses the same opinion as to the objections raised by this defendant.

It was also suggested that the section above quoted must be construed with that one which reads: "Nor shall this chapter be construed to discriminate against any particular school of medicine or surgery or osteopathy or any system or mode of treating the sick or afflicted, or to interfere in any way with the practice of religion: Provided, that nothing herein shall be held to apply or to regulate any kind of treatment by prayer." Suggestive therapeutics, however, as shown by the record before the court, is not the practice of any religious belief, nor is it "any kind of treatment by prayer."

## Power of School Boards to Require Physical Records of Pupils by Physicians

(*Streich vs. Board of Education of Independent School District of City of Aberdeen et al.* (*S. D.*), *147 N. W. R. 779*)

The Supreme Court of South Dakota affirms a judgment in favor of the respondents in this case, in which the sole question presented was their right to require of the children seeking admission into the schools under their charge, and as a condition to their admission, the furnishing of a prescribed physical report either by some regularly licensed physician of their own selection and at their own expense, or by a physician furnished by the board at the expense of the school district. The physical-record cards provided for the purpose required information as to history of contagious diseases, heart, lungs, throat, tonsils, skin diseases, spine, teeth needing attention, abscesses in mouth, irregular teeth, recommendations, results.

The court says that many cases were cited in which it has been held that it is beyond the power of a school board to require pupils to be vaccinated as a condition precedent to attending schools, but such decisions had no application to the question here. It is one thing to say that requiring a report from which the board may learn the physical condition of a child is a reasonable exercise of police power, and quite another thing to say that a rule prescribing a certain method of medical treatment is a reasonable exercise of the police power; and yet this court has held that, under certain conditions, the requiring that pupils be vaccinated is a reasonable exercise of the police power. By so holding, this court recognized that to the school board there is delegated the right to exercise such police power as is reasonably necessary in carrying out the duties imposed on it.

Was the information sought such as would tend to promote the welfare of the child himself in his school-work, as well as to promote the well-being of the school as a whole? Can it be successfully contended that because the statute has intrusted to some particular board the general supervision of matters pertaining to the health of the people, that by implication they have forbidden school boards from bringing about such results as were stipulated to have followed the adoption of the regulation in this case, when it can be done by requiring reports such as the one before the court? The information sought would necessarily tend to aid in giving to the children the greatest benefit possible in pursuing the additional courses in physical culture, athletic exercises and vocal culture provided for them, though the court does not wish to intimate at this time its views with regard to the power of the board to require pupils to pursue studies not prescribed by statute, because that question was not at issue. Nor does the court give weight to the contention that the examination called for might result in such mental suggestion of diseases as might result in mental disease germs. Neither did the case present any religious question.

Was the source from which the information was required a proper one from which to seek same? It is evident that this information, to be entitled to due consideration, should come from some one having expert knowledge of the matters referred to; it could not be furnished by the parent or the teacher. It is true that much of it could be as well furnished by a competent dentist, but there was some which he could not furnish, and it all could be furnished by a competent physician. Moreover, such an examination as called for could not subject a child to anything not in perfect harmony with the conventions of to-day, could not subject it to indignity, and would be reasonable.

## Tracings and Photographic Evidence Admissible to Show Physical Condition

(*M., K. & T. Ry. Co. of Texas vs. Heacker* (*Tex.*), *168 S. W. R. 26*)

The Court of Civil Appeals of Texas says that in this personal injury a tracing of plaintiff Heacker's pulse was admitted in evidence, it being conceded by all the physicians examined on the subject at the trial that the instrument by which the tracing was made was accurate and that the tracing indicated a very weak heart. There was also admitted in evidence, in illustration or demonstration of the condition of the eyes, a tracing made by the perimeter. Again, a microscopic photograph of the plaintiff's urine was admitted in evidence, the photograph having been scientifically and correctly taken and disclosing tube casts or crystals in the urine, indicating an inflamed and serious condition of the kidneys. The court holds that there was no error in the admission of any of this evidence.

# Society Proceedings

## COMING MEETINGS

Amer. Academy of Ophthal. and Oto-Laryn., Boston, Oct. 19-21.
Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
American Association of Railway Surgeons, Chicago, Oct. 14-16.
Delaware State Medical Society, Wilmington, Oct. 13-14.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Mississippi Valley Med. Assn., Cincinnati, Oct. 27-29.
Nevada State Medical Association, Reno, Oct. 13-15.
Southern Medical Association, Richmond, Nov. 9-11.
Virginia Medical Society, Washington, D. C., Oct. 27-30.

## AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

*Twenty-Seventh Annual Meeting, Held at Buffalo, Sept. 15-17, 1914*

The President, Dr. Charles N. Smith, Toledo, Ohio in the Chair

### Officers

The following officers were elected for the ensuing year: president, Dr. Charles L. Bonifield, Cincinnati; vice-presidents, Dr. Asa B. Davis, New York, and Dr. K. I. Sanes, Pittsburgh; secretary, Dr. E. Gustav Zinke, Cincinnati; treasurer, Dr. Herman E. Hayd, Buffalo.

Pittsburgh was selected as the next place of meeting.

### Necessity of Constantly Looking for Cancer of Uterus

Dr. J. Carstens, Detroit: Every case in which curetting is done should be examined. In every case of trachelorrhaphy, the tissue removed should be examined for cancer. The age of the patient does not matter.

#### DISCUSSION

Dr. Julius H. Jacobson, Toledo, Ohio: If we can impress nurses in the training schools with the importance of the early recognition of cancer, we can do more good in informing women of its early signs than by any other plan we may adopt.

Dr. Channing W. Barrett, Chicago: I would not be inclined to lay as little stress as the essayist does on irritation as an etiologic factor in the causation of cancer. We shall probably find out some time that there is another cause, a parasitic cause.

Dr. Gordon K. Dickinson, Jersey City: Dr. Deaver and I stand alone in exploiting the value of diagnostic hysterotomy. Dr. Carstens speaks of the pathologist finding cancer cells and making a diagnosis. How many times have we trusted our pathologists who send a report back "No cancer," and afterward we discover carcinoma? We should make a diagnosis early, and I do not see any reason why when clinical and pathologic proof is wanting, we should not bring the fundus down into the vagina, split it, examine the interior of the uterus, and remove a piece, if necessary, instead of relying on the curettings.

Dr. Charles L. Bonifield, Cincinnati: I do not think it is wise to keep on harping to the laity about the early symptoms of cancer, because they cannot make the diagnosis, but what is necessary is to teach married women who have had children the necessity of going to a gynecologist occasionally to be examined, just as they go to a dentist to see if their teeth are sound or decayed. If it is worth while to pay money to save teeth, it is certainly worth while to have some competent man determine whether or not a woman is suffering from cancer.

Dr. J. H. Carstens, Detroit: Irritation does not produce cancer. It never has and never will. If by coincidence there is a place that is irritated and cancer develops, there is some other place where cancer develops where irritation does not exist. Persons who wear glasses irritate the skin of their noses; their noses are pinched, yet I challenge anybody to show me a single case of cancer having started there from such irritation.

### Renal Damage from Calculi

Dr. Henry D. Furniss, New York: Undoubtedly the calculus in each case is present much longer than the symptoms, yet the average duration of symptoms in my forty cases was four years,—the minimum being one month and the longest eighteen years. Frequently complete destruction of a kidney occurs with very little discomfort or interference with the general health. Multiplicity of stones was found in fifteen cases, though in only two were both sides affected. I regard the so-called reflex pain as very rare. Stones unless multiple or very large, situated in the calices, in the absence of infection, or the opening of a blood vessel by attrition, cause little discomfort and *little damage*. The size and location in these quiescent cases should be determined by frequent roentgenograms, and when the stone remains favorably situated and does not enlarge, a waiting policy should be the one used. When very large, pressure atrophy of the renal parenchyma occurs. When a stone enters the pelvis of the kidney, then obstruction is liable to occur, and with the consequent retention, infection will sooner or later develop. The rougher the stone and the greater the retention, the greater the liability of infection, so the more urgent need of operation.

Ureteral calculi that are small, smooth, do not completely obstruct, move downward constantly and are passed in a relatively short time, do only temporary damage. Those that are fixed, or obstruct seriously the outflow of urine, soon lead to irreparable damage, especially if infection takes place. Stones in the pelvis that ball-valve it, and ureteral calculi, as a rule, cause much more suffering and greater renal damage, than stones located in the calices, especially when on the retention, infection supervenes. Ureteral calculi often become embedded in the ureteral wall, and after operation, stricture of the ureter is very apt to occur, and cause further damage of the kidney. The effect of calculi on the kidney is dependent mostly on the obstruction that is produced, and is added to by infection, which was present in 68 per cent. of my cases. There were nine cases of pyelitis and pyelonephrosis, five of pyonephrosis, and five of infected hydronephrosis. In seventeen cases the function of the involved kidney as compared with its fellow was determined, and in only two was it normal; in four the loss of function was moderate, in three great, and in eight complete. This analysis shows that in practically 50 per cent. there was damage to the renal function, and that in 35 per cent. it was completely destroyed. These numbers fall short of showing the real condition, for in fifteen cases, nearly 50 per cent. of the total, no determination of function was made. Of the thirty-two cases, the calculi produced no injury in thirteen, in nine there was pyelitis and pyelonephritis, in five pyonephrosis, and five infected hydronephrosis. In the pyonephrosis cases and the infected hydronephrosis with great loss of function, nephrectomy is advisable.

In the ureteral cases with great loss of function, it is debatable whether the removal of the stone, or the kidney, is advisable. My own opinion is that better results are obtained by removing the kidney than the stone, and that the best results come from removing the kidney and ureter to a point below the stone.

#### DISCUSSION

Dr. Charles L. Bonifield, Cincinnati: I remember distinctly a case in which I operated two years ago. The patient went to one of my colleagues two or three years previously, and had the kidney explored and needled; but the conclusion was reached that there was no calculus. In the meantime the Roentgen ray showed a calculus. It was easily removed. It is important to employ roentgenoscopy in all these cases early.

Dr. Francis Reder, St. Louis: In one case I cut down on a kidney following a roentgenogram which located the stone in the lower pole. At the operation it was found that the stone was an inch and a half in the ureter. In some way the kidney was displaced and the shadow showed through the kidney and gave the impression that the stone was located in the lower pole of the kidney.

Dr. E. Gustave Zinke, Cincinnati: A man, aged 54, did not pass so much urine as usual, and occasionally he had a dull pain in his back. Examination of the urine revealed a slight trace of pus. The roentgenogram showed a stone about the size of a rooster's head on the right side, with a stone about the size of a cherry on the left side, which gave him little or no trouble. At operation on the kidney with a large stone, the kidney was easily found, exposed, and incised its full length to remove the stone. There was apparently no evidence of destruction of the kidney tissue, and as the man had a stone on the other side I concluded not to remove the kidney. I sewed it up and fixed it in the usual way. The man did well for one week, and then suddenly began to get worse. He died of exhaustion at the end of two weeks.

Dr. John F. Erdmann, New York: In one case the roentgenogram showed a large stone on the right side and a large shadow on the left side. The patient had a high temperature with all the evidences of sepsis. I removed a large hypernephroma from the left side but did not operate on the kidney containing the stone. Notwithstanding the man's urine was badly infected he has recovered. I hope later, if the man turns up, to do a nephrostomy and remove the stone from the right kidney.

### Anastomosis of the Gall-Bladder to the Stomach: "Cholecystogastrostomy"

Dr. Julius H. Jacobson, Toledo, Ohio: The operation of cystogastrostomy has the same indication as that for cholecystenterostomy. The presence of bile in the stomach after cystogastrostomy does not interfere with digestion or cause the patient any inconvenience. The operation is very easy to perform; therefore, it offers a palliation and prolongation of life in a class of cases which as a rule are considered inoperable. On account of the small danger of ascending infection it should be the choice of methods when it is necessary to anastomose the gall-bladder to the alimentary tract.

### Torsion of Ovarian Cysts

Dr. K. I. Sanes, Pittsburgh: Recognizing the dangers of torsion, we should adopt only one line of treatment, and that is ovariotomy. Pregnancy should not be considered a contra-indication to the operation. In a case of torsion of ovarian cysts and one with torsion of the right tube and ovary during the fourth month of pregnancy the patients went to full term and were delivered of living children about five months after the operation. In cases of impaction of a twisted cyst in the pelvis, the vaginal route may be preferable. The good result of the vaginal ovariotomy in one of my cases shows that in favorable instances it can safely be used. There was no death in my ten cases.

#### DISCUSSION

Dr. Channing W. Barrett, Chicago: The question as to how to deal with an ovarian cyst and yet save the ovary is an important one. In a series of cases collected, the frequency of abortion following operation is almost in direct proportion to the trauma done beforehand. The further question that was brought out in this series was what to do with an ovarian cyst that was double, there being a rather common notion that if both ovaries are removed abortion will take place. Abortion did not occur in the series of double removal of the ovaries, but seldom in a single removal and that is easily accounted for by the extra manipulation of taking out the two ovarian tumors rather than one.

Dr. Albert Goldspohn, Chicago: If we inspect the outer part of the cyst wall near its pedicle, frequently we will see macroscopic evidences of graafian follicles, and I have repeatedly dissected out that outer layer, carefully ligated vessels, without compromising the main pedicle, and folded the flap up and stitched it, and menstruation has continued.

Dr. Hugo O. Pantzer, Indianapolis: I have had fourteen cases of torsion of ovarian cysts in fourteen consecutive months, and then none in two years plus.

### Delayed Union in Non-Infected Epigastric Wounds

Dr. Miles F. Porter, Fort Wayne, Ind.: The evidence on which rests the opinion that delayed union is more liable to occur in wounds in or near the midline above the umbilicus than in similar wounds below the umbilicus is quite strong. Neither the suture material nor the method of suturing can be blamed in all cases. The causes are many. Of special importance is the general condition of the patient. By using non-absorbable suture material, and allowing the sutures to remain *in situ* for two weeks or more, one may avoid serious accidents from delayed union; but one cannot in this way always secure prompt union. Incisions through the recti muscle unite more promptly than incisions through the white line. The results of delayed or imperfect union are immediate and remote. The immediate result is protrusion or exposure of the viscera, and the remote result is hernia and rarely rupture of the scar. Lack of union is usually symptomless and is usually discovered when the wound is dressed. In some cases the moisture of the dressing leads to an example which reveals the condition. As a rule, the prognosis is good. The proper closure of wounds may not secure prompt union, but will prevent serious accidents from delayed union.

#### DISCUSSION

Dr. George Van Amber Brown, Detroit: I have had three cases similar to those described by Dr. Porter. The first occurred about ten years ago in a young woman from whom I had removed a large cystic ovary and did the so-called Gilliam operation. She left the hospital in fifteen days. Two or three days after her return home I was called and found that the wound had separated down to the peritoneum. There was no suppuration. It was filled with one blood-clot. A culture was made and staphylococcus infection was found. The patient was taken to the hospital and the peritoneum was closed with catgut and a layer of gauze placed between the peritoneum and the muscle for drainage and the muscle sheath closed with catgut, and then she made an uneventful recovery.

Dr. Lewis F. Smead, Toledo, Ohio: I have had two cases of delayed union above the umbilicus. The first was a case of pyloric obstruction due to ulcer in which the Finney pyloroplasty was done. It was a right rectal incision. The wound was closed with fine silk in the peritoneum, the muscle and fascia with heavy silk, and running silk in the fascia; the through-and-through muscle and fascia stitches going back ¾ inch and tied over a running stitch, the skin being closed by subcutaneous silver wire. At the end of ten days the silver wire was removed and the wound was apparently clean. In the afternoon the wound opened completely from end to end. It was closed immediately, but the woman died on the seventeenth day from peritonitis.

Dr. Asa B. Davis, New York: We have seen five or six cases of separation of the wound after cesarean section in the Lying-In Hospital. The wound was not infected apparently, but by closing it again with through-and-through silkworm-gut sutures, there was strong union and no complications. In one or two cases the wound had been infected and opened part way down and had been allowed to heal by granulation. In these cases hernia developed, while in the other cases it did not. It is a rare thing to see in connection with cesarean operations.

Dr. Hugo O. Pantzer, Indianapolis: I operated on a patient in the relatively well period of pernicious anemia. Within three days after operation there was not found a vestige of any absorbent suture material, and I used chromic gut of the heavy type through the fascia.

Dr. Frank D. Gray, Jersey City: The only instance of separation of the abdominal wound which I can remember in the course of five years or more was a laparotomy done for resection of the intestine following a bullet wound, making six or seven openings in the intestine, which I resected and united by the modified Maunsell method, and the man made an uninterrupted recovery. For a week there were no evidences of sepsis. At the end of that time he sat up, was put in a roller chair, and on his own responsibility went rolling around the ward. He went back to bed, had partial syncope and vomited. The wound separated. It was closed again, and he made an uneventful recovery with perfect union.

**Dr. William H. Humiston**, Cleveland: I do not see why we should have more difficulty with incisions made in the epigastric region than in those made below the umbilicus. The question arises whether the technic might not be at fault in the majority of cases. It is better to go through the muscle to the right of the median line and be very careful not to strip the fascia from the muscle. If the incision is clean and the muscles are separated carefully, and the posterior fascia is divided carefully, I do not see why there should be separation of the wound. In the majority of cases where separation occurs the muscle sutures are drawn too tight.

(*To be continued*)

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## AMERICAN ROENTGEN RAY SOCIETY

*Fifteenth Annual Meeting, held in Cleveland, O., Sept. 9-12, 1914*

(*Continued from page 1229*)

### The Treatment of Cancer by Physical Methods, with and without Surgery

**Dr. Arthur F. Holding**, New York City: Incipient surface cancers can be cured, (a) if *superficial*, by physical methods; (b) if *deep*, by physical methods and surgery. The physical methods employed include massive Roentgen-ray doses, desiccation (Clark), fulguration (De Keating-Hart), diatherapy (Nagelschmidt) and radium. Beginning cancer of the gastro-intestinal tract can be diagnosed with accuracy by recently improved roentgen-ray methods. Advanced cancer either internal or external cannot be cured. The successes herein reported are due, not to the discovery of any one new factor, but rather to the combined application of the best and most efficient electrophysical technic, both in early diagnosis and prompt treatment, the results of which, if permanent, are invaluable. The methods herein advocated are very costly. If this work is to be continued, sufficient money must be raised to carry it on. This means, for institutions, proper endowment; for individuals, the establishment of adequate fees.

### Treatment of Chronic Roentgen Dermatitis

**Dr. E. W. Caldwell**, New York City: For all chronic Roentgen-ray lesions while they are strictly cutaneous, radium treatment is the most practical, because the easiest to apply, and especially because of its comparative freedom from pain. The effectiveness of the freezing methods and of the electric-spark methods cannot be questioned, but they are both painful. Sparks can sometimes be applied in situations impossible to reach with liquid air or carbon-dioxid snow. Of the two methods, freezing is somewhat less painful. The value of surgery in such cases has been demonstrated by Dr. Porter beyond any shadow of doubt, but it is my impression that these operations are dangerous and that they call for surgical judgment and technical skill of a degree which is very rare. Under the best conditions excision cannot be safely done without sacrificing some useful healthy tissue. The possibility of hastening metastasis must always be considered, and when this has occurred there is little to hope from any known treatment.

### Treatment of Acute Roentgen-Ray Dermatitis

**Dr. W. J. Dodd**, Boston: Two or three years ago this paper would have been unnecessary; to-day, I am afraid it is. Powerful apparatus is being installed in many small hospitals, as well as in private laboratories. Untrained and unqualified men may be put in charge. If this be the case, sad results may follow and much harm be done. Occasionally we are going to get reactions in certain cases when Roentgen therapy is applied, and it is to this class I particularly suggest this exceedingly simple and absolutely efficacious remedy, white wash.

| | gm. or c.c. | | |
|---|---|---|---|
| ℞ Zinci oxidi | 30 | | ℥ i |
| Pheaolis | 2 | or | ʒ ss |
| Glycerini | 4 | | ʒ i |
| Aquae calcis | 240 | | ℥ viii |

Shake well and bathe area for five to ten minutes, twice or three times a day. Avoid all heavy dressings and, when possible, expose the lesion to the air. Do not apply this remedy on a dressing, and allow to remain for five to ten minutes, but sap it on and let the air get to the lesion. Under no conditions use an ointment.

## SYMPOSIUM ON ROENTGEN THERAPY

### Technic in Deep Roentgen Therapy

**Dr. George E. Pfahler**, Philadelphia: Since we now have outfits capable of giving almost a uniform output under definite circumstances, it is only necessary to know the value of each factor in order to reproduce at will the quality and quantity of the rays needed for any definite result. I found that the denser portions of the body, especially the liver, absorbed considerably more rays than an equal thickness of water. The liver absorbs twice as much. Only about one-fiftieth of the rays which are filtered through 3 mm. of aluminum, corresponding to 6 or 7 Benoist in penetration value, will pass through 3 inches of meat. Therefore, to obtain the equivalent of an erythema dose at 3 inches in depth, we must cross-fire at this point fifty times. We can give from 20 to 30 x on the surface, which will reduce correspondingly the number of areas through which we must treat. The absorptive value of aluminum filters does not correspond progressively with the number of millimeters used. The first millimeter absorbs nearly as much as the next two. The rays below 8 are relatively almost valueless in effect 3 inches in depth. The value of the ray at this depth is not much reduced by any number of millimeters of aluminum up to 7. The secondary radiation in an adjoining room is a very decided factor to be reckoned with in connection with photographic work, and especially in regard to personal protection.

### Radium as an Aid to Roentgen Therapy

**Dr. Russell H. Boggs**, Pittsburgh: Radium and Roentgen rays have certain differences, but each contains certain rays which are analogous. The action of radium and mesothorium is the same. I believe that the penetration method of filtration and accessibility of application rather than the agent employed determines the results. When treating with radium, authorities advise to use filters which allow lower rays to pass. The reaction produced on tissue by radium is very similar to that produced by the Roentgen ray. The endothelium of the blood-vessels is more sensitive to radium than to the Roentgen ray. A dermatitis of the same degree heals more quickly when produced by radium than by the Roentgen ray. All types of epithelioma of the skin can be treated equally well with the Roentgen ray as with radium, but when the epithelioma is situated in a cavity it is more accessible to radium. In carcinoma of the breast I believe the Roentgen ray is to be preferred. In carcinoma of the uterus, as a prophylactic measure, and in inoperable carcinoma of the rectum, I have been using mesothorium locally and the Roentgen ray by the cross-fire method externally. Results have been gratifying.

### Deep Roentgen Therapy in the Treatment of Malignant Growths

**Dr. Samuel Stern**, New York: By using a 3-mm. aluminum filter and a ray of high penetration, three or four erythema doses can be administered without producing even a first degree dermatitis. The amount generally administered at one sitting is about 15 to 20 x, measured under 13 mm. aluminum. This can be given once every three weeks, or under certain conditions oftener, without any danger. Certain tissues possess a wonderful tolerance for almost any amount of Roentgen rays, as, for instance, the mucous membrane of the vagina. By carefully protecting the outside area, one can give through the vagina daily treatments, lasting for one hour each time, continued indefinitely for weeks, without producing even the slightest dermatitis. The degree of penetration most advantageous in deep therapy is from 8½ to 9 Bauer. Anything below this does not possess a sufficient quality of hard rays to produce the best effects. No operable cases of deep-seated malignant growths should be treated with the Roentgen rays except when patients refuse to be operated on. The treatment is reserved for inoperable cases, recurrences, and prophylactic treatments following operation.

### Technic and Recent Results of Deep Roentgen Therapy

Dr. James T. Case, Battle Creek, Mich.: For deep therapy, I use the Coolidge tube with a minimum focus skin distance, a penetration equivalent to at least a 9-inch parallel spark gap between points, delivering the ray through 4 mm. of aluminum and a layer of sole leather, the time of exposure varying, of course, with the focus skin distance and the dosage required. The maximum dosage given any one skin area within a three-weeks' period should not exceed 18 or 20 Kienboeck units, measured by the Gauss modification of the number of skin areas, it was possible to introduce from 400 to 700 x units during each three-weeks' period, remembering, however, that no given skin area should receive more than 18 or 20 x as a maximum.

The final result in malignant cases may usually be judged by the result of the first series of treatments. Especially good results in my experience were obtained in uterine hemorrhage due to myomas and other causes. In hyperthyroidism, persistent thymus, Hodgkin's disease and leukemia, especially good results were also obtained. A few cases of malignancy have been symptomatically cured. Sufficient time has not yet elapsed for any definite statements regarding the final results. There is no question as to the good palliative results. Sarcoma has been found to be, on the whole, more responsive to the treatment than carcinoma, with the exception of periosteal sarcoma, no case of which, in my experience, has given any satisfactory results.

### Massive Versus Fractional Dose in Roentgen Therapy

Dr. A. M. Cole, Indianapolis: The "massive" dose which is accurate and convenient is not suitable for the treatment of all diseases amenable to roentgenotherapy. Its greatest field is in deep therapy and for destructive action on cancer cells. The fractional dose gives better results in skin diseases calling for stimulation, and where you desire to produce atrophy of the skin appendages. Also in such conditions as leukemia and Hodgkin's disease. For safety it is the best method when the entire face is to be treated. The fractional dose may be measured by means of the H. Scale where great accuracy is essential. With either method of roentgenotherapy technic is the *sine qua non*. This is especially true with the "massive" dose to avoid the great possibilities of danger. The keeping of a record in each "massive" dose treatment is most important.

#### DISCUSSION

Dr. J. H. Edmonson, Birmingham, Ala.: In rodent ulcer I prefer the soft ray. It has a more lasting effect than the hard or filtered ray. Skin lesions respond better to fractional than to massive doses. I use massive doses in the average cutaneous epithelioma, but not in the spreading superficial type.

Dr. George C. Johnston, Pittsburgh: The idea to-day is to get all the rays possible as hard as possible, and filter them through three layers of aluminum. There is a great deal of error in that. The massive dose is very necessary in some conditions, such as lesions deep in the pelvis, but the majority of cases which we treat are not of that type. Only that radiation is effective which is transformed in the cells we wish to reach. The effect manifested depends entirely on the amount of energy absorbed and transformed in the tissues, not on the amount of rays that pass through them. Deep therapy is intended for deep lesions only, not for rodent ulcers or lupus, or other superficial lesions.

Dr. A. M. Crane, Kalamazoo, Mich.: To apply the same technic to various lesions without relationship to their nature or irradiation in the body or their reaction to the Roentgen ray is wrong. The Roentgen ray may cause tissue death as well as tissue growth. The subject of immunity enters into this problem. When we treat tubercular glands of the neck with the Roentgen ray, changes are brought about in the blood-stream similar to those produced by an injection of tuberculin. When we apply a sufficient dose of the Roentgen ray to a cancer we cause a disintegration of the cancer cells. They are absorbed into the body. A negative opsonic index is produced, and the patient may die. If we consider the subject of Roentgen therapy from that standpoint, we will be more careful in doing this work. We must not give more radiation than the body can react to; therefore, the single massive dose will not always do, because the tissues will not be able to react to it. Such treatment is not rational.

Dr. R. H. Stevens, Detroit: The epithelial cells of the papillae of the scalp hairs are much more sensitive to the ray than the cells of the papillae of the lanugo hairs. The cells of certain organs are much more sensitive than those of other organs. Again, the amount of the ray depreciates as it is absorbed. There are certain types of growth that respond well to the Roentgen ray and others that do not. This may be due to the character of the gamma rays. If in a case of nevus you filter the rays through a few sheets of paper, it is very satisfactory, because we get a large amount of the gamma rays. Birthmarks do not respond to the Roentgen ray, no matter whether you use a soft or a hard tube. They do respond to the ultraviolet rays and the beta rays, although some are very penetrating, as much so as the gamma rays. Moles will not respond to the Roentgen ray, but respond well to the radium ray.

Dr. H. W. Dachtler, Toledo, Ohio: My results with the massive doses in diseases of the eyelids have not been so good as from old methods. I attribute that to the fact that the scar is more contracted. In one case I had an eversion of the eyelid, which I did not see in my earlier work. So far as deep therapy is concerned, I wish we could get tubes to give harder rays. I want to get a more uniform treatment in the depths of the tissue. We must be careful in saying that only rays absorbed in the tissues do the work. I never use a softer ray than a Bauer 6 in any superficial work, and I never filter.

Dr. H. K. Pancoast, Philadelphia: In enlarged thymus leukemia and Hodgkin's disease we must be careful about giving massive doses. In some cases of Hodgkin's disease massive doses will undoubtedly cause a fatal result. In leukemia we must be still more careful, because the patient's kidneys must be considered. They may be overtaxed by the elimination of waste products. Large doses of Roentgen rays may destroy not only liver cells, but also red cells.

### Advanced Roentgen Technic in the Diagnosis of Esophageal Lesions

Dr. W. H. Stewart, New York: Into the esophagus is inserted either by swallowing or artificially, a long hollow cylinder of some soft material which, after being placed in position, is filled with a bismuth solution. This bismuth-filled tube, adapting itself to the natural form of the esophagus, will give either by the fluoroscope or by the roentgenogram an accurate reproduction of the esophagus. Thin tubing of rubber, gold beater's skin, hog or sheep casing was used. Up to the present time, however, I have been most successful with the best grade of hog casing. In introducing the hog casing there must necessarily be considerable nervous strain and sense of suffocation, particularly when the bismuth solution is injected into the tubing. It is advisable to spray the pharynx with a 2 per cent. solution of cocain to prevent gagging and coughing. A section of hog casing is then selected, about 16 to 18 inches in length—it must be tested with water before using to be sure that no bad leaks are present. One end is tied firmly with some dental floss.

After lubricating the casing the first procedure is to attempt to have the patient swallow this down to or through the obstruction. In cases, however, in which the stricture is very tight and the patients themselves are unable to pass it on beyond the obstruction, we must resort to artificial means of introduction, by means of a French catheter. There are cases, however, in which the stricture is so tight that an attempt to withdraw the catheter also removes the casing. In these patients we have provided a rubber tubing, about 12 inches long, with a hollow metal tip at the lower end and a metal junction at the upper end, to which is attached another piece of rubber tubing about 7 inches long. The lower tube is fenestrated at frequent points. This lower section is passed into a piece of hog casing, previously tested and found satisfactory, and tied firmly below to the metal tip, and above to the metal junction, after which it is again tested with water to see that no leaks are present. Into this rubber tubing is placed a metal introducer, much the same as a styletted catheter. The tubing is directed downward into the esophagus and passed a sufficient distance to make one confident that the lower metal tip lies within the stomach. Then with a quick upward motion the introducer can be safely removed. We now have the hog casing within the esophagus enclosing a rubber fenestrated tube. It is necessary now only to inject sufficient of the bismuth solution to balloon out the casing. We are usually able to tell when this has been accomplished by the symptoms of the patient, who immediately complains of a feeling of distress along the line of the sternum, with dyspnea. Gravitation has been found to be the best method in which to fill the tube. When the required quantity has passed in or the patient complains of marked dyspnea, it is well to discontinue, placing a clamp on the rubber tubing. The plate should then be made rapidly.

We have been successful in using this method in differentiating between diverticulum and carcinoma, one of the most puzzling problems to solve. The vital observation necessary in differentiation is the presence of the sacculation posterior and outside of the bismuth-filled hog casing, lying within the esophagus.

# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Anatomy, Philadelphia

*September, XVI, No. 4, pp. 387-521*

1 *Skull of Human Fetus of 40 mm. C. C. Macklin, Toronto, Ont.
2 Critical Period in Development of Intestines. C. R. Bardeen, Madison, Wis.
3 Earliest Blood-Vessels in Man. J. L. Bremer, Boston.
4 Retrogressive Changes in Fetal Vessels and Suspensory Ligament of Liver. A. W. Meyer, San Francisco.

1. **Skull of Human Fetus 40 M.M.**—The finding of a small nodule of cartilage above and in front of the cochlea is, so far as Macklin is aware, a contribution to his knowledge of the parts in this area. Other new features are the cartilagines para-ethmoidalis, meatus medii and paraseptalis superior; in addition may be mentioned the lateral and dorsal cranial cartilages, and the paranasal cartilage, lying lateral to the lacrimal duct.

### American Journal of Medical Sciences, Philadelphia

*September, CXLVIII, No. 3, pp. 313-468*

5 Severe Anemia Connected with Gastro-Intestinal Diseases. A. Schmidt, Germany.
6 *Relation of Glycosuria to Pituitary Disease. Report of Case. J. M. Anders and H. L. Jameson, Philadelphia.
7 *Value of Tests for Renal Function in Early and Advanced Bright's Disease. R. Fitz, Boston.
8 *Intravenous Use of Strophanthin with Regular and Irregular Pulse Rhythms. H. G. Schleiter, Pittsburgh.
9 *Value of Colonic Inflation in Diagnosis of Chronic Appendicitis. E. H. Goodman, Philadelphia, and C. W. Lüders, Cynwyd.
10 Duodenal Alimentation. W. G. Morgan, Washington, D. C.
11 *Tuberculosis of Bronchial Lymph-Nodes and Lung Hilus; Clinical and Roentgenographic Study. H. F. Stoll and A. C. Heublein, Hartford, Conn.
12 Two Cases of Hereditary Ataxia. E. M. Williams, Sioux City, Iowa.
13 Cholesterin Antigens in Wassermann Reaction and Quantitative Testing of Syphilitic Sera. J. G. Hopkins and J. B. Zimmermann, New York.
14 An Unattached Mass Found in Abdominal Cavity of Male. R. P. Campbell and J. J. Ower, Montreal.
15 *Value of Petechiae in Diagnosis and Prognosis. H. W. Emsheimer, New York.
16 *Neutrophilic Blood-Picture in Pernicious Anemia. L. H. Briggs, San Francisco.

6. **Relation of Glycosuria and Pituitary Disease.**—In support of the fact that hyperthyroidism may be consequential to lesions of the hypophysis, Anders and Jameson report a case of acromegaly with glycosuria in which there were manifestations of exophthalmic goiter. They have also collected all cases of pituitary disease recorded in literature for a period of five years terminating December 31, 1913. This investigation yielded a total of 246 cases of hypophyseal disease. In 183 cases the urinary findings were mentioned and showed 28 instances of glycosuria, in 9 of which the condition was intermittent. Sixteen of the 28 cases of pituitary glycosuria, or 57.1 per cent., showed acromegaly, while 10, or 35.7 per cent., failed to show the latter condition in association. In 2 cases the presence of acromegaly was in doubt, hence excluded. Of the 183 cases of pituitary disease in which the urinary findings were given, 88, or 42.6 per cent., showed acromegaly, and of the latter only 16, or 18.2 per cent., showed the presence of sugar. In 91 cases of pituitary disease in which acromegaly was absent, 10 showed spontaneous glycosuria, and no mention was made of either hypo- or hyperthyroidism in these cases. There was tumor in 72 cases (of which 3 were specified as sarcoma, 2 cyst, 1 adenocarcinoma, 1 epithelioma, 1 adenoma, and 4 as "tumor"), tuberculosis in 3, gumma in 2, hypertrophy in 1, fracture at base of skull with extravasated blood in 1, and lesion not stated in 8. The ages in the series were given in 21 cases, out of the total of 28, and found to average thirty-seven and one-quarter years, the period of life intervening between 26 and 60 years furnishing all save 3 cases.

In view of the fact that glycosuria not uncommonly complicates exophthalmic goiter, the question naturally arises whether in a case such as reported by the authors it is to be attributed to the associated hyperthyroidism or to the hypophyseal disease. Covering five years which ended January 1, 1914, there was but 1 case of hyperthyroidism in combination with pituitary lesions and glycosuria out of a total of 28 cases recorded, namely, their own case herein reported, so that the rôle played by the thyroid gland in the causation of glycosuria in these cases would appear to be both trivial and obscure.

The authors advance two hypotheses pertaining to the combined conditions discussed which have received considerable corroborative support from their statistical figures: (1) that the relationship existing between hyperthyroidism and pituitary glycosuria, with or without acromegaly, is a remote one, and (2) that pituitary glycosuria without acromegaly not uncommonly occurs (in 10 of the series, as against 16 in which acromegaly was also associated), contrary to the opinions of certain writers.

7. **Tests for Renal Function in Bright's Disease.**—Tests for renal function in Bright's disease are regarded by Fitz of importance for diagnosis, prognosis and treatment. The lactose, salt, water, potassium iodid, and nitrogen tests are of special value in the early diagnosis of nephritis. In advanced nephritis the functional condition is so complex that tests to estimate total function are more useful than those designed to study the function of different parts of the kidney. The phthalein excretion is the most satisfactory single test. The non-protein nitrogen of the blood offers additional information in regard to faulty eliminative powers on the part of the kidney. Yet cases occur in which both blood-nitrogen and phthalein are normal, and chlorid retention is an important factor in the disease. Finally, acidosis has been shown to exist in uremia. Since no one test is perfect in determining total renal function, cases must be studied from several points of view. A rational dietetic treatment can be given in individual cases based on the conditions disclosed by the study of the kidney's selective excretory capacity.

8. **Intravenous Use of Strophanthin.**—The action of strophanthin administered intravenously is similar to that of other members of the digitalis group administered orally, but far more rapid. Strophanthin had, in cases treated by Schleiter, a decisive effect in all cases with pulsus irregularis perpetuus. In cases in which the pulse rhythm was regular, it showed an effect in only three instances out of ten

and this was both slight and transitory, except for the case of paroxysmal tachycardia. In desperate cases of the pulsus irregularis perpetuus type, strophanthin administered intravenously will tide the patient over until digitalis orally administered has time to take effect. In cases of the pulsus irregularis perpetuus type, the first effects are noted in twenty to thirty minutes, though the maximum may not be apparent for seven or eight hours. Thus effect lasts from three to ten days. It does not seem advisable to give on any one occasion more than 1/60 of a gr. and this, if repeated, should not be done before forty-eight hours; 1/120 of a gr. has given a maximum result. On the other hand it may sometimes take more than 1/60 of a gr. to produce this. Two cases of paroxysmal tachycardia are reported with strophanthin administration, both followed by cessation of the attacks. It is not clear, however, to what extent the strophanthin was responsible for this phenomenon.

9. **Colonic Inflation in Appendicitis.**—Inflation of the colon, the authors state, should be regarded merely as an aid in the diagnosis, history and physical examination being far more valuable. The authors have seen no positive reactions in normal individuals. The test is in no sense pathognomonic of chronic appendicitis.

11. **Tuberculosis of Bronchial Lymph-Nodes and Lung Hilus.**—Stoll and Heublein claim that prior to the fifteenth year, tuberculosis of the bronchial glands and lung hilus is the most common form of tuberculous disease. The early symptoms are usually indefinite and chiefly of toxic origin. While a cough is generally present, it may be entirely absent even with advanced disease of the bronchial glands. Although the orthodox signs of incipient (apical) tuberculosis are not present in these cases—in fact, the primary lesion is often in the lower lobe—there are certain physical signs which are indicative of a pathologic process at the lung root. The significant signs are a "hilus dimple" (noted anteriorly over the hilus region at the end of inspiration), dilated veins, parasternal and paravertebral dulness, and most significant of all, a well-marked whispered bronchophony in the interscapular region (d'Espine's sign). Roentgenography, and especially stereoroentgenography, is of the utmost value in these cases, as it shows the exact location and extent of the morbid process, and is the greatest stimulus to careful clinical work.

15. **Value of Petechiae in Diagnosis and Prognosis.**—Ten cases are cited by Emsheimer in which petechiae were present. I. History of erysipelas, followed in two weeks by high fever and prostration; petechiae in conjunctiva; diagnosis of streptococcemia made; bacillus typhosus in blood-culture. II. Acute onset with fever, vomiting and convulsions, in a child; signs of meningitis; skin petechia; no meningococci in spinal fluid; recovery; acute polio-encephalitis. III. Acute labor pneumonia; jaundice; pneumococcic sepsis; petechia. IV. Emaciation; marked anemia; conjunctival petechia; admitting diagnosis; pernicious anemia; blood-count typical of lymphatic leukemia. V. Signs of purpura hemorrhagica; steady progression of symptoms; ulcerations and gangrene; fatal outcome. VI. Case of myocarditis and nephritis; bacillus coli communis pyelitis; petechia in conjunctiva; sudden death. VII. History of a debauch; conjunctivitis; numerous petechiae in upper and lower conjunctivae. VIII. History suggestive of an acute exacerbation of a chronic nephritis; marked eosinophilia; conjunctival petechiae; trichiniasis. IX. History of bite by rabid dog; increasing irritability, finally coma and death; skin petechia. X. History and signs of acute appendicitis; chills and fever; petechiae in conjunctivae; weak heart sounds; diagnosis of bacterial endocarditis with mesenteric embolus; acute gangrenous appendicitis found at operation.

16. **Neutrophilic Blood-Picture in Anemia.**—In the course of some work on the Arneth blood-picture in various conditions, the multiplicity of lobes of the neutrophils in a case of pernicious anemia was observed by Briggs. This particular point has since been studied in nine consecutive cases seen during the past year and in the stained smears from three others. In ten out of twelve cases a decided increase in the normal number of lobes of the nuclei of the neutrophils was found, that is, a "shift to the right" in the terms of Arneth. In eight cases of correspondingly severe anemia, not of the idiopathic pernicious variety, seven showed either a normal number, or a decrease in the number of lobes, a "shift to the left."

### American Journal of Tropical Diseases and Preventive Medicine, New Orleans

*September, II, No. 3, pp. 155-222*

17 Ants and Bees as Carriers of Pathogenic Micro-Organisms. W. M. Wheeler, Boston.
18 Morphology, Life Cycle and Relation to Disease of Entamoeba Histolytica. C. F. Craig, Fort Leavenworth, Kan.
19 Behavior of Hansen Bacillus in Vitro. C. W. Duval, New Orleans.
20 Diphtheroid Organisms Isolated from Lymphadenomatous Structures of Body. J. A. Lanford, New Orleans.
21 An Epidemic of Malaria at Greenwich, Conn. F. C. Hyde, Greenwich, Conn.
22 Report of an Unusual Amebic Infection of Genito-Urinary Tract. W. J. Lynn, New Orleans.
23 Case of Bilateral Ainhum. H. B. Gessner, New Orleans.

### Boston Medical and Surgical Journal

*September 24, CLXXI, No. 13, pp. 473-508*

24 Improved Nursing for Mentally Ill. W. Channing, Brookline.
25 Training of Psychopathic Nurse. M. A. Nutting, New York.
26 Comparison of Drugs Used in General and Mental Hospitals. D. Gregg, Boston.
27 Modern Developments in Mental Nursing. C. W. Eliot, Cambridge.
28 Analysis of Recoveries at Psychopathic Hospital, Boston: I, One Hundred Cases, 1912-1913, Considered Especially from Standpoint of Nursing. E. E. Southard, Boston.
29 Impressions of General Hospital Nurse Beginning Work in Psychopathic Hospital. M. L. Gerrin, Boston.
30 Pellagra and Its Symptoms; Importance of Mouth and Gastro-Intestinal Lesions. J. B. MacDonald, Hathorne.
31 Hysterectomy and Hemorrhage: Three Different Indications. H. B. Perry and E. E. Thomas, Northampton.

### Bulletin of Johns Hopkins Hospital, Baltimore

*September, XXV, No. 283, pp. 255-286*

32 Relations of Internal Medicine to Psychiatry. L. F. Barker, Baltimore.
33 *Korsakow's Psychosis Occurring During Pregnancy. D. K. Henderson, Baltimore.
34 *Bacteria Found in Milk Heated to Various Temperatures. W. W. Ford, Baltimore, and J. C. Pryor, Washington.
35 Presence of Spore-Bearing Bacteria in Washington Market Milk. J. C. Pryor, Washington.
36 *Action of Potassium and Sodium Iodids and of Iodin Ion on the Heart and Blood-Vessels. D. I. Macht, Baltimore.

33. **Korsakow's Psychosis Occurring During Pregnancy.**—Henderson reports 2 cases. The first case may be summarized as follows: A multipara, aged 31 years, in the first month of her second pregnancy started to suffer from nausea and vomiting, and rapidly lost in weight. She then complained of numbness and weakness in the feet, legs and hands. She became depressed, started to fabricate, lost trace of time, and was getting worse so rapidly that an abortion was performed when the patient was three months pregnant. A delirium with fear reaction ensued, she lost power in her hands completely, had incontinence of urine and feces, aphonia, paralysis of the diaphragm, and, probably, also at this time tachycardia. On admission to the hospital the patient was delirious and showed the characteristic symptoms of a generalized polyneuritis. In addition, she had a double adductor paralysis of the vocal cords, and involvement of both the phrenic and vagus nerves. During her hospital residence the striking points in her mental condition have been the exceedingly poor power of retention, the tendency to confabulate, and the unstable emotional condition. Both mentally and physically a wonderful improvement has resulted.

The second case differs from the first in that the psychosis was not accompanied by any polyneuritic symptoms.

The points on which Henderson especially lays stress are: The pregnant state must in certain cases be recognized as an important etiologic factor in the production of peripheral neuritis, and of that condition known as Korsakow's syndrome. The neuritis caused may be either (1) local, that is, affecting one nerve or one limb, or (2) diffuse, that is, affecting all the limbs and certain of the cranial nerves. The mental disorder characteristic of the condition is usually associated with a generalized polyneuritis, but, as evidenced by one case reported here, it may occur alone. The frequent history of hyperemesis gravidarum in association with the generalized forms of the disorder is so striking that it suggests a possible line of approach as to the elucidation of the nature of the toxin. Those patients who in previous pregnancies have suffered from severe vomiting, or other serious toxic phenomena, should be strongly urged to avoid any further pregnancies.

34. **Bacteria Found in Milk Heated to Various Temperatures.**—Ford and Pryor agree with Flügge that milk always contains the heat-resistant spores of aerobic and anaerobic bacteria, which, by their development, can give rise to disagreeable and unwholesome changes in milk, converting it from a food of great nutritive value into an undesirable if not a dangerous article of diet. These changes take place in milk heated to any temperature from 65 C. to 100 C. and kept at any temperature from 22 C. to 37 C., but not at that of the ice-box, 4 to 6 C. The spores of the bacteria causing these changes survive in milk for long periods of time on ice and can initiate the same changes in milk kept on ice when transferred to higher temperatures. There is a danger zone in the heating of milk which may be described as ranging from about 65 C. to 85 C. in which milk will never clot normally. Below this temperature heated milk may clot normally. Above this temperature milk will either clot or slowly peptonize. The problems of pasteurization of milk must be worked out on the basis of the changes which occur in milk heated to 60 to 65 C. and the result may depend on the original character of the milk, on local bacterial infections of milk, on the character of the stables in which the milk is first obtained, on the methods of preservation or on unknown factors. Further investigation alone can determine these points.

With present knowledge as to the difficulty of getting milk free from pathogenic organisms the safest milk is that which has been boiled for a time varying from ten minutes to half an hour and then preserved on ice. In such milk the organisms giving rise to explosive and putrefactive changes are destroyed, while the organisms which remain usually coagulate the milk or coagulate it and then peptonize it. Rarely they peptonize it without coagulation. While these bacteria may give rise to severe derangements of metabolism in children, and even to disease, as Flügge maintains, this has not yet been clearly shown clinically. Danger from them may probably be almost entirely eliminated by keeping the milk on ice from the time of boiling till the time of use. Milk heated to any temperature from 60 C. to 100 C. must be kept on ice, since heated milk is far more apt to decompose than raw milk.

36. **Action of Potassium and Iodin Ion on Heart and Blood-Vessels.**—Experiments showed Macht that the potassium ion produces a relaxation of the blood-vessels and a marked depression of the heart; that the sodium ion has a slightly stimulating action on the blood-vessels and also stimulates the heart, and that the iodin ion is a powerful stimulant to both the heart and blood-vessels as shown by its action in experiments on isolated organs. The stimulating effect of the iodin ions, however, is greatly inhibited in the intact animal by their chemical combination with the proteins of the blood. Whether the chemical compound thus produced is a stable one, or whether it is a loose one, and slowly breaks up, setting iodin free, remains an open question. If iodin is set free, a stimulating effect is to be expected.

The action of sodium and potassium iodids on the heart and vessels can be best understood from the action of their component factors. Sodium iodid possesses no depressing property, for the sodium ion is a vascular constrictor and a cardiac stimulant, and the iodin ion, in so far as it is free to act, has the same action. Potassium iodid, on the other hand, clearly shows the depressing effect of the potassium ion on the heart and vessels, especially of mammals, not only on isolated organs, but also in the living animals. It is, therefore, not a matter of indifference which of the iodids is to be chosen for the purpose of depressing the circulation, as, for instance, in case of an aneurysm. The above pharmacologic analysis of the action of the iodids, furthermore, shows that so far as experimental evidence goes, the iodids possess no special virtue of lowering blood-presure but that effect is really due entirely to the potasium, and could be produced even more efficiently by other potassium salts.

### Florida Medical Association Journal, Jacksonville

*September, I, No. 3, pp. 65-96*

37 Diagnostic Value of Abdominal Pain in Surgical Diseases of Upper Abdomen. J. E. Boyd, Jacksonville.
38 Case of Secondary Multiple Echinococcus Cysts of Peritoneum, Complicating Acute Appendicitis. J. S. Helms, Tampa.
39 Malignant Tumors of Jaws. R. C. Turck, Jacksonville.
40 Six Cases of Pellagra in One Family. J. L. Kirby-Smith, Jacksonville.
41 Two Recoveries from Epilepsy. W. P. Spratling and D. C. Main, Welaka.

### Georgia Medical Association Journal, Augusta

*September, IV, No. 5, pp. 137-165*

42 Some Cardinal Symptoms in Diagnosis of Appendicitis. A. G. Little, Valdosta.
43 *Suprapubic Prostatectomy. W. L. Champion, Atlanta.
44 Diagnosis of Disease of Accessory Sinuses of Nose. J. T. Maxwell, Savannah.
45 *Oil-Ether Colonic Anesthesia. J. C. Pate, Valdosta.
46 High Forceps and Cesarean Section. A. Smith, Atlanta.
47 Cleaning Up of Typhoid in Blackshear. W. P. Williams, Blackshear.

43 and 45. Abstracted in The Journal, May 2, pp. 1428 and 1429.

### Illinois Medical Journal, Chicago

*September, XXVI, No. 3, pp. 153-220*

48 Roentgenology of Chronic Joint Disease. J. T. Case, Battle Creek, Mich.
49 Etiology and Pathogenesis of Rheumatoid Arthritis. D. J. Davis, Chicago.
50 *Medical Management of Chronic Arthritis. F. Billings, Chicago.
51 Rôle of Pylorus in Etiology and Treatment of Gastric Ulcer. J. C. Friedman and W. W. Hamburger, Chicago.
52 Modern Gastroscopy with Demonstration of Sussmann Gastroscope. A. A. Goldsmith, Chicago.
53 Arteriovenous Anastomosis in Upper Extremities for Impending Gangrene. D. W. Neal, Springfield.
54 Psychoneuroses and Their Treatment. F. P. Norbury, Springfield.
55 Present Status of Treatment of Pulmonary Tuberculosis. J. W. Pettit, Ottawa.
56 Two Hundred Cases of Gonorrheal Urethritis without Complication. I. S. Koll, Chicago.
57 Hobbies. H. C. Blankmeyer, Springfield.
58 Illinois School for Blind with Its Record of Causes of Blindness. A. L. Adams, Jacksonville.
59 Experience with Intravenous Injections of Neosalvarsan. E. Sargent, Moline.

50. **Medical Management of Chronic Arthritis.**—The main problem, Billings says, is to get rid of the systemic infection and finally to overcome its sequence—the deformities. Primary rest is necessary as long as motion causes pain. In varying time, four to six weeks, passive motion with gentle massage may be begun. The amount of passive exercise must be gauged by the effect on the individual. The patient, always more or less nervous, tires easily. To these patients tire is painful. Day by day the exercise must be increased. The rest, restorative measures (food, etc.), should improve the general nutrition and blood circulation. The passive exercise will gradually improve the local blood circulation and oxygen supply to the infected tissues. In due time active exercise is added. This must be systematically and regularly performed. Usually a nurse or masseuse should teach the patient the lighter forms of calisthenics. These measures, namely: rest, restorative food, pure air, environment of optimism, graduated passive and later active exercises will overcome the debility, malnutrition and poor general circulation. They will also help to restore the local circulation and oxygen supply to the infected tissues. By these measures the natural defenses of the body are improved, the infected tissues become richer in oxygen and consequently a poor culture medium for the invading micro-organisms. Finally the destructive progressive metabolic changes of the tissues cease. Gradually one may note favorable changes in the joints. Atrophied, contracted muscles increase in bulk and functionate. But one dare not relax the control of the patient. Daily systematic passive and active exercises increased gradually must be continued until a relative restoration occurs. Otherwise a relapse is apt to occur because of neglect of one or more of the above important factors relating to nutrition, general and local blood supply, etc.

Autogenous vaccines made up of the dominating strains of streptococci obtained from the tissues and exudates of the focus of infection have been used by Billings. The dose used has been from 100,000,000 to 1,000,000,000. The large dose does not seem to be any more effective than the small one. The use of autogenous vaccines apears to increase the defenses of the body as judged by a study of the opsonins and phagocytic index. It is Billings' opinion that the general measures of management and treatment are absolutely necessary to succeed in helping these patients. To this management may be added autogenous vaccination without fear of harmful results. The use of stock vaccines seems rational. The use of vaccines in the treatment of chronic deforming arthritis without attempting to find or remove the dominating etiologic focus of infection and without a systematic hygienic management is irrational and most unjust to the patient.

### Journal of Nervous and Mental Disease, Lancaster, Pa.

*September, XLI, No. 9, pp. 553-616*

60 *Hemiatrophy of Cerebellum in Case of Late Catatonia. A. E. Taft and M. E. Morse, Boston.
61 *Pneumograph, New Instrument for Recording Respiratory Movements Graphically. A. Knauer and W. J. M. A. Maloney, New York.
62 Comparison of Wassermann Reaction among Acute and Chronic Insane. I. A. Darling and P. B. Newcomb, Warren, Pa.

60. **Hemiatrophy of Cerebellum.**—Taft and Morse report a case of focal unilateral cerebellar disease of long standing (months or years) apparently quiescent (no signs of exudation) and beyond question due in large measure to arterial thrombosis (no histologic or clinical evidences of syphilis; Wassermann reaction negative in pericardial fluid post mortem). The lesion was not in the nature of an old cyst of softening, but rather the result of gradual shrinkage and induration, possibly due to an unusually gradual thrombosis.

61. **Pneumograph, New Instrument.**—The instrument devised by Knauer and Maloney consists of two parts, a chest piece to which the respiratory movements are communicated and a recording apparatus which writes those movements. The tambours contain no rubber to leak. The recording paper needs not to be blackened and neither varnishing nor drying is necessary. A roll is used instead of a single sheet, so that observations may be continued for prolonged periods. The driving machinery is practically self-regulating. The writing point pressure is self-adjusting. The instrument is said to make the recording of the respiration movements as simple as is the application of electricity. This pneumograph is of service in all psychogenic speech disturbances such as stammering, aphonia spastica, etc., cases in which breathing exercises are indicated; in the treatment of obsessions and psychogenic fears, which can be beneficially influenced by methodical regulation of the rate and character of the respiratory movements; and in the teaching of conscious control of muscular movements. The machine is also of use in obtaining an index to emotional reactions in mental states.

### Kentucky Medical Journal, Bowling Green

*September 15, XII, No. 18, pp. 529-578*

63 Gonorrhea in Male. R. T. Hocker, Arlington.
64 Help the Hospital. E. G. Daviess, Owensboro.
65 Uterine Displacements: Varieties and Treatment. O. W. Brown, Lenoxburg.
66 Problems in Infant-Feeding. J. T. Dixon, Owensboro.
67 Dysmenorrhea Cured by Treating Nose. Report of Case. D. M. Griffith, Owensboro.
68 Our Ethics. T. H. Gamblin, Monticello.
69 Some Functions of Adrenals and Thyroids. G. J. Hermann, Newport.
70 Fecundation, Conception and Gestation. W. E. Reynolds, Hopkinsville.
71 Chronic Intestinal Stasis: Its Causes and Relief. J. E. Pirrung, Covington.
72 Treatment of Pellagra. R. F. Robinson, Hopkinsville.

### Medical Record, New York

*September 26, LXXXVI, No. 13, pp. 531-572*

73 Chronic Intestinal Stasis. A. C. Jordan, London.
74 *Fractures and Burns. J. A. Wyeth, New York.
75 Operations for Inguinal Hernia under Local Anesthesia. J. A. Bodine, New York.
76 Fractures. A. Lyle, New York.
77 Cancer. W. S. Bainbridge, New York.
78 Salvarsan in Syphilis. A. J. Crowell and J. P. Munroe, Charlotte, N. C.
79 *Comparative Wassermann, Cobra and Globulin Tests in Syphilis. W. J. Stone, Toledo, Ohio.
80 Backache and Posterior Parametritis. A. Jacoby, New York.
81 Abrams' Method of Treatment in Aneurysms. A. Abrams, San Francisco.

74. **Fractures and Burns.**—When a severe burn or scald is encountered, Wyeth says, the immediate indication is relief of pain by the hypodermatic administration of morphin, or by some form of opium given by rectum or stomach. The most convenient local remedy is a saturated solution of baking soda in water, with submersion of the burned surface, if possible, or a mixture of bicarbonate of soda and cornstarch, one teaspoonful of each to a quart of water. The dressing should be kept wet with the solution, which is applied freely to the burned area. After five or six hours the free application of the following mixture, made into an emulsion, will be found beneficial:

Ichthyol—℥ss, cotton-seed or olive oil—O.ss, limewater—O.ss. This should be continuously applied for the first three to five days during the stage of acute inflammation. In order to bring about rapid repair of the skin the following ingredients may be used: Lead plaster, liquid albolene, lanolin, vaselin—āā ℥j. These are melted together, and, when cooling, 40 minims of ichthyol added.

Either of these ointments should be applied thickly on the soft linty side of canton flannel, on surgeon's lint, or on several layers of sterile gauze. The application should be repeated daily at first, after opening all blebs. In opening the blebs care should be taken not to remove the epidermis of the bleb, as this may become revitalized, thus greatly accelerating the healing process. In changing the dressing it is important not to disturb new granulations, but simply to wipe over them. When healing is well under way the dressing need be changed only every second or third day. In the treatment of the depression of shock which often follows severe burns, stimulation with whiskey or brandy, by enema or by mouth, is indicated, as well as the hypodermic injection of morphin. Physiologic salt solution, introduced by the colon, or injected into the areolar tissue, is of great value.

In an emergency when the remedies mentioned may not be obtained, a coating of ordinary white lead, as mixed for use in painting dwellings, is an efficient protection when poured over the burn. Flour sprinkled over until all the excoriated surface is well hidden is a method of treatment which is applicable in almost any emergency. Rubber tissue, or oil-silk, sterilized and laid over the raw surface, with cotton batting applied over it, but never directly on the burned surface, is equally efficient. Lint, or a soft cloth, dipped in a 2 per cent. carbolized oil, may be employed directly on the burn. No pressure should be exercised in holding the dressings in place. When the back and posterior aspects of the extremities are chiefly involved, the prone position is of necessity maintained.

79. **Comparative Wassermann, Cobra and Globulin Tests in Syphilis.**—The observations made by Stone comprise comparative cobra, Wassermann, and globulin tests in 150 individuals. All "suspicious" reactions have been excluded. In 30 normals and controls the Wassermann and cobra tests were negative. In 6 of these the globulin test was negative in spinal fluid. In 90 other normals and controls the cobra test was negative. In 22 patients with secondary syphilis the Wassermann and cobra test were positive. In 5 of these the globulin test was also positive in the spinal fluid, while in 7 the globulin test was positive in the blood-serum. In 7 patients with active and latent tertiary syphilis the cobra blood test was positive, and the globulin test in blood-serum and spinal fluid were positive. In 24 late tertiary and clinically cured cases both Wassermann and cobra tests were negative. In 1 patient with cerebral lues the Wassermann and cobra tests were negative while the globulin test was positive in blood-serum and spinal fluid. In 7 patients with syphilis the cobra test was positive and the Wassermann was negative, while in 14 instances the Wassermann was positive

and the cobra negative. Two of the latter were intances of early secondaries five and six weeks after infection, in which the diagnosis was not in doubt.

### Military Surgeon, Chicago

*September, XXXV, No. 3, pp. 211-310*

82 Problems of Routine Sanitary Service. P. Waterman, Conn. N. G.
83 Organization of Red Cross Personnel for War. G. M. Blech, Ill. N. G.
84 Case of Leontiasis Ossium. J. R. Church, U. S. Army.
85 New Method of Carrying Patient, with One or Two Bearers, without Litter. F. H. Trindler, U. S. Army.
86 Blue Button, an Undescribed Type of Tropical Ulcer of West Indies. G. C. Dolley, U. S. Army.
87 Rhinal Myiasis. Report of Two Cases. E. C. McCulloch, U. S. Army.
88 Prevention of Scurvy. P. M. Ashburn and F. Schmitter, U. S. Army.
89 Id. Effect of Boiling on Antiscorbutic Properties of Canned Cabbage. F. Schmitter, U. S. Army.

### Missouri State Medical Association Journal, St. Louis

*September, XI, No. 3, pp. 113-156*

90 *Sprains. H. C. Shuttee, West Plains.
91 Diagnosis of Congenital Syphilis in Infants and Children. E. H. Schorer, Kansas City.
92 Placenta Praevia. F. T. Van Eman, Kansas City.
93 Treatment of Deformities Following Infantile Paralysis. R. M. Schauffler, Kansas City.
94 Diagnostic Procedures in Urology. C. Capell, Kansas City.
95 Intermittent Hydronephrosis. C. W. Russell, Springfield.
96 Diabetes. L. C. Ross, Springfield.
97 Hyperplasia of Thymus. Report of Case. W. H. Douglass, Benton City.
98 Quinin and Urea Hydrochlorid as Local Anesthetic in Exploratory Operations. E. D. Twyman, Independence.

90. **Sprains.**—The modern and correct treatment of a sprain, Shuttee says, is by proper strapping, exercise and massage. The strapping must be applied in such a manner as to envelop the injured joint completely, otherwise the requisite degree of pressure cannot be obtained which is necessary to secure compression when the parts are exercised. In this way complete and early recovery may be brought about, and the dangers greatly decreased. In addition to this, massage should be practiced every time the strapping is changed, beginning at the upper part of the swelling, the manipulation being a steady, uniform gentle movement of stroking or squeezing, directed upward from the distal part of the joint, but always commencing on the proximal side of the injury, or at the proximal limit of the swelling. The object is the emptying of distended veins and waterlogged tissues. By beginning pressure at the upper part and gradually descending in stroking much of the effusion can be pressed out at each sitting, and usually in a few days the swelling is gone. The sprained part, as already stated, should be used as soon as properly supported by adhesive plaster, and thus by muscular contraction the effused material is rapidly pressed out of the injured part.

If the patient is not seen until after great swelling has taken place, it may be best to rub the joint two or three times a day until the swelling is somewhat reduced, when the plaster should be applied. As soon as the plaster has been applied, the patient should be made to walk and in the first few attempts an assistant may be necessary partly to support him; but he should be strongly impressed with the fact that his recovery will be rapid in direct proportion to the use of the joint. The first few attempts to walk will be accompanied by some pain, and at times this will be great but it will diminish at each succeeding attempt, and soon become negligible.

### New Jersey Medical Society Journal, Orange

*September, XI, No. 9, pp. 431-492*

99 Some Important Clinical Observations in Blood-Pressure Studies. P. Marvel, Atlantic City.
100 Recovery from Tuberculous Meningitis. P. A. Potter, East Orange.
101 Reduction of Infant Mortality: How Can It Best Be Accomplished? T. N. Gray, East Orange.
102 Oxyuris Vermicularis as a Carrier. F. C. Henry, Perth Amboy.

### New Mexico Medical Journal, Las Cruces

*September, XII, No. 6, pp. 153-182*

103 Case of Adiposis Dolorosa. C. T. Sands, Las Cruces.
104 Case of Epilepsy Treated with Crotalin. R. E. McBride, Las Cruces.

### New York Medical Journal

*September 19, C, No. 12, pp. 549-596*

105 Hemophilia and Hemophilac Arthritis. M. H. Vegas, Buenos Aires, Argentina.
106 *Pains Anomalously Distributed in Cardiovascular Disease. H. L. Elsner, Syracuse.
107 Treatment of Cancer by Electric Methods. A. F. Holding, New York.
108 *Case of Hermaphroditism. G. S. Foster, Manchester, N. H.
109 Efficiency and Quality of Life. C. A. Penrose, Baltimore.
110 Tuberculization and Immunization. M. Fishberg, New York.
111 Treatment of Sunstroke and Heat Prostration. I. Bram, Philadelphia.
112 Dust. J. A. Guthrie, Portsmouth, Va.
113 Pulmonary Tuberculosis Complicating Operations for Appendicitis. A. C. Burnham, New York.
114 Tyrosin Crystals in Urine of Normal Pregnant Woman. J. Rosenbloom and W. E. Gardner, Pittsburgh.

*September 26, No. 13, pp. 597-648*

115 Modern Diagnostic Methods in Syphilis. J. A. Fordyce, New York.
116 *Medical Treatment of Intestinal Stasis. R. W. Wilcox, New York.
117 General Paralysis of Insane. H. W. Mitchell, Warren, Pa.
118 Prognosis in Acute Appendicitis. E. MacD. Stanton, Schenectady.
119 Tuberculosis Crusade: Parallel. T. J. Mays, Philadelphia.
120 Some European Clinics. R. J. Manion, Fort William, Ont.
121 Use of Scopolamin-Morphin in Labor. A. J. Rongy and S. S. Arluck, New York.
122 Value of Abderhalden Test for Cancer. I. Levin, New York.
123 Artificial Pneumothorax in Pulmonary Tuberculosis. C. R. Kingsley, Jr., West New Brighton, Staten Island.
124 Newer Teachings Concerning Diseases of Gastro-Intestinal Tract. M. I. Knapp, New York.

106. **Pains in Cardiovascular Disease.**—Pain which persists in the precordial region, which is associated with irregularity of the heart, with rapid pulse or occasional shortness of breath, even without convincing physical signs, Elsner states, requires close watching and will ultimately be found dependent on some abnormality of the heart, either of its musculature or of its arterial or nerve supply. He looks with suspicion on precordial pain associated with palpitation, *without prominence of the eye*, with marked or little change in the thyroid, with or without the Graefe symptom. In the early and late stages of exophthalmic goiter, often with changes in the musculature of the heart, precordial pain may be present.

Embryonal heart sounds in the adult, with associated dyspnea and pain, are always suspicious of degenerative changes in the heart muscle associated with vascular anomalies. Valvular lesions are by no means free from precordial and referred pains. Irregular and intermittent hearts with cardiac tumult are frequently associated with pain, either in the region of the heart or at a distance. This pain often increases as hypertrophy of the organ progresses. Sudden, severe, and alarming pain the precordium, occasionally in the neck, accompanies each intermission in some cases and makes the patient conscious of a halting heart. There is a class of cases in which the blood-presure is normal, there is pain in the precordium, anemia with numbness, vertigo, a sense of weight rather than pain in the region of the heart, no murmur, a small pulse and a rapid heart during a long period, then dyspnea, aggravated by movement of the arms, in which there is myocardial degeneration. Some cases with the heart muscle degenerated may show high blood-pressure even in their terminal stages. There is a class of myocardial degeneration associated with slight degenerative changes of a sclerotic nature in the smaller arteries of the heart, in which there are transitory dilatations of the left ventricle, giving rise to evanescent systolic murmurs. These may be associated with severe precordial distress at times, particularly if of specific origin. As the tone of the heart improves, the pains yield, the dilatation and the murmurs disappear. When these cases occur in young subjects, they are of either toxic or specific origin. If not relieved they lead to marked muscular insufficiency and frequent attacks of angina pectoris, and are often associated with aortic disease. Hysterical young women frequently complain of painful pulsation referred to the abdominal aorta in the epigastrium. The absence of expansile lateral pulsation and the bruit posteriorly must always urge against the presence of aneurysm.

Pain referred to the thorax with dyspnea, with or without physical signs, aggravated by movement of the arms upward, may be considered to be of cardiac origin in most cases, particularly if such movement increases dyspnea at the same time. Systematic blood-pressure study in almost all cases, has convinced Elsner that arteriosclerosis is not always associated with high systolic blood-pressure. While in the majority of cases arteriosclerosis is a condition with high blood-pressure, the exceptions are of sufficient frequency to demand consideration in diagnosis. Most of his cases of so-called pseudo-angina, not neuroses, proved ultimately, if in young subjects, to be due to cardiac syphilis with arterial and consecutive myocardial degeneration; in older subjects, to true angina dependent on coronary changes.

108. **Case of Hermaphroditism.**—The particular oddity of Foster's case was the presence of a well-formed testicle in close proximity to the right ovary.

116. Abstracted in The Journal, July 18, 1914, p. 271.

### New York State Journal of Medicine

*September, XIV, No. 9, pp. 429-470*

125 *Metrorrhagia at Puberty. H. C. Coe, New York.
126 Splenectomy for Splenic Anemia. R. S. Fowler, Brooklyn.
127 Atypical Pneumonias of Infancy and Childhood. E. J. Wynkoop, Syracuse.
128 Pleural Lymph Flow: Causes of Its Increase and Decrease. A. H. Garvin, Ray Brook.
129 Surgical Diagnosis and Autopsy Findings. H. G. Weiskotten, Syracuse.
130 Intra-Ocular Sarcoma. W. A. Weidler, New York.
131 Some Sociologic Aspects of Ophthalmology. E. M. Alger, New York.
132 Surgery of Maxillary Antrum: External Route. S. H. Lutz, Brooklyn.
133 Surgery of Maxillary Antrum: Intranasal Route. L. M. Hurd, New York.
134 Correction of Nasal Deformities by Injection of Paraffin. H. Smith.
135 Diet in Health and Disease. C. C. Sutter, Rochester.
136 Causes of Renal Pain. E. M. Stanton, Schenectady.
137 Lightning Stroke. I. M. Slingerland, Fayetteville.

125. Abstracted in The Journal, May 30, p. 1750.

### Ophthalmic Record, Chicago

*September, XXIII, No. 9, pp. 433-486*

138 Samoan Conjunctivitis. C. F. Ely, U. S. Navy.
139 External Canthotomy. R. S. Lamb, Washington, D. C.
140 Use of Snare as Final Step in Enucleation of Eye. H. R. Wright, Columbus, Ohio.

### Tennessee State Medical Association Journal, Nashville

*September, VII, No. 5, pp. 187-226*

141 *Arteriosclerosis of Cerebral Vessels. J. Phillips, Cleveland.
142 Cancer of Uterine Cervix. J. M. Maury, Memphis.
143 Cancer Problem. M. Goltman, Memphis.
144 Local Anesthesia in Rectal Surgery. D. R. Pickens, Nashville.
145 Malaria and Country Practitioner—Plea for Blood Examination. H. Lockhart, Coalmount.
146 Case of Fracture of Base of Skull, with Unusually Good Recovery. J. B. Lackey, Ripley.

141. Abstracted in The Journal, May 2, p. 1428.

### Wisconsin Medical Journal, Milwaukee

*September, XIII, No. 4, pp. 131-174*

147 Points of Contact in General and Orthopedic Practice. F. J. Gaenslen, Milwaukee.
148 Volkmann's Ischemic Paralysis. Special Reference to Nerve Involvement. C. J. Habhegger, Watertown.
149 Some Aspects of Cardiorenal Disease. L. M. Warfield and R. L. Schulz, Milwaukee.
150 Tuberculosis of Tracheobronchial Lymph-Nodes in Childhood. G. R. Ernst, Milwaukee.
151 Roentgen Diagnosis of Obstruction in Alimentary Tract. P. Eisen, Chicago.

## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Medical Journal, London

*September 12, II, No. 2802, pp. 457-492*

1 Etiology and Treatment of Carcinoma of Tongue. W. G. Spencer.
2 *Method of Opening Abdomen for Appendicectomy. G. H. Edington.
3 *Pott's Disease in Cervical Region. Methods of Bony Splinting. A. Don.
4 *Diagnosis of Chronic Pulmonary Tuberculosis in Infancy and Childhood. I, D. B. Lees; II, C. Riviere, and III, W. I. Bruce.
5 Conditions Simulating Chronic Appendicitis. J. Morley.
6 *An Unusual Case of Appendicitis. E. W. M. H. Phillips.
7 Case of Rupture of Kidney from Slight Trauma. J. L. Atkinson.
8 Treatment of Acute Gonorrhea in Men. J. G. Hayes.

2. **Opening Abdomen for Appendicectomy.**—The principles underlying Edington's method are: (1) Division of the posterior sheath of the rectus transversely, in the direction of the aponeurotic fibers, and (2) preservation of the muscle itself to form a support to the scar. The method of operation consists in exposing the rectus muscle, loosening it in its sheath, retracting toward the middle line, and transverse division of the posterior sheath and peritoneum. After the appendix has been removed and the posterior sheath and peritoneum sutured, the rectus is allowed to fall back into its normal position, and the anterior sheath and superficial wound closed.

3. **Pott's Disease in Cervical Region.**—The method Don employs is to expose the spines from below the seventh cervical to above the second dorsal spine by an ordinary central incision, clear well of periosteum the seventh and under-side of second spines, and then to pack the space with gauze to arrest hemorrhage. A piece of rib long enough to stretch from the tip of the seventh spine to well over the second is quickly excised subperiosteally from a most convenient part of the chest wall next the operator. A hole is drilled in the wider (generally anterior) end of this piece, big enough to fit easily over the seventh spine, which has been cleared of periosteum to receive it. When the piece is adjusted over the seventh spine, with the convexity forward, it is then easy to mark and cut across at the point which will just fit into the groove below the second spine. A small hole for a suture is drilled in the upper end of the piece of rib, and through this a stitch of silver wire or catgut is put and a curved round needle threaded to one end of it. With the needle it is quite easy to get a good grip of the interspinous ligaments and tendons between the second and first vertebra or base of the skull and thus to fix the upper end of the splint. Much does not depend on this suture, for the muscles and fascia when sutured together over the splint in closing the wound are sufficient to hold it in good position till healing takes place. Should the second spine not be available owing to the disease being in the first or second vertebra, a length of rib is taken sufficient to be jammed against the base of the skull and fixed there as before.

4. **Chronic Pulmonary Tuberculosis in Childhood.**—The point Riviere puts forward as something new is the fact, hitherto unrecorded, that interscapular impairment as an early sign of tuberculosis of tracheobronchial glands occurs on the right side only. Evidence is collecting to point to pressure on the right pulmonary artery in which it passes in front of the bifurcation glands as the causation of these right-sided signs. The bifurcation glands are those most commonly tuberculous of all the thoracic group; they show the most extreme changes, and hence are probably the first to suffer. Hence a sign which depends on enlargement of the bifurcation glands, if subsequent research confirms this, must be of considerable value in the diagnosis of tuberculous disease in the chest.

It is an increase in size and in dulness of this area on the right side which constitutes the sign. The normal impairment becomes more marked, being often sufficient to be termed "dulness," and extends out 2 or 3 inches from the middle line. The area extends downward to the sixth, seventh, or even the eighth dorsal spine while its outer limit, mapped by percussion from without inward, forms a well-defined curved line, though the note outside it is sometimes not so good as that over corresponding parts of the opposite lung. It is interesting and important that this clear outer limit can be shown to undergo a distinct respiratory fluctuation during deep breathing. There is also present in nearly all cases slight impairment at the apex of the lung, both front and back, with some diminution of the area of apical resonance as described by Kroenig.

6. **Unusual Case of Appendicitis.**—Phillips cites the case of a collier who was suddenly seized with abdominal pain of such severity as to necessitate the administration of chloro-

form. On the following day the patient complained of sharp, continuous pain situated under the heart and in the upper part of the abdomen, of obstinate constipation, and of vomiting of clear green fluid. In 1887 he had a similar pain which lasted five days; it came on after a fall from a tree. On five occasions since then he had suffered from the same pain, of greater or less severity, the attacks lasting five or six days.

His face was pale and typically hippocratic and covered with beads of perspiration. The tongue was clean, the pulse was 78, and the temperature 96.8 F. The abdomen was not distended. The respiratory movements were good, but better on the right side than on the left. Superficial and deep epigastric tenderness were present, and there was a zone of hyperesthesia in the left hypochondrium. There was deep tenderness on pressure over the left kidney region posteriorly. The whole of the left side was tympanitic. The liver dulness was normal. The apex of the left lung showed some apical retraction, Kronig's sign being present, and there was some impairment of breath sounds. There was a slight systolic murmur at the apex of the heart, conducted out to the axilla. The urine was normal. There was slight leukocytosis. Loewi's adrenalin mydriasis test was applied with a view to determine the possible presence of pancreatitis. The result was negative. There was nothing definitely indicative of perforation of a peptic ulcer. Repeated enemas were unavailing.

The patient appeared to improve slightly, but in about eight hours he suddenly became much worse; the temperature fell to 96; the pulse went up to 102, and became very thin. He was now evidently moribund. Operation was out of the question and in a few hours the patient died, evidently of shock.

At the post-mortem examination the cecum and ascending colon were enormously distended and hyperemic. This part of the gut was freely movable, and had a large mesentery. It lay looped between the hepatic and splenic flexures, below the transverse colon and great omentum, and suspended on the left to the cardiac end of a dilated stomach, by the tip, middle and mesentery of a long recurved appendix. The appendix when unravelled, was 9½ inches long, was full of hard concretions, and was gangrenous at its tip. The tip was densely adherent to the greater curvature of the stomach on the left side, and by fine adhesions to the spleen. The right iliac fossa was occupied by coils of small intestine.

### Journal of State Medicine, London

*September, XXII, No. 9, pp. 513-576*

9 Thirty Years in History of Tetanus. L. Vaillard.
10 State Medicine Problems of Coming Ten Years. W. L. MacKenzie.
11 Public Health Crusade. W. P. Paterson.
12 Value of Incubation Test in Examination of Water and Other Products. S. Delépine.

### Journal Tropical Medicine and Hygiene, London

*September 1, XVII, No. 17, pp. 257-272*

13 Tinea Capitis Tropicalis in Anglo-Egyptian Sudan. A. J. Chalmers and A. Marshall.

### Lancet, London

*September 12, II, No. 4750, pp. 683-730*

14 Dysentery (To be continued.) F. M. Sandwith.
15 Principles Which Govern Ultimate Results of Hare-Lip and Cleft-Palate Operations. G. V. I. Brown.
16 *Cases of Recovery from Detachment of Retina. C. Higgens.
17 *Persistent Low Arterial Blood-Pressure in Carcinoma of Tongue with Amyloid Disease. H. D. Rolleston.
18 Case of Ganglion of Ring Finger. M. C. S. Lawrance.
19 Family History of Polydactylism. A. B. Raffle.

**16. Recovery from Detachment of Retina.**—The three cases cited by Higgens are examples of a disease the treatment of which leaves much to be desired, and so far as results are concerned is no better now than it was many years ago. All operative treatment is, in Higgens' experience, worse than useless. He has never seen a case in any way benefited by any of the operations that have been recommended, but has seen some which have been made worse. The treatment that seems to hold out the best, if only a slight, hope of cure is by rest in the horizontal position continued for weeks, and measures which may be supposed to cause removal of fluids—such as sweating, purgation, absorbents, and abstinence from fluid nourishment, as far as it is possible to live without it.

**17. Low Blood-Pressure in Carcinoma of Tongue with Amyloid Disease.**—The persistent low arterial blood-pressure in Rolleston's case he believes was due to the general asthenia and the amyloid disease, and is unique in his experience, as he has not seen a blood-pressure as low as 70 mm. Hg except in cases of advanced Addison's disease and in cardiac failure shortly before death. In otherwise healthy persons during the fever of pneumonia, Rolleston has seen a systolic blood-pressure of 80 mm. Hg. The diastolic blood-pressure taken by the auscultatory method ten days before the final collapse, was 35 mm. Hg with the normal difference of 30 mm. between the systolic and diastolic pressure.

The tongue in this case was extensively involved by carcinoma, the anterior portion being much eroded and the organ practically fixed. At the back the growth had extended to the left anterior pillar of the fauces and to the soft palate. The condition was quite inoperable. There was some slight enlargement of the cervical glands, but these did not increase in size. The heart was normal. There was general bronchitis on admission but this cleared up, though there were often some rhonchi over the root of the right lung. There was constantly albuminuria associated with edema of the feet, at first transient and mainly after the patient had been up, and slight purpura on the hands. The specific gravity of the urine varied from 1.002 to 1.022. Casts were not found. There was never any fever, relatively little pain and weight was remarkably maintained. The liver and spleen were never found to be enlarged. In June edema of the legs became more prominent and the albuminuria increased. In July there was not much change until the seventeenth, when he collapsed and was in great pain. The right leg became livid and cold. He died the next day.

### Practitioner, London

*September, XCIII, No. 3, pp. 301-444*

20 Chronic General Periodontitis. J. F. Colyer.
21 Mental Deficiency Act as It Affects Practitioner. A. F. Tredgold.
22 *Occurrence of Bilateral Extensor Response in States of Unconsciousness. C. O. Hawthorne.
23 Psoriasis. G. Pernet.
24 Diathermy and Its Use in Surgery. E. P. Cumberbatch.
25 Relation of Tuberculosis to Other Diseases Including Pregnancy. H. L. Tidy.
26 Otorrhea. H. L. Whale.
27 Ophthalmia Neonatorum. S. Stephenson.
28 Summer Diarrhea. L. Mandel.
29 Scarlet Fever. C. B. Ker.
30 Recent Public Health Work. J. Priestley.
31 Pink-Eye. C. H. Brown.

**22. Bilateral Extensor Response.**—The summary of Hawthorne's preliminary statement is, (1) that, as an extensor response may be present during sleep, after an epileptic convulsion, under the influence of certain drugs, and in association with the peripheral irritation of chronic joint diseases, it must be accepted that the conditions necessary for such a response may be provided by non-organic modifications of the central nervous system; (2) that unconsciousness may possibly be one of these modifications, and (3) that the existence of the extensor response in sleep, and in the stupor of exhaustion which follows an epileptic fit, renders the second of these propositions not improbable.

### Journal de Médecine de Bordeaux

*August 2, LXXXV, No. 31, pp. 515-530*

32 Technic for Intravenous Injections of Neosalvarsan. Joulia.
33 *Serotherapy of Tuberculosis. (Un mot sur la sérothérapie antituberculeuse.) Grasseteau.

**33. Serotherapy of Tuberculosis.**—Grasseteau states that the tubercle bacilli become modified in the course of tuberculosis in the human body and thus the toxins they secrete change at different periods. It follows that antitoxins useful at one period lose their power at other stages of the disease. The success of diphtheria antitoxin is due to the fact that diphtheria is an acute and rapid disease which runs its course so swiftly that the bacilli have only one stage of development and secretion. It is very different with tuberculosis, and animals immunized by injection of tubercle bacilli have in their serum only the antibodies generated to combat the first stage of the tubercle bacilli's evolution. Their serum consequently has no antitoxic properties except for the toxin of this first stage. It seems foolish to try to produce antitoxin by injecting tubercle bacilli or tuberculin as the antibodies to each this are always the same and very limited in their action. Natural toxins should be used to generate antitoxin, he insists, and they should be taken from the serum of animals at different stages of the disease. By injecting serum from such animals into other animals, known to be more or less immunized, we may perhaps cause the development in their serum of complete antitoxins. In short, he reiterates in conclusion, it is probably only by injecting natural toxins from different stages of the disease that we can succeed in obtaining an antitoxin for tuberculosis that will cover the whole scale of the toxins generated in the long course of tuberculosis.

### Beiträge zur klinischen Chirurgie, Tübingen

*July, XCIII, No. 1, pp. 1-222*

34 Typical Disease of Upper Epiphysis of the Femur. E. Schwarz.
35 Fascia Flap in Treatment of Ankylosis of the Lower Jaw. (Operative Behandlung der wahren Unterkieferankylosen.) P. Kornew.
36 Etiology of Gastric and Duodenal Ulcers. F. Bode.
37 Metastasis of Goiter Tissue. (Strumametastasen.) E. Crone.
38 Operative Treatment of Primary Cancer of the Liver. (Lebercarcinom.) E. Bundschuh.
39 Operative Correction of Vulvar Anus. J. Weiss.
40 Actinomycotic General Infection, with Metastases. H. Kolaczek.
41 Exclusion of the Pylorus. F. v. Tappeiner.
42 Recurring Hernia. R. Welzel.
43 Dislocation of the Metatarsus. (Luxationen im Lisfranc'schen Gelenk.) T. Herrmann.
44 Laceration of Bronchus from Contusion. (Subkutane Bronchuszerreissung.) J. Vierheilig.

### Berliner klinische Wochenschrift

*August 31, LI, No. 35, pp. 1589-1604*

45 *Cancer on Hand Consecutive to Battle Wound. (Handkrebs als Spätfolge einer Kriegswunde?) H. Coenen.
46 The Blood-Picture with the Intracutaneous Tuberculin Reaction with Various Technics. (Das cytologische Bild der Intracutanreaktionen mit den Deycke-Much'schen Partialantigenen der Tuberkelbacillen und dem Alttuberkulin.) T. Kohrs.
47 *Brachial Neuralgia; Eight Cases. O. B. Meyer.
48 *Signs of Apical Disease. (Zur Diagnostik der Erkrankungen der Lungenspitzen.) R. Ehrmann.
49 Diagram Showing the Plan of Arrangements for Caring for the Wounded in War. (Skizze des Kriegssanitätsdienstes.)

45. **Tardy Results of Wounds in War.**—Coenen remarks that not much has been published on the tardy results of injury received in war, but the scar is liable to become the seat of a cancer late in life. This happened in a case he reports in detail, a cancer developing in 1913 in the scar on the back of the hand injured in a bomb explosion in 1886. The man emerged otherwise unscathed from three campaigns to have his arm amputated at 74. Coenen knows of five other cases of cancer on the back of the hand consecutive to trauma or irritation of a wart. Cancer of the palm is rare. Michael, who has compiled sixty-four cases of cancer on the back of the hand, could find only three in which cancer had developed in the palm of the hand, but Grawitz has encountered two since then in young farm-hands. Coenen comments on the frequency of wounds of the hand in modern warfare; he had 104 cases in his charge during the first Balkan War and forty-two in the second. The injury was generally extensive and jagged and usually on the back of the hand, so that cancerous degeneration later in life must be reckoned with as a possible aftermath of war.

47. **Brachial Neuralgia.**—Meyer reports some cases of brachial neuralgia in which throwing the head back, as in shaving, starts pain in the arm or increases it if already present. This pain in shaving runs from the back of the neck down into the arm. In one typical case with this symptom he succeeded in partially arresting the neuralgia by a paravertebral injection of cocain to reach the root of the nerve, and completed the cure by a peripheral injection of alcohol to block the posterior inferior cutaneous brachial nerve just above the elbow, as the remaining pain was mainly along this nerve. It disappeared for about a year and then returned, but subsided again after two injections, first with a local anesthetic, the second with alcohol. He has had similar experiences in other cases of brachial neuralgia and sciatica in which, after injection of salt solution on the root of the nerve had arrested part of the neuralgia, the cure was completed by a peripheral injection of alcohol. In three of seven cases of brachial neuralgia the above "shaving sign" was pronounced. The pain in the arm and shoulder is sharper when, as the head is thrown back, it is bent over a little toward the sound side. This sign does not occur with pain in the arm of other origin. With obstinate or especially severe brachial neuralgia the region should be examined with the Roentgen rays to discover any new growth in or near the cervical vertebrae or plexus or cervical ribs. His experience has thus been very favorable with paravertebral, epidural injections in the neck, supplemented by a peripheral injection of alcohol. The latter should be tried first as it might answer the purpose alone.

48. **Diagnosis of Apical Disease.**—Ehrmann relates that the percussion findings differed on the two sides and an apical process seemed beyond question in two cases in which necropsy revealed that the apices were entirely sound and that there was nothing abnormal but adhesions in the pleura. Similar areas of dulness were found in four of twenty-three cadavers and yet the lungs were sound; but there were adhesions in the pleura.

Ehrmann found further that in patients with an apical affection a dose of atropin rendered more distinct the difference between the pupils which is characteristic of apical trouble. The muscle dilating the pupil is more irritable, and this is effectively shown up by paralyzing the oculomotor muscle with atropin or belladonna by the mouth. He has the patient take from 5 to 15 drops of a 0.1 per cent. solution of atropin on a lump of sugar, and examines the pupil every fifteen minutes. By instillation into the eye it is by no means so effectual, but cocain by the mouth or subcutaneously answers the same purpose.

### Medizinische Klinik, Berlin

*August 30, X, No. 35, pp. 1421-1440*

50 Battle-Field Surgery. (Chirurgie im Felde.) A. Köhler. To be continued.
51 *Prophylaxis of Cholera. F. Rosenthal.
52 Treatment of Club-Foot by General Practitioner. (Die Klumpfussbehandlung in der Praxis.) G. Magnus.
53 *Medicated Vaginal Douches During Pregnancy and Parturition. (Ueber medikamentöse Scheidenspülungen bei schwangeren Frauen und während der Geburt.) E. Zweifel.
54 Inversion of Uterus; Two Cases. (Prolapsus uteri inversi.) G. de Rossignoli.

51. **Prophylaxis of Cholera.**—Rosenthal discusses the danger of the introduction of cholera into western Europe by the Russian troops as prisoners or by the occupation of cholera-infested towns by the Germans, and he deplores the fact that serum prophylaxis of cholera is far from being as effectual as vaccination against small-pox. It is impossible to immunize troops in the field with it, as the serum induces high fever and there is a negative phase for a few days. The quarantine measures and supervision of rivers which have been successful in keeping out cholera in the past are nullified by the conditions of war, but each person can effectually protect himself against cholera by extreme cleanliness and avoiding unboiled water and uncooked foods. The most important general prophylactic measure is the isolation of the sick. The disease starts almost always with diarrhea, and although the patient may still feel quite well yet he is already scattering germs in his diarrheic stools. A soldier with profuse diarrhea should go at once to the hospital and stay there. Even before it is possible for bacteriologic examination of the stools, the leukocyte count and blood-picture may reveal the presence of cholera infection and permit the discharge of the men with ordinary harmless diarrhea.

Even direct exposure to cholera does not necessarily entail the disease unless the system is depressed from any cause, and he urges for this reason restriction of the sale and use of liquor, avoidance of physical excesses, raw fruit, etc. Before eating and especially before preparing food the hands should be thoroughly cleansed with soap and water. The face and particularly the mouth should not be touched by the hands. All fluids should be boiled before drinking, except beer, wine and natural mineral waters. If water has to be taken raw, the danger of infection can be materially reduced, he says, by adding a little acid, a knife-tip of citric acid to half a liter, or 20 drops of liquid phosphoric acid. The army corps should have a supply of each. He insists that it is unnecessary to use a disinfectant for the hands, and that spraying the rooms and clothes with a solution of phenol does no good whatever and merely serves to lull into false security. Disinfectants are of no use for the desired purpose except in the privies, and even here milk of lime is preferable to phenol. The linen and the dejecta from the sick require of course thorough sterilization. There is no transmission of cholera, typhus or dysentery through the air. In Bulgaria he used to see persons extremely punctilious in singeing their dishes with alcohol and toasting all their bread, and yet they would eat raw fruit and drink unboiled water.

53. **Vaginal Douches in Pregnancy and Parturition.**—Zweifel says that the consensus of opinion seems to be that in normal conditions vaginal douches are superfluous. With a pathologic secretion and the date of the expected delivery over ten days away, he advocates vaginal douches with a 0.5 per cent. solution of lactic acid, according to Schweitzer's practice. A daily douche is given, boiling all the instruments beforehand each time. If delivery is impending, he advises mechanical cleansing of the vagina with 1 or 2 liters of saline. This is followed by injection of 100 or 200 c.c. of a 1 to 2,000 solution of mercuric chlorid. This can be repeated after twelve or twenty-four hours, repeating it each morning. There is danger of poisoning from the mercury if larger amounts are used. A solution of silver nitrate might be used, or the vagina wiped out with tincture of iodin. He has had puerperal fever develop in only one of the fourteen pregnant women with pathologic secretion treated in this way, that is, in 7.1 per cent.

### Münchener medizinische Wochenschrift, Berlin

*August 4, LXI, No. 31, pp. 1713-1768*

55 *Improved Methods for Repeated Physical-Chemical Examination of Blood. (Untersuchungen von Blutseris.) J. Traube.
56 Depth of Biologic Action of Radiant Energy. (Biologische Reichweite der Radium-Mesothorium- und Röntgenstrahlen.) B. Krönig.
57 *Changes in Technic for Roentgen Treatment of Cancer. (Wandlungen in der Krebsbehandlung mit Röntgenstrahlen.) J. A. Amann.
58 *Colloidal Nitrogen in Urine as Aid in Differentiation of Cancer. (Der kolloidale Stickstoff des Harns und seine Bedeutung für die klinische Karzinomdiagnostik.) P. L. J. de Bloeme, S. P. Swart and A. J. L. Terwen.
59 *Kidney Disease in Children. (Nierenerkrankung im Kindesalter.) C. T. Noeggerath and H. Zondek.
60 Hyperleukocytosis from Action of Cold. A. Rovighi and R. Secchi.
61 Diathermia in Ophthalmology. F. Best.
62 Misleading Roentgen Findings with Cancer in Body of Stomach. (Diagnostische Eigentümlichkeiten der Karzinome des Magenkörpers.) H. L. Baum.
63 Resection of Duodenum with Papilla for Cancer. G. Hirschel.
64 *Hour-Glass Stomach with Ulcer. (Sanduhrmagen bei nicht tiefgreifendem Ulcus ventriculi.) W. Nonnenbruch.
65 Radiotherapy from the Surface for Deep Cancer. (Heilung tiefliegender Karzinome durch Röntgenbestrahlung von der Körperoberfläche aus.) G. Schwarz.
66 Emetin in Lamblia Dysentery. M. Mayer.
67 *Pancreas Disease. (Fortschritte in der Pathologie und Therapie der Pankreaserkrankungen.) A. Schmidt.

*August 11, No. 32, pp. 1769-1800*

68 Why Hemorrhoids Develop. (Enstehung der Hämorrhoiden.) A. Schmincke.
69 Standard Technic for Taking the Temperature. (Notwendigkeit einer einheitlichen Temperaturmessung: Grenze zwischen normalen und pathologischen Temperaturen.) L. Saathoff.
70 Sex and Narcotics as Influencing Serodiagnosis. (Zur Frage der Geschlechtsspezifität der Abderhaldenschen Abwehrfermente und über die Beeinflussung der Abbauvorgange durch Narkotika.) E. Wegener.
71 Distribution of Fat, Lecithin and Wax-Splitting Ferments in the Organs. A. E. Porter.
72 *Compressor Instrument for Utilization of the Movability of the Skin of the Abdomen in Roentgenotherapy. (Zur Technik der gynäkologischen Röntgentherapie.) D. Chilaiditi.
73 The Ionometer for Dosage in Roentgen Work. H. Greinacher.
74 Red Light in Roentgen Work. (Ein kleiner Vorteil beim Durchleuchten mit Röntgenstrahlen.) R. Geigel.
75 Operation Plus Radiotherapy. (Operation oder Bestrahlung.) L. Heidenhain. Concluded in No. 33.
76 Treatment of Gunshot Wounds. (Behandlung der Schusswunden im allgemeinen.) O. v. Angerer.
77 Surgery at the Front. (Kreigschirurgische Arbeit auf dem Hauptverbandplatz.) L. Schliep.
78 Arrangement of Field Hospitals. (Anordnung der Verbandplatze im Feld.) Schoenwerth.

*August 18, No. 33, pp. 1801-1832*

79 *Action on Syphilis in the Fetus from Salvarsan Given the Mother. E. Meyer.
80 Artificially Produced Gamma Rays. (Die technisch erzeugte Gamma Strahlung. II.) F. Dessauer.
81 Non-Diphtheric Stenosis of the Trachea in Children; Two Cases, One Fatal. E. Köck.
82 *Recurring Colic in Umbilical Region in Children. P. Tobias.
83 Toxic By-Effects of Embarin. (Toxische Nebenerscheinungen des Embarin.) A. Pasini.
84 Esophagothermia in Treatment of Stenosis. (Heizbare Oesophagussonde zur Behandlung von Stenosen.) W. Sternberg.
85 Medicolegal Decisions. (Der Arzt in der Rechtsprechung. VII.) P. Kaestner.
86 Treatment of Frontal Sinusitis. (Stirnhöhleneiterungen.) E. Winckler.
87 *Treatment of Gunshot Abdominal Wounds in War. E. Payr.
88 Orthopedics at the Front. F. Lange.
89 *Gunshot Wound of the Heart. (Blutender Herzschuss durch Naht und Muskelimplantation geheilt.) A. T. Jurasz.
90 The Service in a Field Hospital. (Der Dienstbetrieb bei einem Feldlazarett.) v. Reitz.
91 *The Wounded in the Various Wars Since 1850. (Kriegssanitätsstatistik.) Schwiening.

55. **Research on the Blood.**—Traube thinks that the physical-chemical properties of the blood-serum have not been investigated to the full, and here reports the results of his own research in this line opening up a promising field for diagnostic deduction. The alkalinity he determines by application of a new and simple principle: The stalagmometer shows about the same number of drops with a 0.2 per cent. solution of quinin hydrochlorid as with water; namely, at 18 C., 49.9 with water and 50.3 with quinin solution. But if a minute quantity of an alkaline solution is added, the number of drops increases in proportion. The same principle can be applied to the serum to determine the acidity. If a stronger acid is added to a 2 per cent. solution of sodium isovalerate, the capillary action of the valerianic acid is reduced and the number of drops increased. These tests are extremely simple. All that is necessary to determine the acidity of the serum is to add 0.2 c.c. of the serum to 5 c.c. of an aqueous solution of 2 per cent. sodium isovalerate, and then note the difference in the number of drops it forms. Or the test can be applied by adding to 1 c.c. of serum, mixed with 9 c.c. water, 4 c.c. 1/100 normal sulphuric acid.

He found that guinea-pig serum containing complement had by far the least viscosity, the least alkalinity and the least capillary action—all tending to show, he says, that the complement properties of a serum are the expression of physical causes. In testing several hundred human serums it was found that with the quinin test (10 c.c. of a 0.2 per cent. solution of quinin hydrochlorid to 0.2 c.c. serum) normal serum behaved like a 0.05 or 0.06 normal solution of potassium hydroxid. With cancer or other cause for cachexia, the alkalinity becomes much reduced. The findings paralleled always the meiostagmin reaction so closely that he thinks the latter is merely an index of the degree of alkalinity and cachexia. The practical value of the research is shown in such cases as when viscosity of 237 is found with a supposed heart neurosis. This finding indicates unfailingly that the trouble is certainly more than a mere simple neurosis. The tests are so simple that any practitioner can apply them and thus throw light on many puzzling cases.

57. **Roentgen Therapy of Cancer.**—Amann states that he has applied Roentgen therapy in 52 cases of uterine cancer. In the 31 absolutely inoperable cases of cancer of the cervix, 5 of the patients were completely or nearly cured, 29 per cent. thus being restored to health when they had been absolutely doomed before. The improved technic accomplishes this, besides, without danger of Roentgen burns even with the far more intensive dosage, while the action on the cancer cells is more destructive. But it is indispensable to recognize and utilize the facts that only certain types of rays are the biologically effectual and harmless ones, and that different tubes and apparatus and even the same tube under different conditions generate entirely different rays. The electroscope permits these different rays to be distinguished

and intensive dosage, he emphasizes, should never be applied without preliminary electroscope tests. When the rays are applied both from front and back to act on an advanced cancer of the cervix, they act on the entire region, all the lymph-glands and adjacent tissues feeling the effect, and thus a more thorough clearing out of the malignant disease is possible, he declares, than could even be realized by operative measures. In one case he had removed a cancer of the cervix three years before and a recurring tumor a year later. Again a tumor as large as a fist developed in the pelvic connective tissue but this was treated with intensive Roentgen exposures and a complete cure followed. The sciatica-like pains and the contracture of the foot from pressure on the nerves vanished and the patient gained in weight. She was in good health for a long time but died suddenly later without recurrence of pelvic trouble. Amann's experience has been so favorable that he thinks the improved technic for Roentgen therapy might be applied even in operable cases.

58. **Colloidal Nitrogen in the Urine.**—This communication from Amsterdam reports tests with the Salkowski-Tojo method the results of which have shown that the original technic does not distinguish with any constancy between normal and cancer urine. But by determining the adialyzable element alone; that is, exclusively the actual colloidal nitrogen in the narrowest sense, a marked difference is apparent between normal and cancer urine. Thus the Kojo-technic nitrogen, the writers conclude, is nothing specific, but its non-dialyzing constituents were only 4.69 to 5.57 in three healthy persons and 7.56 in a patient with pernicious anemia but ranged from 10.74 to 38.64 in four cancer cases, the largest figures being with cancer of the larynx. (Compare with editorial in The Journal, Sept. 6, 1913, p. 778.)

59. **Kidney Disease in Children.**—Noeggerath and Zondek have applied to six children with nephritis and several healthy controls the functional tests and recorded the metabolic findings thereafter, keeping up the tests for several weeks with daily comparison of the intake of salt, nitrogen and water with the elimination through the kidneys. At regular intervals the residual nitrogen was also determined and the salt content of the blood. They do not know of any similar extensive research on children. The practical consequences for effectual treatment have proved useful and illuminating beyond all anticipations and they urge the general practitioner to apply this individualizing treatment of nephritis in children if he can have the chemical tests made for him in some convenient laboratory. The first thing is to put the child on a standard diet: for a boy of 10 weighing 28.8 kg. this may consist of 500 c.c. milk; 50 c.c. sugar; 50 gm. unsalted bread; 10 gm. unsalted butter; 100 gm. potatoes; 80 gm. carrots; 80 gm. apple; 250 c.c. tea; 100 c.c. coffee; 400 c.c. water, and 15 c.c. lemon juice. This totals 1,121 salt; 26.04 albumin; 1,061 water, and represents in all 1,436 calories. (A liter of milk represents in comparison only 670 calories with 1.6 salt and 3.2 albumin.) The tests were made by superposing on this standard ration varying amounts of salt—from 1 to 3, or at most 5 gm. a day—and varying amounts of a commercial food representing 67.4 per cent. albumin, 0.2 per cent. salt and no extractives. This was given up to a dose of 100 gm., mixed with the warm dishes. The fluctuations in the output of salt were as apparent with small amounts of salt as with larger ones.

This research has demonstrated once and for all that the albumin content and the sediment of the urine are far from reliable criteria as to the functional capacity of a child's kidneys. They may be apparently normal while yet the child is unable to tolerate the salt and albumin of the ordinary diet for his age. It sometimes happens that the tolerance for salt becomes upset when albumin beyond what he can tolerate is being taken, or vice versa. In one child palpable edema developed when an excess of albumin was being taken, and it could be banished and recalled at will by varying the albumin from 30 to 85 gm. a day. This happened regularly even after all traces of albumin and sediment had disappeared from the urine. The kidney trouble in this case had followed diphtheria in a boy of 10. As the child recovered from his nephritis this albumin-induced edema disappeared.

One child of 3 with severe uremia and hemorrhagic disease of the kidney was unable to tolerate any salt or albumin and he was tided along past this dangerous stage by being fed exclusively for nine days with sugar. He was given grape sugar at first and then beet sugar, 250 gm. a day, in the form of raspberry syrup. The stools kept good. This supplied ample calories for a weight from 11.6 to 13.7 kg. When the child lost his appetite for this, he was fed exclusively for sixteen days with breast milk drawn and mixed with a little oatmeal gruel to make it taste better. Breast milk contains so little salt and albumin that it can be used in this way to great advantage at times for young children past the nursing age. This little patient was treated besides with venesection, digitalis, diuretics and sweating on the electric pad. With this course of treatment the edema and uremia rapidly subsided. The urine ran up from 150 gm. to a liter in eleven days and the child was not only cured but passed through a severe purulent otitis media six weeks later without any signs of functional derangement in the kidneys under the most searching functional tests. In one case of orthostatic albuminuria these tests showed that there was some functional disturbance.

64. **Hour-Glass Stomach with Gastric Ulcer.**—In the two cases described the ulcer healed under medical treatment and with this the hour-glass shape disappeared and normal outlines were restored. The contracture was thus purely functional.

67. **Disease of the Pancreas.**—Schmidt reviews our knowledge to date in respect to pancreas functioning and derangement, concluding with the statement that everything tends to show that the internal and the external secretion of the pancreas are widely independent of each other. No anatomic basis has yet been discovered for disturbance in the internal secretion and consequently glycosuria alone cannot be accepted for the anatomic diagnosis unless there are other signs of derangement in pancreas functioning. Aberrant islands of Langerhans in the intestinal mucosa, on the other hand, might ward off glycosuria even with complete degeneration of the entire pancreas.

72. **Improved Technic for Roentgen Work.**—A little compressor is illustrated which is used to push over automatically and hold the skin of the abdomen. This makes it possible to expose different areas of the skin without moving the Roentgen tube or the abdomen in applying intensive Roentgen treatment to cancer in the intestines or pelvis. The compressor is of woven catgut, like a tennis racket, and is mounted on an adjustable standard.

79. **Action on Fetus of Salvarsan Given Mothers.**—Meyer cites Sauvage's statement that only 25.46 per cent. living children were born to 217 women with evidences of recent syphilis treated systematically with mercury and iodid, and 10.18 per cent. of the living had signs of syphilis. Meyer then tabulates similar experiences from seventeen clinics to show what can be accomplished with salvarsan under similar conditions. The proportion of children born living was from 86 to 100 per cent. In Meyer's own experience 97.4 per cent. were born living and 86 per cent. were living by the tenth day; 15.8 per cent. of the children had a positive Wassermann. The arsenic content of the placenta corresponds to the arsenic content of the mother's blood but the sound placenta does not allow arsenic to pass. The salvarsan affects the fetus favorably by its curative action on the mother and especially by preventing disease of the placenta. Pregnant women bear salvarsan well; abortion or hemorrhage is not brought on even by intravenous injection.

82. **Recurring Umbilical Colic in Children.**—Tobias has had several cases of this trouble in children like that described recently by Moro and Küttner. Tobias does not accept the explanation advanced by others but thinks the disturbances are caused by the preliminary stages of incipient ulceration in stomach or duodenum; that is, the pains are the result of cramps in the vascular system of these organs. Pallor and syncope frequently accompany the colic and confirm the angiospastic condition. The beneficial influence of belladonna or atropin is further corroboration. Measures

which act by suggestion tend to reduce the nervous excitability. Tobias' assumption is further sustained by the fact that two of the children, aged 10 and 13, developed the classic symptoms of gastric ulcer a few years later, but were cured by the usual medical and dietetic measures. (See Abstract 51, p. 1126, The Journal, April 4, 1914.)

87. **Treatment of Gunshot Abdominal Wounds.**—Payr has found that the holes made by a small bullet are liable to close up spontaneously but that the blood and fecal matters which escape through the holes at first gradually work their way downward into the small pelvis and are not absorbed, as the collection is generally infected from fecal matter. The consequence is often that an abscess forms here in the small pelvis. He has witnessed this repeatedly after perforation of a gastric or duodenal ulcer; all seems to be going well for a time but then the abscess forms and the walling-off adhesions are broken down and secondary peritonitis results. It usually proves extremely serious, with an unfavorable prognosis. He advocates therefore means to render harmless the infected extravasated blood from a gunshot wound of the abdomen, and suggests two ways in which this can be done. When the patient is seen in the first twenty-four or forty-eight hours he advises making a very small laparotomy incision above the symphysis, under local anesthesia; the incision only large enough to permit the introduction of a rubber drain the size of one's finger, carrying it down into the small pelvis and having the patient keep in a half-sitting position or lie on his side afterward. When not seen until later than this, the space between the rectum and the bladder must be carefully examined through the rectum. If there is any tenderness, protrusion, tenesmus or difficulty in micturition, he advises to open up the region at once. If the swelling is circumscribed, the incision can be made in the rectal wall for the evacuation of the extravasated blood. If no circumscribed swelling can be discovered, but the whole region seems swollen and very painful, indicating peritonitis in the small pelvis already installed and beginning to spread, he advises a parasacral operation. The coccyx had better be enucleated, the rectum exposed and the anterior reflection of the peritoneum incised. The drain introduced into the small pelvis should be held with a stitch, the wound left open and lightly tamponed. Treatment on these principles has rendered him excellent service in many forms of peritonitis after injury and perforation of abdominal organs, and he thinks the technic will be found useful also for the bullet wounds in war.

89. **Muscle Flap to Patch a Heart Wound.**—Jurasz reports a case of attempted suicide by a man of 34, the bullet passing through the left ventricle, making a jagged wound. The hole where the bullet emerged was readily sutured but the other kept up bleeding until finally a small piece of muscle tissue taken from nearby was sutured over the hole. It arrested the bleeding at once. The pericardium was rinsed out with saline until no more clots came away. The pleura contained many clots which were cleared out and a wound in the lung sutured, the pleura also being copiously rinsed out with saline until no more clots came away. There was slight fever, not over 38 C., the first two weeks and the tenth day an extensive sterile serous effusion in the pleura was siphoned out. The pulse all the time was slow, regular and strong. Examined eight weeks later there was no dilatation of the heart or pathologic murmurs and the health seemed to be perfect. When first seen there was no suspicion that the heart had been injured as the course of the bullet seemed against this assumption and the bleeding seemed to come altogether from the lung. The absence of infection he ascribes to his copious rinsing out of the pericardium and pleura.

91. **The Morbidity and Mortality in the Wars of the Last Sixty Years.**—In an interesting table are shown statistics relating to the twelve wars that have been waged since 1854, beginning with the Crimean War: The duration of this was twenty-eight months; forces engaged, 97,864 British and 309,268 French; with morbidity of respectively, 1,475.4 per thousand and 1,168.8 per thousand and mortality of 179.6 and 191.7; killed in battle, 28.2 and 26.7 per thousand; wounded, 186.8 and 128.9 per thousand, and died of wounds, 18.9 and 32.1. The total mortality was thus 226.7 and 250.4 per thousand. None of the other wars since approached this mortality. The total mortality among the Germans in the Franco-Prussian war is stated as 18.2 per thousand from disease and from wounds 34.7, during the twelve months of the war. The force numbered 815,000. In the Russian-Japanese war of 1904-5 the Russians lost from disease 13.3, and from wounds 48.6 per thousand and the Japanese, respectively, 41.8 and 90.6. The progress of surgical and medical science is shown by the constantly lowering percentage of the wounded who die from their wounds. This is stated as having been 24.9 among the French in the Crimean war; 11.1 among the Germans in the Franco-Prussian war, 1870-1; in the Russo-Japanese war, 6.8 per cent. among the Japanese and 3.2 per cent. among the Russians.

### Zentralblatt für Chirurgie, Leipsic

*August 29, XLI, No. 35, pp. 1409-1432*

92 *Paravertebral Anesthesia in the Service of Gall-Stone Surgery. A. T. Jurasz.
93 *In Operating on Varicose Veins. R. Gutzeit.

92. **Paravertebral Anesthesia.**—Jurasz calls attention to the advantages of this method of nerve-blocking for gall-stone operations when general anesthesia is contra-indicated for any cause. He reports two cases in which it answered the purpose perfectly, no further anesthetic being required for the skin or peritoneum. The patients were debilitated women of 39 and 73 with much dilated hearts. He injected 5 c.c. of a 1 per cent. solution of novocain on one side at each segment of the spine from the sixth dorsal to the first lumbar, a total of about 40 c.c. In ten minutes the anesthesia was complete and the abdominal walls had relaxed. There was no pain when the bile duct was opened and gall-bladder removed. There was no operative shock in either case; the pulse was weak to start with but did not grow any weaker. The anesthetic is injected with a long fine needle on a level with the tip of the spinous process, and the lower margin of the transverse process is sought with the needle and close to it, just below, the needle is pushed in ½ to 1 cm. deeper, pointed a little more toward the median line, pushing the tip in cautiously until the patient feels a pain radiating forward. Then 5 c.c. of the fluid is deposited here and by the end of a minute there is no further pain. He leaves the needle in place and takes another for the next injection, using the first again for the third injection, and so on. As the technic is rather tedious and as the patient has to stand the brief pain when each nerve is reached in turn, the method is not adapted for general use, but may have life-saving value in cases in which general anesthesia is contra-indicated.

93. **Improved Technic for Operations on Varicose Veins.**—Gutzeit has the shaved leg rubbed with alcohol and then traces with a blue indelible pencil the course of the veins in question. When the leg is dry it is painted all over with 5 per cent. tincture of iodin. The veins then all stand out black on the brown background and show up plainly even when the region is covered with blood.

### Zentralblatt für Gynäkologie, Leipsic

*August 29, XXXVIII, No. 35, pp. 1201-1216*

94 *Formaldehyd Cauterization to Arrest Climacteric Hemorrhage. (Konzentriertes Formalin, das am schnellsten und sicherste wirkende chemische Mittel zur Behandlung klimakterischer Blutungen.) E. Gerstenberg.
95 Acetonuria Following Spinal Anesthesia. G. Gellhorn (St. Louis).

94. **Concentrated Formaldehyd in Treatment of Climacteric Hemorrhage.**—Gerstenberg states that he uses a solution containing 40 parts formaldehyd in 60 parts of water to paint the uterine mucosa to arrest climacteric hemorrhage, and has never had any mishaps with it. It advantageously substitutes for or supplements curetting or roentgenotherapy while it is far superior for numerous reasons to atmocausis or zinc-chlorid applications. He even affirms that if uterine hemorrhage in women of 40 to 50 is not arrested by two formaldehyd applications in this way, some special cause for the hemorrhage is more than probable. The trouble generally proved to be myoma in his cases; in one the myoma pre-

vented the formaldehyd from reaching the mucosa above it. He applies the formaldehyd for fifty seconds altogether and uses two sounds at once. Otherwise his technic is the same as in his first communcation on the subject in 1900.

### Zentralblatt für innere Medizin, Leipsic

*August 29, XXXV, No. 35, pp. 825-840*

96 The Sense of Taste. (Der Geschmack.) W. Sternberg.

### Gazzetta degli Ospedali e delle Cliniche, Milan

*August 23, XXXV, No. 101, pp. 1057-1072*

97 Serodiagnosis of Tumors. (La reazione di Abderhalden nella diagnosi dei tumori.) F. Lanzarini.

*August 25, No. 102, pp. 1073-1080*

98 *Helminthiasis. (Patologia degli ascaridi.) G. Slaviero.

*August 27, No. 103, pp. 1081-1088*

99 Peritoneum Flaps. (Alcune esperienze di innesto libero del peritoneo.) T. V. Caldesi.

98. **Disturbances from Ascarides.**—Slaviero remarks that the pendulum is now swinging back to a more rational estimation of the pathologic importance of helminths, from the exaggeration of the old days and the recent opposite almost total disregard of them. He has lately encountered three cases of obstruction of the bowel by ascarides. The patients were boys of 12 and 13 and a woman of 27. The seat of the obstruction and intense pain in the abdomen changed about in the first boy and in twenty-four hours there was retention of urine and other evidences of acute cystitis. Numerous ascarides were passed in the stools and finally a conglomerated bunch of 28, after which all symptoms subsided. The woman patient was of a tuberculous family and for six months had pain in the ileocecal region, aggravated by walking, and strictly localized. The pain then became suddenly intense, with collapse, and spread throughout the abdomen. She improved under treatment but then the pain became localized in the bladder with tenesmus and painful micturition. The urine contained fecal matter and the fifteenth day an ascaris, 16 cm. long, came out through the urethra. She improved after this but still had pain in the right flank and lumbar region radiating down to the bladder. Slaviero's diagnosis is that a tuberculous process exists in the intestine and had opened a passage into the bladder which has since closed. In the third patient the symptoms were sudden severe delirium, with hallucinations. It came on without fever or pain and lasted for several hours with a few brief lucid intervals. Then consciousness returned and the boy complained of oppression in the epigastrium. After a dose of calomel several ascarides were passed and the nervous symptoms subsided. A few months later the same toxic syndrome of acute, transient delirium developed anew and yielded again to a vermifuge.

### Pediatria, Naples

*August, XXII, No. 8, pp. 561-640*

100 Purulent Disease of the Urinary Apparatus in Infants. S. Cannata and G. Caronia.
101 Areas of Thoracic Dulness in Infants. (Significato di alcune ipofonesi toraciche nella patologia del lattante.) S. Maggiore.
102 *Digestion of Starch and Milk in Infant's Stomach. (Fenomeni digestivi che si svolgono nello stomaco del lattante alimentato con farine lattee.) F. Luna.
103 *Causes of Congenital Hydrocephalus. F. Amenta.
104 *Malaria in Infant, Probably Congenital. M. Manca.

102. **Digestion of Starch in Infant's Stomach.**—Luna examined the stomach contents at regular intervals after a test starch-milk feeding, studying the effect of five different variations of the salt and starch content of the food. When there were no salts in the food, the mixture was hypotonic in respect to the blood serum and the consequence was that larger amounts of hydrochloric acid were secreted than when there were salts in the food. When the starch in the food was given already diastased, large amounts of hydrochloric acid were secreted but as there was nothing to bind it all, some free acid was left in the stomach content. This does not occur with milk alone or not until tardily. For this reason diastased starch is advantageous only when there is abnormal fermentation in the gastro-intestinal tract from the presence of bacteria which tend to make the reaction alkaline (putrefaction). When the tendency is to acid reaction, then more acid is injurious, and consequently diastased starch is contra-indicated under these conditions. On the whole the research reported emphasizes that starch overstimulates the secretory function of the stomach at an age when it should still be spared, as is the case on a milk diet.

103. **Congenital Hydrocephalus.**—In Amenta's eleven cases of congenital hydrocephalus the Wassermann reaction was positive in seven, and also in some of the parents even when the Wassermann was negative in the infant.

104. **Congenital Malaria.**—The babe was found to have typical malarial chills and fever when it was 27 days old, and they may have been present before and escaped detection. The mother had contracted malaria two years before and still suffered from it. This is the first case Manca has encountered in eighteen years of practice in which a congenital origin of the malaria seemed probable, although many children are affected in this region.

### Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

*June 27, LVIII, No. 26, and Supplement, pp. 2419-2578*

105 *The Hemorrhagic Syndrome in Various Diseases. P. G. J. Duker.
106 Is There a Connection Between the Location of the Transverse Sinus and the Shape of the Nasopharyngeal Cavity? (Is er verband tusschen de ligging van den sinus transversus en den vorm der neus-keel-holte?) E. W. de Flines.
107 Blocking the Brachial Plexus; Five Cases; Menacing By-Effects in One. S. S. Hylkema.

105. **Hemorrhagic Syndromes in Various Diseases and Intoxications.**—Duker theorizes and cites evidence to prove that poisons which act on the blood cells act likewise on the cells of the endothelium lining the blood-vessels, as the endothelium cells, he reiterates, are nothing else but blood cells in a special morphologic state. In embryonal conditions as well as in pathologic conditions during extra-uterine life the blood cells are derived from the endothelium cells of the blood vessels. The hemorrhages which occur in phosphorus poisoning, purpura, typhoid, leukemia, aplastic and pernicious anemia and in congenital hemophilia are the result of the toxin acting not only on the blood cells, but also on the endothelium of the blood vessels thus rendering them more permeable. This explains why the hemorrhages occur at so many points. He refers to Barker's report in 1910 of aplastic anemia developing in three young men professionally exposed to the fumes of benzol, adding that this was the basis for Koranyi's use of benzol in treatment of leukemia, seeking to utilize the destructive action of the benzol on the blood cells.

### Norsk Magazin for Lægevidenskaben, Christiania

*September, LXXV, No. 9, pp. 1001-1104*

108 The Mentally Deficient and the Law. (De sindssvake og deres retsstilling.) R. Vogt.
109 Acute Tuberculous Peritonitis in the Puerperium. G. Benestad.

### Ugeskrift for Læger, Christiania

*August 20, LXXVI, No. 34, pp. 1449-1494*

110 *Acetyl-Salicylic Acid in Treatment of Asthma. G. Jepsen.
111 Inhalation Mercurial Treatment. (Emikuren, Et Forsøg paa en Kritik.) S. Lomholt.

*August 27, No. 35, pp. 1495-1540*

112 The Conjunctiva Is Not Usually Sterile in the Newly Born. A. Bernsten.
113 Electro-Gymnastics and Bergonié's Method. H. Jansen.
114 Radium and Roentgen Treatment of Uterine Cancer. A. G. Lauritzen.

110. **Acetyl-Salicylic Acid in Treatment of Asthma.**—Jepsen has suffered from asthma himself and has found great relief from acetyl-salicylic acid, as also a number of patients, as he describes in detail. The dose was 1 gm. and it always helped at once and has served to ward off impending attacks. Some of his patients have been thus taking it for two years, one for three. In some other cases no benefit was apparent from it and, only epinephrin gave relief. All had a vasomotor rhinitis which suggests that reflex action from the nose may be an important factor in asthma. Treatment of the rhinitis is thus an indispensable preliminary to treatment of the asthma. The asthma subsided completely during acute intercurrent diseases in his patients.

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# ANOCI-ASSOCIATION IN RELATION TO OPERATIONS ON THE GALL BLADDER AND STOMACH*

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In reviewing the records of 893 operations on the biliary tract and 331 operations on the stomach performed by my associates, Dr. Bunts and Dr. Lower, and myself, together with those performed by other surgeons at the Lakeside Hospital, we find that the clinical course of certain patients after gastric resections and after common-duct operations is similar in many respects. At the time of operation pulse and temperature are normal, but the patient is emaciated and sallow in appearance; his vitality is much reduced; his demeanor is melancholic and he is alternately possessed by hope and despair. After the operation his downward course and exit strikingly resemble the sinking and disappearance of the unwary traveler who has been trapped by quicksand.

Statistics show that no clinic has ever reduced the mortality rate of any considerable series of resections of the stomach below 10 per cent., and the mortality rate of infected, obstructed common-duct operations is scarcely less. When the surgeon is obliged to tell the prospective patient, whose courage has already been lowered by the disease itself, that his chances for recovery from the operation are but one in ten, the patient is naturally reluctant to accept the risk, or else he undergoes the operation in a hopeless spirit which augments the peril.

The purpose of this paper is to offer a probable explanation of this postoperative morbidity and mortality and to discuss a method by which the patient may be steered clear of the metabolic quicksand. The cause of the high mortality of gastric and gall-bladder operations is exhaustion—not the exhaustion induced by trauma and infection, though this may indeed be a contributory cause, but exhaustion which is the result of the lack of function of a fundamental organ.

This postulate is based on experimental as well as clinical evidence. In my laboratory, my associates Dr. J. B. Austin, Dr. F. W. Hitchings and Dr. M. L. Menten have made histologic studies and H-ion concentration tests after the excision of each of the following organs—the liver, the adrenals, the thyroid, the pancreas, and the spleen. Only double adrenalectomy and hepatectomy caused a steadily increasing exhaustion and death in less than twenty-four hours. These operations were the only ones followed by a marked increase in the hydrogen-ion concentration of the blood, this increase appearing in from a few to twelve hours or more and being the immediate precursor of death. Excision of the liver or of the adrenals also caused marked changes in the brain cells.

We then made histologic studies of every tissue and organ in the bodies of animals exhausted by prolonged insomnia; by infections; by fighting; by physical injury; by fear; by slow etherization and by the injection of toxins, of alcohol, of skatol, etc. In every case, identical changes were found in the brain, the adrenals and the liver, and in these organs only. In brief, exhaustion from any cause is manifested by identical clinical symptoms and by identical histologic changes in the brain, the adrenals and the liver. A given case of exhaustion may have been initiated by the inanition of vomiting; increased by pain; carried further by infection; still further by the strain of etherization; another step by the unblocked traumatism of the operation; until postoperative pain, even if not severe, finally overcame the already lowered powers of endurance and the patient died. According to the margin of safety in the individual patient the fatal sequence may be terminated at any point.

I have stated that three organs are especially concerned in this progressive exhaustion, but the primary significance of one of the three—the liver—in the cases we are considering, may not at first be manifest. One of the most important functions of the liver is the neutralization of the acids which, as our hydrogen-ion concentration tests have shown, are a by-product of energy transformation. Disease processes, emotion, physical injury—every kind of response to stimuli produces acidity. Under normal conditions the liver and the adrenals—which share in the neutralization process—can quickly restore the body fluids to their normal, slightly alkaline condition.

If a starved and worried patient be traumatized, the margin of safety must necessarily be reduced; acidosis will be present or threatened and but a slight additional stimulus will suffice to produce the fatal result. But ether and nitrous oxid anesthesia cause marked acidity in the blood, which normally is neutralized in about thirty minutes; ether, however, adds an adverse chemical effect and a psychic strain. Every contact between instruments and tissue under naked-nerve ether anesthesia causes a discharge of energy and increases the acidity; the postoperative pain stimuli do likewise until at some point the body's stores of energy are exhausted and the liver is no longer able to meet the demand for acid neutralization. Long before the operation is completed, the patient's doom is sealed.

Treatment is of little avail. The administration of sodium bicarbonate and glucose by mouth, of bile by rectum, and excellent nursing may aid, but in most instances they accomplish little. The only cure is prevention (*a*) by increasing the store of energy and (*b*) by stopping the expenditure of energy and the consequent fabrication of acid. The first end may be accomplished by increasing the intake of food and water; by the administration of sodium bicarbonate and glucose, and by having the patient sleep in the open air. Energy may be conserved by limiting physical activity and so far as possible eliminating worry and anxiety before the operation; and by diminishing acid production during and after the operation by complete anoci-association.

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June 1914.

With the starved patient no anesthetic and no narcotic is safe. Anesthetics increase acidity in a direct ratio to the amount given; morphin does not increase acidity but does interfere with neutralization. Psychic quiet for these patients may be safely secured by bromids administered per rectum. Just enough nitrous oxid should be administered to give a twilight anesthesia so that the patient may be protected against the destructive action of fear. The infiltration of novocain in 1:400 solution precedes each division of nerve-bearing tissue. An ample incision is made and a feather-edge technic is employed throughout the operation. To insure complete relaxation during the operation and to promote postoperative comfort the abdominal wall at a distance from the incision is thoroughly infiltrated with quinin and urea hydrochlorid in 1:600 solution.

If the margin of safety is very narrow the operation is performed in two stages. For example, a gastro-enterostomy is followed by gastrectomy after the nutritional balance has been restored; or in a case of common-duct obstruction with infection, the gall-bladder is first drained until the jaundice disappears and the margin of safety is enlarged, when the stones may be removed safely.

Another great danger in gall-bladder operations is interference with the function of the liver by injuring its nerve supply. In our experiments we found that blocking the nerve-supply to the liver caused histologic changes. We found also that when the splanchnic nerves are roughly handled the brain cannot control the epinephrin output.

A sharp knife, bloodless dissection, the elimination of pulling and tearing manipulations and a minimum amount of sponging are required. Because of the very slight insulation of the splanchnic nerves, their injury is surprisingly easy; for this reason also, therefore, the two-stage operation is advisable in critical cases, as thus a smaller number of splanchnic nerves will be injured at one time and the interference with the functions of the already almost overwhelmed liver and adrenals will be diminished.

These deductions are based not only on laboratory experiments but on clinical observations as well. Since I have begun to apply these principles in gall-bladder and stomach operations I have seen a remarkable improvement in the results.

The postoperative care of these patients is of vital importance. Skilful, tactful nurses by creating an innocuous environment can most valuably second the efforts of the surgeon who, in the patient's room as clearly as in the amphitheater, visualizes the clinical problems which his special case presents.

A brief word may well be added concerning the danger of postoperative pneumonia. This danger may be almost eliminated by discarding ether and by the infiltration of quinin and urea hydrochlorid at a distance from the wound. The tendency of ether to cause bronchitis and pneumonia is generally recognized. Pneumonia does not result from the use of nitrous oxid oxygen. Even without ether, however, a painful wound may in itself cause pneumonia. When a wound in the upper abdomen is painful, the respiratory excursions are inhibited; the lung is not expanded, and pleurisy and pneumonia are the natural result. The painless wound which is assured by the use of quinin and urea hydrochlorid will, therefore, prevent postoperative pneumonia.

The complete application of the principle of anoci-association, not only during the operation but also in the preoperative and postoperative care of the patient, will minimize the two greatest dangers attending gall-bladder and stomach operations—exhaustion with its fatal sequel, acidosis, and postoperative pneumonia.

Osborn Building.

## ABSTRACT OF DISCUSSION

Dr. W. D. Haggard, Nashville, Tenn.: We are greatly indebted to Dr. Crile for the elucidation of factors of which we have evidently been hitherto unaware. We have been so engrossed with the pathology that it may be said we have been pathologically wise, but physically foolish; but Dr. Crile has joined the experimental with the practical. Gentle manipulations and extreme care should be used particularly in those cases in which the great primitive organs of the body are concerned. We learn from surgical associates, of patients with chloroform poisoning who die on the fourth and fifth day without apparent cause. The blood-count is just like that in phosphorus poisoning. So we find that in surgical deaths when this drug is not used the important function of the liver has been interfered with. We seem to forget that the sympathetic nerve controls the liver and in our operations on this organ and the common duct, a perfectly mechanical thing, our mortality has been frightful because we have ignored the fact that, if we destroy the innervation of this big center of the body, we not so much destroy the patient's resistance as inhibit his opportunity for recovery. I was glad Dr. Crile referred to the gall-bladder as he did, because we have had the pendulum of opinion going to and fro, some thinking that if the gall-bladder is lost our landmarks are gone. I had this experience in an ordinary inflamed gall-bladder which I left in. I had the intense chagrin of seeing that patient develop malignant neoplasm of this retained gall-bladder. An experience of that kind does much more to shape our course than any theorizing. When put to the test of analysis, how unwise it seems to leave the thickened, inflamed gall-bladder which is already functionless and out of commission. Why not remove it so that the patient can have the benefit of immedate and permanent recovery? Our generation will scarcely appreciate keenly enough the remarkable addition to our therapeutic resources that have come from the elaborate and convincing studies presented by Dr. Crile and his associates.

Dr. Ernest Laplace, Philadelphia: So eminent a man as Sir Berkeley Moynihan said in my presence that Dr. Crile's work was the greatest thing in surgery since the work of Lister, and I believe it. For years I have taught that there was but one kind of shock, and that traumatic, emotional, chemical or physical shock must produce the same material results. It remained for Dr. Crile to prove that assertion. The logical sequence to this has been the birth of anoci-association with the wonderful improvement in the operative recovery of patients. Hence, we must diminish the causes of shock. Mechanical interference and tampering with the peritoneum, especially in the region of the gall-bladder and liver, is probably one of the greatest additional causes of shock. Gall-bladder surgery just now is undergoing the same course that appendiceal surgery went through some years ago. The gall-bladder is a diverticulum like the appendix which should be removed if it has ceased to serve its purpose. Gall-stones likewise should be removed with the least shock-producing procedures, quickly, and with the least interference with the peritoneal cavity leading to anoci-association. With that object in view I have devised a simple liver retractor. In removing the gall-bladder the liver was formerly lifted by the hand of an assistant. Instead, I now lift the liver with a long smooth wire retractor while the gall-bladder drops into a forked space in the center of the retractor. This facilitates the dissection of the gall-bladder and affords a better view of the gall-ducts and neighboring structures. This is a step in carrying out the shockless operation, as it facilitates and expedites the work.

Dr. Robert T. Morris, New York: Dr. Crile has reduced to analysis principles I have held for many years. The principles of the fourth era of surgery I stated very crudely, but at least felt clinically the experience that was giving this trend, and expressed it in various ways. I taught for many years the crude outline form of anoci-association. Many of us have been doing the same thing. Dr. Crile has simply given us a refined product because of his philosophic method of work; synthesis in association with his scientific analysis.

Dr. Albert J. Ochsner, Chicago: If we go home with the valuable principles which are at the bottom of the remarkable clinical success of Dr. Crile's work, and with a thorough appreciation of the fundamental principles, we will be the gainers. The fundamental principle is, in the first place, to widen as much as possible the margin of safety. The various things that Dr. Crile does in his practice inspire the patient with confidence, making him feel that he is in the best hands under the conditions in which he exists. Everything is favorable, the patient is in the hands of nurses who know that things must go well after Crile has finished the operation. Every surgeon should introduce this element and carry it out in his work. He should not do his work where forty other surgeons are doing bad surgery. The second principle is that none of this margin of safety should be wasted. There is neither insane haste nor imbecile deliberation in Dr. Crile's work. His surgical judgment indicates what should be done and after he is through with the operation the best possible and nothing harmful has been done. Another fundamental principle is that all the useless things done must be harmless; for instance, introducing quinin and urea hydrochlorid. This is one of the useless things, a little of which will do the patient no more harm than any one of many other useless things. Many Christian Scientists have come to me for operation. I have found that one of these patients will do better after an operation than another patient after the same operation, simply because that element of waste is eliminated. The value of faith in the remedial element I saw illustrated some twenty-five years ago when I was chief assistant to Charles T. Parkes. A visitor after a week with us said it was wonderful that our anesthesias went so quietly, that we had no vomiting, that the patient's condition was perfect throughout the anesthesia. "How do you do it?" Dr. Parkes replied, "We give morphin ¼ grain and atropin 1/100 grain half an hour before the anesthesia is begun." A nurse who heard this came to me and said, "I have been on duty for a year and a half and I have never given this. Is it possible that I should have known this and that I was not informed when I undertook this work?" We had no cyanosis during the anesthesia; we had almost no postoperative pneumonias. A man from the East came to my hospital with a remedy which was intended to stop postoperative vomiting. He told a very plausible story. I instructed the superintendent of nurses to use this in every case of postoperative vomiting. Some time later I asked her whether the remedy was doing what was claimed for it. She replied, "We have had no postoperative vomiting." Now if I had done some useless thing, so long as it was harmless, it would have seemed good practice, and it would have been most natural to attribute the good results to this factor.

Dr. Conrad A. Howell, Columbus, O.: No one follows out the principles which Dr. Crile has endorsed more than I. It was from Dr. Crile that I first got the impelling motive to use his technic and the principles involved in anoci-association. So much have I been impressed with the necessity of rest, both mental and physical, that a patient who goes into a hospital the night before the operation is made to sleep under the influence of veronal. I consider ten or twelve hours sleep the *sine qua non* for the operation which is to take place next morning. I can readily imagine what the thought would be that every tick of the clock means a second nearer the time set for the operation. As to the use of narcotics, morphin, hyoscin, I do not use them as was suggested by Dr. Ochsner. My operating hour is 9 a. m. The veronal which was administered the night before keeps my patient asleep until 7 a. m. At 7, dependent on the physical characteristics of the patient, I order morphin ⅛ grain, hyoscin, 1/200 grain, and at 8 I repeat a similar dose, with the object of keeping the patient's mentality, his cerebral centers, in a completely sedative state until 9, the time set for the operation, and not in that raspy, keen pitch, which would be the case if these narcotics were administered only one-half hour before he is to be operated on. Veronal the night preceding the operation, morphin and hyoscin at 7 and 8 keeps the patient in a tranquil condition from the time he wakes until the time of operation. The morning hour is the time for operating, not the afternoon—the morning hour when the patient has been refreshed by sleep, when there has not been a long interval between the time of waking and the time set for operation. With regard to quinin urea hydrochlorid, do not use it strong (1 per cent.). Do not use it near the skin. It produces a fibrinous exudate which strangulates the blood-vessels supplying the skin and will cause a slough. Use it deep in the muscular structure; use it in the parietal peritoneum. I cannot agree with Dr. Crile when he says that he puts patients to bed and gives them bromids because, using quinin and urea hydrochlorid in the strength which I do (1:400), I must confess that the patient still suffers pain, though not the amount that would be present without the use of that drug. I believe that pain breaks down cerebral cells if kept up for hours after an operation, and tends to produce shock; therefore I use morphin in small doses as a postoperative adjunct.

Dr. George W. Crile, Cleveland: We never give morphin to a very old or very young patient, or to one who is very sick. We do give morphin grain ⅙ and scopolamin grain 1/150 to patients who are not debilitated. After the operation we do not hesitate to give morphin again, in small doses. We also use novocain. It does not interfere with the healing of wounds. Quinin and urea hydrochlorid injected into the skin does produce a marked reaction in the tissues, but, as Sir Berkeley Moynihan states, if quinin and urea hydrochlorid is injected at a distance from the wound itself it will interfere with healing no more than any other manipulation does. When quinin and urea hydrochlorid in 1:600 solution is injected at a distance from the wound it does not come in contact with the wound itself. Of course whether quinin and urea hydrochlorid will ultimately prove to be as valuable as we now think it is, will be determined by the testimony of the patients.

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**Challenge to Christian Science.**—The following proposition was made at a lecture on Christian Science by J. W. Springthorpe, Melbourne, Australia (Therapeutics, Dietetics and Hygiene, ii, 651): "Leaving the abstract for the concrete, I will now undertake to demonstrate to the local coterie of Christian Scientists that their minds do not dominate their own bodies, much less the bodies of others, and I will do so with drugs, which they say are powerless. Thus with one drug I will make their president speechless and motionless; with another I will make their vice-president red all over or perspire horribly, whichever she dislikes most; with a third their treasurer the sickest possible in the time; and with a fourth their secretary unable to read her 'Bible', though she shall still see the book. Surely here is real 'fruitage'—or failure." Needless to say, the challenge, though reported to headquarters, was not taken up. It is hardly necessary to add that chloroform, amyl nitrite, pilocarpin, apomorphin and atropin would have produced the effects mentioned.

# EXPERIMENTAL SURGERY OF THE HEART, LUNG AND TRACHEA*

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## *HISTORICAL*

In a not very distant past surgical interference of the heart itself was considered quite out of the question, and even its suggestion seemed highly ridiculous.

As late as 1888 Rydinger said that "the proposal of suturing of heart wounds hardly needs any serious consideration." Even Billroth told his friends that any one who tried to suture a heart wound would surely lose the respect of all his confrères. No doubt unknown to these authorities, however, about this time experimental work was being done along these lines. As early as 1812 Block[1] demonstrated a dog ih which he had successfully stured the heart. He was followed by Howell and Donaldson,[2] in 1884, Phillipson[3] (1886) and Del Vecchio[4] (1894). Then came Cappelen and Farina,[5] each with an attempt at heart suture in man with disastrous results, followed by Rehn[6] in the same year with the first successful suture of the human heart. Thus the path was broken and in 1913 Wagner[7] was able to collect 260 cases with the truly marvelous result of almost 50 per cent. recoveries, and now the researcher is patiently paving the way for a surgical invasion of that sacred Lhassa of the human, the interior of the heart.

Surgical attack of the pericardium has a great deal longer history, and there is reason to believe that tapping of the heart-sac was practiced by the ancients and surely by the medieval surgeons.

Riolan[8] talks of the permissibility of opening the chest wall for pericardial effusions. He, however, cites no cases. One of the first, if not the first, to incise the thoracic wall for the purpose of reaching the pericardium was the famous Larrey,[9] the surgeon-general in Napoleon's army, who in his interesting memoirs describes a case of self-inflicted heart-wound followed by empyema of the heart-sac in which he bravely incised the chest wall between the fifth and sixth ribs and evacuated a great amount of fluid, followed by temporary improvement of the patient. He also palpated the apex of the heart with his fingers.

Romero[10] a little later also incised the pericardium and further on reported some cases to the Faculty of Medicine in Paris. This society, however, disapproving of the operation and lest others might imitate, refused to publish the paper in its *Proceedings*. The operation is also reported by Fowett,[11] Karawagon and others. Early experimental work was done by Amerito,[12] who concluded that animals thrived fairly well without the heart-sac.

The history of lung surgery extends back to Hippocrates, who was probably the first to describe pneumonotomy (Ricketts[13]).

Bolgius (1710) was one of the first to incise the pleura for lung wounds. Rolandus of Parma published the first account of successful operation for hernia of the lung. Fabricius Hildanus (1646) and Ruysh (1777) recorded cases in which portions of the lung had been excised.

Camparadon treated abscesses of the lung with surgical intervention, and Baglion in 1714 advocated operative measures in pulmonary tuberculosis.

The modern history includes a number of brilliant clinicians and researchers, and rapid advances are recorded due to the perfected operative technic and all important aid of artificial respiratory apparatus introduced by Sauerbach.

Estlander[14] was the first to treat empyema with thoracoplasty.

Tuffier had done a great deal of well recognized work along the lines of lung surgery. De Lormo, Ombonin and Michaux (Ricketts) performed pneumonectomies for grave injuries to the lung.

Willard reported bronchiotomy from behind for foreign bodies in the bronchus.

Murphy[15] conceived the brilliant idea of adapting the accepted method of rest for tuberculous lesions to that of the lung by introduction of nitrogen gas in sufficient quantities to completely collapse the lung and thus immobilize it. Other pioneers are Mosler, Kolle, Bull, Roswell Park, Lemcke, Fenger, Reclus and many others.

According to Newberger and Pagels[16] tracheal surgery in the form of tracheotomy was known to the Jews before the Christian era and probably also to the Greeks and Romans. In the sixteenth century Vidus Vidius (Pagels) is said to have opened the trachea and inserted gold and silver tubes.

The modern work of the lung-tube concerns the repair of the tracheal defects and resections of which the first attempt was made by Gluck and Zeller[17] (1891), who in working on the esophagus of a dog accidently tore the trachea and repaired it. The first premeditated attempt was made by Colley[18] in 1895.

Kuster[19] was the first to report resection of several rings of the windpipe, followed later by Foederl, von Haecker Konig.

The first intrathoracic suture seems to be the one reported in this paper (by me).

The status of the present thoracic surgery in all its branches is due in a great measure to the brilliant clinicians and researchers of this country, namely, Carrel, Bernheim, Cushing, Willy Meyer, Robinson, Murphy, Halstead, Elsberg, Crile and others.

## *GENERAL TECHNIC*

Owing to the extreme susceptibility of the pleura and the pericardium to infection, the most painstaking and scrupulous asepsis must be maintained. The defensive power of these serous sacs is greatly less than that of the peritoneum, so that procedures that would prove fairly satisfactory in intra-abdominal work would be absolutely fatal in an intrathoracic invasion. The resistance of the pleura as to that of the chest wall is almost incomparable, as behind a perfectly healed chest wall without at least any macroscopic sign of infection you may have a pleural cavity filled with pus and this without any bronchial leakage. Thus it is of the greatest importance to use every possible precaution in thoracic work. The animal should receive the antiseptic bath a day or two before the operation. At the time of operation it is well to give an antiseptic mouth wash. The tracheal tube should be boiled for each animal. The coil of the tracheal tube we often pass through hot water. The operative field should receive the most pedantic toilet.

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Block: Gaz. med. de Strassbourg, October, 1882.

[2] Howell and Donaldson: Phil. Tr. Roy. Soc. London, 1884, Part 1, p. 139.

[3] Phillipson: Russian Med., 1886, iv, 187.

[4] Del Vecchio: Internat. Cong. Med., Rome, 1894, iv, 297.

[5] Farina: Ztschr. f. Chir., 1896, p. 1224.

[6] Rehn: Jour. Exper. Med., v, vi, 488.

[7] Wagner: Deutsch. Ztschr. f. Chir., cxix, 222.

[8] Riolan: Encheiridium Anatomicum, Paris, Ed. 4, 1658, p. 213.

[9] Larrey: Mémoires de chirurgie militaire, Paris, 1812, iii.

[10] Romero: Dictionnaire des sciences médicinales, 1819, 370.

[11] Fowett: Gunther's Blutigen Operationer, iv, Part 3, p. 102.

[12] Amerito: Internat. Cong. Med., Rome, 1894, iv, 301.

[13] Ricketts: Surgery of Head and Lungs.

[14] Estlander: Nord. Med. Arch., 1879, v, 11.

[15] Murphy, J. B.: Surgery of the Lung, The Journal A. M. A., 1898, xxxi, 151, 208, 281, 261; Internat. Cong. Med., Paris, Section of Surgery.

[16] Newberger and Pagels: Handb. d. Gessch. d. Med., i, 117 .

[17] Gluck and Zeller: Arch. f. klin. Chir., 1891, xxvi.

[18] Colley: Deutsch. Ztschr. f. Chir., xl, 150.

[19] Kuster: Wien. Klin., 1890, Nos. 3, 4.

In all our work we have used the intercostal incision and sometimes after entering the thorax the opening has been forcibly stretched. This has given splendid exposure and to me it has seemed better than the flap opening in that it creates less abnormal conditions, namely, fractured ribs, cut muscles, divided nerves, etc. It surely causes less postoperative disturbances, healing sooner, and with less chance of infection.

The wound edges should be covered with sterile gauze. All tissues should be gently handled with instruments. It is preferable not to touch the interior of the chest with fingers. As suggested and practiced by Carrel, packing should consist of oiled Japanese silk and then be covered with moist hot sponges. The local atelectasis produced by pressure from sponges should be remedied by forcible expansion of collapsed area before the chest is closed.

Great stress has been laid on forcible inflation of lung before suture of the chest cavity. This is probably desirable but not at all important, as the animals in which we neglected this maneuver fared just as well as the others. However, it may be good practice. The wound suture must be done carefully in layers. We used catgut and the deeper stitches we placed around the two adjacent ribs thus making a perfect splint. This undoubtedly enhances the healing and surely lessened the postoperative discomfort.

This wound was dressed in plain gauze, pneumonia jacket applied, and animal surrounded with hot-water bags in its cage. Morphin was given before and after the operation.

For artificial respiration we used a simple homemade affair consisting of two automobile pumps made by Dr. Simon and later perfected by my assistant, Dr. Rahe.

## EXPERIMENTAL WORK

For the following experiments 120 cats have been used, including those used for development of technic. Complete clinical records have been kept of each one by Dr. Rahe. Space does not permit of all the observations being printed. I have given only the main data. Some of the animals have been kept over half a year. We should have liked to have saved a great number for long periods, but this was impossible on account of inadequate quarters.

### I. PERICARDIUM

Complete excision was done in order to study the clinical findings and the extent of adhesions following. Practically no disturbance follows the procedure. The animals acted as before operation and nothing could be heard on auscultation. One was kept for over six months and was in splendid condition when killed. Adhesions were found mainly to the mobile lung, which explains the lack of symptoms.

Repair of pericardial defects might become necessary following mediastinal operations. Great loss of pericardial tissue cannot be remedied by drawing the sac together with sutures, as the heart will not endure the pressure caused by a tightened pericardium. This we have often noticed.

In two cats we closed the pericardial openings with a lipofascial flap from the chest wall. This flap should be made quite long, as it later contracts and then may cause serious trouble, as happened in one cat probably by causing too much traction on vessels at the base of the heart. In a few cats we replaced the excised heart-sacs by a piece of omentum. This, however, is of very doubtful value as there is great danger of the transplant not thriving and, if successful, it forms close adhesions all around the heart and to the surrounding lung. For some reason that I cannot explain, these animals suffered more than any of the others we used in this research.

Strips of pericardium might be used as artificial ligaments if ever cardiopexy should be practiced.

Cat 1.—April 15, 1913. Excision of pericardium. Killed July 20, 1913. Heart glistening, few adhesions to lungs, and mediastinum otherwise normal.

Cat 2.—Jan. 16, 1914. Killed May 21, 1914. Slight adhesions to lung, some to mediastinum. Heart smooth, of normal size, interior normal.

Cat 3.—July 18, 1913. Repaired pericardial defect with lipofascial flap. Died July 24. Contraction of flap seemingly interfered with heart action.

Cat 4.—July 18. Operation as before. Killed Aug. 20, 1913. Flap took well; adhesion of lung to suture-line.

Cat 5.—Oct. 14, 1913. Excision of pericardium, and replaced by transplanted omentum. Killed Nov. 9. Omental transplant adherent to heart and lung. Heart normal.

Cat 6.—Nov. 10, 1913. Operation as above. Died November 13 from infection.

Cat 7.—November 12. Operation as above. Died November 19 from sloughing of transplant.

### II. HEART

Before going into details of our work it would probably be of some interest to consider the special technic of heart surgery.

After the chest cavity is opened, the pericardium is picked up in much the same manner as the peritoneum. A small amount of clear watery fluid escapes on incising the sac. The incision may be made in various ways. We made a longitudinal straight cut. By experience we found it best not to make this opening too near the base of the heart, as in sewing up you may cause too much tension in this region, resulting in acute cardiac dilatation. By making slight traction on the edges of the pericardium the heart is drawn slightly forward and partly or entirely delivered from it. The heart must be drawn forward carefully as too much traction is one of the great dangers in heart surgery. Many a cat did we lose in the preliminary experiments before we recognized this very important fact.

In doing intracardiac work, hemostasis becomes at once the foremost problem. This has been solved in different ways. Rehn,[20] Magnus and Noetzels used digital compression of the right auricle or temporary ligation of the vena cava, but this could be maintained for only one and one-half minutes. Schepelman[21] applied ligature on vessels at some distance from the heart. He also clamped the heart with rubber-covered clamps. Haeckers asserts that the heart could endure clamping of the vena cava from nine to ten minutes. Carrel occludes the aorta for two to six minutes. Lange puts a ligature around both auricles. We have used an ordinary bowel clamp without clasp suggested by Dr. Rahe. With this instrument we applied just enough pressure to produce hemostasis, doing absolutely no damage to the heart-muscles.

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[20] Rehn, L.: Verhandl. d. Deutsch. Gesellsch. f. Chir., 1907.

[21] Schepelman: Deutsch. Ztschr. f. Chir., 1913, cxx, parts 5 and 6, p. 573.

In applying clamps one should avoid the area about the junction of the upper with the middle third of the anterior longitudinal sinus, the mechanical irritation of which may cause acute dilatation of the heart (Spongaro[22]).

Another dangerous region is at the junction of the right auricle and the vena cava. In incising the ventricles it is advisable to avoid the coronary vessels and to make a straight clean cut. Almost the entire ventricle may be laid open. A small wound bleeds only during systole, a larger one both during systole and diastole.

The opening is best sutured with fine silk. We used continuous suture.

If at the close of an operation the heart acts badly we have found it fatal to suture the pericardium completely. To a poorly acting, partly dilated heart, pressure is just as harmful as excessive traction on the organ. Under such conditions the heart absolutely needs sufficient room for action; otherwise it soon begins to fibrillate.

In two cats after having finished the operation we saw the animals going through all the ordinary antemortem symptoms, using all the accessory muscles of respiration, exhibiting facial spasm and the final gasps. On rapid opening of the wound and the pericardium, the heart was soon acting normally. The pericardium was left open. Both animals survived.

There is no doubt that some of the human heart-wound patients on whom operation is performed and which terminated fatally might have been saved had the pericardium been left open.

To me, as well as to other observers, it has been astonishing how little immediate reaction the animals have shown from this work. Cats which have had their ventricles opened and digitally explored, instruments passed from ventricles into auricles and even up into the veins, auricular appendixes removed, stab-wounds through and through the heart have been jumping off and on tables in less than an hour after the operation. In few of our animals did we hear anything abnormal on auscultation. In some there was irregular heart action and only occasionally did we hear murmurs. Postoperative findings have been very few.

### III. CARDIOTOMY WITH INSTRUMENTAL DILATATION OF AURICULOVENTRICULAR VALVE

Surgery of the valves was first suggested by Brunton,[23] who asserted that a mitral or tricuspid stenosis could undoubtedly be remedied by operative measures, transforming the condition into a mild insufficiency. As this lesion in animals is a great rarity, it had to be produced experimentally in order to test out the value of such operative therapeutics. Thus Bernheim[24] and others produced the lesion by passing a silk ligature around the valve. Bernheim used twenty animals, of which ten survived from a week to ten months.

The valves may be reached operatively either through the vessels, or as seems far preferable, through the ventricles. Rosenstein was the first to attack the valves directly in an attempt to produce tricuspid insufficiency, passing instruments through a great neck vessel. By far most of the animals died.

Cushing and Brandt[25] worked through the so-called laparothoracoscope, cutting the stenosis. They succeeded in six out of twelve animals. Haecker[26] opened the ventricles and cut the valve with the aid of the eye. All the animals died. Jacobaeus and Lilgestrand used puncture instruments and performed the operation by the sense of touch.

Schepelman[27] aims by ventricular and auricular anastomosis to equalize circulation in tricuspid stenosis. Rather formidable an intervention, I think.

We aimed to remedy the lesion by stretching the contracted opening with ordinary artery forceps. The ventricle was opened more or less forcibly. The value of this experiment is, of course, greatly minimized as we had not previously produced an artificial stenosis; still we wanted to ascertain how the animals would endure this manipulation. Our animals stood this about the same as an ordinary cardiotomy.

Cat 8.—Operated on, April 17, 1913. Died Dec. 12, 1913. Heart dilated; fluid in abdomen.

Cat 9.—Operated on, April 23. Same operation. Died on table.

Cat 10.—Operated on, April 24.—Died on table.

Cat 11.—Operated on, April 25, 1913. Posted July 1. Adhesions between lungs and chest. Heart incision healed perfectly. No enlargement; internal surface smooth.

Cat 12.—Operated on, May 5, 1913. Killed July 10, 1913. Heart normal in size; small line where opened; no adhesion between lungs and chest.

Cat 13.—Operated on, Oct. 15, 1913. Heart also punctured with hat-pin. Killed Oct. 28, 1913. Findings similar to above.

Cat 14.—Operated on, Oct. 17, 1913. Died October 28. Purulent infection in chest cavity.

Cat 15.—Operated on, Oct. 17, 1913. Died Oct. 19, 1913. Lungs congested; sink in water.

Cat 16.—Operated on, Oct. 21, 1913. Died three hours after operation; acute dilatation of heart.

Cat 17.—Operated on, Oct. 22, 1913. Killed December 4. Few adhesions, otherwise negative.

Cat 18.—Operated on, Oct. 29, 1913. Left auricle removed; hat-pin thrust through heart. Died December 28 from intercurrent disease; few adhesions along cut; interior of heart normal.

Cat 19.—Operated on, Feb. 24, 1914. Transverse incision in heart. Killed, March 20. Scar very distinct; lung adherent to it; heart somewhat enlarged.

Cat 20.—Operated on, Feb. 25, 1913. Killed June 2. Slightest adhesion to cardiac wound, otherwise negative.

### IV. PUNCTURE-WOUNDS OF THE HEART

Excepting those of a certain area in the anterior interventricular groove, puncture-wounds of the heart, unless very extensive, cause only temporary disturbances, the degree of which varies with the type of the insulting agent. Needle punctures, even those going through and through the organ, cause only, as a rule, a momentary increase in the heart action, which may at times become tumultuous, especially at the time of introduction of the needle, but in a short time the action is perfectly normal. In one cat we made four such punctures. It made an uneventful recovery. In another we punctured the heart with a mosquito forceps with similar results. In the course of other operations we often punctured the heart here and there, without seemingly greatly adding to the danger of the operation. The hemorrhage following is very slight, and unless the coronary vessel is injured no ligature is needed.

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[22] Spongaro: Arch. Internat. de Chir., 1907, iii.

[23] Brunton: Lancet, London, 1902, i, 362.

[24] Bernheim: Bull. Johns Hopkins Hosp., April, 1904, p. 107.

[25] Cushing and Brandt: Jour. Med. Research, 1908.

[26] Haecker: Arch. f. klin. Chir., 1908, lxxxiv, 1035.

[27] Schepelman: Deutsch. Ztschr. f. Chir., cxx, 570.

In knife stab-wounds the disturbance is somewhat more prolonged, and a suture is needed at entrance and exit of the wound tract.

Multiple stab-wounds are of course serious, but it is remarkable to what extent the heart may be damaged and still recover. This, of course, refers to injuries received under aseptic conditions.

Cat 21.—Operated on, Feb. 4, 1913. Four through-and-through needle punctures. Killed March 14. Heart negative.

Cat 22.—Operated on, June 4, 1913. Mosquito forceps passed through the entire heart. Killed July 3, 1913. Heart showed no signs excepting small white spots where puncture was made.

Cat 23.—Operated on, March 14, 1914. Knife stab-wound through and through left ventricle. Died March 16. Heart normal in size.

Cat 24.—Operated on, March 14, 1914. Several knife stab-wounds. In closing operation heart acts splendidly. Killed by anesthesia.

### V. AURICULAR APPENDECTOMY

In cats the auricle appendix is of considerable size. It closely resembles a leaf fluttering over the ventricle. Its walls are very thin, and it is not amenable to suture. There does not seem to have been much if any surgical work done in that portion of the heart. The only one we could find was Domenichi,[28] who tied off part of the left auricular appendix. The dog died on the table. We excised the left, the right and then both appendixes.

In all our work excision of the left auricle appendix resulted in the least disturbances, seemingly not any more than if the chest and pericardium had been opened.

After excision of both appendixes no cat lived over three weeks, but we did not use a sufficient number of animals; otherwise I think we might have got some to live on. Post mortem we noticed in these cats great congestion of the lung, and also of other organs. It seems that the excision of both appendixes causes enough interference with the circulation to produce this excessive congestion. The operation was simple. We picked up the appendix with mosquito forceps and tied it off at its base and excised it.

#### REMOVAL OF LEFT AURICULAR APPENDIX

Cat 25.—Operated on, May 23, 1913. Killed July 17, 1913. Lung adherent to pericardial sac and along chest wound. Heart normal in size, free in pericardial sac. Stump of auricle free and smooth; no enlargement.

Cat 26.—Operated on, May 24, 1913. Died May 30. Infection in the pleural cavity.

Cat 27.—Operated on, May 26, 1913. Died June 1. Infection in pleural cavity.

Cat 28.—Operated on, Sept. 25, 1913. Killed Dec. 15, 1913. Lung adherent to pericardial sac. Heart free in sac. Normal in size. Stump of auricle smooth. Cause of death appeared to be pneumonia.

Cat 29.—Operated on, Oct. 3, 1913. Killed June 18, 1914. Slight adhesions of lung to pericardium. Heart free in sac and normal in size. Interior negative.

Cat 30.—Operated on, Nov. 12. Killed December 12. Lung adhesion to scar.

Cat 31.—Operated on, March 20, 1914. Died March 24. Pulmonary embolism.

#### REMOVAL OF RIGHT AURICULAR APPENDIX

Cat 32.—Operated on, Oct. 11, 1913. Died October 16. Infection.

Cat 33.—Operated on, Oct. 14, 1913. Killed Dec. 5, 1913. Heart normal in size. Lung adherent to pericardium.

Cat 34.—Operated on, Nov. 12, 1913. Killed Jan. 14, 1914. Slight pericardial adhesions to stump. No external pericardial adhesions.

#### EXCISION OF BOTH AURICULAR APPENDIXES

Cat 35.—Operated on, Oct. 15, 1913. Died Oct. 30, 1913. Infection.

Cat 36.—Operated on, Oct. 23, 1913. Died Oct. 25, 1913. Acute congestion of the lungs and other organs.

Cat 37.—Operated on, Oct. 27, 1913. Died Dec. 2, 1913. Died from intercurrent sickness.

Cat 38.—Operated on, Oct. 28, 1913. Died three hours after operation. Embolism.

Cat 39.—Operated on, Jan. 31, 1914. Died Feb. 2, 1914. Congestion of lungs and other organs.

#### MISCELLANEOUS WORK

In working on the heart we could not resist the temptation of listening directly to the organ with the stethoscope. We also examined the heart by tracheal and esophageal auscultation. The direct method was not at all satisfactory, the sounds being muffled and indistinct. The unopened chest barrel is required to intensify the sounds. Through the tracheal tube the heart-sounds could be heard with startling distinctness, when breathing was temporarily suspended. In one cat we heard a faint, soft murmur that could not be heard by auscultation of the chest.

Through the esophagus the heart-sounds are not heard any plainer than by ordinary auscultation. We also tried this in man through a stomach-tube, but the sounds were not very plain.

In some cats we performed multiple operation, such as removal of heart-sac and cardiotomy, cardiotomy and auricular appendectomy, stab-wounds and auricular appendectomy, etc.

Cat 40.—Operated on, May 12, 1913. Small piece resected from left ventricle. Died on the table from acute dilatation of the heart.

Cat 41.—Operated on, May 12, 1913. Operation as above. Killed July 17, 1913. Heart normal in size; lung adherent along line of incision. Internal surface of heart smooth; slight depression along line of incision; firm union.

Cat 42.—Operated on, May 5, 1913. Operation as above. Died from anesthesia.

Cat 43.—Operated on, May 5, 1913. Operation as above. Left auricle was accidently cut and tied off. Killed July 17, 1913. Heart seemed slightly enlarged. Lung adherent along line of incision. Auricle that was partially removed was smooth. Heart incision showed separation of muscle-fibers, leaving a pouch of fibrous tissue.

Cat 44.—Operated on, March 10, 1914. Excision of pericardium; cardiotomy. Killed May 2; adhesions to lung.

Cat 45.—Operated on, March 10. Left auricular appendectomy; cardiotomy; stab-wound; killed April 21. Slight intrapericardial adhesions; heart normal.

Cat 46.—Operated on, March 14. Knife stab-wound. Double auriculectomy. Died March 17 from infection.

Cat 47.—Operated on, March 14. Use of ice on heart.

Cat 48.—Operated on, March 14. Excessive heat on heart.

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[28] Domenichi: Bull. d. r. Accad. Med. di Roma, 1913, xxxviii, 83.

### LUNG RESECTION (UNILATERAL)

This operation would be performed for malignancy, tuberculous foci, actinomycosis, gangrene, etc. The main operative dangers from pulmonectomy are pleural infection and pyopneumothorax from reopening of the tied bronchial stumps. Consequently the object of most of the experimental work has been to devise methods that would as much as possible overcome these operative risks.

The special difficulty is really the closure of the cut-off bronchi, and several more or less successful procedures have been proposed, none of which, however, is fully reliable.

Carrel[29] says that he used only simple ligation of stump with good results.

Probably the best closure is that devised by Willy Meyer,[30] who treats the bronchial stump somewhat like the cut of an appendix vermiformis. One of his reports gives twenty-one total resections with seventeen recoveries.

Robinson[31] using a simple ligation, saved four dogs out of thirty. In total resection there was no recovery. In all his fatal cases he found a great amount of pleural effusion which greatly displaced the heart, fatally interfering with its action. This fluid was sterile. We also observed this in our fatal cases, but we always found this fluid to contain bacteria of various sorts. Some effusion is present, however, in all cases following total lung excision.

Cournont[32] experimented on dogs and rabbits to discover the minimum capacity of lung compatible with prolonged survival.

Friedrick[33] studied the skeletal changes following total unilateral pulmonectomy, noting the attempt, as did several others, of the pulmonectomized side to close in the empty space.

In our work we found in young cats that the lungless side collapsed very quickly so that sometimes in a week there was a marked difference. In older cats these changes come on much more gradually. In order to meet this attempt at cavity obliteration half way, we resected the mediastinum, which in cats is only of the thickness of a leaf, aiming then to have the remaining lung fill the empty space, preventing the marked collapse noticed in the other cats with undisturbed mediastinum. Our results somewhat favor this supposition.

Roentgenograms show very little osseous changes on the lungless side, and cross-section of frozen cat shows the lung moderately distended, almost filling the empty space. The lung-stumps were covered in the different ways mentioned above. The series is too small to declare any preference for any particular method. As in heart surgery the immediate result is simply above all expectations. The animal reacts almost less than from a simple laparotomy. The next few days they are rather quiet and take very little nourishment. If this keeps on after the third day as a rule there is something wrong, either a pleurisy from which they die in from four to six days, or else there is a beginning leakage from a bronchus, later evidenced by gradual increase in body size and alarming dyspnea. Later there may be an extensive general emphysema.

CAT 49.—Operated on, Oct. 22, 1913. Right lung excised; stump tied with single ligature; died October 29, pyopneumothorax; reopening of bronchial stump.

CAT 50.—Operated on, October 22. Operation as above. Died November 25 from intercurrent disease; slight fluid in pleural cavity which was greatly collapsed; opposite lung normal; heart normal.

CAT 51.—Operated on, October 23; resections of right lung and mediastinum. Killed November 30. Right side only slightly contracted. On inflation lung filled almost both sides.

CAT 52.—Operated on, December 2. Same operation. Died December 16, sloughing of bronchial stump, pyopneumothorax.

CAT 53.—Operated on, Dec. 13, 1913. Excision of right lung. Killed June 10, 1914. Osseous changes slight.

CAT 54.—Operated on, Feb. 27, 1914. Removal of right lung; double ligature of stump. March 21 reoperated on, one lobe of left lung removed; died two hours later from pneumothorax.

CAT 55.—Operated on, March 2, 1914. Operation as above. Left stump treated with Meyer method. Died March 5, from pleurisy.

CAT 56.—Operated on, March 19. Same operation; double ligature of stump. Died March 23 from pleuritis.

CAT 57.—Operated on, April 1. Same operation, but stump covered with lung tissue. Died March 3 from intercurrent disease. Some fluid in pleural cavities, otherwise negative.

CAT 58.—Operated on, April 1. Same operation. Died April 5 from pyopneumothorax; opened bronchial stump.

CAT 59.—Operated on, April 1. Left lung and mediastinum excised and stump covered with lung tissue. Died May 10 from distemper. Slight pleural effusion.

CAT 60.—Operated on, April 21. Same operation. Died April 24 from pleuritis.

CAT 61.—Operated on, April 21. Same operation. Died April 22 from pulmonary embolus.

CAT 62.—Operated on, April 22. Same operation. Willy Meyer method. Killed May 2. Pleural cavity smooth; chest not very much collapsed, if any.

CAT 63.—Operated on, April 22. Same operation. Stump covered with lung tissue. Killed June 10. No collapse of chest. Pleural cavity smooth.

CAT 64.—Operated on, April 28. Same operation. Died May 1 from pulmonary embolism.

### INTRATHORACIC SECTION OF TRACHEA

The theoretical indications for a resection of the trachea in the thorax could not be numerous, possibly a stricture or a localized tumefaction. As far as I know this is seemingly the first recorded attempt of such experimental research.

The technical difficulties are great; the dangers are numerous. The shock is far greater and the death rate infinitely higher than in any other intrathoracic operation. A great number of the animals died on the table apparently from respiratory failure in convulsive seizures with extreme opisthotonos strongly resembling symptoms of strychnin poisoning.

Some of these animals we were able to tide over temporarily with prolonged artificial respiration, since we found the heart acting good, although respiration had completely ceased. This respiratory failure might have been a temporary reflex inhibition of the respiratory center, incidental to the cutting of the trachea, especially the posterior fibromuscular part which (in this region) may contain important hitherto unknown nerve-tracts.

This fibromuscular part of the windpipe is undoubtedly of special importance in bringing about certain contractive motions of the trachea, as in excessive expiratory efforts I have seen the tube contract and then the ends of the tracheal rings were closely

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[29] Carrel: Ann. Surg., i, 83.

[30] Meyer, Willy: Pneumectomy with the Aid of Differential Air Pressure, THE JOURNAL A. M. A., Dec. 11, 1909, p. 1978.

[31] Robinson: Ann. Surg., 1908, xlvii, 184.

[32] Cournont: Compt. rend. Soc. de biol., 1913, lxxiii, 503.

[33] Friedrick: Arch. f. Chir., 1908, lxxxvii, 647.

approximated and may possibly even overlap. There is really a bow-string action of each tracheal segment. I do not know whether this was observed before. Those muscular fibers between the ends of the cartilaginous bows, however, were not placed there for simple ornamentation.

Except in one or two cats the depression following the operation was very pronounced, and as a rule they were very quiet for the first two days. The cause of death of those that survived the operation was pneumothorax, pleurisy, pneumonia, collection of mucus at site of section, and pulmonary embolism and sloughing of tracheal rings. Out of twenty-five operations we succeeded in saving only one cat—Cat 86.

The thoracic incision was made in the second or third intercostal space and one or two ribs fractured at inner end of wound. The lung was pushed out of the way with sponges, then the trachea was dissected free and raised carefully on blunt hooks. This must be done with care; otherwise the soft coat of the trachea may easily be torn. The tracheal catheter is now pushed beyond the proposed site of section and a catgut thread tied around the trachea above and below. The air-tube is then cut or rings excised by cutting around the catheter and between the rings. The tube is then sutured with interrupted fine silk prepared with petrolatum. Trachea is then replaced and covered with the surrounding areolar tissue.

CAT 65.—Operated on, Dec. 10, 1913. Died Dec. 17, 1913. Infection entering through line sutures, sloughing of trachea.

CAT 66.—Operated on, Jan. 29, 1914. Section of trachea removed from another cat placed around trachea. Died January 30 from imperfect apposition.

CAT 67.—Operated on, Jan. 31, 1914. Died same day. Leakage of air collapsed lungs.

CAT 68.—Operated on, Jan. 31, 1914. Died immediately after operation from respiratory failure.

CAT 69.—Operated on, Feb. 2, 1913. Died February 4 from pneumonia. Lungs highly congested.

CAT 70.—Operated on, Feb. 3, 1914. Died immediately from respiratory failure.

CAT 71.—Operated on, Feb. 4, 1914. Died February 5 from collapse of lung; leakage of tube.

CAT 72.—Operated on, February 5, and died February 6 from pneumothorax.

CAT 73.—Operated on, February 5, and died February 7 from congestion of lungs.

CAT 74.—Operated on, Feb. 6, 1914. Died same evening from leakage and collapse of lung tissue.

CAT 75.—Operated on, February 6. Cat died on table from respiratory failure.

CAT 76.—Operated on, Feb. 9, 1914. Died same night. Embolism of pulmonary artery.

CAT 77.—Operated on, Feb. 9, 1914. Died February 10 from occlusion of trachea with mucus.

CAT 78.—Operated on, Feb. 10, 1914. Died one hour after operation; acted as if it had convulsions.

CAT 79.—Operated on, Feb. 11, 1914. Egg-membrane placed around trachea. Died February 13 from occlusion of trachea.

CAT 80.—Operated on, Feb. 12, 1914. Died on the table from respiratory failure.

CAT 81.—Operated on, Feb. 12, 1914. Surrounding fascia loosened and sutured over trachea. Died February 14; trachea and surrounding tissues looked good; lungs congested.

CAT 82.—Operated on, Feb. 13, 1914. Died February 15 from pulmonary embolism.

CAT 83.—Operated on, Feb. 17, 1914. Membranes and fascia sutured over trachea; ether passed through hot water. Died February 19 from embolism of pulmonary artery.

CAT 84.—Operated on, Feb. 17, 1914. Fascia sutured over trachea; air and ether warmed. Died same day; nonapproximation of trachea.

CAT 85.—Operated on, Feb. 17, 1914. Fascia sutured over trachea where sectioned. Died while on table.

CAT 86.—Operated on, Feb. 18, 1914. Fascia sutured over union. Killed June 14. Small adhesion of lung to chest wall. Union of trachea perfect, only slightest contraction at site of anastomosis. Small spot of granulation tissue on the mucosa interiorly. Cat was in perfect condition when killed.

CAT 87.—Operated on Feb. 18, 1914. Ether and air warmed, passing through coil immersed in hot water. Fascia sutured over place of section. Died February 19 from apposition, lumen became plugged.

CAT 88.—Operated on, Feb. 19, 1914. Died Feb. 21, 1914. Became plugged with mucus.

CAT 89.—Operated on, April 16, 1914. Died April 19, 1914. Small quantity of thick pus. One lobe of lung gangrenous. Pneumogastric nerve tied in one ligature.

## *SUMMARY AND CONCLUSIONS*

The death-rate in the heart work was 38 per cent.; in the lung research 50 per cent., and in the tracheal experimentation we succeeded in saving only one out of twenty-five.

Cats without heart-sac show very little, if any, disturbance.

If at the end of an operation on the heart the organ is acting poorly it is almost always fatal to suture the heart-sac.

The making of a new heart-sac from transplanted tissue is not very promising.

Opening in pericardium should not be made too near the base of the heart, as sewing it may cause too much traction on vessels and incidentally on important centers.

Extreme traction on heart is one of the greatest dangers in heart surgery.

Through-and-through aseptic puncture wounds, unless through certain danger regions, create only a temporary disturbance, varying, of course, with the type of the insulting agent and the extent of damage.

Auscultatory findings were few in the operated cat heart.

The marvelous recuperative power of the heart is demonstrated by the recovery from multiple extensive operations on the organ.

The local atelectasis produced by pressure from sponges should be remedied by forcible expansion of lung before closing the chest.

The collapse of the chest wall in unilateral excision of the lungs is somewhat counteracted by mediastinal removal.

Certain contractile movements of the trachea are observed in excessive expiratory efforts.

In section and suture of the intrathoracic trachea a number of animals die from respiratory failure (seemingly reflex).

At the present time some of this research may seem ridiculous and void of all practical application, but surely we are not yet at the end of our resources. The human race is still young, only a few hundred thousand years old, and in untold centuries to come work that now seems unfeasible might then be fairly well mastered.

As we now stand, however, there are manifold dangers to overcome in the chest work, and the indications for surgical intervention in thoracic disorder will have to be a little more clear cut than those on which we now cheerfully invade the right iliac fossa.

I wish to extend my thanks to Dr. A. Rahe and E. Wichtemas and Miss H. Nelson for valuable assistance.

1230 East Sixty-Third Street.

## ABSTRACT OF DISCUSSION

Dr. John B. Murphy, Chicago: I feel that as a prerequisite to graduation, every medical student should do experimental work on the arteries and on the chest cavity. A surgeon has to deal from the very beginning with hemorrhage, with blood. He should become familiar with blood and particularly with the tubes through which blood flows. In 1896 when I did the first end-to-end suture of the artery which had ever been accomplished in a human subject, I had then been working two years experimentally with the blood-vessels. A man can do no work which will give him such poise as that of arterial suture. The work of Dr. Werelius is an inspiration. It is the most important thing that has so far been brought before this section. Why? Because it stimulates us to do new things; to make ourselves familiar with the technical complications and conditions that can arise in so many fields of surgery. There is no question in my mind that it will be but a short time until some of these improbable or even now apparently impossible conditions will be turned to a valuable purpose. When I succeeded in making end-to-end sutures I did not feel that the time would come when a whole day would be devoted to arterial suture as was recently done in one of the great surgical congresses. It is not the individual artery that one wants to or needs to suture, but it is to have the confidence that one is master of the situation and that one can meet any emergency of hemorrhage in a life-preserving way, not alone for the whole body, but for the limb in its proportion. In 1893 or 1894 a surgeon found, in operating on an appendicular abscess, that he was in the external iliac artery. He was a master surgeon; he sutured that artery in the presence of the infection and saved the life and limb of that patient. Conditions of this kind will arise not infrequently and will be of the utmost value to the practical surgeon. I read in an article on the surgery of the chest, that the first lung was opened in 1498 by a bull in Bologna—not a papal bull but an animal. The lung was extracted through the opening of the chest. It was kept outside of the chest, it desiccated and the man survived, and it has taken four hundred years from that time for the skilful surgeon to make himself at all familiar with the removal of the lung, which is not very complimentary to us as original investigators. It is just such work as that of Dr. Werelius that will stimulate us to make the lung and the heart a familiar field for operation.

Dr. E. Wyllys Andrews, Chicago: Modern surgery has not lagged behind so much in chest and heart work. I remember the monumental compilation of Ricketts of Cincinnati; I remember that De Forest Willard, in a long series of experiments, demonstrated that it was possible to remove a lobe of the lung, or the whole lung, from an animal and have the animal survive; to open the bronchus in a dog and remove a foreign body artificially introduced. We know the surgery of the mediastinum has been carried as far in the hands of Dr. Willy Meyer of New York as in any clinic in the world. But when we think of the possibilities of lung and cardiac surgery, of cutting down and operating on the lung and the heart, the question arises whether the greatest value we are to get from all this experimental and clinical work is not to be indirect. Whether it will not resolve itself into the question of how to open the chest successfully, how to do it freely and how to handle blood-vessels, as in pulmonary embolism, or the esophagus in cancer. Numerically speaking, the cases of heart surgery will be small and possibly the excision of lungs very rare. Possibly cases of lung surgery will not numerically amount to as much as cases of mediastinal surgery, or opening the bronchi, or of diaphragmatic hernia which are all incidental to our learning how to operate successfully in this line of experimental work. We see how freely we may, even after having seen the work of Sauerbruch, open the chest without the Sauerbruch or any cabinet or differential pressure and without fear of collapsing the lungs. We learn by making a long incision, with powerful retractor blades between two ribs, to get immense openings into the chest and to operate freely in the mediastinum. In a large service in the Cook County Hospital we have had an unprecedented number of such cases. We have had five patients with congenital stenosis of the esophagus in Dr. Richter's clinic alone. All were operated on and, as it proved, unsuccessfully. We have had several successful cases of resection of the esophagus for carcinoma or stricture. You remember the beautiful work of cutting down on a rupture of the diaphragm and hernia by Cranwell after a stab wound of the diaphragm. I reported five cases: three patients died and two recovered. We have completely changed our idea as to where to cut in these cases.

Dr. Willy Meyer, New York: Dr. Werelius' paper is full of interest. It deals with thoracic surgery from the experimental point of view. I speak from the clinical point of view, concerning surgery of heart and lungs in man. Trendelenburg's operation for pulmonary embolism will, it seems, promise better results, if done under differential pressure with longitudinal division of the sternum (Rehn). Cardiolysis for fixation of the heart and pericardium, in a condition usually fatal without operation, can be well done by the same route, particularly in children. Extirpation of the lung in the healthy dog is a simple procedure. The lobes are always separated. After ligation of the blood-vessels the bronchial stump needs air-tight closure. We treat the bronchial stump as that of the appendix—crushing, ligature, top suture—and consider this a safe procedure. Of twenty-one dogs thus operated on we saved seventeen. The resulting cavity in the chest on firm closure remains filled with air, which is gradually absorbed. Frozen sections of dogs killed at certain periods after pneumectomy, the vascular system having been injected with a formaldehyd solution (Dr. Francis C. Wood), have proved this. The gap is slowly filled by the opposite lung, heart and big vessels, and the rising diaphragm. The sick human being, however, is different from a healthy dog. In human beings the sensitiveness of the pneumogastric nerves, also of the sympathetic system needs consideration. Sudden, unexpected, sometimes fatal reflexes occur. We must learn to overcome these. Cocainization promises help. The next difficulty is found with the bronchial stump. There, too, I believe, further practical experience will show that it is best to deal with the stump in man as we have done in the dog, but its mucosa is often infected. It needs thorough disinfection during operation. Lately I had to resect the left lower pulmonary lobe in a woman for multiple bronchial fistulas. Twice she had been operated on in other hospitals. We resected the lobe, taking out a wedge-shaped piece which carried the bronchial fistulas, and closed each remaining portion of the lobe separately by a continuous inverting suture. The patient recovered nicely. One bronchus opening has, it seems, not yet definitely closed. I feel that had I disinfected each of the bronchial lumina during operation before suturing, the one reopening would likely not have occurred. The tendency of the bronchial stump to retract is also important. If there be no adhesions and the stump leaks while the thoracic cavity is closed air-tight, the deadly pressure—pneumothorax—will develop. Postoperative drainage of the pleural cavity will most likely overcome this danger. I believe that more frequent drainage after intrathoracic operation, always of course, on strict indication, will work for more rapid progress, not only after radical operations for lung disease, but also after operations on the esophagus.

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**The Making of a Good Surgeon.**—The education of a surgeon is always incomplete if he is not a good anatomist, physiologist and pathologist to start with, and continues to be so to the end, and it is only by those who will take the trouble to attain and maintain this knowledge that any real surgical advance can be made. . . . The days when surgery was a mere handicraft are past, and to be able to operate well, though a useful accomplishment when properly applied, may make a man a curse instead of a blessing to the community in which he practices.—Rutherford Morison, *Canadian Med. Assn. Jour.*

# NERVOUS AND MENTAL DISTURBANCES FOLLOWING CASTRATION IN WOMEN*

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It is a very well-known fact that ovarian tissue has a certain influence on the development of the body. Removal of the tissue before puberty arrests or prevents the development of the uterus; removal after puberty prevents menstruation. Removal of it is followed by atrophy of the breasts and arrest of general physical development. On the other hand, after removal of ovaries, anatomic changes have been observed in other glands, namely, hypophysis, thyroid, adrenals. In the hypophysis, for example, there is an increase of its size (hypertrophy) with an extraordinary number of eosinophilic cells and dilatation of its blood-vessels.[1] Goldstein[2] has recently reported a case of acromegaly which developed after castration. In the thyroid there is an increase of the acini, also dilatation of the follicles and increase of the colloid substance.[3] In the adrenals hypertrophy has been observed by many authors. The same histologic modifications which are observed after castration in women have been found experimentally on animals.

It is also very well known that after transplantation of ovarian tissue into the abdominal cavity in women previously castrated, the phiyologic functions of the genital organs are restored. The latter has also been observed in a number of cases in which castrated women have been treated by opotherapy. Dixon[4] speaks of great improvement of all symptoms following oophorectomies obtained from the internal use even of small quantities of ovarian tissue. Menopause may thus be prevented.

Whether the disturbance of genital function after oophorectomy is due to the suppression of the internal secretions supplied by the ovaries according to the conception of Brown-Séquard, or to the presence in the ovaries of adrenal substance as Sajous wants it, it is as yet difficult to say with any definiteness. It is equally difficult to estimate the rôle played in the above-mentioned disturbances by other glands, since the latter have been found altered in a large number of cases. The physiologic interrelation between various ductless glands is a well-known fact. In cases of acromegaly and gigantism, for example, alongside the changes in the pituitary gland changes in the genitalia also were not infrequently noted, such as atrophy of testicles or ovaries. Experimental castration has been followed by changes in the hypophysis. On the other hand, we are familiar with the frequent occurrence of enlargement of the thyroid at puberty and pregnancy when physiologic changes occur in the generative organs. The genital organs and the thymus are also physiologically influenced by one another.

In view of this intimate relationship between various glands and of our want of knowledge of the exact significance of the relationship, it is impossible as yet to say with any degree of certainty what particular gland with internal secretion plays the most conspicuous rôle in the production of certain morbid phenomena, since several of them are altered anatomically at the same time.

As to the physiologic effect of ovarian tissue on the economy, our knowledge is quite limited. From the investigation of Loewy and Richter,[5] of Neumann and Vas,[6] Dalché and Lépinois,[7] of Sauvé,[8] and a few others we know that ovarian extract is an oxidizing agent; it enhances metabolism, it increases the hemoglobin content of the blood. Robin and Binet have shown that during the physiologic changes in the ovaries, namely, during menstruation, there is an increase of respiratory exchange. This meager information concerning the influence of ovarian tissue on the organism cannot, of course, explain the great variety of morbid manifestations observed during the physiologic menopause or following bilateral oophorectomy. Nevertheless, the fact is that clinically we meet with a certain group of phenomena which are evidently in connection with the female generative organs. Without entering into further discussion of the pathogenesis of these phenomena, which after all will be only speculative, let us consider only the nervous and mental disturbances which I succeeded in observing during the period of several years in a series of 112 cases.

The large majority of patients (eighty-nine) had the ovaries alone removed; the rest (twenty-three) had ovaries and uteri removed. In a certain number of cases (thirty-seven) oophorectomies were performed through errors of diagnosis. As the patients complained of vague neurotic pains in the abdomen and only gynecologists were consulted, the productive genitalia were considered as the direct cause of those disorders.

Let us consider first the latter group of cases.

Thirty-four young women suffering from various manifestations of neurasthenia, hysteria or psychasthenia complained among other symptoms also of vague disturbances in the abdomen. Surgeons at once incriminated the ovaries and removal of the latter was insisted on. The results were as follows: In a small number of cases (nine) there was at first an improvement in the preexisting functional disorders. Rapidly, however, during convalescence following the operative procedures the former conditions returned. In the remaining twenty-five cases there was no improvement whatever. In all the cases the former nervous and psychic phenomena have become aggravated in the weeks and months following the operations.

The obsessions from which several women suffered prior to the oophorectomies became since then more persistent and covered a larger field of morbid ideas than heretofore. Those who suffered from hysterical paroxysms began to have them more accentuated and more frequently. The former neurasthenic individuals developed a deeper asthenic state with a greater number of hypochondriac tendencies than heretofore. Several patients among the psychasthenics became so ill that temporary confinement to institutions was unavoidable. Some of these patients are still seen occasionally by me, but there has been no abatement of the condition; on the contrary, the latter is more persistent and more profound, so that at times it appears to make one suspect absolute incurability. Three of this group of patients presented before the operations no distinct symptoms of the aforesaid functional nervous diseases. They complained of vague nervous symptoms, such as frequent pain in the abdomen, back and head, of various paresthesias, of anorexia, constipation or diarrhea. They were referred for their complaints to gynecologists who advised indiscriminately surgical intervention, that is, oophorectomy. The operations were uniformly successful. Shortly after the operations various nervous disturbances made their appearance. Irritability, more or less pronounced; highly nervous state; peculiar and sometimes bizarre relations to surroundings, such as inability to be in accord with others or inability to stand the least contradiction; changeability in the mood at various times on the same day; restlessness, tendency to move about, to travel; great and sometimes extreme tendency to complain about others; finally insomnia, loss of appetite or else voracious appetite; in some cases traces of sugar in the urine—all these manifestations have been observed in the three patients whose previous medical histories showed a total integrity of the nervous system.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Cimoroni: Policlinico, 1907, p. 16. Kon: Beitr. z. path. Anat., 1908, xliv, 233.

[2] Goldstein: München. med. Wchnschr., April 8, 1913.

[3] Cecca: Soc. méd.-chir. de Belogne, 1904. Parhon with Goldstein: Spitalul, 1906, xxvi.

[4] Dixon: Practitioner, May, 1901.

[5] Loewy and Richter: Berl. klin. Wchnschr., 1899, xxxvi, 350.

[6] Neumann and Vas: Monatschr. f. Geburtsh. u. Gyn., 1902, xv, 433.

[7] Dalché and Lépinois: Bull. gén. de therap., 1902, clxiii, 10.

[8] Sauvé: Paris. méd., 1911, No. 45, p. 400.

In all the thirty-seven cases considered here we therefore find that oophorectomies were followed by decided nervous disturbances of a various character. Either the preexisting morbid phenomena became accentuated, or else new manifestations developed directly on the removal of the generative organs. In this connection it is interesting to note that the removed organs were found to be normal in every one of the cases in which operation was performed. The diagnosis was evidently erroneous. It proves beyond doubt that indiscriminate surgical intervention in cases of vague but persistent complaints of a nervous nature is a wrong procedure which may lead to regrettable consequences.

In the remaining seventy-five cases the reproductive organs were found to be diseased, either on one or on both sides. The surgeons performed in all of them radical operations. Complete hystero-oophorectomies were advised and accepted. Both diseased and healthy portions of tissue were removed. Prior to the operations the patients complained of symptoms, incidental with diseased viscera, such as pain in the abdomen and back, constipation, and general nervousness. The removal of the diseased organs removed the localized discomfort, but in the months following the operations, symptoms of a more distressing nature began to develop. In the largest majority of my patients the former nervousness not only remained but became accentuated. Symptoms observable in neurasthenia, psychasthenia, especially in anxiety neurosis, gradually made their appearance. Insomnia was a prominent feature. Obsessions of various nature were the next pronounced manifestation. They concerned especially fear of death, of becoming insane, of impending calamities. The obsessions existed either single or multiple. Restlessness, discontentment with everybody and everything, tendency to quarrel, to contradict, desire to control, to dominate, are all symptoms observed in some of my patients. In other patients there was actual incapacity for mental work; they were unable to concentrate their thoughts in writing or in conversations; they lost all power of initiative, they lost interest in all absorbing subjects. They knew nothing but their ailments and their complaints. Some of the patients eventually developed the most pitiful picture: there was a complete loss of desire for enjoyment; they confined themselves to their rooms with not the least desire for outdoor life; their homes were neglected, their children were abandoned to themselves; former clean habits changed radically: untidiness, uncleanliness, nonchalance became conspicuous. Another group of patients developed imperative ideas of traveling which were probably due to the extreme restlessness and nervousness. This eccentricity, along with other peculiarities in dealing with the surroundings, rendered the individuals incapable of taking care of their families and of their homes. A small group of patients, after passing through a phase of disturbances as observed in the other patients, gradually developed such a state of mentality that their removal to an institution was found unavoidable. While they presented no delusive ideas, no hallucinations, no evidences of dementia, and no paradoxical reasoning, nevertheless the extreme restlessness, insomnia, anxiety about the future, inability to live peacefully with others and to content themselves with the attention given them by others, the great tendency to quarrel, the episodic outbursts of ungovernable anger with impulses to attack—all these morbid manifestations rendered the lives of those who came in contact with these patients intolerable and isolation of the latter became imperative.

## CONCLUSIONS

An analysis of all the cases grouped in my study permits me to draw the following conclusions:

1. Removal of the reproductive organs in women causes disturbances in the domain of the nervous system. These disturbances are of a purely functional nature.
2. The disturbances are somatic and psychic.
3. The psychic manifestations, while individually they belong to any of the varieties of psychoneuroses, nevertheless in their ensemble do not constitute any of the well-established classical forms of psychasthenia.
4. True insanities are not observed.
5. The generally observed symptoms are: restlessness with a tendency to move from place to place; difficulty of self-control; dissatisfaction with all and everything; difficulty of finding contentment in one's own efforts; want of interest in all absorbing subjects and objects; indifference, indolence and pessimism. Sometimes there are outbreaks of anger with a tendency to attack. Among other symptoms may be mentioned: insomnia, gastro-intestinal disturbances of a functional nature, headache, vague pains or paresthesias, also occasionally glycosuria; tendency to obesity is also observed in some patients.
6. While the psychic manifestations are sometimes of a very disturbing nature, nevertheless they do not present the characteristics of genuine psychoses. For example, indifference and want of interest in surroundings lack the depth of those of melancholia or of dementia. Restlessness, which is so frequently observed here, lacks the characteristic features of exaltation in the motor sphere observed in cases of mania. As mentioned above, while individual symptoms of my cases resembled those of psychoses, the entire picture of each case lacked the depth and definiteness of any of the forms of insanity. Some of my patients had to be removed from their surroundings and isolated, not because they were insane in the proper sense of the term, but because of inconveniences caused.

by them to others. Besides, the subsequent histories of the last category of patients as well as of any other patient of my entire series proved at no time the existence or eventual development of true psychoses. On the other hand, it is striking that the morbid phenomena persist with a remarkable obstinacy; at times they become more accentuated, at others some improvement is noticeable, but then it is only temporary. Some of my patients have been under observation during a period of ten years and the condition still persists unaltered.

7. Individuals who presented various manifestations of psychoneuroses before they fell into the hands of surgeons, had their psychic phenomena decidedly aggravated after the uteri and ovaries or only ovaries were removed.

8. As in the removed organs healthy portions of tissue were invariably found, it is to be supposed that the removal of the latter is in some relation to the morbid phenomena observed after the operations.

9. The logical conclusion seems to be that one must be very cautious in advising operative procedures on the generative organs and the tendency should be to preserve as much as possible of any amount of normal tissue found in the uterus or ovaries.

10. No operation should be advised on healthy organs if a woman complains of vague nervous disturbances.

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## ABSTRACT OF DISCUSSION

**Dr. Walter B. Swift, Boston:** If, as has been lately held, the etiology of dementia praecox shall prove to be a faulty elaboration of the secretion of the testicle, I see no reason why a similar disease in women could not derive its etiology in a faulty secretion of the ovary. I consider that Dr. Gordon has gone far in the determination of this new symptom-complex.

**Dr. Joseph M. Aikin, Omaha:** For the last eight years I have observed just what Dr. Gordon has been telling us with reference to surgery in that class of cases. I tried to collect from my own files and those of some of my associates, sufficient data on which to present a paper on the subject, but the evidence was too indefinite for scientific use. I have experienced the results he has pictured. While hardly germane to this subject, permit a reference to surgery in cases of epilepsy. I have seen a number of cases in which the question has come up of removing the ovaries or the uterus and the ovaries, with the idea of giving the patient relief from the epileptic convulsions. In every case I have insisted that, unless there is pathology in the pelvis warranting surgery without regard to the epilepsy, it should not be done. If the epileptic convulsion occurs only at the time of the menstrual period, relief by surgery is very often obtained. If the convulsion occurs during the intermenstrual period no relief will come to the patient from surgery.

**Dr. Frank R. Starkey, Philadelphia:** Dr. Gordon has brought out a point in which I am particularly interested, namely, the multiglandular or polyglandular nature of disturbances of this kind. The terms, "ovarian syndrome," "thyroid syndrome," "pituitary syndrome," etc., will soon pass away. Although any of the organs of internal secretion may be so involved as to make its deficiency most conspicuous; in reality all of these organs are affected when one is involved. When we remove both ovaries, we take away from the woman two organs of generation; but we also take away from her the ability to form the internal secretion of the ovary which is important to her economy and assists in oxygenation and metabolic processes generally. We remove from her the balancing function of the ovary, we rob her of the influence of the corpus luteum, change the chemistry of her tissues, precipitate at once the menopause and the nervous and mental phenomena incident thereto, with a complete change in her entire being. Adynamia and lack of efficiency are the keynote of this condition; relaxed muscles, visceroptosis and mental and nervous depression follow. The condition is always polyglandular. Shall we give these patients extracts or the substance of single glands? No. Shall we give them tablets or other preparations of commerce prepared from the glands of animals raised for food purposes and castrated in their youth to improve the quality of their flesh for eating? No, for these animals are pathologic themselves and their glands are especially deficient. The sooner we recognize that we must always use glands from unspayed animals and treat the entire chain of glands of internal secretion, the sooner will we treat this class of patients intelligently.

**Dr. William M. Leszynsky, New York:** About twenty-five years ago, there were a number of gynecologists in New York who were really obsessed with the idea that every woman who appeared with inexplicable nervous symptoms should have her ovaries removed. The result was very disastrous, as many of us remember. Fortunately, such methods in a large measure were soon discontinued. The psychoneurotic manifestations mentioned by Dr. Gordon are unusual or rarely occur after oophorectomy for ovarian disease, unless the patient is of a pronounced neurotic temperament. I had thought that the final words on this subject had been definitely expressed many years ago.

**Dr. Hugh T. Patrick, Chicago:** My experience confirms that of Dr. Gordon relative to the results which have followed operations on women; but, today, the question is not as to the inadvisability of removing normal organs, but abnormal organs. The natural attitude of operators is this: When there is obvious organic trouble the diagnosis seems to be very simple; the nervous disorder must be due to that organic disease. As a matter of fact, however, that conclusion does not follow. Because a woman has a tear in her uterus, a prolapsed uterus, a retroversion or a cystic ovary, we should not conclude that her nervousness is due to abnormalities in the pelvis. So it is not a matter of operating on normal pelves, but in pathologic conditions. My experience in most cases of obvious pathologic conditions in the pelvis is that there is very little direct connection between this pathology and the nervous disorder. Those are the cases which need most protection at our hands, because really the up-to-date gynecologist is exceedingly conservative.

**Dr. Robert T. Morris, New York:** First, we have patients whose condition is that of manic-depressive insanity, particularly with the mild cyclothemias, in which there is pain in the ovaries, especially in the depression stage of the cycle. If these patients are operated on by gynecologists who are not psychiatrists, the patient may subsequently have insanity diagnosticated by some one else for the first time, and ascribed to the effects of operation. The depressive phase may have been made more intense by the pomp and circumstance of the operation than it would have been in a mild cyclothemia. We have to distinguish here that particular form of insanity following removal of the ovaries, but not dependent on the operation. In another class of cases in which we have various stigmata of decadence—arrested development, high arch of palate, and others which I do not need to classify here, we have patients in whom, as a phase of their neurasthenic condition, manifestations of pain commonly occur in the ovaries or in the pelvis, or the pelvic ganglia. Now, if we remove the ovaries from those patients we may have, in some patients, the nervous phenomena which have been so accurately described. In another class of patients the removal of the influence of the internal secretion of the ovaries is evidently beneficial to the patient. But we cannot inform any patient or physician in advance in which case the patient will become permanently injured by removal of the ovaries, and in which there will be a good deal of benefit; and I state that fact directly to the physician when these cases are seen in consultation. I do not operate in any such case except after thorough consultation with a competent neurologist or psychiatrist, and for ovaries which are the seat of definite degenerative changes. I have followed many cases for a good many years, and have found that some improved and some were made worse. It is important to remember that we have fundamentally a patient with a general neuropathic tendency. I have sometimes made ovarian grafts after the ovaries have been removed, and have seen relief from nervousness in consequence. While an ovarian graft is of benefit for a short and sometimes for a long period, we have to deal with the known fact that the tissues of one person are inimical to those of another. Some patients will in a few weeks absorb the foreign graft while another individual is quite tolerant of it and will apparently be saved from the effects of loss of the internal secretion of the ovaries for months or years. Grafting is a matter of comparative tolerance on the part of the tissues of one person toward those of another, when we are trying to overcome the ill effects of removal of the ovarian secretion.

Dr. Charles R. Ball, St. Paul: The correlationship which exists between these various glandular structures is a most intimate and complex one. Thus far it presents, in the majority of the cases, a Chinese puzzle. We are very much in the position of the man who is trying to open a safe without the combination. There is no doubt but that the thyroid and pituitary secretions exercise a restraining and modifying effect on the activity of the testicles and ovaries. Recently I have had under observation the case of a boy 13 years old who, when 11 years of age, sustained a severe accident to his head. He was unconscious for twenty-four hours, complained of pain and headache and still complains of them. The remarkable thing is that, within a period of a few weeks after his accident, he began to take on weight, became sluggish in his habits, would not go out and play as formerly, but would sit inactive and apathetic around the house. His parents tried sending him to school but his teachers reported that they could not get him to study or concentrate. In the fifteen months he has gained 55 pounds in weight. His facial expression, the appearance of his skin and his enormous increase in weight give him the appearance presented by a case of myxedema. His breasts are enormously developed. His abdomen is protruding and the contour of the hips with the layers of fat over them suggest the feminine type. It has been pointed out that sometimes pregnant women have such a coarsening of the lips, the face and thickening and clumsiness in the fingers, as is seen in cases of acromegaly. Also, the eunuch is a good illustration of this influence, for being castrated when young, these individuals sometimes grow to enormous size.

Dr. Charles H. Hughes, St. Louis: The expression, *post hoc, ergo propter hoc,* is about the keynote of the discussion. With surgery, until quite recently, finding a local disease, it was the rule to conclude that operation was necessary even though the local disease was only a congestion which manifested itself as a secondary condition in connection with hystero-epilepsy for example. The ovaries can become congested as well as the brain, and I know an individual who defined hystero-epilepsy as ordinary persistent periodic epilepsy in a hysteric, and, finding therewith a congested ovary, he operated on that patient in the hope of curing her hystero-epilepsy, but failed. In the earlier days of the discussion of this subject (and I speak in vindication of my own past record with regard thereto), the *Alienist and Neurologist,* published at that time, took the same attitude of caution as to operation for those neurotic conditions that we are verging toward to-day. We are becoming cautious, and we do not say now that, given a disease of the ovary or of the uterus, *post hoc, ergo propter hoc,* but we make some inquiry as to the other conditions present or antecedent. The suggestion made by Dr. Morris that, in these cases, a neurologist might profitably be consulted, is a pertinent and timely one, and so also a psychiatrist and an alienist might be consulted. The disease that is apparent does not always indicate the brain condition. You hear little now of Baker-Brown or of his method of clitoridectomy. It formerly was claimed by some that oophorectomy was a justifiable surgical procedure if epilepsy was detected because epilepsy was such a grave disease that, whether the ovary was normal or abnormal, it ought to be taken out. Our surgeons do not practice on that line now.

Dr. Alfred Gordon, Philadelphia: It is important for any medical man to have some knowledge of neurology. Dr. Patrick said that we now see very little of those surgeons who operate on every patient of this kind. My experience has been more unfortunate. Even to-day I see approximately the same thing I saw eight or ten years ago. A great many surgeons, when patients come complaining of pain in the back or abdomen, do not yet consult a neurologist as Dr. Morris would, but at once operate on the genital organs. The belief of the ancients that functional nervous disorders come from the uterus finds its modern application in the work of psychanalysts who will say that sexual traumas have a great deal to do with psychopathic phenomena. It is for the neurologist to express opinions in these matters and to instruct the surgeon how he should go about his work. Dr. Leszynsky well said that surgery in these cases should be the last resort.

Dr. Patrick stated that even if a patient has a tear or prolapse of the uterus or disease of the ovaries, this does not mean that the pain and bachache and headache and neurotic phenomena belong to the uterus or ovaries. Certainly not. The surgeon does not know all that enters into the make-up of the individual; he does not know under what circumstances the condition has developed. Dr. Patrick also spoke of removing healthy or diseased ovaries. Every patient who presents herself to any medical man complaining of pain in the back or side or in the abdomen should not be operated on immediately. Whether or not a woman who is already suffering from a psychosis should have her reproductive organs operated on for the cure of the psychosis, there is to-day a tendency on the part of many surgical men of eminence to operate on these patients. I have seen cases of that kind. In fact, a surgeon-in-chief of a hospital for the insane in Paris is one of those claiming that maniacal depression and excitement can be removed by operative procedure on internal organs. On reading the cases in detail, however, you find that he fails to recognize that there is any relation between the indication for operation and the depression or whatever other form of psychosis the patient suffered from. The object I had chiefly in view was to induce neurologists and psychiatrists to express an opinion on this important subject. The plea that I make before the profession is that in every case when a woman complains of vague or nervous or psychoneurotic symptoms, operations should not be done hastily.

# TUBEROUS SCLEROSIS AND OTHER UNUSUAL FEATURES OF EPILEPSY *

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Although epilepsy is a most ancient disease, our knowledge of it in many respects is quite meager. And yet one of the greatest advances ever made in neurology was made with the establishment of the type of this disease which we know as jacksonian epilepsy. While the recognized manifestations of epilepsy are very numerous, there is still much of its etiology that remains a mystery. Of vast importance in the development of many cases is heredity, but the precise extent of the part this plays must always remain uncertain. In some instances we are confident that the cause is encephalitis dependent on the infectious diseases and sometimes it is due to traumatism, syphilis or brain tumor. Occasionally epilepsy is observed to follow fright or other mental shock, but the manner of such influence we cannot understand except as it acts on an individual who is a potential epileptic. Another interesting group of cases are those reported as exhibiting a variety of attacks, at times even said to be major, minor and psychic, which can in no wise be distinguished from those of epilepsy, but in which the attacks lessen or cease after the correction of some abnormal body condition as in intestinal intoxication. Since it is but seldom that an addition is made to our knowledge of the etiology of this disease, the matter of doing so seems deserving of more than passing notice. It now appears that tuberous sclerosis is the pathologic basis for a few cases of epilepsy.

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* From the Pennsylvania Epileptic Hospital and Colony Farm and the Department of Neurology of the University of Pennsylvania.

For our first anatomic knowledge of tuberous sclerosis of the brain we are indebted to Bournville, and the appearance presented by the unhardened tissue is that of markedly indurated areas of sclerosis which are slightly elevated beyond the surrounding brain substance; in addition there are sometimes found small tumors protruding into the ventricles. Tuberous sclerosis in connection with glial formation may present the common picture of brain tumor.

Recently Schuster[1] has made the clinical diagnosis in some of the feeble-minded and epileptic. Eight cases were reported, one of which came to necropsy. The identity of the disease in these cases he bases on the finding of adenoma sebaceum on the face, together with small angiomas, the latter appearing chiefly at the sides of the nose and on the chin; other cutaneous anomalies may be present. At times the internal organs, especially the heart and kidneys, are invaded by small growths which may give rise to some of the symptoms found in the chronic disorders of these organs. The skin manifestations may to a less extent be met in some of the blood relatives. One man was seen who showed typical adenoma sebaceum without any other appearance of disease, but he had a daughter of 6 years who was an epileptic imbecile. Schuster states that tuberous sclerosis must be interpreted as a conditionally, endogenous, hereditary family disease. He furthermore refers to a relationship with Recklinghausen's disease and says that while tuberous sclerosis involves chiefly the brain and skin, in neurofibromatosis it is for the most part the peripheral nerves that are implicated.

More recently, however, Nieuwenhuijse,[2] in studying the question of a relationship between these two diseases, writes that their clinical appearance and also their anatomic changes are entirely different, that the skin fibromas which occur in both affections have their own individuality, and that when the brain is involved in Recklinghausen's disease, there is found a series of absolutely typical changes which are in no wise like those found in tuberous sclerosis.

Sailer[3] in 1898 recorded the finding of hypertrophic nodular gliosis in the brain of an epileptic idiot, and Munson[4] in 1912 reported his findings in an infant of 27 months who clinically showed only seizures and possible mental enfeeblement. At necropsy, he says, "Throughout the cerebrum are foci of hardening corresponding to single convolutions or to groups of convolutions. These are much harder than the intermediate cortex, and in places seem to be so hard as to be almost 'bony' to the touch." Munson, on anatomic grounds, placed the case with the true multiple scleroses. From the descriptions given by these writers I think it highly probable that both brains showed areas of tuberous sclerosis. I am not aware of any case that has been reported in English literature in which the clinical diagnosis of tuberous sclerosis has been made.

We have two patients at the Oakbourne Epileptic Colony which present the features described by Schuster in some of his cases. In neither of them has there been evidence of focal involvement of the brain. It is regretted that a complete family study has not been possible, but one patient is from a distance, both are of foreign-born parents who are very ignorant, and as a result our information in this respect is very fragmentary.

Case 1.—The first patient is a girl of Italian descent, aged 14, whose attacks began at 7 years. She is one of six children, and the others, it is stated, are healthy. She was never robust and is said to have had rickets in infancy. Mentally, she is an epileptic imbecile and temperamentally she is morose and abnormally sensitive. The seizures are major in type, and three and one-half years ago she had status which lasted eleven days. Physically, her appearance is somewhat grotesque with a possible element of achondroplasia. There is also something suggestive of cretinism, and with this thought in mind we placed her on thyroid extract. For a time decided improvement was made and this was manifested in various ways, in six months she gained 15½ pounds in weight, there was an increase of 2 inches in height, she was less irritable and much more alert mentally, and while there were on an average of twenty-five seizures a month before the administration of thyroid, during this treatment for a period of six months she was free from attacks; unfortunately, she relapsed. This individual (Fig. 1) is small in stature, her legs are abnormally short and her hands reach almost to the knees; she is loose jointed, shows marked lordosis and has a protuberant abdomen; her features are thickened and the thyroid is not palpable. The pulse-rate is usually from 90 to 100 and the specific gravity of the urine is always low, sometimes not more than 1.002, but without albumin or casts. She is surprisingly tolerant of cold, never appearing uncomfortable even though thinly clad in the coldest weather.

The following very complete dermatologic report is by Dr. O. H. Foerster: On both cheeks, grouped above the nasolabial furrows, are numerous small pin-head to wheat-grain-sized papular tumors, discrete and confluent, firm, with convex summits, and of brown and yellow-red color. The larger growths are associated with well-marked telangiectases and on pressure are yellow-red in color. The remaining portions of both cheeks are clear, except for several similar isolated lesions of half-pin-head size. On the chin are about twenty similar discrete lesions of less than pin-head size.

Both alae nasi, and tip and dorsum of nose are practically covered by waxy or translucent, pink to yellowish, elevated, convex, closely set and confluent, papular growths of firm consistency. Several are associated with telangiectases, though less developed than on the cheeks. Similar, more rudimentary lesions of less than one-quarter pin-head size, and yellowish in color, are situated on the upper lip. In both nasolabial angles the lesions are more prominent and grouped, so as to give a verrucous appearance. On the left upper eyelid are several tiny lesions with color of normal skin.

On both sides of the forehead, extending toward the eyebrows from just within the hair-margin, are two elevated tumor masses of irregular outline, light yellow-red in color, with smooth flat surface except for several shallow clefts or furrows. The entire right temporal region down to a line between the outer edge of the right eyebrow and the right ear is occupied by a firm growth with irregular margins, of yellow-red color, lobulated on deep palpation, and of verrucose appearance. Embedded in the scalp at the right parietal region and at the occipital protuberance are two firm, ovoid, elevated masses of finger-nail size. On the neck are several small dark, pedunculated fibromas.

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[1] Schuster: Deutsch. Ztschr. f. Nervenheilk., 1913, p. 96.

[2] Nieuwenhuijse: Ztschr. f. d. ges. Neurol. u. Psych., orig., 1914, xxiv, 53.

[3] Sailer: Jour. Nerv. and Ment. Dis., 1898, p. 403.

[4] Munson: Jour. Nerv. and Ment. Dis., 1912, p. 251.

The middle third of the forehead is studded with comedones. The tongue, buccal and labial mucous membranes are normal. The lobes of both ears are abnormally large.

The extensor surface of the arms and dorsum of hands, from knuckles to above the elbow, is of light brown color, sprinkled plentifully with pin-head and slightly larger nonpigmented areas, with irregular, white patches of finger-nail size at the elbows and on the radial side of the right wrist. On the dorsum of the right wrist, on the radial and ulnar side, are two irregular, scar-like, slightly elevated lesions, with a "knitted" appearance, and spots of light-yellow to brown pigmentation. Palms and finger-nails are normal; hair-growth is normal.

Both legs are darkly pigmented, especially at the knees, and show several areas of entire loss of pigment, from finger-nail to small palm in size.

The skin of the back is of darker color than normal, with a moderate eruption of acne on the shoulders, upper back and in the sacral region. On the right shoulder is a group of three fibromatous yellow-red growths. Arranged irregularly in a belt-like manner just above the hips are several flat fibromas.

Case 2.—The second patient is a girl of Slavish parentage, aged 15. It is said that her father has some curious markings on his face and that he has periodic headache and fainting-spells. A paternal uncle also has attacks of headache. At 3 years this girl was hit on the head by a ball and was unconscious for a time. Her attacks began at 4 years and her rank is that of an epileptic imbecile. For a time the seizures occurred daily but gradually they became less and less frequent and now she is for months without attacks. This individual presents several unusual features. Her voice is peculiar, sometimes it is feminine in pitch, at others masculine and again it will "break" as is common with the male voice at puberty. Though she had many major attacks previous to her admission to the colony, during her stay of two and one-half years with us, she has had only three complete epileptic seizures. Twice there have been vasomotor discharges in the form of intense redness which has covered all exposed parts of the body. Ten paroxysms of uncontrollable laughter have been recorded and three of these have occurred during sleep. There is a cartilaginous thickening of the left ear which has probably resulted from a hematoma auris. The palatal arch is high and narrow. This patient (Fig. 2) is markedly stoop-shouldered, she carries her head far forward and has a decidedly ungainly gait.

Dermatologic report by Dr. Foerster: In the flush area of the face, arranged with considerable symmetry, and grouped especially in the region of the nasolabial furrows and on the chin, are numerous pin-head and slightly larger tumors, many with telangiectases on their summits. They resemble in every particular the lesions described in Case 1, but are in general more rudimentary, though equally characteristic. Similar pigmented patches and flat nodular fibromas are present, though fewer in number and smaller. In addition there is a large flat nevus of the size of an adult's palm to the right of the lumbar spine.

### SOME UNUSUAL ETIOLOGIC FACTORS

A remarkable cause of epilepsy is mentioned by Oppenheim[5] as having been observed by Marburg. It occurred in an individual after eating for many years from 1 to 1⅓ ounces of roasted coffee-beans a day. I have recently examined a patient in whom the exciting cause was most unusual. A man aged 20 of good heredity and correct habits had his first seizure immediately after a drive of several hours' exposure to a temperature of 20 degrees below zero. He now has attacks every month or two and is an undoubted epileptic. What change was brought about by this exposure we do not know, but perhaps it only aroused a slumbering epilepsy. The disease sometimes follows an electric shock, and Jolly[6] has recently recorded the instance of a motorman 20 years of age and previously healthy who on climbing to the top of his car came in contact with the charged pole; he was rendered unconscious. The next day he had pain in his head and fourteen days later there was an unconscious attack; after this there appeared complete epileptic seizures. It is admitted that the electric current may have been only the exciting cause. Spratling[7] speaks of a man of 32 years who had never had convulsions but who became an epileptic after receiving an electric shock. It is not stated that he was rendered unconscious by this shock.

In a patient recently seen there must have been some actual destruction of cerebral tissue. It was a patient of Dr. Henry Pleasant's, aged 26, and an electric worker; he came in contact with an alternating street current and was rendered unconscious. Later it was observed that he had a hemiparesis involving the right face, arm and leg. Following this was severe headache and at a time impossible to determine definitely, he began with minor attacks and three years after the shock he was having complete epileptic seizures.

Severe injuries from electricity usually cause death, and from the non-serious ones a good recovery may generally be expected. The changes most frequently observed in the brains of criminals who have been electrocuted are capillary hemorrhages, arterial anemia and venous congestion; more or less destruction of nerve-cells has been reported by one writer.

Gowers[8] speaks of the influence of light as exciting seizures in rare instances. He refers to two cases, one a girl who had just recovered from typhoid and whose first fit occurred immediately on going into the bright sunshine. At no other time did she have attacks. The other was a man whose attacks were always brought on by looking at a bright fire. Gowers states that the discharge apparently began in the visual center. A somewhat similar effect is seen in one of our cases. It is that of a young man whose face and neck muscles are thrown into most vigorous clonic contractions whenever a bright light falls on his eyes. At times the head is thrown backward violently and it may be held there as much as thirty seconds. Rarely, these clonic movements pass into complete epileptic seizures, but nearly all of his major attacks appear precipitately. Very rarely there is spontaneous recovery from epilepsy. The following case is one in which all motor manifestations ceased but a paraplegia persisted: A boy at 2 years developed fever, was nauseated, had general convulsions and then the right arm and leg became helpless. He probably had an attack of acute poliencephalitis. The right arm and leg remained spastic, and jacksonian convulsions were manifested from time to time until 13 years, when the attacks ceased spontaneously. They stopped, strange to say, at an age when epilepsy is very prone to begin. He has now been for eleven years without attacks.

The next case is one in which jacksonian convulsions developed into or at least were masked by complete epileptic seizures. The patient is rather remarkable because of the great variety of nervous phenomena displayed. This girl probably also had an attack of acute poliencephalitis at 2 years. In the month of May she had fever and convulsions and lay unconscious for a week. On regaining consciousness it was observed that there was disability of the right face, arm and leg. For three weeks the child seemed aphasic; at first she did not talk at all but soon learned again. From time to time slight motor disturbance occurred on the right side and at 10 years the child was placed in a home for crippled children. When she began to use her pen, which she held in her left hand, she wrote mirror-writing; it was with difficulty that the child learned to write correctly. By this time there were pronounced jacksonian seizures and at 14 years attacks developed in which the convulsions were general and the unconsciousness absolute. The patient's acute illness in infancy was followed by aphasia, right hemiplegia, jacksonian convulsions which developed into complete epilepsy, and she also exhibited athetosis, associated movements and mirror-writing.

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[5] Oppenheim: Lehrbuch Nervenkrankheiten, 1913, p. 1590.

[6] Jolly: München. med. Wchnschr., 1912, p. 1453.

[7] Spratling: Epilepsy and Its Treatment, 1904, p. 124.

[8] Gowers: Epilepsy and Other Chronic Convulsive Disorders, 1885, p. 75.

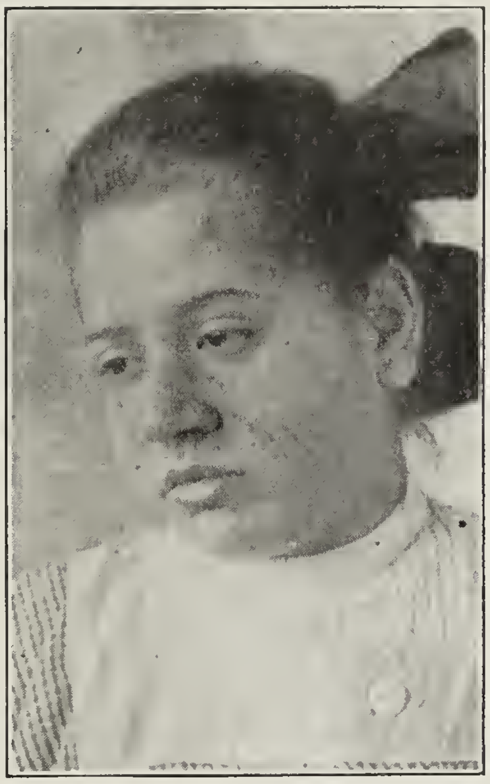

Fig. 1.—Epileptic imbecile showing sebaceum, angiomas and tumor masses.

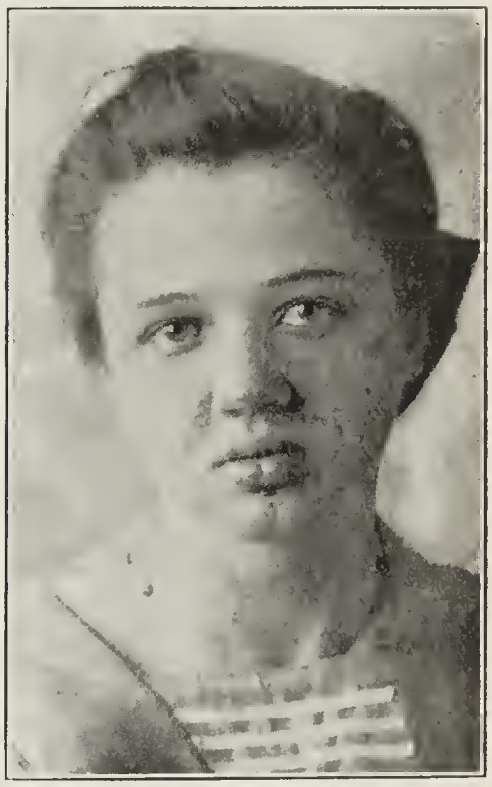

Fig. 2.—Epileptic imbecile showing the same condition as in Figure 1, though more rudimentary.

Another patient is an epileptic girl with myoclonus and recurring sighing manifestations. Her age is 13 and the attacks began at 3 years without obvious cause. The seizures are both major and minor. There is often observed a distinct bodily movement in an arm, a leg or the head and sometimes the shoulders are shrugged. In addition there are less-marked contractions of the muscles in the face and in other parts of the body. All of these movements may be observed during sleep. The patient often sighs deeply both when asleep and when awake. There are at times diaphragmatic spasms. The myoclonus is always more marked after seizures. There are likewise lesser movements that may be felt but not seen. At all times by grasping an arm or leg, a distinct muscular contraction may be felt within the part and the feeling transmitted is that of throbbing or pulsation.

### SLEEP AND EPILEPSY

The relation between sleep and epilepsy is most curious and interesting. Most epileptics after a complete attack have a temporary awakening and from this they usually drop into deep sleep. Rarely, this sleep is absent as shown in the following case: A girl aged 18 had her first attack two days after the burial of her mother. She is now 33 years old and has many short but severe attacks. She injured herself so often and so badly that for a long time a protector was worn on her head. The seizures are both nocturnal and diurnal, but now for some months all attacks have been confined to the periods of sleep. This patient has never slept after an attack and even though the seizure occurs during the deepest sleep, she invariably awakens at once and remains awake from a half to two or three hours.

In some individuals sleep is the only known cause of recurring attacks. It is said that in most epileptics the seizures have begun during sleep, that often it is in the deepest sleep that a paroxysm occurs and that more attacks take place when asleep than when awake. There are momentary losses or absences which have the appearance of sleep, but they are something more than this, for attacks of some kind are frequently seen while these individuals are actually asleep. Besides, if stuck sharply with a pin while in such attacks, unconsciousness as a rule is uninfluenced; any other person at such a time would awaken at once. Such seizures resemble more nearly the disturbance of consciousness seen in cardiac syncope. In connection with this subject, I have observed a very curious case. It was a girl of 19 years whose attacks began at 10 years without known cause. She has major and minor epilepsy with seizures occurring eight or ten times a day. She also has hallucinations of sight and these usually appear just before her attacks. This patient is very drowsy and if permitted, would sleep as much as fifteen hours out of twenty-four. She always takes several naps during the day and will even fall asleep while scrubbing the floor. At one period of about a month's duration, she appeared to be passing into sleep incessantly; all day long she would begin to doze and then promptly recover herself; and this happened several hundred times a day for several days. Considering her drowsy condition, it is difficult to know where to place this phenomenon. Was the manifestation psychic attacks of epilepsy, was it narcolepsy or was this individual an epileptic exhibiting attacks of narcolepsy?

### SO-CALLED NON-EPILEPTIC "ABSENCES"

Friedmann[9] asserted that certain cases previously classified as showing petit mal were really instances of non-epileptic "absences," and furthermore stated that such seizures probably had no relation to hysteria. He described fifteen personally observed cases and regarded the seizures as narcoleptic in nature. This subject has recently been referred to in this country by Sedgwick.[10] In this connection Gowers[11] states that "before fifteen cases of narcolepsy were met, 30,000 cases of epilepsy would come under observation! Most of these cases were probably minor epilepsy." The features of this disorder are, according to Friedmann, attacks which usually begin between the ages of 4 and 7 years in apparently healthy children; they consist of a momentary disturbance of consciousness and almost without convulsions or falling; they recur from six to ten and up to 100 times a day; it is only occasionally that they appear at night and frequently they are recovered from; the physical and mental development of the child is not affected.

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[9] Friedmann: Deutsch. Ztschr. f. Nervenheilk., 1906, p. 462.

[10] Sedgwick, J. P.: Spasmophilia with Especial Reference to Familial Reactions and Repeated Absences, Am. Jour. Dis. Child., February, 1914, p. 140.

[11] Gowers: Borderland of Epilepsy, 1907, p. 116.

I have studied two such cases. The first is a girl aged 14 whose attacks began at 9 years without obvious cause. The seizures vary in number from six to thirty per day and are of from ten to fifteen seconds' duration. This momentary disturbance of consciousness is not preceded by an aura; never has there been a convulsion. This girl is healthy, growing rapidly, unusually active and has the mentality of a normal child. So far she conforms to the description of Friedmann's cases. But on further careful study, many attacks are seen while she is asleep; she was once known to fall and in a number of attacks has wet her clothes. If sitting and caught at the time of a seizure her arms and legs are found to be slightly rigid; but if walking she continues though sometimes with slight wavering; occasionally, the movements of tasting are seen. After some of the seizures there is an action suggestive of straightening out the clothes, and this we know is common among epileptics.

The second patient is a girl of 16 years whose so-called "absences" began at 6 years without obvious cause. The attacks usually vary from six to ten per day but they have gone as high as 100. The usual duration is from fifteen to twenty seconds. There is no aura and while she is generally unconscious, some seizures are so light that they are barely apparent even while one is watching her. She also is healthy, is growing rapidly and is of average mentality though somewhat peculiar. During the nine and one-half years of the disease there have been two convulsive attacks with complete loss of consciousness. If spoken to while in a spell there is no response; if stuck sharply with a pin at the beginning of an attack, the seizure is aborted; but if fairly under way the hand is drawn from the irritation although she has no subsequent knowledge of having been stuck. There is an occasional drowsy episode during which time the patient can hardly be kept awake. Since the age of 14 a very interesting feature of her clinical history is recurring attacks of complete migraine; these usually appear three or four times a month. The intelligence of this girl has made her description of the attacks interesting. The migraine is preceded by the appearance of a bright light before one or the other eye but never before both in the same attack. This light is shaped like the flame of a gas-jet with a serrated upper edge and an attenuated extremity which always points to the outer side and which the patient speaks of as the "tail." The light lasts about twenty minutes and before it disappears headache begins; this is always preceded for about a minute by double vision. The headache usually persists for a half hour and frequently there is nausea and vomiting. When the attack subsides she feels perfectly well except for extreme weakness.

I believe the "absences" in these two cases are best classified as momentary psychic attacks of epilepsy. It may be that Friedmann and others have regarded the motor manifestation as the cardinal symptom in epilepsy, whereas the disturbance of consciousness is now generally accorded first place.

It is obvious that a great variety of momentary phenomena important in the matter of diagnosis may be lost unless the patients are constantly under the care of trained and observant attendants.

To me, the conclusion that these two patients are epileptics is inevitable.

The last patient has associated with her epilepsy attacks of migraine. As to the relation of these a wide difference of opinion exists; but some light should be thrown on this question by a careful study of the cases in which there is a clinical history of both affections.

2005 Chestnut Street.

## ABSTRACT OF DISCUSSION

Dr. Alfred Gordon, Philadelphia: Were roentgenograms taken of the skulls? Roentgenograms may reveal changes in the skull similar to those on the skin.

Dr. William G. Spiller, Philadelphia: I am glad Dr. Yawger has reported on this subject, because, as he has said, there is nothing in the English literature with regard to it. Those who are familiar with Schuster's report will recognize that the two cases presented by Dr. Yawger are exceedingly like those of Schuster. If we can establish the existence of tuberous sclerosis by the means Dr. Yawger has mentioned and make a diagnosis in epileptic cases, we have made a distinct advance.

Dr. N. S. Yawger, Philadelphia: Replying to Dr. Gordon's question, I would say that we have not made any Roentgen-ray studies in our cases.

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# A NEW METHOD OF TREATMENT OF LUPUS VULGARIS *

M. L. HEIDINGSFELD, Ph.B., M.D.
Professor of Dermatology, Ohio-Miami Medical College of the University of Cincinnati; Dermatologist, Cincinnati General Hospital
CINCINNATI

In 1911 I[1] published a short monograph covering a brief clinical experience with trichloracetic acid in concentrated form. Reference was made to the fact that this time-honored and more or less generally employed nose and throat remedy had received little favorable notice as a therapeutic agent in dermatology.

Lanz,[2] in an article on the topical application of 20 per cent. trichloracetic acid by means of an endoscope in chronic urethritis, incidentally refers to the success attending its use in papillomas, warts and pigmentations.

In the monograph above referred to, I set forth the success which attended the treatment of moles and circumscribed pigmentations, vascular nevi and telangiectases and warts and papillomas, with a saturated solution of trichloracetic acid, and incidentally mentioned that immediate favorable results were also noted in lupus vulgaris and several other affections. I have continued to use this remedy with unfailing benefit in all cases of lupus vulgaris and tuberculosis verrucosis cutis which have come to my notice within the past three or four years, many of which have proceeded to complete clinical recovery. These cases form the basis for the presentation of this paper.

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* Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Heidingsfeld, M. L.: Arch. d. Dermat., 1911, cx, 245.

[2] Lanz: Monatsh. f. prakt. Dermat., 1891, xiii, 271.

In spite of the innovation of many new and successful features in recent years, in lupus therapy, no single remedy or well-defined plan of treatment of lupus vulgaris has thus far found general or universal favor. Authors and investigators have exploited their particular views from time to time, expressing their predilection for this or that special form of treatment, but always with a considerable degree of reservation, in reference to the completeness of immediate results and absence of relapses. This conservatism has resulted in the conservation of all the generally accepted old and new methods of successful treatment in the monographs of nearly all who have written on the subject in a text-book or general way.

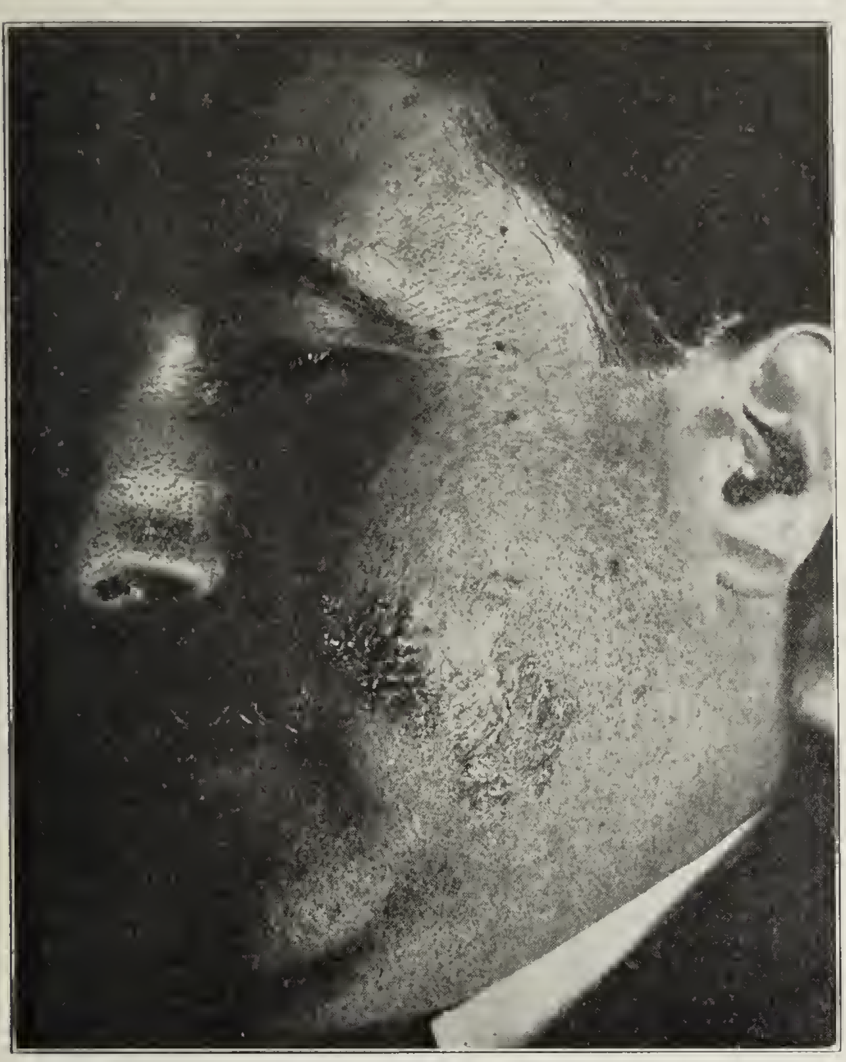

Fig. 1 (Case 1).—Patch of lupus on left cheek, of forty-two years duration.

Of noteworthy interest in this direction is the fact that a commission appointed by the German government in recent years, for the purpose of studying the cause, prevention and cure of lupus, set forth in a report[3] in May, 1910, that all hitherto accepted methods of successful treatment such as the application of astringent, stimulating and erosive pastes and ointments, the use of the Roentgen ray, Finsen and Kromayer light, radium and mesothorium, the various forms of surgical procedure after the method of Lang and others, should, at least for the time being, be retained. The same commission in an earlier report, in November, 1908, stated that there were 11,354 recorded cases in Germany at that time, and estimated the total number for the empire, after making due allowance for the unrecognized, undiagnosed and non-reported cases, to approximate 33,000 cases.

The treatment therefore laid down for lupus vulgaris, like all things in medicine without a specific and unfailing medication, embraced a sea of remedies and methods in which the patient and physician are often hopelessly engulfed. It includes, on the one hand, all forms of palliative and mildly stimulating remedies such as diachylon, oleate of mercury, salicylic acid, resorcin, ichthyol lotions and ointments, etc.; on the other, such caustic erosive and destructive agents as lactic, sulphurous, nitric, pyrogallic and arsenous acids, Vienna paste, acid nitrate of mercury, silver nitrate, caustic potash, etc. In addition to these and numerous other agents, tuberculin, the application of Roentgen rays, radium, Finsen and Kromayer light, Hollander superheated air, Paquelin and galvanocautery, carbon dioxid snow, curettement, linear scarification and radical extirpation, and various other procedures have been, and continue to be, exploited from time to time. Each and all have received at one time or another a generous degree of recognition, and are to this day more or less universally used with at least a very fair degree of success. Without question, many of these old and time-honored measures are not without virtue, but if any of these, new as well as old, possessed overshadowing and unfailing properties, the vast majority would long ere this have been relegated to the discard. Time will not permit me to enter into a detailed consideration of their respective merits or relative worth.

It is possible that I am adding another remedy, or at least another method of its application, to the already too long list of "tried and found wanting," but several years of patient study and observation have led to the conviction that it is not only far superior to any method of lupus treatment which has thus far come to me in my personal experience, but apparently quite the equal, if not superior in results, to those which I personally observed in Copenhagen, Stuttgart, Vienna, Paris and elsewhere. Unless I err in judgment, the results which I have thus far attained compare most favorably with those which I have

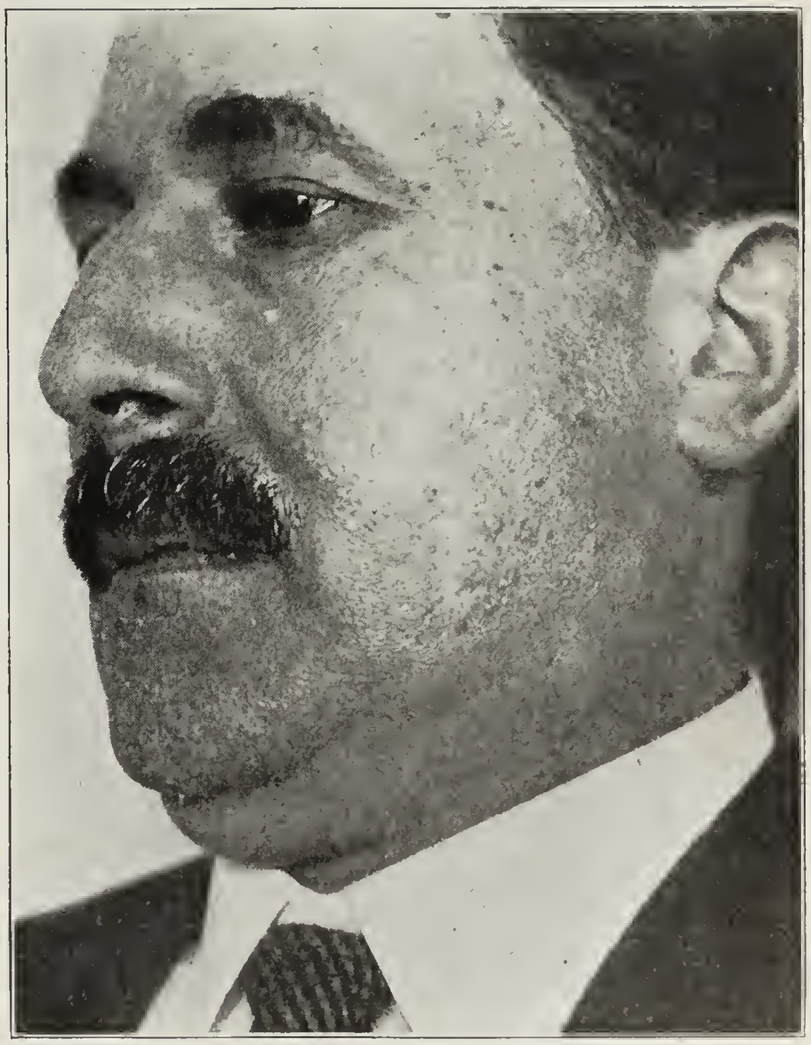

Fig. 2 (Case 1).—After treatment.

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[3] Nietner: Strahlen Therapie, 1913, ii, No. 1.

observed from other generally accepted successful methods, embracing in a measure their special advantages, and circumventing many of their objectionable features.

For example, the cosmetic result is invariably excellent and as perfect as the physical conditions at the time treatment is instituted can reasonably justify. The cosmetic results compare most favorably with those observed at the Finsen Institute at Copenhagen and those of the quartz-mercury lamp, both generally conceded to be of the highest order. They are better than those generally obtained from the Roentgen ray, radium, mesothorium and thorium X, particularly when the application of these agents is followed by atrophic scars. The patients are also spared the unpleasant and at times persistent and very painful dermatitis which these agents call forth. The cosmetic results are superior to the good results which I have observed at the hands of Veiel of Stuttgart, a master in the successful use of pyrogallic acid paste; the method is devoid of the pain, discomfort and disagreeable features of the pyrogallic acid method of treatment. The cosmetic results are far superior to those obtained from the use of caustic and destructive and erosive substances, scarification, curettement and excision, after Lang's, Payer's and other methods.

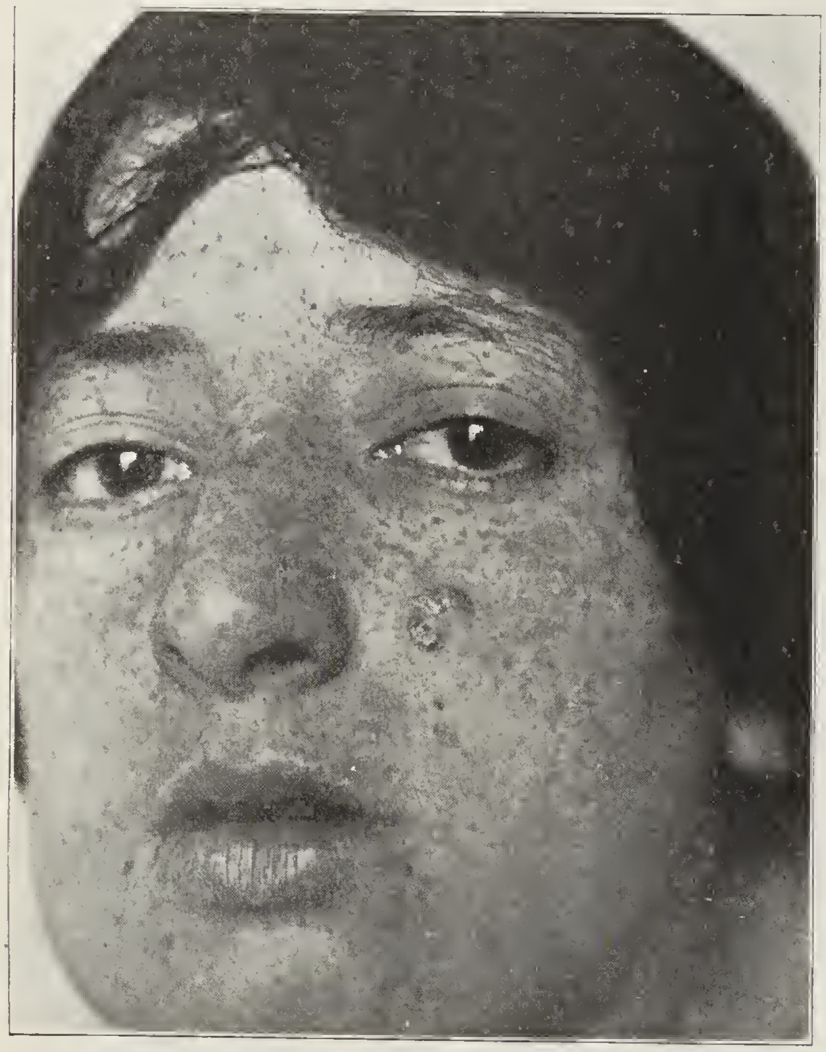

Fig. 3 (Case 2).—Patch of lupus on left cheek of six years' duration, before treatment.

The treatment is far superior to most of the enumerated methods, in that it entails no cost in equipment and can be readily adapted to meet all the exigencies of every form of practice. The results assert themselves with surprising promptness; improvement is almost invariably noted within a few weeks, and a cure in the more moderate cases is effected within six months or a year. This compares favorably with all other methods, with the exception of a radical operation, and is second only to radium and its allied radio-active substances.

The pain and discomfort is of momentary and transient character, a sense of slight burning and stinging, readily tolerated by children as well as adults. Successfully treated patches of lupus which are smooth, devoid of scales and roughness, and show no congestion or nodules under glass-slide pressure, remain, as well as the still somewhat limited period (two years) permits judgment, permanently well and show less tendency to relapse than I have observed from light and radium treatment. Particularly noteworthy is the fact that the actively spreading and usually very persistent borders respond with almost as much promptness as the partially cicatrized centers. Relapsing nodules in partially or neglected treated patches respond with every degree of promptness when treatment is reapplied.

### METHOD OF TREATMENT

A saturated solution of trichloracetic acid is obtained by adding 10 drops of distilled water to an ounce of pure crystals. A tiny pledget of cotton is carefully wrapped around the end of a small rounded wooden toothpick, by means of which the remedy is applied as far as practicable, to each congested nodule. The remedy apparently exerts a selective action, attacking the nodules with greater promptness and sparing somewhat the intervening more normal or cicatrized areas. This selective action is also noted if the remedy is applied more or less diffusely to a generally congested surface, although better results are usually obtained if it is carefully applied to the individual nodules for a few seconds at a time. The application produces a momentary sense of discomfort and stinging, which can be promptly allayed by the application of the following:

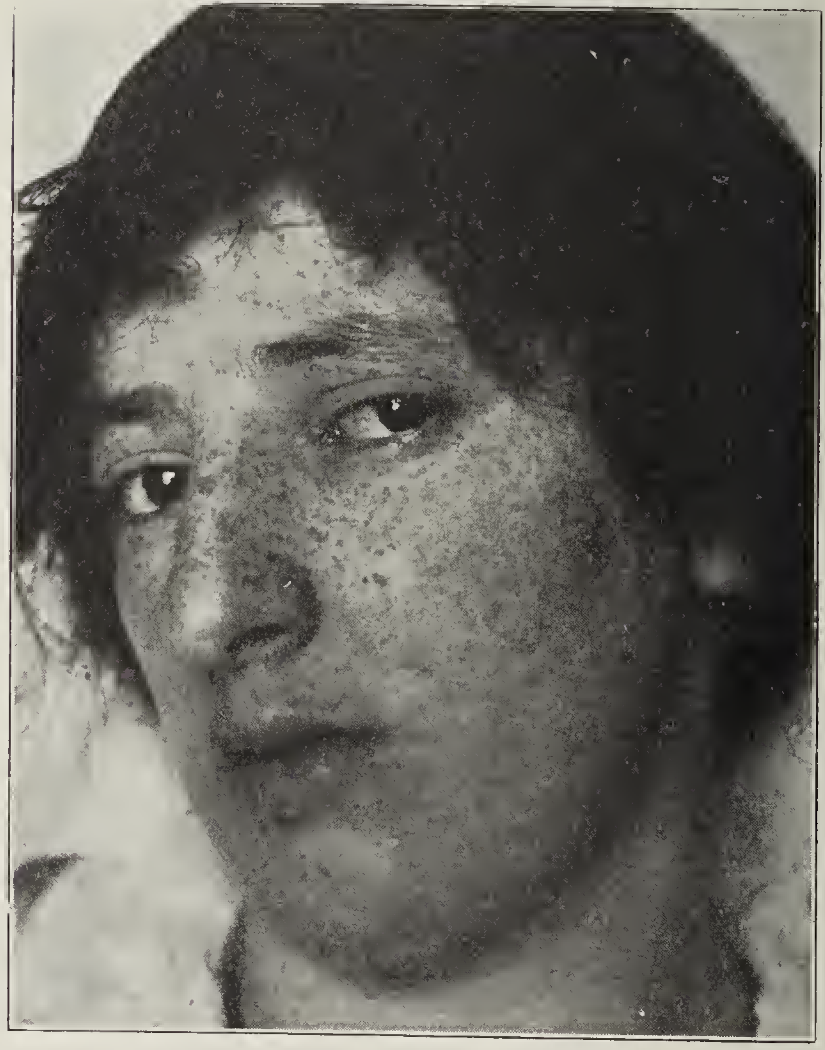

Fig 4 (Case 2).—After treatment.

| | |
|---|---|
| Sulphurated potassa, | |
| Zinc sulphate, of each | 1 part |
| Zinc oxid | 10 parts |
| Lime-water | 15 parts |
| Distilled water, enough to make | 40 parts |
| Powdered carmin, enough to color pink. | |

This application serves, in addition to its protective and healing properties, as a cosmetic to hide the glaring whiteness produced for the time being by the trichloracetic acid. The trichloracetic acid should be applied to areas not much larger than a silver quarter, at a time, and repeated at seven- to fourteen-day intervals. Under the treatment the nodules become the seat of superficial crusts which exfoliate within from five to ten days. The general congestion diminishes, and the nodules lose in intensity of redness, and rapidly diminish in size, until they gradually become no larger than pin-heads and ultimately disappear. Mucous membrane lesions on the lips and within the nose have yielded with equal promptness and success.

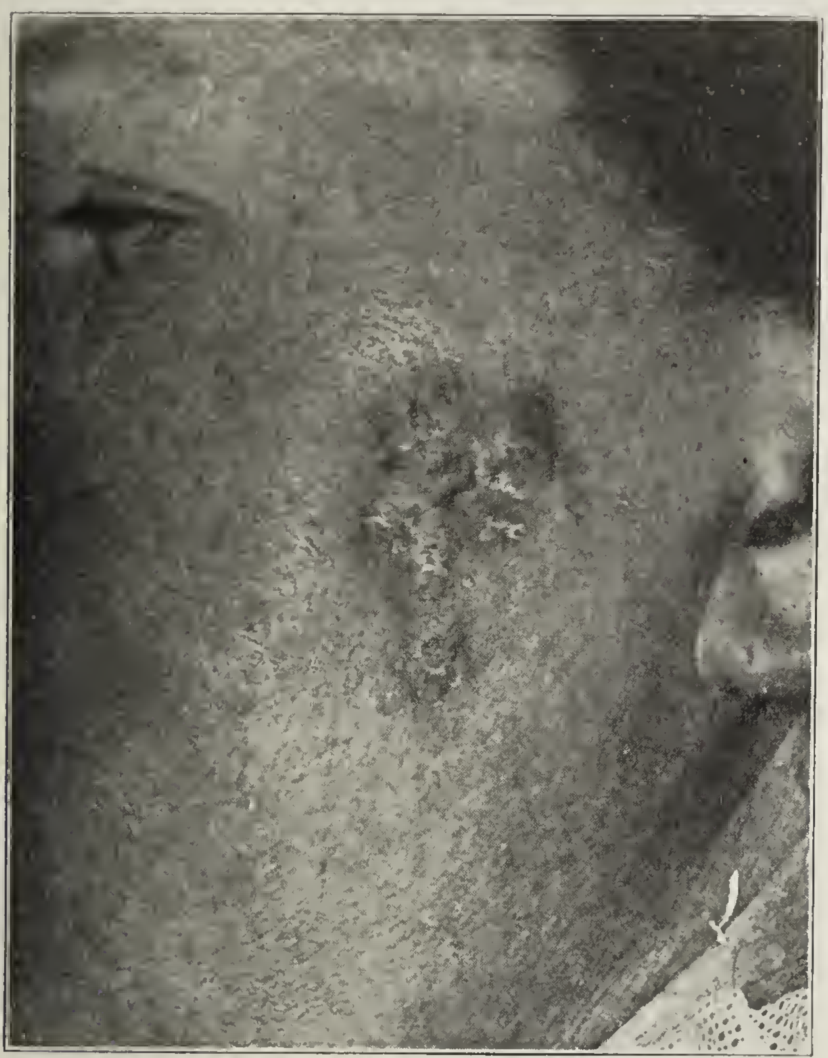

Fig. 5 (Case 3).—Partially cured by treatment.

CASE REPORTS

Case 1.—C. L., shoe manufacturer, aged 44, large circular patch of lupus covering almost entire left cheek, present from early childhood and slowly extending until nose and lips were encroached on. Unsuccessfully treated a number of times by means of pastes, curettement, Roentgen ray and light. Surgical extirpation was at one time recommended. Patient no longer entertained any hope of relief and for the past few years merely employed cosmetics to hide the physical disfigurement. Treatment was instituted Oct. 4, 1913. Thirty-two applications have been made and patient pronounced clinically well, May, 1914.

Case 2.—B. S., aged 16, Roumanian, patch of lupus size of a twenty-five cent piece, on left cheek, near nose; duration six years. Trichloracetic acid treatment instituted April 20, 1913. Improvement noted within two weeks. The remedy was applied, all told, fourteen times and patient was discharged well, Oct. 4, 1913. No relapses at present writing.

Case 3.—Mrs. R. A., aged 35. Triangular patch of lupus on left cheek anterior to right ear, 1½ by 1½ by 1¼ inches, of twenty years' duration. Varied attention from various physicians, unsuccessful. Trichloracetic acid first applied Jan. 4, 1913, and patient discharged well, April 9, 1914.

Case 4.—Mrs. A. E. H., widow, aged 52, lupus vulgaris twelve years' duration, involving nose, right cheek and right eyelid. Treatment instituted April 16, 1914. Material improvement noted June 10, 1914.

Case 5.—E. J., aged 23, lupus vulgaris present from early childhood. Large patch covering the larger portion of the left cheek, extending from the anterior border of the left ear, almost to the left eye and nose, involving the lips and left side of mouth, and extending over the neck from the chin to the angle of the jaw. Tuberculin, Roentgen ray, Kromayer quartz-mercury lamp, pyrogallic acid, caustic and stimulating pastes were all used to no avail. The Roentgen ray effected some temporary improvement but also a very serious degree of severe atrophic disfigurement. The Roentgen ray was unable to check recurrences. Trichloracetic acid was first applied, April 21, 1911, and the case was brought under excellent clinical control, although not radically cured, owing largely to apathy on part of the patient, in March, 1912. The mucous membrane lesions yielded with surprising promptness. A few recurrences have manifested themselves from time to time, particularly in the parchment-like Roentgen-ray atrophies. On date of last visit, April 17, 1914, patient's condition was under favorable control.

Case 6.—J. C. D., aged 32, organist, lupus of left foot of ten years' duration, which resulted in entire destruction of large toe and necrosis of distal phalanx of second toe. Vocation seriously threatened and for the time being, impaired. Trichloracetic acid first applied Oct. 29, 1913. Greatly improved and vocation resumed, November 24. Case greatly improved but still under observation at present writing.

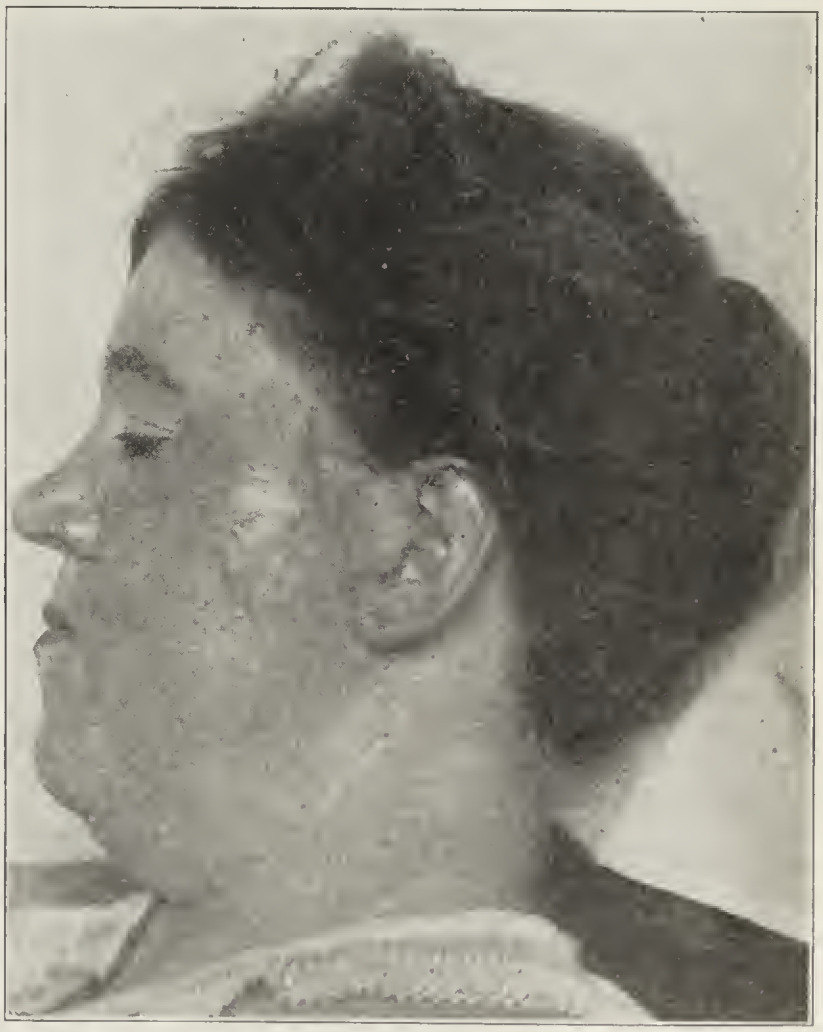

Fig. 6 (Case 3).—Treatment discontinued.

Case 7.—Mrs. G. E., aged 41, wife of physician, small patch of lupus vulgaris, size of a silver dime, on left side of chin. Duration several years, following electrolytic removal of a mole. Trichloracetic acid was first applied, Jan. 3, 1912, and the patch was promptly brought under clinical control. There have been no signs of recurrence for almost two years and patient appeared radically and permanently cured on date of last visit, June 2, 1914.

Case 8.—Mrs. S. H. G., aged 53, lupus vulgaris infection followed slight laceration to right ear ten years ago, from an earring. The nodules slowly extended themselves downward over the lobe of the ear and over the right cheek, to the angle of the jaw and upwardly over the free edge of the ear to its upper third. Caustic and erosive pastes and liquids, curettement, Roentgen ray, tuberculin, light, etc., were all used without success. Trichloracetic acid was first applied, April 21, 1911, and a clinical result was apparently attained, May 29, 1912. The cheek remained permanently well, but a few nodules again made their appearance over the free edge of the ear, March 7, 1913, but promptly responded to a few additional applications of the remedy.

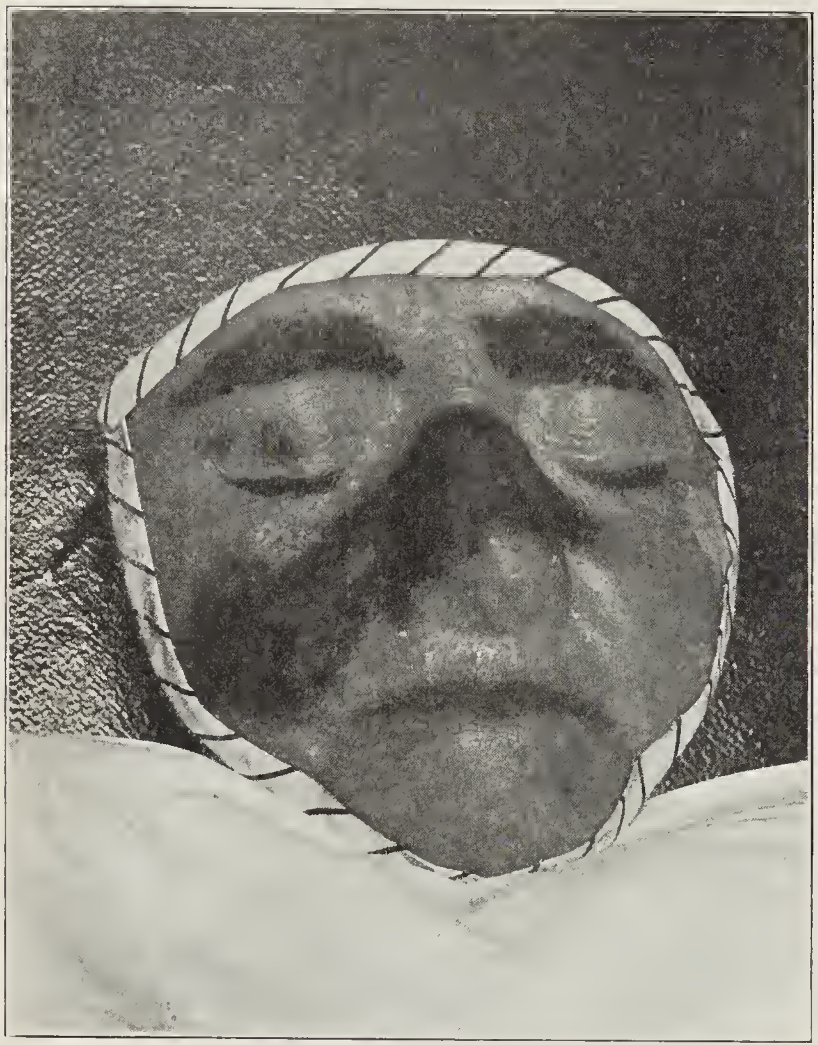

Fig. 7.—Photograph of moulage of Case 4 before treatment.

Case 9.—Mrs. M. T., aged 56, lupus vulgaris of thirty-three years' duration, which has destroyed almost the entire cartilaginous portion of the right ear, and has extended posteriorly into the scalp, and downward over the right cheek to the angle of the jaw, forward to its middle third, and upward to the outer canthus of the right eye. A few outlying nodules are situated on the right side of the forehead, and near the right angle of the mouth. Curettement, caustic and erosive preparations, Roentgen ray and light have been unsuccessfully applied. Trichloracetic acid was first applied, Jan. 22, 1914, and the patient at present writing is apparently progressing toward prompt and satisfactory recovery.

Case 10.—J. B., aged 53, painter, circumscribed patch of lupus verrucosus cutis on lower third of left tibia, size of 1 by ¾ by ⅜ inches in the various diameters, of eighteen years' duration. Enlargement has been very slow and insidious. Trichloracetic acid first applied Jan. 16, 1914: discharged well, April 15, 1914. No evidence of relapse, May 13, date of patient's last visit.

Case 11.—W. G., aged 20, baker, several small, warty, painful excrescences over the dorsal aspect of the left hand, near the knuckle of the index-finger, with a history of about one year's duration. Clinical diagnosis of tuberculosis verrucosa cutis, was, in a measure, confirmed by physical signs of pulmonary apical involvement and bacilli in sputum. Trichloracetic acid was first applied January 15, and followed by applications, January 29, February 12 and 26, and patient was discharged well, July 15, 1913. No relapses at present writing.

Case 12.—A. J. C., aged 39, with numerous painful fissured excrescences of tuberculosis verrucosa cutis, covering the dorsal aspect of both hands, of approximately eighteen months' duration. Diagnosis clinically confirmed by well-advanced pulmonary tuberculosis and sputum laden with bacilli. Remedy first applied, March 6, 1914, and, April 8, date of patient's last visit, clinical recovery seemed already established.

19 West Seventh Street.

## ABSTRACT OF DISCUSSION

Dr. William T. Corlett, Cleveland: I have had no experience with this special drug in the treatment of lupus vulgaris, although deep curetting, followed by the application of phenol or the acid nitrate of mercury has given me the best results. I have gradually come to regard lupus vulgaris as one of the most obstinate affections with which we have to deal, and I do not greatly regret when such patients, who expect rapid and brilliant results, go elsewhere — to the surgeon, for instance, where radical treatment by the knife is usually resorted to. With the Roentgen ray I have had some favorable results, but as a routine treatment I have not found it successful.

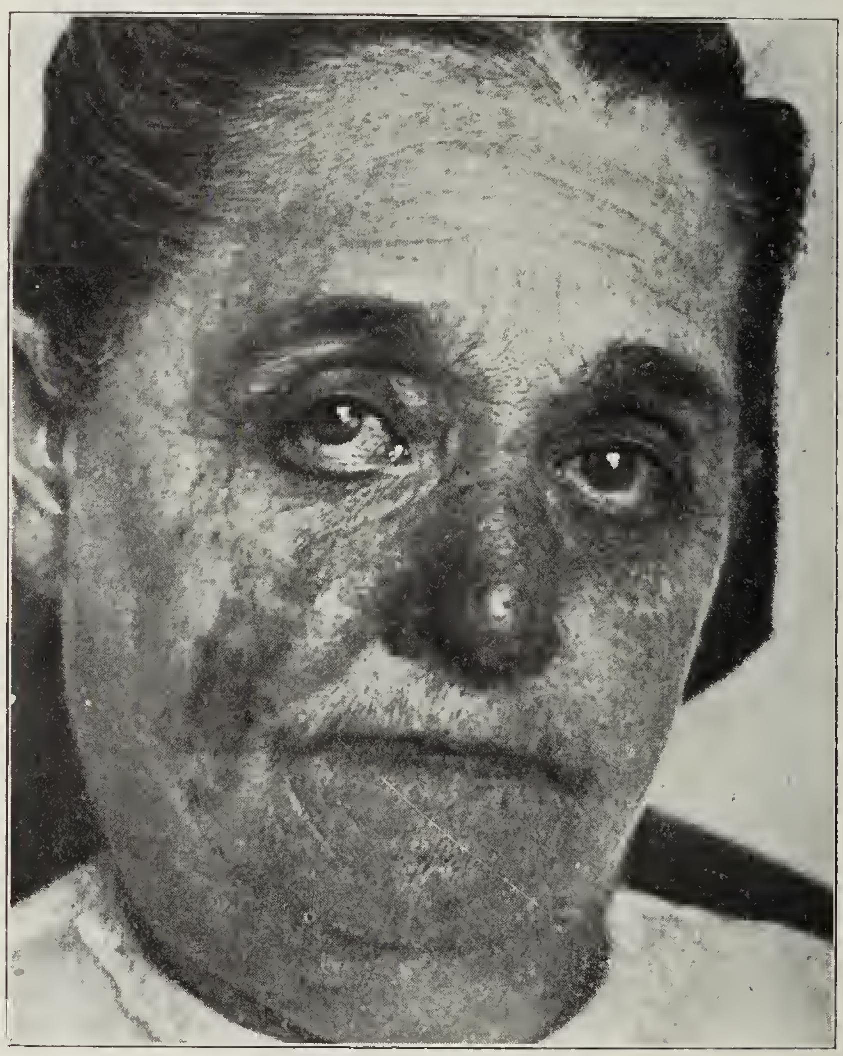

Fig. 8 (Case 4).—After partial treatment.

Dr. M. L. Ravitch, Louisville: I have found lupus vulgaris analogous to psoriasis, "on again; gone again." Whether we use the monochloracetic acid or the trichloracetic acid, this agent is very destructive in its effects. About three years ago Dr. D. W. Montgomery, San Francisco, referred to Dr. Heidingsfeld's use of this remedy, and reported favorable results from it in the treatment of keratotic conditions. I have had little success with the remedy in this condition. In lupus vulgaris we do not know whether we are dealing with a localized condition or a manifestation of general tuberculosis. I have found phenol (carbolic acid) and iodin very satisfactory in a number of cases of lupus vulgaris, the acid being first applied and then painted over with iodin. Persistently applied, this remedy acts admirably.

Dr. Henry C. Baum, Syracuse: I have used trichloracetic acid in a variety of conditions for many years, and while my results in some instances were very satisfactory, they were not equal to those of Dr. Heidingsfeld in cases of lupus vulgaris, which is perhaps due to the fact that I did not continue the treatment as persistently as he did. My experience with the Roentgen ray does not agree with Dr. Corlett's. I have treated many cases of lupus vulgaris with the Roentgen ray with perfectly satisfactory results, both from a cosmetic point of view and as to permanency of the cure. I can recall only one case in which the outcome was not satisfactory, and in that instance I had excellent results from pyrogallic acid, which I find has a selective action in lupus, selecting and destroying the diseased areas very beautifully. We should not lose sight of the fact that lupus is not a superficial disease: with the microscope we find cells deep down in the corium. It is hopeless to try to eradicate the disease by superficial treatment, and it is because the Roentgen ray penetrates deeply that it is so valuable.

Dr. William S. Gottheil, New York: The man who calls attention to an old remedy is entitled to just as much credit as he who suggests a new one. Under Dr. George H. Fox I have seen lupus vulgaris treated with phenol and various acids, trichloracetic and nitric, the applications being made with a toothpick inserted deep into the lesions. I was surprised to hear from Dr. Baum that he has had such good results in lupus vulgaris with the Roentgen ray. In New York City the Roentgen ray has been practically discarded by the radiologist as a therapeutic agent.

Dr. S. E. Sweitzer, Minneapolis: Has this treatment been of value in lupus of the mucous membranes? In our part of the country, lupus vulgaris appears to be very rare. In a case which I saw recently, the disease involved the outside of the nose and also the nasal mucous membrane.

Dr. H. H. Hazen, Washington, D. C.: To my mind, lupus vulgaris, as I see it in hospital practice, is comparable to rodent ulcer, and I believe the correct method of treatment, in early cases, is to get rid of it surgically. Under local anesthesia the lesion should be thoroughly curetted and then treated with the actual cautery. In some cases I have used the acid nitrate of mercury, after the manner described by Dr. Samuel Sherwell. I have very little faith in the so-called selective action of various applications, inasmuch as they would not destroy isolated foci of infection, and my experience with the Roentgen ray has led me to believe that in over one-half of the cases of lupus vulgaris in which it has been employed, there is a relapse sooner or later, usually within one or two years.

Dr. J. B. Shelmire, Dallas: I have not seen a case of lupus vulgaris in my part of the country for the past eighteen years, or, at least, I have not recognized any as such. Of two cases that were sent to me with that diagnosis, one proved to be syphilis and the other cancer.

Dr. Jay F. Schamberg, Philadelphia: In view of the derogatory remarks made by one of the speakers concerning the value of the Roentgen ray, permit me to state that some years ago I saw a very extensive case of lupus vulgaris involving a large part of the face which was cured by the use of the rays; the cosmetic result was excellent, and there has been no recurrence for seven years.

Dr. M. B. Hartzell, Philadelphia: I think the good results obtained by Dr. Heidingsfeld in the cases he has reported are largely due to his persistency. Whether we use trichloracetic acid or any of the other destructive agents, we must be persistent. My experience with this remedy dates back some fifteen years when I used it on a boy whose mother always had to help us in holding him down while we made the applications, which I recollect were extremely painful.

Dr. J. B. Kessler, Iowa City, Iowa: I have used trichloracetic acid in keratotic conditions, but have had no experience with it in lupus vulgaris, which is very rare in my section of the country; I have probably not seen more than one or two cases in the past dozen years. I cannot agree with Dr. Heidingsfeld that the application of trichloracetic acid is comparatively painless. I have resorted to it in various cutaneous conditions and most of my patients complained considerably about it.

Dr. M. L. Heidingsfeld, Cincinnati: While trichloracetic acid is an old-time remedy, I have searched the literature very carefully and have failed to find any except slight reference to its use in lupus vulgaris. It has been most extensively employed in throat and nose work, in 20 or 30 per cent. solutions. In my work I have used it in concentrated form, and while the applications have been attended by some pain and discomfort, these have not been excessive and I have heard very little complaint from either children or adults. It is possible that this is due to the application I make after the treatment, as described in my paper. Pyrogallol, to which Dr. Baum referred, has proved very disagreeable and unsatisfactory in my hands. Surgical treatment, while sometimes imperative, is objectionable to many patients on account of the resulting disfigurement. In response to Dr. Sweitzer's query, my results with mucous-membrane lesions in close proximity to the skin of the lips and nose have been equally gratifying in character.

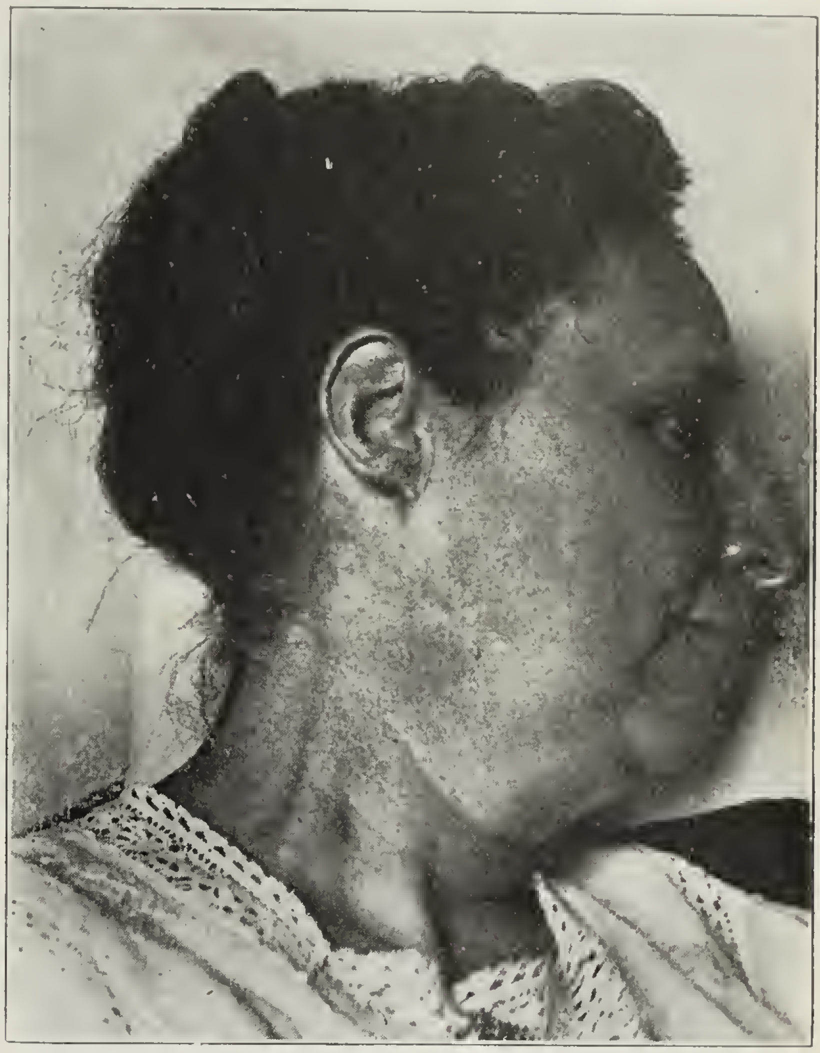
Fig. 9 (Case 8).—After treatment.

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**Mathematics and Digestion.**—The researches of Pawlow and his pupils have clearly demonstrated the obedience of the digestive processes to mathematical laws. Thus, it has been ascertained that the time of digestion is, roughly speaking, proportional to the square root of the quantity of food, and that the same is true of the amount of gastric juice secreted in a given time. Professor Svante Arrhenius, in his recent lecture at the Royal Institution on "The Identity of Laws in General and Biological Chemistry," pointed out that, just as in reactions in general chemistry, the velocity of the reaction increased with the temperature, so also is this the case with organic products and vital processes, the action of enzymes being accelerated by increase of temperature up to certain limits. It might be helpful to diners-out if a digestive time-table of the various articles of food were appended to the menus, or, better still, indicated in special type after each dish. Such a "psychological restaurant" might pay well if established within easy distance of Harley Street.—*Med. Press*, June, 1914.

# GENERALIZED NEUROFIBROMATOSIS (Von RECKLINGHAUSEN'S DISEASE)

## REPORT OF A CASE SHOWING A SUPERFICIAL RESEMBLANCE TO HODGKIN'S DISEASE

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Generalized neurofibromatosis, von Recklinghausen's disease, is by no means a rare condition, occurring in the proportion of about 1 : 1,300 dermatologic cases[1] (85 in 112,775). Were one to take into account the *formes frustes* of Thibièrge[2]—cases exhibiting only generalized pigment spots, and a functional, psychic or trophic disturbance, but no cutaneous or nerve-tumors — the percentage would then be considerably higher.

As the etiology and pathogenesis of the condition are by no means *res adjudicatae,* each case not fully conforming to the recognized types merits recording, both for satistical purposes and with a view of throwing new light on some of the obscure features.

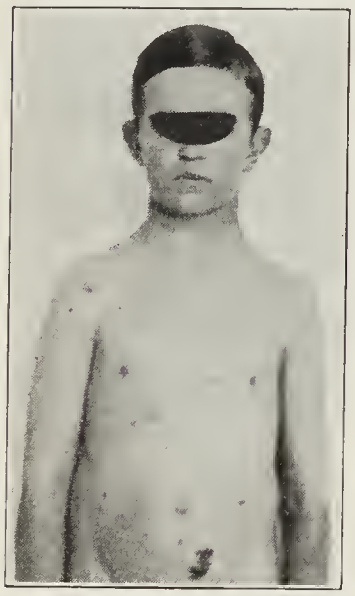

Fig. 1. — Photograph showing lymphatic appearance, cervical swelling, diffuse pigment spots and nevi. Note the absence of elevated skin tumors.

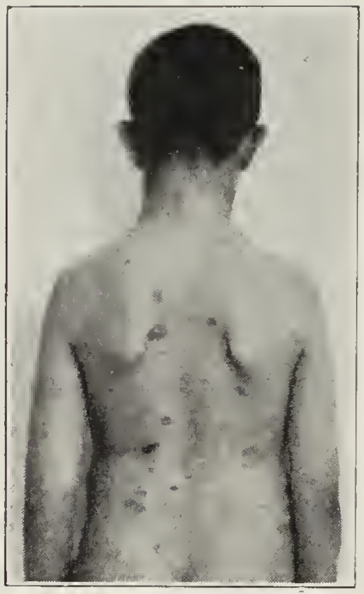

Fig. 2. — Photograph showing particularly pigment spots and fulness of cervical region.

From time to time, extensive monographs on the subject have appeared. The first, that of von Recklinghausen[3] (1882), collects the authentic cases recorded up to that year and establishes the condition on a firm clinical and pathologic basis; from his work, the morbid process has derived its name. Alexis Thomson,[4] in a monograph appearing in 1900, gave the subject exhaustive treatment. Adrian[5] (1903), on the basis of 447 cases which he was able to gather from the literature, published a comprehensive review of all features of the process, essential and occasional. So complete is his *Sammel-Referate,* that a survey of the literature of the last decade—comprising several hundred cases, the majority from French sources—enables one to add little that is vital to the knowledge of the subject.[6]

The particular interest attaching to the case we wish to record is its superficial resemblance to morbus hodgkinii. At the conclusion of our report, on the basis of our observations and of manifestations recorded in the literature, we desire to emphasize certain items relative to the etiology and pathologic place of the entity.

*History.*—Master John D., aged 16, a schoolboy, entered Wesley Hospital, April 28, 1914. As was facetiously remarked at the time, he arrived with a written diagnosis in one hand and a vial of vaccine in the other. It would seem that a short time previous to admission he had been under observation at the experimental station of a well-known pharmaceutical house, where he was placed on vaccine treatment for Hodgkin's disease. The diagnosis was made after removal of a subcutaneous node from the right deltoid region; from this tumor, we presume, was cultivated the organism used in the making of the vaccine. As no improvement followed the injections, the boy was referred by Dr. Hayman for observation.

Up to the onset of his present illness, the boy had always been well, except for an attack of measles, two years before. This had affected his eyes and had necessitated his remaining out of school a year.

The family history is irrelevant; there has been no similar illness among his relatives, according to the statement of the boy's mother. There is no history of tuberculosis.[7]

The present complaint began five to six years ago when there were first noticed some "lumps" in both cervical regions, though attaining a greater size in the left. These tumors were sensitive to pressure and gradually grew larger, the mass on the left side reaching half the size of his fist. After the lapse of six months, the tumors became smaller and less sensitive. (Particular questioning elicited the fact that when a baby he had "rheumatism," at which time his feet were very tender and he could not walk.)

Soon after the appearance of the cervical masses, the boy noticed tender areas in both arms, which were sensitive following slight bruises; even moving the arms in certain directions caused pain. Somewhat later, small tumors could be felt under the skin of the arms. Subsequently similar tender lumps appeared on the trunk, scalp and lower extremities.

In March of this year the patient discovered innumerable small nodules when passing his hand over the integument, particularly of the arms. In the past year, occipital headache, of frequent occurrence, associated with dizziness has been present.

*Present Status* (April 4, 1914).—The boy is a well-nourished, healthy appearing lad of 16, weighing 102 pounds (Figs. 1 and 2). Physically and mentally he seems to represent his years. Aside from nostalgia and worry over the failure of therapy in his case, he feels very well. His appetite is good, he sleeps well, and his bowels are regular. He cannot play, however, as do his friends, because of pain in the groins and popliteal spaces when he romps about. Sudden or extreme movements of the arms also cause pain.

He presents to a certain degree that typical, but difficult to describe, lymphatic facial appearance—a slight puffiness of the lids and skin of the face—which the Germans so happily express as *pastös.* The teeth are in good condition except for the right lower molar (roentgenogram by Dr. Hollis E. Potter shows no periapical abscess). The gums are spongy and bleed easily; on pressure, pus exudes from the incisors of the lower jaw. The soft palate shows an irregular lymphatic thickening; the tonsils are medium-sized and not distinctly abnormal.

The right ear has been numb, following the recent (January, 1914) removal (elsewhere) of three small tumors from the right side of the neck. The paresthesia extends also to the right side of the face, neck and shoulders. For a time, the patient could not rest on his side because it felt "boardlike." Another tumor, removed at the same time, from the left cubital region—which was freely movable from side to side, but not from above downward—caused no sensory disturbances. In March of this year, a "lump" was taken from the right shoulder region; from this the diagnosis of Hodgkin's disease was made and the vaccine prepared (!) following which there remained a numbness over the anterior aspect of the right arm.

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[1] Heidingsfeld: Am. Jour. Dermat., July, 1900.

[2] Thibièrge: Société médicale des hôpitaux de Paris, Feb. 18, 1898; quoted by Lion and Gasne: Bull. et mém. Soc. méd. d. hôp. de Paris, 1904, xxi, 5.

[3] Von Recklinghausen: Ueber die multiplen Fibrome der Haut, etc., Berlin, 1882, (literature).

[4] Thomson, Alexis: Neurofibroma and Neurofibromatosis, Edinburgh, 1900.

[5] Adrian: Centralbl. f. d. Grenzgeb. d. Med. u. Chir., 1903, vi, (literature).

[6] Kerr: Surg., Gynec. and Obst., January, 1914 (extensive bibliography compiled by Dr. von Klein of the Crerar Library).

[7] Wittemann: Med. Klin., 1911, vii, 883.

The most striking feature, from the first glance at the boy, is not the existence of the numerous tumors, but the presence of innumerable diffuse pigment spots of various kinds. The majority of these are freckle-like and distributed chiefly over the trunk; in addition there are seen nevi—in particular, one large one on the anterior abdominal wall—pea-sized bluish areas surmounting small nodules in the skin, and a patch of atypical hair, reddish in hue, the size of the palm of the hand on the left forearm.

The cutaneous and subcutaneous nodes are distributed over the entire body, and vary in size from that of a pinhead to that of a walnut. The largest are in the left cervical region. In the lower cervical region they are massed together like bunches of grapes composed apparently of many hundred tumors on either side. Many of the nodules are associated with a thick firm strand, in most cases coursing centralward from the tumor, in a few peripherally.

An attempt to count the tumors, as a number of writers have painstakingly done, was not made; but it can safely be asserted that they run into the hundreds. No portion of the integument is free from them; a delicate palpation often would reveal a millet-sized node where none was suspected. The large number in the cervical, antecubital, anterior crural and popliteal regions explains the complaint of the boy that moving the arms and legs is painful.

A notable feature of this case is the absence of large skin tumors. The great majority of illustrations accompanying the presentation of these cases show numerous large, sessile, wart-like growths of the skin; in this patient, however, a cursory glance would scarcely reveal an elevated node. Many of the cutaneous lumps are covered with a bluish and bluish-red skin. None gives spontaneous pain, but nearly all are tender to pressure.

As to the remainder of the examination, a few words will suffice. Nodes can be palpated at all the various points where superficial lymph-nodes are ordinarily to be felt. We have assumed (though without the actual removal and examination of any of these nodes) that we have to do with a *generalized* lymphadenitis, and this assumption has further justification in the percussion enlargement of the spleen—from the sixth rib to two fingers below the costal arch—though a definite edge cannot be felt. The significance of these findings will be commented on later.

The organs of the thoracic cavity show several variations from the normal; dulness over the upper sternum and overlapping the margins, particularly to the left (Figs. 3 and 4); and an apex beat and left cardiac border 1 cm. outside the mammillary line with some accentuation of the pulmonic second tone. There are no murmurs. The liver edge is to be felt two fingers' breadth below the costal arch, on deep inspiration, with a smooth surface and sharp edge; on percussion it is not enlarged to the left.

The secondary sexual characteristics are just appearing. Neither testicle is in the scrotum, but they can be pushed down, with little difficulty; the testicles and penis are perhaps small for the age. The reflexes are all present and normal. There is no ankle edema. Examination of the blood (Wittemann[7]) shows: erythrocytes, 5,240,000, hemoglobin, 85, leukocytes, 9,400, distributed as follows: polynuclear neutrophils, 65.5 per cent., lymphocytes, 27.0 per cent., large mononuclears and transitionals 5.0 per cent., eosinophils, 2.0 per cent. and basophils, 0.5 per cent. Practically 90 per cent. of the neutrophils would fall into Classes II and III of Arneth's classification (Dr. Holmes). The Wassermann reaction (blood) is negative (Holmes). The systolic blood pressure is 90 mm.

May 2, a cutaneous tumor (chest wall), a deep tumor (left forearm) the tonsils and the carious molar tooth were removed by Dr. Kanavel. The tonsils were the seat of a chronic inflammation with ulceration (Dr. Zeit). The removal of the node from the forearm furnished a surprise. Before the incision, it was felt as a walnut-sized round tumor, but at operation there was found an egg-sized mass in a fine capsule, composed of several lobes and looking much like a combined fatty and myxomatous tumor of a jelly-like consistency. A careful dissection as to anatomic relations was not made, so that the association of the mass to adjacent nerves was not noted; immediately following the operation, however, partial wrist drop occurred with inability fully to extend the little finger.

Somewhat later there was removed from the left scapular region a tumor made up of convolutions of interwoven strands studded here and there with nodules (plexiform neuroma; *Rankenneurom*).

Microscopically (hematoxylin and eosin [Fig. 5]), the excised tumors showed the picture characteristic of von Recklinghausen's disease—a spongy, myxoma-like tissue with many meshes and without definite structure. Some of the spaces are lined with endothelial cells, but the bulk are formed by protoplasma-poor cells, all of about one size. With this stain the plasma-cells emphasized by Unna[8] are not seen. The Marchi method (Fig. 6) shows bundles of apparently normal axons in the tumor mass (Dr. Ranson).

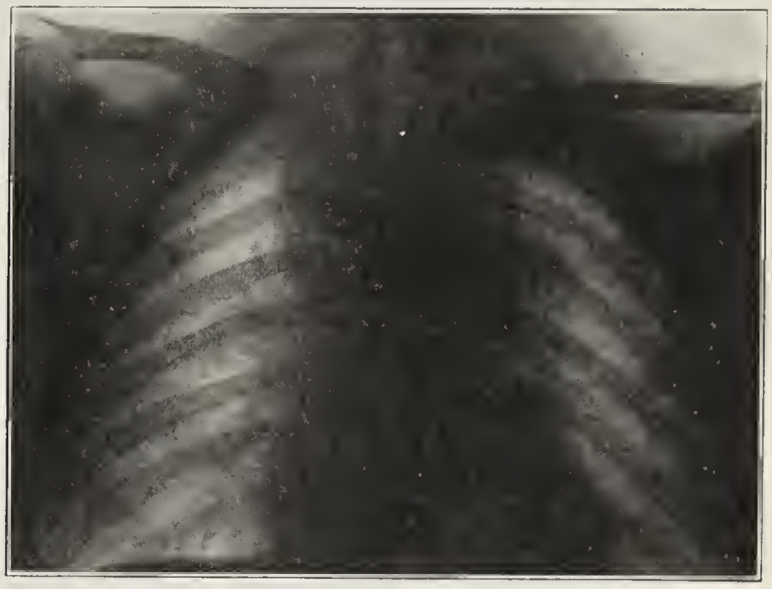

Fig. 3.—Chest, anteroposterior, showing mediastinal mass capping the heart.

That we have to do with a case of neurofibromatosis is clear from the clinical manifestations, surgical sequelae and microscopic examination. The symptoms of the first order (Adrian) are all present, that is, tumors of the skin, tumors of the nerves and cutaneous pigment anomalies. Of the symptoms of the second order, so called—functional disturbances, intellectual and psychic changes, maldevelopment of various kinds, bone changes and the like—there is but little to be seen; and, indeed, in the majority of reported cases they are usually absent or only suggested. The headache and dizziness belong to the group of functional disturbances so far as we have been able to determine, for there is no evidence of an intracranial neurofibroma.

Of intellectual and pyschic anomalies there is no sign. The boy seems normal except for the lymphatic appearance already commented on.

In the category of developmental faults belongs the condition of cryptorchism. Bone changes not infrequently observed, scoliosis particularly, are absent; and there are no trophic disturbances.

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[8] Unna: Fibrome, Histopathologie.

Our patient exhibits, in brief, few findings which have not frequently been commented on by other observers. One unusual feature is the non-critical resemblance to Hodgkin's disease—the appearance of the first nodes in the cervical region, their initial enlargement, the generalized lymphadenopathy, the enlarged spleen, etc. For these we shall offer below a different interpretation. As for the organism cultivated from one of the nodes, we can offer no explanation save that it may bear some relation to bacterial flora not uncommonly present in new growths. Cultures in our laboratory were sterile (Holmes).

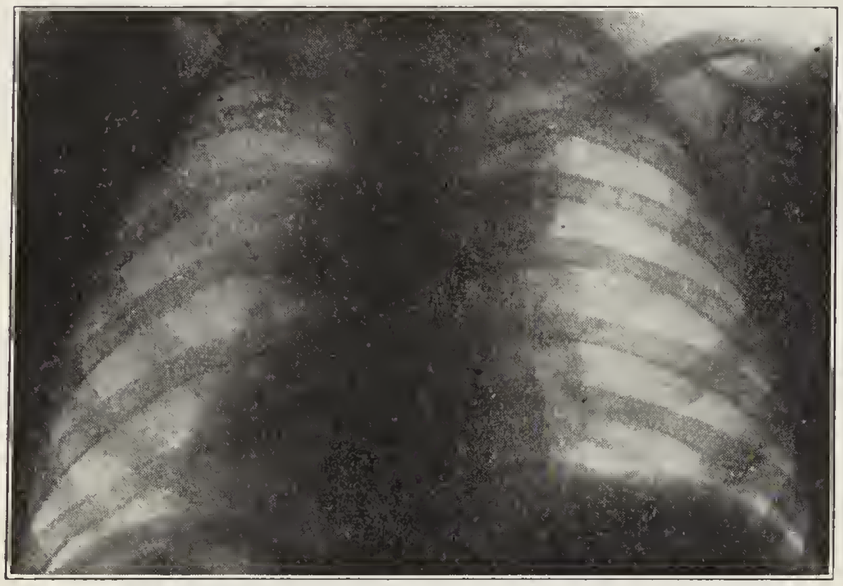

Fig. 4.—Chest, postero-anterior, showing same as Figure 3.

The absence of large cutaneous tumors growing considerably about the skin level may be accounted for by the age of the process; they may be looked for later, or perhaps this is one of the forms which tends to involve the deeper nerve filaments rather than the cutaneous.

There is no congenital, hereditary or familial aspect to this case—a feature so striking in many observations. The patient falls into that rather large class which shows no evidence at birth of the coming condition and begins to develop it at puberty.

As to nomenclature, many observers, notably von Recklinghausen,[3] Adrian[5] and Orth,[9] have taken exception to the name neurofibromatosis as representing incorrectly the nature of the growth. That the growths are not essentially of nervous origin is well known; that they arise from the neurilemma sheaths or from the fibrous investment of certain cutaneous appendages or subcutis or perhaps from both structures, is generally accepted.[10] Their origin from an embryonic nervous tissue has been advocated in late years.[11] Hence the name neurofibromatosis is not apt in that it attributes to nervous tissue proper a false participation in the process. False neuroma is no improvement. Adrian's suggestion of the term "von Recklinghausen's disease" seems to him the best and least open to adverse criticism. French observers generally employ this term.

There remains now the consideration of the many theories put forth from time as to the actual nature of von Recklinghausen's disease. Adrian reviews the ideas held up to the year 1903. All observers who have expressed an opinion on the point are agreed that it is a disease which comes into being through some general impetus; it is a system disease affecting a particular tissue (Verocay[12]). The infectious, the toxic, the traumatic and the sympathetic influence theories are to-day no longer generally put forth, though Pic and Gauthier[13] in 1907 point out the close association of the condition with tuberculosis. We shall refer later to the view of Chauffard and others that the adrenals are affected.

The view most generally advocated and the one best founded is that the condition arises on an inborn tendency—an anlage—which exerts its influence at variable times after birth and leads to the proliferation of the fibrous tissue making up the neurilemma sheaths.

It is our opinion, however, based on certain peculiarities of the case we have reported, on features of cases we have collected from the literature, and on general considerations, that von Recklinghausen's disease belongs to the larger congenital anomaly known as the status thymicolymphaticus sive hypoplasticus. Space forbids our entering in any detail, into the complexities of this condition, to which so much attention has been devoted of recent years.[14] Speaking for the condition in our case are the peculiar lymphatic facies, the hypertrophic faucial lymphatic ring, the generalized lymphadenopathy, the enlarged spleen, the persistent and enlarged thymus, the scanty axillary and pubic hair, the cryptorchism, the small testicles and penis, and the very tendency toward tumor formation —particularly multiple. All of these go to make up the thymicolymphatic and hypoplastic status, or condition of structural inferiority (*Minderwärtigkeit*).

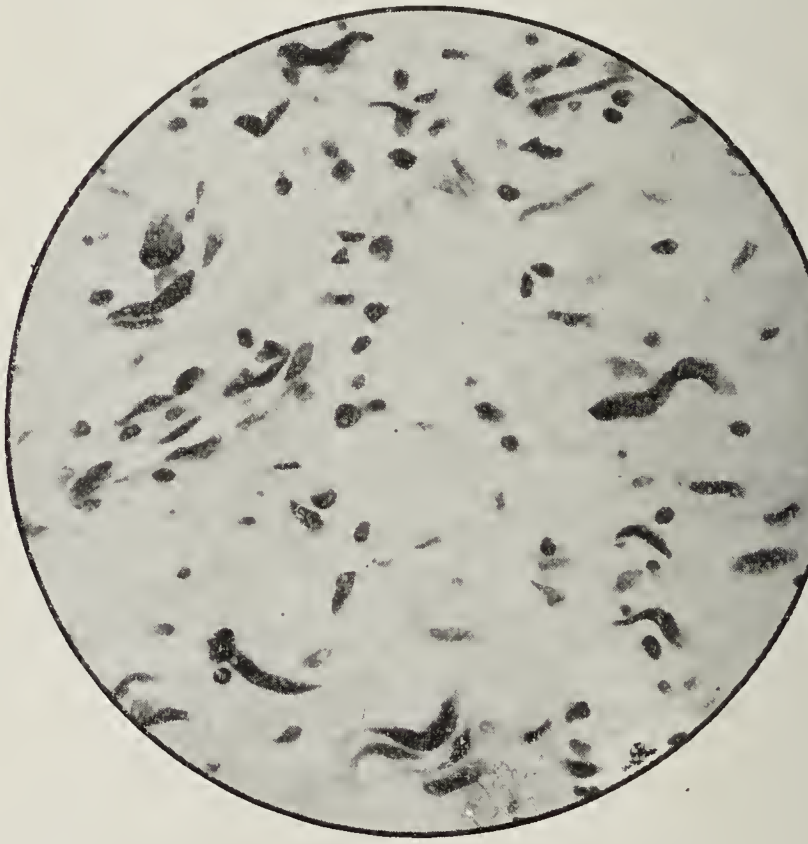

Fig. 5.—Microscopic section of tumor removed from the left forearm, hematoxylin-eosin stain, × 450, showing loosely interwoven texture, marked edema of stroma and cells made up almost entirely of nuclei.

Other observers have not noted this association of the lymphatic status with von Recklinghausen's disease. We have been able, however, to collect from this case or that, one or more recognized attributes of the anomaly. Sabrazès[15] notes the generalized lymphadenopathy, Klinger[16] the absence of pubic hair. Wittemann[7] in his cases observed a mononucleosis regularly. In Ehrmann's[17] case the hands of the patient reached almost to his knees—a disproportion frequently observed in the status lymphaticus. Various malformations are generally looked on as one of the symptoms of the second order belonging to von Recklinghausen's disease. For a compilation of these, we would refer the reader to Adrian's monograph.[18]

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[9] Orth: Deutsch. med. Wchnschr., 1911, p. 473.

[10] Jarisch: Hautkrankheiten, Wien und Leipzic, 1908, p. 810 (literature of this phase).

[11] Kohn: Arch. f. mikr. Anat., 1907, lxx (quoted by Verocay, Footnote 12).

[12] Verocay: Beitr. z. path. Anat. u. z. allg. Path., 1910, xlviii, 1.

[13] Pic and Gauthier: Lyon méd., 1908, cxl, 1148.

[14] Bartel: Status Thymico-Lymphaticus und Status Hypoplasticus, Wien, 1911. Von Neusser: Ausgewählte Kapitel d. klin. Symptomatologie und Diagnostik H. 4. Zur Diagnose der Status Thymico-Lymphaticus, Wien, 1911. Wiesel, Status Thymico-Lymphaticus, in Lewandowsky: Handbuch d. Neurologie, Berlin, 1913, p. 380 (literature).

Very striking in a number of case histories has been the early and unexplained lethal ending after operation on large tumors which offered no technical difficulty. Among such records are cases reported by Piollet,[19] Lambret and Gérard,[20] and Littlewood, Telling and Scott.[21] Though these are not strictly instances of thymic death, they are to be ascribed in all probability to a lack of resistance.

It would appear to us, therefore, that closer examination, in the future, directed particularly to evidence of the presence of stigmata of the status thymicolymphaticus, would furnish convincing proof of the association of the two conditions.

Another phase of von Recklinghausen's disease which has been cursorily treated in the last decade, particularly by French writers, is the influence of the glands of internal secretion in the process. Again we refer to Adrian for assembled instances, up to the year 1903, of involvement of the ductless glands and for symptoms referable thereto. Chauffard and Ramond[22] in 1896 advocated the adrenal theory of the origin of the disease, basing their opinion on the generalized pigmentation, the commonly observed asthenia, gastro-intestinal disturbances and other evidences of adrenal insufficiency. In two of their cases coming to necropsy adrenal changes were discovered, in one an adenoma, in the other atrophy. The adrenal theory, though never of general acceptance, has received a great deal of consideration by many observers.

The majority felt that the association was merely a coincidence. (We would call attention, however, to a recognized pathologic fact, namely, that Addison's disease is almost constantly accompanied by stigmata of the status lymphaticus.) Adrian[5] rejects the adrenal theory, citing the various observations bearing on the relationship. Merk[23] in his case found changes in the left adrenal and cannot entirely disregard Chauffard's view. The chromaffin system was found hyperplastic in Orzechowski's[24] patient. Gabriel[25] and others have observed good results from the use of adrenal extract. Vignolo-Lutati[26] observed a well-developed Addison complex in his case. Revilliod[27] and Pic and Rebattu[28] comment on the frequent association of the two conditions, as do Bourcy and Laignel-Lavastine.[29] Mucous-membrane pigmentation was noted by Oddo.[30]

Thyroid disturbances are also of frequent occurrence. Adrian has gathered several instances of the association of von Recklinghausen's disease and cretinism.[31] Pic and Rebattu[28] found thyroid changes. In one of his cases Ehrmann found a small thyroid, in the other an absence of the gland. It is interesting to note that joint changes are not infrequently present in disturbances of the ductless glands. Preble and Hektoen[32] report a case of von Recklinghausen's disease associated with arthritis deformans. And, furthermore in the latter condition, thyroid extract has been used with favorable results (Midelton,[33] Llewellyn[34]). It is scarcely necessary to recall here the close relationship of thyroid, sexual glands and thymus.[35]

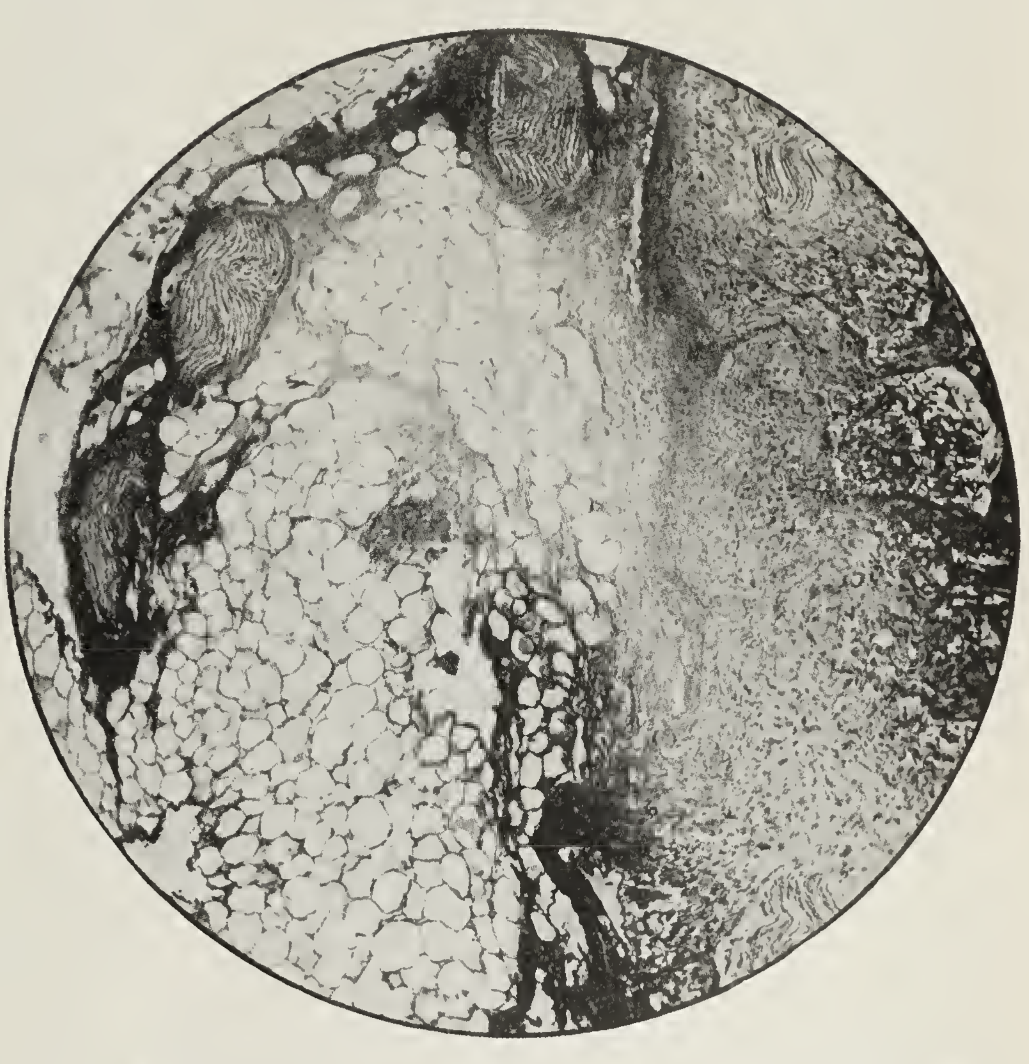

Fig. 6.—Microscopic section of plexiform neuroma (see text) stained by Marchi method, showing bundles of nerve fibers loosely separated by edematous tumor stroma; × 60.

Of the behavior of the thymus we have found no record. Functional sexual disturbances—impotence, frigidity, diminished libido—are noted by Adrian. Orzechowski[24] found ovaries below par. Meige and Feindell[36] note ovarian disturbances. Osteomalacia is very frequently observed, as for example by Gabriel,[25] Klinger,[37] Wechselmann[38] Marie and Couvelaire[39] and Hoisnard.[39] Menstrual anomalies are of frequent record (Adrian).

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[15] Sabrazès: Gaz. hebd. d. sc. méd. de Bordeaux, 1911, xxxii, 591.

[16] Klinger: Berl. klin. Wchnschr., 1912, xlix, 1491.

[17] Ehrmann: Wien. klin. Wchnschr., 1904, xvii, 139.

[18] Adrian: Centralbl. f. d. Grenzgeb. d. Med. u. Chir., 1903, vi, 465.

[19] Piollet: Gaz. d. hôp., Dec. 4, 1902, p. 1345.

[20] Lambret and Gérard: Echo méd. du nord, 1908, xii, 30.

[21] Littlewood, Telling and Scott: Lancet, London, 1905, i, 921.

[22] Chauffard and Ramond: Bull. et mém. Soc. méd. d. hôp. de Paris, 1896.

[23] Merk: Arch. f. Dermat. u. Syph., 1905, lxxiii, 139.

[24] Orzechowski: Ztschr. f. d. ges. Neurol. u. Phychiat., 1912, xi, 231.

[25] Gabriel: Berl. klin. Wchnschr., 1911, xlviii, 133.

[26] Vignolo-Lutati: Monatschr. f. prakt. Dermat., 1911, lii, 51.

[27] Revilliod: Thèse de Genève, 1900, quoted by Vignolo-Lutati, Footnote 26.

[28] Pic and Rebattu: Lyon méd., 1907, i, 636.

[29] Bourcy and Laignel-Lavastine: Bull. et mém. Soc. méd. d. hôp. de Paris, 1905.

[30] Oddo: Revue neurol., 1905, xiii, 412.

[31] Strohmeyer (1844) and Schuh (1851, 1854), quoted by Adrian (Footnote 5), p. 461.

[32] Preble and Hektoen: Am. Jour. Med. Sc., 1901, cxxi, 1.

[33] Midelton: Practitioner, lxxxviii, 11, 80.

[34] Llewellyn: Edinburgh Med. Jour., 1904.

[35] Lampé: Deutsch. med. Wchnschr., 1912, p. 1127. Capelle: Beitr. z. klin. Chir., 1908, lviii, 353.

[36] Meige and Feindell: Revue neurol., 1903, p. 157.

[37] Klinger: Berl. klin. Wchnschr., 1912, xlviii, 1400.

[38] Wechselmann: Dermat. Stud., 1910, xx, 133.

[39] Cited by Adrian (Footnote 5).

Schlesinger,[40] in his case found an associated tetany. This is the only recorded instance of parathyroid involvement. We have found no reference to pancreas changes except for a normal organ in Orzechowski's[24] case.

Numerous observers record the simultaneous involvement of the hypophysis. Prognathism without further comment is a common observance. Acromegaly and von Recklinghausen's disease are chronicled by De Castro,[41] Wolfsohn and Marcus,[42] Cushing,[43] Nicholas and Favre[44] and others. Thomas[45] observed fingers and lower jaw suggestive of acromegaly; Feindel and Frounard,[46] an acromegalic skull contour. A tumor of the sella turcica was present in Spillman's[46] case; in Mossé and Cavalie's[46] an enlarged and hard hypophysis was found. Piollet[19] records pituitary insufficiency and also acromegalic facies and extremities.

That von Recklinghausen's disease may be a manifestation of pluriglandular disturbances has been noted by several writers, notably Pic and Rebattu,[28] Orzechowski[24] and De Castro.[41] Their deductions have been based, however, on symptoms shown by their own cases; no observer, to our knowledge has heretofore collected extensive data from the literature showing the not uncommon occurrence of ductless gland disturbances in generalized neurofibromatosis.

Direct proof that von Recklinghausen's disease is part of the larger congenital anomaly known as the status thymicolymphaticus, or that the secretions of the ductless glands play a part in its production, cannot of course be adduced. The close interweaving of the lymphatic status and ductless gland affairs is well known; and considerable evidence is at hand to indicate that von Recklinghausen's disease is a manifestation of both. This is particularly understandable if one admits the embryonic nature of the tissue forming the tumors.

Note: Dercum's disease, adipositas dolorosa, has received considerable attention of late as an internal secretion disorder. In its tendency toward multiple tumor formation it resembles von Recklinghausen's disease. It is of interest to note that in the latter, lipomas are of frequent occurrence.[47]

30 North Michigan Avenue—122 South Michigan Avenue.

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[40] Schlesinger: Mitt. d. Gesellsch. f. inn. Med. u. Kinderh., in Wien, 1911, x, 124.

[41] De Castro: N. iconog. de la Salpêtrière, 1912, xxv, 41.

[42] Wolfsohn and Marcus: Berl. klin. Wchnschr., 1912, xlix, 1088.

[43] Cushing: The Pituitary Body and its Disorders, Philadelphia, 1912, p. 148.

[44] Nicholas and Favre: Lyon méd., 1910, cxiv, 786.

[45] Thomas: Bull. Johns Hopkins Hosp., 1903, xiv, 204; also Maryland Med. Jour., 1903, xlvi, 82.

[46] Cited by Wolfsohn and Marcus (Footnote 42).

[47] Cushing (Footnote 43): Von Stejskal, Mitt. d. Gesellsch. f. inn. Med. u. Kinderh., 1907, vi, 153.

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**Vis Medicatrix Naturae.**—One of the most interesting facts in regard to the regenerative capacity—Nature's power of healing—is its adaptive distribution. It tends to occur in those animals and in those parts of animals which, in the natural conditions of their life, are particularly liable to non-fatal injury. Long-legged and lanky animals like crabs and star-fishes usually show much of it; a self-contained globular animal like a sea-urchin shows little. The chameleon is one of the few lizards which cannot regrow its tail, for it keeps it safely coiled around the branch. Another very interesting fact is that what is regrown is not always quite true to pattern—the crab does not always get an eye for an eye, but it may be an antenna for an eye. The lizard does not always regrow its own tail, but its grandfather's, so to speak.—J. Arthur Thomson, *Brit. Med. Jour.*

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# SPONTANEOUS SUBARACHNOID HEMORRHAGE

## A CONTRIBUTION TO THE SUBJECT OF MENINGEAL HEMORRHAGE*

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Aside from the rare pachymeningitis hemorrhagica interna, and the traumatic pial hemorrhage, there has been no recognition of a spontaneous subarachnoid hemorrhage. Although this symptom-complex has been elaborately studied by Froin,[1] Chauffard,[2] Vigneras[3] and others among the French writers, little or nothing is mentioned of the subject by the American, English or German writers, Starr, Dana, Mills, Oppenheim, Finkelburg in Lewandowsky's[4] handbook, Schultze in Nothnagel's "System," and others.

In describing meningeal hemorrhage, Gowers does not differentiate the subarachnoid from the other forms, but his description corresponds very closely to this type. He says:

> Blood may be extravasated, (1) outside the dura, separating it from the bone; (2) beneath the dura; (3) beneath the arachnoid between it and the pia (subarachnoid hemorrhage). . . . Meningeal hemorrhage occurs apart from visible aneurysm under the same conditions as hemorrhage elsewhere in the brain. . . . In some cases in young adults, the occurrence of meningeal hemorrhage is probably indicated by intense pain in the head at one spot, soon followed by coma and convulsions. The cases are remarkable as occurring without other exciting cause than exertion in a hot room, or sometimes after a meal.

Froin, in 1903, collected some reports of cases of subarachnoid hemorrhage but he included the traumatic form among them. Ehrenberg[5] was the first to separate the spontaneous subarachnoid hemorrhage from the rest. He reports two of his own, and analyzes twenty-seven other cases. He distinguishes two varieties, the one in which the meningitic picture predominates; the other an apoplectic onset, with coma or cerebral type. Since then Babinski[6] and Jumentie report two cases, and Forsheim[7] one.

Two of my cases illustrate the apoplectic form, and one the meningitic.

Case 1.—B. Y., white, aged 59, married, was admitted to the hospital April 25, 1910. Present illness began suddenly with vomiting, headache, pain in the epigastrium and stupor. (I had no opportunity of studying this case clinically and the notes taken are very meager.) The pupils were equal, reacted to light and accommodation. There were no paralyses. The patient died the next day. No clinical diagnosis was made.

At necropsy, examination of the brain showed a hemorrhage beneath the arachnoid at the base. It extended forward to the frontal lobes, and surrounded the optic chiasm. It covered the under surface of both the pons and the medulla. It covered the inferior surfaces of both hemispheres of the cerebellum. The convexity of the brain was free from hemorrhage. There was no evidence of meningitis or thrombosis. The skull showed no sign of fracture. Sections were taken from the pons and medulla for microscopic examination. Hemalum-fuchsin and Weigert stains were used. Sections of the cerebellum and the pons stained with hemalum-fuchsin showed a considerable collection of red blood-cells beneath the pia-arachnoid. The pia showed a considerable round-cell infiltration of the lymphocytic type. The blood-vessels showed periarteritis and endarteritis. The infiltration of cells around the vessels was intense in places. In two of the vessels in the pons the lumen was almost occluded. In the medulla, similar pathologic changes were noted. Sections of the pons and medulla stained with the Weigert showed a slight border-zone degeneration.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Froin: Thèse de Paris, 1904. Froin and Boidin: Gaz. d hôp. 1904, p. 9.

[2] Chauffard and Boidin: Presse Méd., 1903.

[3] Vigneras: Thèse de Paris, 1908.

[4] Lewandowsky: Handbuch de Neurologie.

[5] Ehrenberg: Hygeia, 1912, p. 849.

[6] Babinski: Soc. méd. d. hôp. d. Paris, 1912.

[7] Forsheim: Deutsch. Ztschr. f. Nervenh., 1913, xlix.

The pathologic picture was that of a syphilitic meningitis. Clinically, this case is interesting despite the meager notes, in that the onset is characteristic of this form of hemorrhage, and shows the apoplectiform type of seizure. The meningitic origin of the hemorrhage was only discovered on microscopic examination. As far as I can learn, no microscopic study of this condition has ever been reported.

The second case also illustrates the apoplectic form with coma.

Case 2.—H. M., an unmarried colored laundress, aged 19, with negative family history and previous medical history, two months ago had pelvic trouble, said to have been inflammation of the tubes. Patient had been well until the morning of her admission to the hospital, when she came home, complaining of severe headache, with vomiting. She went to her room, where she was found unconscious several hours later. She was admitted to the hospital that evening, Dec. 13, 1913, where she died several hours later.

Physical examination showed a young, well-developed girl. The pupils were unequal. There was rigidity of the neck, and spasticity of the lower limbs. Both patellar tendon-reflexes were increased. Babinski was present on both sides. The upper limbs were flaccid. The respirations were of the Cheyne-Stokes' type. Temperature, 100.4 F. The urine analysis showed no albumin, sugar or acetone. Microscopic examination, negative. The diagnosis of subarachnoid hemorrhage was made, and lumbar puncture advised. The possibility of a meningitis was also considered. Hysteria was easily excluded. Uremia and diabetic coma were excluded by the urinary findings. There was no history or visible sign of trauma. Lumbar puncture was made, and the fluid came out drop by drop, somewhat rapidly, until twenty c.c. were collected in two tubes, and both showed a diffuse red color, considerably lighter than pure blood. On standing, no clot was to be noted in either tube, only a slight granular sediment. Centrifuging the fluid showed the supernatant fluid of a yellow color. The Wassermann reaction was negative. No relief followed the withdrawal of the fluid. One hour later the patient died. No necropsy was permitted.

*Summary.*—A young woman, previously healthy, suddenly was seized with headache, vomiting and unconsciousness. The symptoms present were rigidity of the neck, and spastic paralysis of the lower limbs with Babinski. Clinical diagnosis, spontaneous subarachnoid hemorrhage.

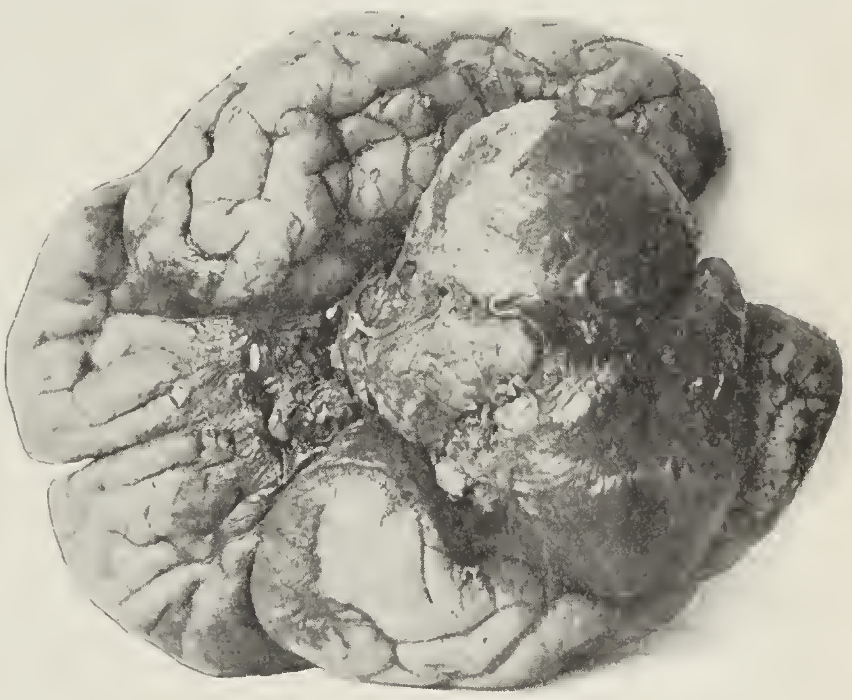
Case 3.—Italian stone-worker, aged 23, family history and previous medical history negative, one month ago complained of fever, backache, headache and general weakness. He was treated in an Italian hospital for two weeks, and was apparently cured, though still weak. Five days after his discharge he suddenly developed severe headache, pain in the back of the neck and persistent vomiting, and was admitted to the hospital, complaining of his head and pain in the back of the neck.

Examination showed a young man of fair nutrition, somewhat apathetic. When questioned, patient pointed to his head. Pupils were equal, reacted to light and accommodation. There was rigidity of the neck. The limbs showed no paralysis. Kernig's sign was present. The knee-jerks were absent. There was no Babinski or ankle-clonus. The eye report showed deviation of the eyes to the right, though at times they moved to the median line. The media were clear, the disk margins slightly hazy, but the vessels were neither engorged nor tortuous. Ear examination was negative. Temperature 100 to 101.4. The lungs showed slight impairment. The diagnosis was subarachnoid hemorrhage with tuberculous diagnosis was subarachnoid hemorrhage with tuberculous meningitis. Lumbar puncture was ordered.

At necropsy, the viscera showed a general miliary tuberculosis. The brain showed miliary tubercles scattered over the convexity and at the base along the vessels. Besides a subarachnoid hemorrhage at the base extended from the optic chiasm over the peduncles, slightly involving the temporal lobes on each side, and also over the pons and cerebellum. The hemorrhage was most marked in the right cerebellopontile angle. There was some hemorrhage over the vermis. The convexity of the cerebral hemispheres was free from hemorrhage.

*Summary.*—Young man. History of general weakness for a month. Five days before admission to the hospital was seized with headache, vomiting and meningitic symptoms. Examination showed rigidity of the neck, Kernig's sign, loss of knee-jerks, no Babinski, no paralysis of the limbs. Clinical diagnosis; tuberculous meningitis, with subarachnoid hemorrhage. Pathologic Summary: General miliary tuberculosis of lungs, liver, kidney and brain, subarachnoid hemorrhage.

There is some doubt whether this case should be classified among the pure forms of subarachnoid hemorrhage. The picture here is rather that of a secondary complication in the course of a miliary tuberculosis.


Area of hemorrhage in Case 1.

The sudden onset in these cases with meningeal symptoms, with or without coma, the disproportion between the onset, severity of the symptoms, and the range of temperature, the presence of hemorrhage in the cerbrospinal fluid, will usually differentiate this condition from other cerebral states. It may not always be possible to prove a primary meningitis as the underlying factor. The etiology has been variously ascribed to sunstroke, as in Bouquet's[8] case, in which the patient, following prolonged exposure to the sun, suddenly developed rigidity of the neck, headache and Kernig's sign. Lumbar puncture showed hemorrhage. Relief of symptoms followed immediately. Disturbed or aberrant menstrual function was the cause, according to Follet and Chevrel[9] and Gaillard and Boyé,[10] in their cases.

Follet and Chevrel's patient, a domestic, aged 21, was suddenly seized during the menstrual period with weakness, and fell to the floor unconscious. She awoke with intense headache and had persistent vomiting with symptoms of meningeal irritation. Lumbar puncture showed hemorrhage.

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[8] Bouquet: Ref. Rev. Neurol., 1909.
[9] Follet and Chevrel: Gaz. d. hop., 1910, p. 547.
[10] Gaillard and Boyé: Bull. Soc. méd. d. hôp d. Paris, 1909, p. 1268.

In Gaillard and Boye's case, there was no evidence of trauma, syphilis, exposure, emotion or infection. The interesting fact was noted that an amenorrhea following oophorectomy had existed for one year.

Violent emotion is attributed as the cause in one of Froin's cases, overexertion in Forsheim's. Syphilis was noted in seven of the cases reported. Tuberculosis was present in one of Froin's cases, and in my Case 3. Chronic nephritis and hemophilia have also been reported as causes. It is possible that meningitis will prove to be the underlying cause in the majority of cases. Babinski believes that syphilitic meningitis plays a distinct rôle in these cases.

The localization of the hemorrhage at the base, so characteristic of this form of hemorrhage, would add further support to the meningitic origin.

While the symptomatology in the cases I report and those found in the literature shows the ordinary signs of meningeal irritations and coma, several features impress themselves. Headache was localized either over the occiput, or at the base of the neck. Sometimes the pain radiated down the spine and in one of my cases was localized over the epigastric region. Rigidity of the neck and Kernig's sign were present in two of my cases, and one or other of these symptoms was present in all cases reported. This meningitic picture is most favorable for recovery.

Coma may be the initial symptom, followed either by death or the appearance of meningeal symptoms. In a few cases a condition of recurring coma was noted. All the fatal cases showed coma.

Jacksonian convulsions were noted by Froin and Babinski. In these cases the hemorrhage had escaped to the cortex and clots were found over the motor area. The reflexes were increased in some cases and absent in others. Babinski's sign was also inconstant. The paralytic symptoms were manifold, according to the extent and localization of the hemorrhage.

Ocular palsies, conjugate deviations of the eyes, paralysis of one or more limbs, transient hemianopsia, all have been noted.

The value of lumbar puncture in these cases is apparent. In all suspected or doubtful cases in which lumbar puncture was performed, the presence of blood without clot was obtained. Many of these cases were confirmed by necropsy. In fact, according to Follet and Chevrel and others, no diagnosis can be made without lumbar puncture.

The accidental puncture of a vessel during the procedure may be distinguished, according to Milliet, from subarachnoid hemorrhage by collecting the cerebrospinal fluid in three tubes. The former will show streaks of blood in the clear fluid, also the presence of clot, while the latter is a diffuse red throughout, and shows no clot. Centrifuging the fluid will also show the supernatant liquid of a yellow or slightly reddish tinge. According to Widal,[11] this is the only pathognomonic sign of hemorrhage. In only one other condition, that of jaundice, is this sign to be found.

Lumbar puncture has proved of therapeutic value in some of the cases, relief following one or more punctures.

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[11] Widal: Presse méd., 1903.

## ABSTRACT OF DISCUSSION

Dr. William W. Graves, St. Louis: Doubtless not a few cases of subarachnoid hemorrhage occur in general paretics. I doubt not that some cases of the stuporous meningitic type are seen by the practitioner and are considered to be of a hysterical nature. Dr. Leopold has emphasized the value of the diagnostic aids which have come to us and which have given such excellent results during the last few years, especially lumbar puncture, and this, with the suddenness of the onset, usually in the comparatively young, make the diagnosis almost certain in the condition described by him.

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# PRIMARY CARCINOMA OF THE LUNG

## SECOND COMMUNICATION

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Two recent advances have helped to make this subject one of growing importance. These are (1) the rapid development of intrathoracic surgery, and (2) the introduction of radio-active substances in the treatment of malignant disease. In this condition, as in malignant disease generally, any therapeutic procedure that is intended to be curative must be applied before the process has gone too far. Early diagnosis of this disease is, therefore, one of its most important practical considerations. With a better realization of the importance of this clinical entity, perhaps the problem of early diagnosis would be made easier. It is with the idea of stimulating a more general interest in this type of pulmonary disease that a new case is now added and attention briefly called to the more important clinical features of such cases.

The literature on this subject is growing rapidly. In 1912 Adler[1] published his admirable monograph, which is, indeed, the best and most comprehensive work written on this subject thus far. He succeeded in collecting the records of 374 cases of primary lung carcinoma. In the same year I[2] submitted a very limited review of the literature with the report of an additional case. The particularly noteworthy feature in that case was the occurrence of a focal encephalomalacia, probably due to metastatic emboli to the cerebral vessels supplying the affected areas. In that year Weil[3], also, reported a case in which necropsy revealed primary adenocarcinoma of the right bronchus with extension to the pericardium and metastases to the peribronchial glands, liver, right adrenal and pancreas; and Ephraim[4] reported several cases in which a clinical diagnosis was made by means of bronchoscopy. It is generally understood, however, that for accurate statistical purposes only authenticated cases should be included, and such cases are those in which microscopic evidence as to the nature of the neoplasm is obtained. For the same reason such clinical reports as those of Swan[5] and of Freeman[6], the latter with very incomplete and the former with no pathologic data, are open to justifiable criticism.

In 1913 appeared Weller's[7] collection of what he termed "the authenticated cases of primary carcinoma of the larger bronchi," including a new case described by himself. Only those cases were included which met the requirements he set up as the criterion of authenticity. A total of only ninety such cases was found by him in the literature. Other important contributions during that year were those of Buchstab[8] and von Wiczkowski.[9] The former reported eleven cases in a series of 2,089 necropsies during 1910-1911. In three of the cases the clinical diagnosis was correctly made. In the fourth, empyema was suspected and thoracotomy revealed two abscesses, but necropsy showed a carcinoma that seemed to have its origin in a thrombus. The latter observer gives briefly the data of six additional cases, in four of which the diagnosis was made *intra vitam*. Hermann's[10] case report must also be mentioned. Here was present an associated chronic cicatrizing pulmonary tuberculosis, and it is Hermann's[10] belief that the irritation produced thereby stimulated the formation of the lung cancer. This coincidence of primary carcinoma with tuberculosis in the lung has been noted often enough to arouse considerable discussion on the significance of this association.

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[1] Adler: Primary Malignant Growths of the Lungs and Bronchi, 1912.

[2] Edlavitch, B. M.: Primary Carcinoma of the Lung, The Journal A. M. A., July 20, 1912, p. 181.

[3] Weil: Fortschr. a. d. Geb. d. Röntgenstrahl., 1912, xix, 2; abstr., Jahresb. f. Chir., 1913, p. 453.

[4] Ephraim: München. med. Wchnschr., 1912, lix, 1517.

[5] Swan: Med. Rec., New York, 1913, lxxxiv, 888.

[6] Freeman: New York Med. Jour., 1913, xcvii, 350.

[7] Weller, C. V.: Primary Carcinoma of the Larger Bronchi, Arch. Int. Med., March, 1913, p. 314.

During the present year an article by Inada[11] entitled "Primary Carcinoma of the Lung" has already appeared in Japanese literature. For obvious reasons this publication can only be referred to here. Two other cases added this year are the one reported by Marschik,[12] who stated that in his case the postmortem finding was such that he was led to believe that a resection of the lung might have been possible, and the one reported by Schlesinger and Schopper,[13] who describe a case of primary bronchial cancer with metastases to the mediastinal glands, the stomach and intestines.

From such a large mass of accumulated reports it must be evident that carcinoma originating in the lung or bronchi is not at all as rare as has been generally thought. Indeed, is it not rather to be expected that an organ so rich in epithelial elements should not infrequently be the seat of epitheliomatous or carcinomatous change? Certainly it seems that the condition occurs often enough to warrant what Adler[1] says, that the physician "may meet it any day in his practice among the young, as well as among the old."

The following case is from the private practice of Dr. G. W. McCaskey, to whom grateful acknowledgment is made for permission to report it.

*History.*—The patient, Mrs. C. A. C., aged 64, came in complaining of shortness of breath, cough, and swelling of her right arm. The family history and past history were entirely unimportant. Her illness began about one year ago when she "caught cold" and began "to hack and cough." Since then she had been troubled with this persistent cough. At times the paroxysms of coughing seemed to bring on nausea. She had had several slight hemorrhages after coughing. There was considerable expectoration, and raising of sputum seemed to give some relief. Lately she became markedly dyspneic, and felt as if she "filled up" after exertion. She said there had been no pain, no night sweats, no headache and no fever. During the past four or five weeks her right arm gradually became swollen. She had lost about 50 pounds in weight since the onset of her trouble.

*Examination.*—Patient was pale and emaciated. Her voice was weak and very hoarse, and there was marked inspiratory dyspnea. There was definite puffiness of the face and very marked diffuse edema of the right forearm and hand. The right clavicle was bulging, and situated posterior to it was a hard swelling, the contour of which could not be determined. Over this region there was some tenderness. The chest was asymmetrical, the left side being distinctly fuller than the right. Characteristic board-like dulness was obtained on percussion over the upper half of the right chest both in front and behind. Over this dull area the breath sounds were harsh and a few moist râles were heard. Pulse was regular, 92; temperature, 99.4; blood-pressure (systolic), 110. Nothing of importance otherwise was found on physical examination. The urine contained some albumin with a few hyaline and finely granular casts. Phenolsulphonephthalein output was 46 per cent. The blood examination showed hemoglobin 70 per cent., 4,150,000 red cells, 14,800 leukocytes, and a differential count as follows: polynuclears 79, small lymphocytes 15, large mononuclears 3, transitionals 2 and eosinophils 1 per cent.

The patient entered Hope Hospital, and remained until December 11. A Roentgen examination of the thorax was made by Dr. B. P. Weaver, whose report was, "Whole mediastinum and right apex occupied by a growth which also extends to left of aortic border."

The sputum was abundant, mucopurulent and very often bloody, and on repeated examination no acid-fast bacilli could be found. It should here be added that two examinations of the sputum made in the laboratory of the State Board of Health before the patient came under our observation were also reported as "negative."

*Clinical Diagnosis.*—In view of the similarity of many of the clinical features of this case to the one which I previously observed and reported, the true nature of this condition was readily recognized and a clinical diagnosis promptly made of "carcinoma pulmonis."

December 11, patient left the hospital, but returned six days later. Her condition continued to become progressively worse. Jan. 2, 1914, her sputum was streaked with bright-red blood, and this continued more or less until exitus. January 6 she had a very bad "choking spell" that was almost fatal. The following day her breathing became worse and finally respiration ceased at 10 p. m. that day.

*Necropsy* (abstract).—Lab. No. 14-3, Jan. 8, 1914, 8 a. m. Anatomic diagnosis was primary carcinoma of lung, involving right upper lobe; metastasis to bronchial lymph-nodes and to right axilla; chronic bronchitis and tracheitis; arteriosclerosis; chronic nephritis; diffuse edema right upper extremity.

The upper half of the right lung was so firmly adherent to the chest-wall and mediastinum that it was removed with great difficulty and was torn. The right upper lobe felt hard and nodular, and on section was found to be studded with grayish opaque nodules and masses. A small cavity about 1.5 cm. in diameter, filled with cheesy-like material, was present in this lobe. Much grayish, stringy, mucopurulent débris could be squeezed out on pressing this lobe. A very small calcareous nodule was found on the pleural surface near the apex. The glands at the hilum were large, hard and filled with an abundance of greenish-black pigment. There was marked peribronchial and peritracheal thickening. In the right axillary space extending up to the sternal half of the clavicle and the first rib in front and to the scapula behind was found a small, irregular, very soft and friable, granular-looking mass which was intimately attached to the thickened surrounding tissues. Chronic bronchitis and tracheitis, a mild degree of generalized arteriosclerosis, and chronic nephritis were the only other pathologic changes worthy of note. The brain and cord were not examined (permission not granted).

*Microscopic Examination.*—Histologic study showed that the lesion was a squamous-cell carcinoma and that it originated from the bronchial mucous membrane. The cancer cells seemed to be everywhere grouped into a definite alveolar

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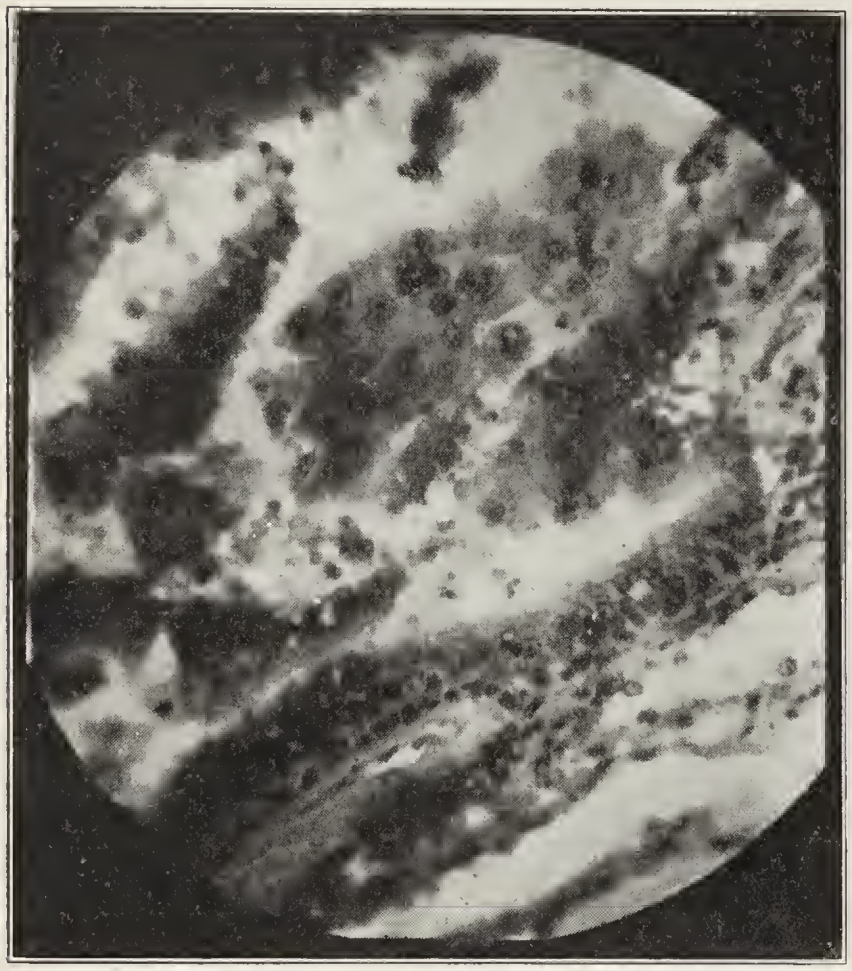
8. Buchstab: Zentralbl. f. Chir., 1913, xl, 412.
9. Von Wiczkowski: Wien. klin. Wchnschr., 1913, xxvi, 1067.
10. Hermann: Ztschr. f. Krebsforsch., 1913, xiii, No. 3; abstr., Berl. klin. Wchnschr., 1914, li, 78.
11. Inada: Sei-i-Kwai Med. Jour., 1914, xxxiii, 1.
12. Marschik: Abstr., Berl. klin. Wchnschr., 1914, li, 141.
13. Schlesinger and Schopper: Abstr., Berl. klin. Wchnschr., 1914, li, 335.

arrangement. Degenerative changes in these cells were numerous so that there resulted considerable necrosis in areas of the tumor tissue. In one of the microscopic fields a very important change was observed at a certain point. Here was found a very definite proliferation or overgrowth of the epithelial cells lining the bronchiole and the characteristic change in the morphology of the proliferating cells from the cuboid to the squamous variety. Here seems to have occurred the metaplasia in the epithelium of the mucous membrane from the normal to cancer. This field is shown in the photomicrograph reproduced here. Cancer cells were also found in the lymph-channels of the affected areas and in the lymph-nodes at the hilum. The mass in the axilla was made up of the same type of cell. No microscopic malignant changes were found in the other tissues examined.

### SYMPTOMS AND SIGNS

Evidently these must vary with the size, situation, rate of growth, manner of extension and other characteristics of the neoplasm. Rarely cases have occurred in which there were no symptoms pointing to malignant disease of the lung. A characteristic symptomatology can not, therefore, be said always to occur. However, certain definite symptoms do seem to be fairly constant in very many of the cases. These are (1) shortness of breath, (2) cough, (3) pain, (4) weakness and loss of weight, and (5) pressure symptoms.



Photomicrograph showing (1) normal cuboid epithelium lining the bronchial wall; (2) its proliferation and transformation into the cancerous type of cell, and (3) the typical squamous carcinoma cells present in the bronchial lumen.

1. *Dyspnea.*—This most distressing symptom seems to be quite frequent. The shortness of breath usually progresses, and as it becomes more severe the patient's physical condition becomes correspondingly more desperate.

2. *Cough.*—This troublesome symptom also seems to occur very often. It has been described as a "dry" cough and as a "moist" cough. It is nearly always continuous, so that it has been termed "tussis perpetua." With it there is almost always an abundant mucopurulent, bloody expectoration. The degree of hemoptysis may vary, the sputum at times showing only a few red streaks, at others a liberal amount of bright-red blood.

3. *Pain.*—Pain on the affected side or even radiating to the other side and to distant parts occurs frequently. It is said to be not so severe as the pain in an acute inflammatory pleuritis, but when it does occur it seems to be persistent and does not disappear with the onset of a pleural effusion. This symptom has not been noted in the two cases which I have observed.

4. *Weakness and Loss of Weight.*—Progressive loss of weight and of strength seem to be very important clinical features.

5. *Pressure Effects.*—The symptoms caused either by extension of the tumor to adjacent structures or by its metastases must obviously be extremely variable. The change in voice, the inspiratory dyspnea and the edema of the right arm noted in the case here reported are typical examples. Such symptoms when present may be very helpful or, on the other hand, somewhat confusing in the diagnosis.

In the clinical findings perhaps the most important is that typical dull percussion note which has been characterized as *bretthарte Dämpfung.* With this are associated various changes in the voice and breath sounds. The pulse-rate is increased in spite of the absence of fever and night sweats. The presence of a bloody pleural effusion—in which diagnostic cells have been found—and the absence of acid-fast bacilli in the sputum are very important as aids in the differential diagnosis. Rarely such bacilli have been found in the sputum, for the coincident occurrence of pulmonary tuberculosis has already been noted. Obviously in cases in which tubercle bacilli are found the diagnosis becomes complicated and correspondingly more difficult.

### DIAGNOSIS

In cases exhibiting these clinical manifestations where the possibility of primary lung cancer must be considered, the following practical methods should help in establishing a definite diagnosis, namely, (1) roentgenoscopy, (2) bronchoscopy, and (3) thoracotomy.

1. *Roentgenoscopy.*—In obscure thoracic conditions Roentgen examinations are now being regarded as almost indispensable. As a diagnostic aid they are very helpful when used in association with all the other obtainable data. Wiczkowski's[9] warning should here be emphasized: "They (Roentgen rays) should be used merely to confirm the clinical diagnosis." The fact that a large number of cases were diagnosed *intra vitam* by Otten[14] and by Müser[15] with the help of the Roentgen ray demonstrates the great practical value of such examinations.

2. *Bronchoscopy.*—The bronchoscope may be used successfully in determining the nature of the pathologic process. Direct examination of the affected parts or the excision of a fragment of diseased tissue for microscopic study whenever possible can give information that will "clinch the diagnosis." By this method Karrenstein[16] was able to observe the tumor arising from the right main bronchus of his patient, and von Schrötter[17] in a case of his excised a piece of the tissue for microscopic examination. Ephraim's[4]

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[14] Otten: Fortschr. a. d. Geb. d. Röntgenstrahl., 1906, ix, 369.

[15] Müser: Mitt. a. d. Hamburg. Staatskrankenanst., 1906-1908, viii, 111.

[16] Karrenstein: Charité-Ann., 1908, xxxii, 315.

[17] Von Schrötter: Ztschr. f. klin. Med., 1907, lxii, 508.

success in diagnosing clinically primary lung carcinoma by bronchoscopic examination has already been noted.

3. *Thoracotomy.* — An exploratory thoracotomy ought to have the same diagnostic value as an exploratory laparotomy. Among the cases in which thoracotomy has been done may be mentioned several of those in Müser's[15] series, the case of Martens,[18] who reports a *Probeinzision* under local anesthesia in a case of advanced lung carcinoma, and one of Lawrason Brown's,[19] who describes a case in which thoracotomy revealed mediastinal sarcoma where mediastinal abscess had been suspected. Adler[1] urges exploratory thoracotomy quite emphatically. With the advance of local anesthesia and thoracic surgery this diagnostic procedure ought to be looked on more favorably and be unhesitatingly used whenever indicated.

### TREATMENT

Early recognition and complete extirpation of the cancer offer the only hope of permanent cure in this desperate disease. Until very recently there really was no curative treatment for these most unfortunate patients, but since the rapid development of intrathoracic surgery the operative removal of an entire lung or a portion of it has become feasible. In addition to the lung resections reported by Ders, Lenhartz, Küttner and Sauerbruch, quoted by Weller,[7] there are on record still a few more. Müller[20] resected the right upper lobe of a 3-year-old child for suspected malignancy. He declares that a circumscribed tumor recognized early should by all means be removed. Kümmell[21] removed the entire right lung in a case of lung cancer presumably originating in the bronchial glands. As a preliminary to the operative surgery of the thoracic cavity he advises the production of artificial pneumothorax. Friedrich[22] reports the resection of entire lobes for the cure of pulmonary tuberculosis. Willy Meyer[23] states that sixteen cases of pneumonectomy for bronchiectasis have been reported until now. It must be admitted that resection of the lung is a rather difficult technical procedure, but if the operative difficulties can be overcome in the individual case, a successful outcome is to be expected. Much of the lung substance may be removed without disturbing the respiratory function, for according to the recent experimental investigations of Bernard and Mantoux[24] this function can be carried on with the lung capacity reduced to as low as one-sixth of its normal volume. Therefore, in the present state of intrathoracic surgery, no operable case of primary lung carcinoma should be allowed to go on to inevitable death when by operative interference it may be possible to clean out the neoplastic tissue and thus effect a permanent cure.

Radium, thorium and mesothorium are now being tried out in the treatment of malignant disease. Marked success seems to be attained in some instances; in others the results seem to be complete failures. In superficial cancers they often seem to be absolutely curative, but in deep-seated lesions they do not yet seem to do much good. In one of Müser's[15] cases and in Marschik's[12] case these emanations were tried, but in neither case did they do any good. Schittenhelm and Betz[25] believe that with their newly introduced "deep" technic these agents may become more beneficial in the treatment of internal diseases. The general opinion at present is that it is too early as yet to pass final judgment on the value of these new powerful physical agents. Should they be found by further experience capable of producing the beneficial results that are hoped for, the use of these radio-active emanations in the treatment of this condition will follow as a matter of course. In the present state of our knowledge the question whether or not to use them in a case must be decided by a consideration of all the aspects of that particular case.

### CONCLUSIONS

1. It must be emphasized that primary carcinoma of the lung as a distinct pathologic and clinical entity is by no means as rare as it is generally thought to be.

2. The group of symptoms that should be regarded with suspicion are progressive dyspnea, persistent cough, hemoptysis, pain, weakness and loss of weight, and pressure or metastatic effects.

3. Signs of solidification of the lung, the presence of hemorrhagic pleural effusion, tachycardia without fever, and the absence of tubercle bacilli in the sputum are the significant objective findings.

4. A diagnosis based on these clinical phenomena may be established by the use of the Roentgen rays, the bronchoscope or thoracotomy.

5. Resection of the affected parts by radical operative procedure should be attempted in every operable case.

6. Radio-active emanations may prove to be of therapeutic value and, if possible, can be given a thorough trial whether surgery is resorted to or not.

Physicians Defense Building.

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# THE USE AND ABUSE OF THE TONSILS *

JULIUS H. COMROE, A.M., M.D.
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It is with no small degree of tremulous fear and daring courage that I stand before so critical and representative an audience in an attempt to defend a helpless organ, whose guilt has been so uniformly acknowledged—an organ which has been accused of being an accessory to the fact in causing so many and varied pathologic conditions, of more or less serious nature, and which has, through professional and lay expressions, and even through the public press, been condemned without a full and impartial hearing. A sparkling hope that the innocent may be prevented from suffering with or for the guilty, that in the future, many tonsils may be rescued from unnecessary and undeserved slaughter, makes me feel privileged to present some relevant facts, which, alone, make true science. This hope is augmented by the successful escape from a somewhat similar series of indiscriminate massacres of the ovary, the appendix, the inferior turbinates, etc.

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[18] Martens: Jahresb. f. Chir., 1911, p. 311.
[19] Brown: Bull. Johns Hopkins Hosp., 1914, xxv, 112.
[20] Müller: Jahresb. f. Chir., 1911, p. 370.
[21] Kümmell: Jahresb. f. Chir., 1911, p. 320.
[22] Friedrich: Jahresb. f. Chir., 1911, p. 323.
[23] Meyer, Willy: Ann. Surg., 1914, lx, 7.
[24] Bernard, Le Play, A., and Mantoux, C.: Capacité pulmonaire minima compatible avec la vie, referred to in The Smallest Lung Capacity Compatible with Life, editorial, THE JOURNAL A. M. A., June 7, 1913, p. 1794.
[25] Schittenhelm and Betz: Deutsch. med. Wchnschr., 1914, xl, 1147.

* Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

There is not a fraction of a doubt that the removal of the tonsils is ofttimes indicated, and that innumerable good and commendable results have been accomplished by such surgical treatment. It is not, therefore, my object to attempt either to condemn or to revolutionize modern tonsil surgery in general, or to ridicule the professional attitude toward such procedure, but rather to endeavor to crystallize the views of both radical and conservative internists into such a form as will aid each of us in solving this complex problem. Probably no other instance exists in which so many human lives are involved by such a solution. In 1912, there were in Philadelphia 37,000 recommendations to parents made by medical inspectors that these organs receive immediate attention, constituting about 26 per cent. of the recommendations for all defects in that period. In New York City, during the same year, medical inspectors had supervision of 825,000 schoolchildren, and reported that approximately 30 per cent. of the children examined had hypertrophied tonsils. As it was the desire of the department to fix a certain standard as to when operation should be recommended, a letter was sent to a number of eminent specialists in nose and throat diseases asking them what, in their opinions, were the exact indications for the operative treatment of enlarged tonsils, and it is a very significant fact that no two of these specialists agreed as to the exact details. The question therefore involves the disposition of the tonsils in millions of children throughout the United States, and should be sufficiently vital to demand most exacting consideration.

## PROTECTIVE FUNCTIONS

It is a universally accepted scientific fact that every organ is of essential value and service to the organism which contains it, and the organ under discussion has not yet been proved to be valueless. The faucial tonsil is a natural organ; some questions pertaining to its physiology have been definitely settled; judgment on others is so uniform as almost to force conviction, and some remain yet to be solved. From their important anatomic position, the ensemble of adenoid bodies—more commonly known as the Waldeyer ring—situated at the very entrance of the respiratory and digestive passages, would be looked on as constituting the first line of defense against microbic invasion, and of this group, the tonsils stand out most prominently. Primarily, it is the function of all lymphatic glands to act as a sort of filter for lymph. Thus, should the lymph contain any foreign substances or toxic material, these tend to be halted within the gland, not alone because of the anatomic peculiarities of the structure, but also on account of the cellular hyperplasia resulting from the irritation. This so-called barrier action is a most important one and the tonsils are arranged like sentinels to guard the most vital orifices of the human organism—a function that has been most clearly demonstrated by Bizzozero, Ruffer, Ribbert and others. Particles of dust, cells from malignant tumors, dead or disintegrating cells, red blood-corpuscles, bacteria, etc., which, in any manner, get into the lymph-vessels, are harmlessly carried along until a lymph-node is reached, where they are, in part at least, deposited among the trabeculae of the sinuses, or are taken up by the phagocytic cells, while the filtered lymph passes on and out of the efferent vessels.

This most important physiologic function has been attributed to the tonsils by Delafield, Pruden and many others. Stöhr has demonstrated that the tonsils are actually traversed by an enormous number of leukocytes, which exercise a kind of migration toward the oral cavity; actually demonstrating the passage of leukocytes through the tonsillar epithelium into the buccal cavity, which is a medium for various micro-organisms. This continual and normal condition is often termed Stöhr's phenomenon. Likewise, Metchnikoff found that when he removed a particle of mucus from the surface of the tonsils of a person in good health, he always could demonstrate that it contained numerous leukocytes, especially small phagocytes, filled with micro-organisms of all kinds. Gulland, Kümmel and Lindt have also demonstrated the presence of these leukocytes. Phillip Stöhr states that the leukocytes that wander through the epithelium of the tonsils are so numerous that they may be regarded as the most fertile source of the salivary corpuscles. Von Chiari agrees in this opinion and thinks that the tonsils serve for the purpose of the formation of leukocytes. Adami and Nicholls, as a result of careful investigations, concluded that while the tonsils are themselves, to a limited degree, phagocytic through their lymphoid cells, polymorphonuclear leukocytes in considerable numbers make their way from the blood-vessels to the surface of the tonsils, through their epithelial lining. These leukocytes are strongly phagocytic and their marked activity suggests that the tonsils form one of the most powerful barriers of the body against invasion by infectious micro-organisms.

Brieger has proved that the lymphocytes in the tonsils, though devoid of ameboid movement, enter the epithelium of their own accord, and he has demonstrated their presence in lesser or greater degree in the epithelium of the tonsils. We have to assume a vehicle which carries the lymphocytes from the adenoid tissue; this vehicle is the lymphatic juice which fills all the crevices between the tissue, and which reaches the surface through the finest canals. The cause of the movement of the lymphatic current, according to Brieger and Goerke, is to be found in a difference of pressure in the afferent lymph-vessels and the free surface. Increase of blood-pressure increases the force of the lymphatic current and carries along a larger amount of lymphocytes to the surface of the tonsils. In addition to the specific effect attributed to these lymphocytes, the current, *per se*, militates against the entrance of germs, as the mechanical effect of the current, assisted by the lymphocytes, washes away the infectious micro-organisms.

Harrison Allen, Kayser, Pluder, Schoenemann, George B. Wood, Ashby and others state that the tonsils undoubtedly form lymphocytes in the germinating follicles. Retterer also proved the existence of clear germinating centers in the follicles of the tonsils, and demonstrated the presence of lymphatic vessels occupying the entire follicular mass of organs, forming a system of closed lymphatic canals which do not open into the connective tissue reticulum by stomata or by their extremities. Piersol found that the epithelium covering the folds and the depressions of the tonsillar surfaces is completely infiltrated with lymphoid cells, and that great numbers of the cells escape into the oral cavity to become the salivary corpuscles, of which the tonsils are a most important source.

J. Gordon Wilson states that plasma-cells are derived from these lymphocytes, and are engaged in removing and utilizing cell material which has broken down, and that their presence, instead of indicating disease, proves that the tonsils are physiologically active. D. J. Davis concurs in this view of the origin of plasma-cells, although Unna thought that they were derived from the connective tissue.

Hugh T. Ashby, in an analysis of three thousand cases of enlarged tonsils (and adenoids) concluded that they enlarge in order physiologically to augment the lymphoid tissues of the body. In every fetus, after the age of 6 months, it was possible to detect some adenoid tissue, but in infancy and early childhood, the lymphatic structures were at their maximum—exactly at a time when enlarged tonsils (and adenoids) are very common. I have presented sufficient evidence, therefore, that the tonsils are generators of lymphocytes and leukocytes, which are undoubtedly present in large numbers, where they may even be stored up for ready action, when called on, and that in addition to their specific bactericidal action, a constant stream of lymph from the depth to the surface exists, which alone would protect by counteracting an invasion of micro-organisms and by clearing the surface of these undesirable settlers. This may be termed the protective function of the tonsils.

### DEFENSE AGAINST ABSORPTION

In addition to actually opposing the systemic invasion with infectious micro-organisms by this protective action of the cellular elements, it has been conclusively proved that the tonsils, *per se*, actually antagonize the entrance to their interior of infectious germs. Hodenphyl conducted a careful series of experiments dealing with the phenomena of absorption at the level of the tonsils and found that the epithelium prevented absorption, which latter became possible only when the epithelium was destroyed, or when the substances employed were introduced under the epithelial bed, and that even under these conditions, it was extremely slow. He employed fatty substances, powders and colored solutions as recommended by Labbé and Sirugue. He found that the epithelium had the same protective rôle at the level of the tonsils as at the level of the buccal mucosa, and that the crypts augmented its extent.

Even in the normal state, the epithelium is more or less irritated, and above all, at the bottom of the crypts, where Labbé and Sirugue have observed the incessant phenomena of cellular renovation. This epithelial irritation is due to the presence of dust, or small foreign bodies, which penetrate into the crypts; it is due above all to the existence at the surface of the tonsil of pathogenic microbes, which are found incessantly in the normal state. These micro-organisms, although in the crypts, are nevertheless on the exterior of the tonsil, and it is the defensive reaction of the epithelium which prevents their penetration. It is only when the epithelium is destroyed that they penetrate, and even in such instances, they rarely pass beyond the epithelial bed.

The leukocytes have not solely a phagocytic rôle in regard to microbes, but they destroy also their toxins by producing antitoxins, nucleins and oxydases, which have positive chemotoxic properties in regard to white corpuscles, and exalt their vitality.

The phenomena of absorption at the level of the tonsils have been further studied experimentally in the laboratory of Landouzy, at the Laennec Hospital, by Marcel Labbé and C. Levi-Sirugue. They found that the epithelium prevents absorption, and their findings were in full accord with those of Hodenphyl.

Jonathan Wright, in a personal communication (to Wendell C. Phillips) writes:

> My experiments seem to furnish conclusive evidence that under normal conditions, bacteria do not penetrate the epithelial layer of the tonsil in sufficient numbers at least to set up disease. Yet, we know from clinical experience that nerve shock from fractures, hemorrhage, nasal operations, uric acid, sudden cold, etc., produces systemic changes whereby infection is more easy and more dangerous. I believe that the mechanism causing surface infection is a chemicophysical change set up by impulses carried along the sympathetic nerves. This produces an alteration in the surface tension existing normally between the bacterial denizen of the tonsillar crypt and the epithelium which lines it. By virtue of this change, the living pathogenic agent enters the system.

Wright contends that the selective action of the tonsillar epithelium on dust and bacteria, whereby the latter at times are prevented from passing, and at other times are allowed to pass freely into the lymph-channels, is not fully explainable by the laws of immunity, but rather that we are dealing with living matter which obeys the laws of heredity and evolution, and that adaptation by natural selection is the only tenable explanation as to why the protoplasm of the epithelial cells of the tonsillar crypts acts in such a manner.

Clinically, we know that infectious germs, especially streptococci, are commonly found in the tonsillar crypts of healthy individuals, and that autoinfection is probably essential to induce follicular tonsillitis. Wright also adds the significant comment that it is a highly interesting sequence of events which takes place between the time the micro-organism floats on food or in the air into the tonsillar crypts and the time it reaches the deep lymphatics which drain the tonsil—which he regards as a biologic process of a physicochemical nature, affecting the surface tension of the colloids, of which the cells and bacteria are composed.

The defense of the tonsil against absorption, which has been so conclusively demonstrated experimentally, has been exhibited clinically by most observers, notably Jacobi, Fränkel, Goerke and others, who attributed the general mildness and low mortality-rate of tonsillar, as compared with other diphtherias, before the days of antitoxin, to this specific defense. It is simply remarkable how many and varied pathologic conditions are found by pathologists to exist, strictly confined to the tonsil, that are not found elsewhere by the internist—again adding clinical evidence of the defensive action of these organs.

### OTHER FUNCTIONS OF THE TONSILS

*Internal Secretion.*—Escat believes that the faucial tonsils have not for their only functions those above enumerated, but that they also possess a physiologic and biologic function, due to an internal secretion. With Allen, he agrees that the tonsils secrete a principle, the exact nature of which it has been difficult to determine, but which may be useful in the development and to the growth of the individual, and probably to the growth of the skeleton. Masini believes also that the tonsils are the seat of an internal secretion, somewhat similar to that of the suprarenal gland, and he succeeded in producing an increase in the arterial pressure by injecting many animals with an extract of tonsils. E. L. Shurley subscribes to the presence of this internal secretion. Leto discovered fuchsinophil cells in the human tonsils, a similar to those which Schridde found in the thymus gland. He states that their origin is not known, but they may develop from the perivascular tissue, and in his opinion, they have a secretive function.

*Lubricant.*—Frank E. Miller emphasizes the importance of the value of the tonsils as a lubricant. The frequency with which atrophic pharyngitis follows tonsillectomy adds clinical evidence relative to the necessity of this function, and John H. Johnson further endorses this point of view.

*Voice.*—That the tonsils possess important mechanical, acoustic and phonetic functions very few will deny. Their consistence, shape, size and presence or absence give structural variation to the resonance cavities, and create as well as determine differences in individual timbers of the voice. They play an important rôle in tone formation, and the excellent work of Faulkner along these lines is invaluable. J. Price Brown and many others have reported a large number of cases in which the singing voice had been practically destroyed by tonsillectomy.

*Immunity.*—Digby asserts that by a process of continual autovaccination, the tonsils (in common with the solitary follicles of the intestine, Peyer's patches and the vermiform appendix) protect the body against chance infection. By chemotaxis, all bacteria in the vicinity are attracted through the overlying epithelium into the lymph-nodule. This bacterial attack, invited into the region most favorable to the defensive mechanisms of the body, is nearly always repulsed; lymphocytosis takes place and a great excess of specific bateriolysins and antitoxins are also produced, which enter the general system and combat the attack at a more vulnerable point. Thus, immunity against disease is acquired without the individual having apparently had the disease. The same theory is advanced by Packard, who holds that the micro-organisms of acute inflammatory rheumatism are streptococci weakened through this action of the tonsils, and that otherwise we would observe septic diseases oftener. Mackenzie also endorses the existence of this function.

### REMOVAL OF THE TONSILS

It is not within the province of this paper, nor will the time allotted permit me to enter into a discussion of the tonsils in their relationship to other diseases. The quartet comprising tonsillitis, rheumatic fever, endocarditis and chorea is almost classic. In addition, competent observers have considered the tonsils as a focus from which may be disseminated tuberculosis, diphtheria, empyema of the nasal sinuses, septic joints, gall-bladder disease, appendicitis, gastric ulcer, urethritis, etc. But we also agree that the uterus, breast and stomach constitute the organs which become the seat of the vast majority of malignant growths which produce metastases, and yet no one has had the courage to suggest wholesale removal of any of them as a prophylactic measure. Furthermore, we must not lose sight of the fact that the removal of the tonsils is not so simple a matter as is commonly supposed. Although a large number of deaths, complications and sequelae never reach the medical press, very recent literature from the pens of skilled and experienced specialists gives evidence of many deaths and complications resulting from serious hemorrhages, local traumatic disturbances, gangrene, diphtheria from auto-infection, infection of the middle ear, surgical shock, asphyxia, hyperpyrexia, general septicemia, surgical emphysema, pulmonary infarct, septic infection of the lungs and its serous membranes and also of the cervical glands, latent tuberculosis in the lungs and adjacent glands, status lymphaticus, serious disturbances of the nervous system, amygdalotomy rash, etc.

With these various well-confirmed expressions before us, who can conscientiously refuse to enter a most energetic protest against operative intemperance, and to place himself on record as considering the indiscriminate removal of the normal tonsil an absolutely inadmissible proceeding? We cannot and must not be guided by any rule of thumb, but must carefully study and consider each case as an individual entity. Very few will dispute the propriety of tonsillectomy: (1) when these organs greatly interfere with respiration and thus lead to insufficient oxygenation of the blood; (2) when they are actually diseased beyond repair, or (3) when there is no reasonable doubt as to their being, directly or indirectly, an etiologic factor in the production of disease. But the size of the tonsil is by no means a pathologic symptom; a small tonsil may prove more harmful than a large one, and yet size is frequently considered one of the chief indications, if not the chief indication for removal. The Bureau of Child Hygiene, in New York, has established the following very practical standard as a guide to its medical inspectors, namely, that no case was to be considered a true hypertrophy of the tonsils, unless the hypertrophy was such as to interfere with the nutrition of the child, or to cause secondary disturbances, interfering with its health, and incidentally with its school progress.

In conclusion, it is my firm belief that the tonsils were put into the throat of man with good, and not evil intent, to serve a physiologic rather than a pathologic purpose, and that the normal tonsils have physiologic, chemical and phonetic functions which should not be indiscriminately eradicated.

259 South George Street.

### ABSTRACT OF DISCUSSION

Dr. John Zahorsky, St. Louis: The tonsils are necessary, not only for the production of immunity to the child, but for protection to the air-passages. Removing tonsils for repeated attacks of tonsillitis, is often followed by recurrent attacks of bronchitis. The tonsil protects the air-passages, not perfectly but in a large measure. I do not advise the removal of tonsils before the child is 10 or 12 years of age, unless there are definite pathologic signs for their removal. I even go so far as to say no tonsil should be removed without a consultation of the pediatrist and the nose and throat specialist. I think adenoids protect the middle ear instead of causing middle-ear trouble. Unless they are so large that they interfere with respirations I would not advise their removal. We get middle-ear disease when the adenoids or tonsils are defective or when they are so large that they obstruct. When adenoids obstruct the postnasal space, they should be removed, but some tissue should be left as a protection.

Dr. Thomas S. Southworth, New York: This paper is an indication of the fact that time is training us on this question of the "slaughter" of tonsils. In my experience in the dispensary in New York, more than half the cases sent in from the schools with the statement that the tonsils needed removal, were sent back because there was no good reason for their removal. One thing in Dr. Comroe's paper I will comment on. There is a great deal in literature referring to the tonsillar structures as a ring of lymph tissue which is the first line of defense of the pharynx. It reads in many cases as though this comparatively small area was in some way able to reach out for bacteria as they pass down the throat and seize and destroy them. The tonsil itself seems very vulnerable to disease. If the tonsil has any defensive power it is through some form of internal secretion. If it acts as a sentinel a hypertrophied tonsil would be infinitely more valuable because it would present a much greater area for defense.

Dr. J. H. Comroe, York, Pa.: The chief reason I was so desirous of presenting the tonsil question before this Section, as Dr. Zahorsky has hinted, was to stimulate better teamwork among the general practitioners, pediatrists and laryngologists. I have heard it frequently stated by nose and throat specialists that they themselves wished for this; that they ofttimes were compelled to carry out the specific instructions of the family physician against their own better judgment. Conversely, these same specialists have urgently advised the immediate removal of the tonsils when either the general practitioner or the pediatrist recommended noninterference. There is no absolute standard as to what constitutes a "normal tonsil." Each case must be considered as an individual entity. It is my belief that the tonsil is spoken of as the direct etiologic factor in systemic disease in too many instances. If I can drive just one point home, especially among general practitioners, namely, that the tonsil should be studied more carefully in relation to each patient, and that its removal should never be indiscriminately considered, I will feel that I have accomplished my chief purpose.

# THE RELATION OF HEAT TO THE MORBIDITY AND MORTALITY OF INFANTS FROM GASTRO-INTESTINAL DISEASES*

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During the summer of 1912 we began a study of the influence of climatic conditions, particularly of heat, on the health of infants. In this study a certain number of babies that were coming to the infant-welfare stations of Chicago were observed for a prolonged period of time, by daily visits in their homes. Maximum and minimum thermometers were installed in the babies' rooms. These were read daily, the infants' temperatures taken, notes were made regarding the babies' general condition, the number of passages in twenty-four hours, and of the general hygienic condition of the homes. In thirty of these homes record was also kept of the humidity. The summer of 1912 was relatively cool, and inasmuch as the results of our observations were inconclusive with regard to any direct influence of heat on the well-being of the infant, it was thought that a renewed study in a more severe summer might give different results.

The work was therefore continued during the summer of 1913. Forty-six cases were studied, the observation of the majority extending over a period of about two months.

As to what should constitute a gastro-intestinal disorder we arbitrarily accepted four or more loose passages in twenty-four hours. All told, gastro-intestinal disorders were observed thirty-nine times in twenty-nine different infants; seventeen infants passed through the entire period without any disturbance whatsoever.

It is impossible here to give a detailed discussion of all of the observations; so the results will be briefly reviewed.

## I. ROOM TEMPERATURE IN RELATION TO TEMPERATURE OF INFANTS WITH GASTRO-INTESTINAL DISORDERS

In the 46 cases studied, 17 infants had no gastro-intestinal disturbance whatsoever, 20 had a single attack, 8 had two attacks, and 1 had three attacks. A tabulation of these disturbances (Table 1) with the infant's temperature and the room temperature on the day preceding and the day of the onset shows that in 14 out of the 39 instances, on the day of or the day preceding the attack, the infant's temperature was 100 F. or over, and in four instances it ranged between 99.5 and 100. Of the 18 infants that showed hyperthermia the room temperature was 90 F. or above in 12 instances and below 90 in 6.

TABLE 2.—INFANTS' TEMPERATURE IN RELATION TO MAXI-INFANT TO ONSET OF DIARRHEA

| No. | Age in Months | Date of Onset | | Child's Temp., F. Day Previous | Child's Temp., F. Day of Onset | Max. Room Temp., F. Day Previous | Max. Room Temp., F. Day of Onset | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | 2½ | July | 30 | 99 | 98 | 84 | 95 | ................ |
| 2 | 3 | July | 11 | 99 | 98 | 78 | 73 | ................ |
| 3 | 3 | July | 26 | 99 | 98.6 | 76 | 82 | ................ |
| 4 | 3 | July | 14 | 100 | 104.2 | 84 | 92 | Died July 22. No care |
| 5 | 6 | July | 28 | 100 | 98 | 86 | 89 | Died July 31. Atrophy. Death in 24 hours. |
| 6 | 8 | July | 24 | 100.4 | 99.4 | 84 | 83 | ................ |
| 7 | 4 | July | 29 | 99.6 | 100 | 94 | 88 | Died July 30 |
| 8 | 7 | July | 5 | 98.8 | 99.2 | 100 | 96 | Died July 20. No care |
| 9 | 10 | July | 23 | 99.4 | 99.2 | 98 | 96 | ................ |
| 10 | 10 | Aug. | 6 | 99.4 | 99 | 100 | 102 | ................ |
| 11 | 5 | Aug. | 7 | 98.6 | 100 | 82 | 78 | ................ |
| 12 | 3 | July | 19 | 99 | 98.6 | 84 | 84 | ................ |
| 13 | 3 | June | 28 | .. | 98 | .. | 93 | Died July 14. No care. Overfed by Father. |
| 14 | 3½ | July | 26 | 97 | 97 | 84 | 78 | Died July 31. Ac. Intox. in atrophy |
| 15 | 9½ | July | 29 | 99 | 99.2 | 92 | 92 | ................ |
| 16 | 5½ | Aug. | 2 | 99 | 99 | 88 | 86 | Careless mother |
| 17 | | Aug. | 16 | 99 | 99.6 | 84 | 94 | ................ |
| 18 | 9 | Aug. | 4 | 98.6 | 99.4 | 95 | 96 | 31 in 48 over 90 F. |
| 19 | | Aug. | 25 | 99.4 | 99.6 | 84 | 88 | ................ |
| 20 | 10 | July | 9 | 99.8 | 100 | 100 | 96 | Careless mother gave melon |
| 21 | 5 | July | 31 | 100 | 100.2 | 84 | 85 | ................ |
| 22 | 8 | July | 19 | 99 | 99 | 76 | 82 | ................ |
| 23 | | July | 31 | 100 | 100 | 90 | 88 | ................ |
| 24 | 4 | July | 7 | 99 | 99 | 94 | 90 | ................ |
| 25 | 4 | Aug. | 25 | 98 | 101 | 89 | 92 | 36 in 46 over 90 F. |
| 26 | 6 | July | 11 | 99.2 | 98 | 91 | 75 | .. ............ |
| 27 | 8 | Aug. | 10 | 99.6 | 98 | 89 | 91 | ............ |
| 28 | | Aug. | 23 | 97.1 | 97 | 84 | 78 | ................ |
| 29 | 7 | July | 1 | .. | 98.6 | .. | 88 | Loose movements for 2 months |
| 30 | 12 | Aug. | 20 | 98.6 | 98.4 | 89 | 90 | ................ |
| 31 | 10½ | Aug. | 9 | 98.8 | 99.8 | 84 | 92 | ................ |
| 32 | | Aug. | 20 | 98.6 | 100.2 | 92 | 82 | ................ |
| 33 | 6½ | July | 21 | 99.6 | 100.2 | 82 | 85 | 22 in 42 over 90 F. |
| 34 | | Aug. | 11 | 100 | 98.8 | 101 | 94 | ................ |
| 35 | 8 | July | 7 | 99 | .. | .. | 90 | 34 in 42 over 90 F. |
| 36 | | Aug. | 2 | 98 | 100 | 98 | 94 | ................ |
| 37 | 6 | July | 9 | 98.4 | 99.2 | 108 | 98 | 43 in 44 over 90 F. |
| 38 | | July | 21 | 99.4 | 99 | 96 | 110 | 37 in 44 over 95 F. |
| 39 | | Aug. | 8 | 100 | 100 | 100 | 108 | ................ |

Of the 21 cases that had no fever at onset the room temperature was 90 or above in 13 instances and below 90 in 8, showing that the proportionate number of instances in which the room temperature was above 90 F. was just about the same in those cases with fever as in those without.

Of those cases in which the room temperature did not go above 90 F. 5 infants had a temperature of 100 or more, 1 infant had a temperature of 99.6 and 8 infants had no temperature above normal.

As in the preceding, this summary shows no definite relation of high room temperature to infant hyperthermia and gastro-intestinal disturbance. The average room temperature of the day before and the day of the onset of the dyspepsia was 89 F., in both instances. As seen from Table 1, the room temperature varied from 73 to 110 F., and with temperatures as high as seen in Table 1, it would seem likely that the room temperature on the day of the onset was responsible for the gastro-intestinal upset; over against these figures, however, must be set the total number of times in each case that the maximum room temperature exceeded 90 F. without any hyperthermia. For instance, in Cases 18, 25, 33, 35 and 37, in which of a total of 222 maximum room temperature readings, 156 showed a maximum room temperature above 90 F., the infant had no fever.

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* From the Otho S. A. Sprague Memorial Institute Laboratory of the Children's Memorial Hospital.

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TABLE 2.—INFANTS, TEMPERATURE IN RELATION TO MAXIMUM AND MINIMUM ROOM TEMPERATURES

| | Infants' Temperature | | Maximum | | | Minimum | | |
|---|---|---|---|---|---|---|---|---|
| Case | 100 to 101 | 101+ F. | 90+ F. | 86 to 90 F. | 85 F. | 80+ F. | 76 to 80 F. | 75 F. |
| 1 | 3 | .. | .. | .. | 3 | .. | 3 | .. |
| 2 | 3 | 1 | .. | 3 | 1 | 1 | .. | 2 |
| 3 | 4 | .. | .. | .. | 4 | .. | .. | 4 |
| 6 | 1 | .. | .. | 1 | .. | 1 | .. | .. |
| 8 | 3 | 2 | 4 | 1 | .. | .. | 2 | 3 |
| 9 | 1 | 1 | .. | 1 | 1 | .. | .. | 2 |
| 10 | 1 | 2 | 3 | .. | .. | .. | 1 | 2 |
| 11 | 1 | .. | 1 | .. | .. | 1 | .. | .. |
| 12 | 2 | 1 | 1 | 2 | .. | .. | 1 | 2 |
| 14 | 1 | .. | .. | 0 | 1 | .. | .. | 1 |
| 15 | 4 | .. | .. | 1 | 3 | 1 | 2 | 1 |
| 21 | .. | 1 | .. | .. | 1 | .. | .. | 1 |
| 23 | 2 | 1 | 2 | 1 | .. | 1 | 1 | 1 |
| 24 | 1 | .. | 1 | .. | .. | .. | .. | 1 |
| 25 | 4 | .. | 3 | .. | 1 | .. | .. | 4 |
| 26 | 3 | 1 | 3 | .. | 1 | .. | 3 | 1 |
| 27 | 2 | .. | 1 | 1 | .. | | .. | 2 |
| 28 | 3 | .. | .. | 1 | 2 | .. | .. | 3 |
| 29 | 1 | 2 | 1 | .. | 2 | .. | .. | 3 |
| 31 | .. | 4 | 3 | 1 | .. | 1 | .. | 3 |
| 32 | .. | 1 | 1 | .. | .. | .. | .. | 1 |
| 33 | 1 | .. | .. | .. | 1 | .. | .. | 1 |
| 37 | 1 | .. | .. | .. | 1 | .. | .. | 1 |
| 38 | 2 | .. | 1 | .. | 1 | 1 | .. | 1 |
| 41 | 1 | .. | .. | .. | 1 | .. | .. | 1 |
| 42 | 1 | .. | .. | .. | 1 | . | .. | 1 |
| 43 | 1 | 2 | .. | .. | 3 | . | .. | 3 |
| 44 | 3 | .. | 2 | .. | 1 | 1 | .. | 2 |
| 45 | 2 | .. | 2 | | . | 2 | .. | .. |
| 46 | 3 | 1 | 4 | .. | . | 2 | .. | 2 |
| Total | 55 | 20 | 33 | 13 | 29 | 12 | 14 | 49 |

With reference to the incidence of dypepsia it is seen by examination of the dates of onset that there is a fairly even distribution of the cases throughout the summer, with a slight bunching of the cases during the hot spell at the end of July (six cases in four days) and a similar grouping (six cases in five days) early in July, just during and after a drop of 25 degrees in the outdoor temperature. Carelessness on the part of the mother was charted in five cases.

### II. FEVER IN THE INFANT IN RELATION TO HIGH MAXIMUM AND MINIMUM ROOM TEMPERATURES

Leaving out of consideration those cases of fever associated with diarrhea, there remain seventy-five instances in which the infant's temperature rose to 100 F. or above.

A summary of this series as given in Table 2 shows that the maximum temperature was 90 or over in 33 instances, between 85 and 90 in 13 and below 85 in 29 instances.

The minimum temperature was 80 or over in 12 instances, between 75 and 80 in 14 and below 75 in 49 instances.

Here again it is evident that there is no constant relationship between fever in the infant and high room temperature.

### III. HIGH MAXIMUM ROOM TEMPERATURE IN RELATION TO HYPERTHERMIA IN THE INFANT

The analysis of the cases from this point of view is to serve as a further control on the relationship of heat to the incidence of dyspepsia, as well as on the relationship of fever to high room temperature. One hundred room temperatures over 95 F. were tabulated, as seen in Table 3. A summary of the tables is as follows:

Of the 100 maximum room temperatures, 46 were between 95 and 99; 44 between 100 and 104 and 10 above 105.

Of the 100 temperatures of the infant, 82 were between 98 and 99.5; 11 between 99.5 and 100 and 7 were over 100.

With room temperature higher than in any other series of cases there were only nineteen instances in which the infant's temperature was abnormal. In over 80 per cent. of the cases the infant, in spite of the high room temperature, could keep its body temperature within the normal range. Here again we see how well the infant can adjust itself to unfavorable circumstances.

TABLE 3.—HIGH MAXIMUM ROOM TEMPERATURES IN RELATION TO INFANTS' TEMPERATURES

| Case | Temperature of Room F. | | | Temperature of Infant F. | | |
|---|---|---|---|---|---|---|
| | 95-99 | 100-104 | 105+ | 98-99.5 | 99.6-100 | 100+ |
| 1 | 4 | .. | .. | 4 | .. | .. |
| 2 | . | 3 | 1 | 4 | .. | .. |
| 3 | 1 | 1 | .. | 2 | .. | .. |
| 7 | 1 | .. | .. | 1 | .. | .. |
| 8 | 12 | .. | .. | 7 | 1 | 4 |
| 9 | 1 | .. | .. | 1 | .. | .. |
| 10 | .. | 1 | .. | 1 | .. | .. |
| 11 | .. | 6 | .. | 3 | 2 | 1 |
| 14 | .. | 1 | .. | 1 | .. | .. |
| 15 | .. | 3 | 1 | 3 | 1 | .. |
| 17 | 1 | 3 | .. | 4 | .. | .. |
| 18 | 1 | .. | .. | 1 | .. | .. |
| 19 | 2 | .. | .. | 2 | .. | .. |
| 20 | 1 | .. | . | 1 | .. | .. |
| 22 | 2 | .. | .. | 2 | .. | .. |
| 23 | .. | 3 | .. | 1 | 1 | 1 |
| 24 | .. | 2 | 2 | 2 | 2 | .. |
| 25 | .. | 2 | 2 | 3 | 1 | .. |
| 26 | .. | 4 | .. | 4 | .. | .. |
| 27 | 2 | .. | .. | 1 | 1 | .. |
| 28 | 1 | .. | .. | 1 | .. | .. |
| 29 | 2 | .. | .. | 2 | .. | .. |
| 30 | 2 | 1 | .. | 3 | .. | .. |
| 31 | 2 | 2 | .. | 2 | 1 | 1 |
| 32 | .. | 3 | .. | 3 | .. | .. |
| 34 | 2 | 1 | .. | 3 | .. | .. |
| 36 | 2 | .. | .. | 2 | .. | .. |
| 38 | 3 | .. | .. | 3 | .. | .. |
| 39 | 1 | .. | .. | 1 | .. | .. |
| 41 | 2 | .. | .. | 2 | .. | .. |
| 44 | 1 | 3 | .. | 3 | 1 | .. |
| 45 | .. | 2 | 1 | 3 | .. | .. |
| 46 | .. | 2 | 3 | 5 | .. | .. |
| | 46 | 44 | 10 | 82 | 11 | 7 |

### IV. THE RELATIONSHIP OF OUTDOOR (WEATHER BUREAU) TEMPERATURE TO ROOM TEMPERATURES

Here I want to call attention merely to the great differences which may exist between room and outdoor temperatures. As a rule, the room temperature reaches its maximum twenty-four hours after the outdoor maximum. In a selection of seventy-five instances of high maximum room temperatures the differences between indoor and outdoor maximum and minimum were as follows:

The indoor exceeded the outdoor maximum by 10 34 times, by 20 35 times, by 30 5 times, by 40 1 time.

The indoor exceeded the outdoor minimum by 10 37 times, by 20 4 times.

These great differences in the indoor and outdoor temperatures are unquestionably maximal. I feel sure that, if we had the street or backyard shade temperatures to compare with the room temperatures, the differences would be very much smaller.

### V. REPORT OF CASES RESULTING IN DEATH

Case 1.—Baby K., aged 3 months. Condition fair. Slight dyspepsia at beginning of observation. Condition grew gradually worse. Mother would not give any care. Observed from July 11 to July 22, 1912.

Case 2.—Baby C., aged 4 months. Weight 8 pounds. Atrophic infant. Severe cough. Dyspepsia began July 26. Grew worse to July 30. Intoxicated. Child died July 31. Observed from July 12 to 31. No maximum temperature over 92 F.; no minimum over 82 F.

Case 3.—Baby F., aged 4 months, weight 8½ pounds. Did well up to within twenty-four hours of death. Died July 30, 1913. Body temperature 100. Maximum room temperature July 28, 94; July 29, 88.

Case 4.—Baby P., aged 4 months. Weight 8½ pounds. Dyspepsia from beginning. From four to eight bowel-movements a day. Mother would not follow instructions. No special symptoms. Child gradually lost ground and died July 28, 1913,

Case 5.—Baby J., aged 3½ months. Weight 5½ pounds. Began observations July 19, 1913. In fair condition. July 28, diarrhea began. Maximum temperature, 89 F. July 29, temperature from 98 to 88 F.; July 30, from 96 to 88. Child died July 31, 1913. Temperature July 28, 100 F.

Case 6.—Baby W., aged 3 months. Weight 7⅛ pounds. Good condition. Mother very ignorant. Diarrhea at onset. June 28, 1913, fifteen stools. Gradually improved on slow increase in food. Father overfed child. Acute exacerbation and death July 14, 1913.

### VI. ANALYSIS OF FATAL CASES

Four of the six deaths occurred between July 28 and 31, the period of greatest heat, the others on July 14 and 22. Of the six cases three must be ruled out because of unwillingness on the part of the mother to follow out instructions. Of these, Infant 1 received no care. The final note by the nurse "Mother seems happy" explains the case. The second, Infant 6, was just recovering from an acute dyspepsia and was still on a restricted diet, when its father decided that it was not getting enough food, with the result that it died the following day.

The third, Infant 4, had a dyspepsia at the beginning of July and continued about the same all through the month. The mother was never willing to follow out instructions. It was overfed most of the time.

Of the three remaining cases, Case 2 must be excluded because in all probability the gastro-intestinal disturbance was parenteral in nature, secondary to a respiratory infection.

This leaves us just two cases, Infants 3 and 5, both atrophic, the latter more markedly so (5½ pounds at 3 months). Infant 3 died within twenty-four hours of the onset of symptoms without any special signs. Temperature was up to 100 F. The maximum room temperatures were 88 the day previous and 94 the day before that, which was not at all excessive when compared with the other maximum temperatures.

In Case 4, the dyspepsia began on the twenty-eighth with the infant's temperature up to 100 and a maximum room temperature of 89. The two days following were very severe. The maximum and minimum room temperatures ranging from 98 to 88 F., and from 96 to 88 F. In this case alone one can see a possible direct relationship of heat to the death of the infant.

In these six cases the direct effect of heat could be responsible in only one or possibly two cases, and even in these there is a question as to the direct relationship of room temperature and infant death.

The factor of faulty diet, which is particularly harmful at this period, we have not mentioned because, in the great majority of our cases, it was carefully supervised and our instructions carried out except in cases which are especially noted.

In this paper it is my object merely to present the results of the last summer's work and in a future publication to go into a detailed report of the work during the past two years. In passing, I want to say that work of this kind has been done before on a small scale by Rietchel, Kleinschmidt, and others, who laid varying emphasis on the direct effect of heat on the child.

As a result of the summer's work the direct effect of heat alone must be considered as of relatively little importance. Infants can tolerate temperatures decidedly above those usually supposed to be harmful, without any bad effects, in fact, can gain in weight during such time.

Nothing is more striking than the difference in the amount of clothing that infants have on when coming to an infant-welfare station; on the first visit they are practically all overclothed, and even after repeated warnings the mothers insist on putting more clothes on their infants than is good for them. It becomes possible, therefore, to have an overheating of the infant with relatively low temperatures, provided that the clothing of the infant is wrong, and, in like manner, with high temperatures, it is almost sure to occur if the clothing of the infant is not properly adjusted. That clothing may act very intensely in producing fatal heat retention has been recently shown by experiments on animals in the Sprague Institute Laboratory of the Children's Hospital by Drs. McClure and Sauer.

There is no question that the summer heat increases the infant morbidity and mortality from gastro-intestinal disturbances. The efforts to explain this fact have been various. The explanations offered are based on the heat alone; or, on heat in conjunction with humidity. Another factor which has been emphasized has been faulty diet. In addition, more elusive factors like the general care of the baby have been taken into consideration. When a relatively large number of cases like the foregoing are studied, when the conditions with regard to heat, humidity and diet are rather uniform, and when in spite of this fact a certain number of infants show ill effects, even at relatively low temperatures, another factor must enter the field permitting of great individual variability. This factor we see in the clothing.

### CONCLUSION

This study would indicate that it is a matter of improper adjustment of the individual to its surrounding temperature, rather than the height of the temperature that helps to swell the total of gastro-intestinal deaths during the summer. Our aim must be to educate the mothers to a realization that, as infants must be kept warm in the winter, so must they be kept cool in the summer.

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## ABSTRACT OF DISCUSSION

Dr. L. T. Royster, Norfolk, Va.: Three years ago I undertook a study of this subject in twenty-six American cities. In no instance have I seen what I consider a proper amount of attention paid to humidity. A child can stand an intense amount of heat, provided there is a proper amount of radiation. In my investigations I found that children in the hottest climates, perhaps, and certainly in the hottest sections of this country, had comparatively little trouble of this kind when near the seashore. To show from a practical point of view what relation humidity has to this question of radiation, in spite of humidity, the children kept near the seashore in Norfolk rarely have trouble of this nature if sent before the first hot spell. When they do have trouble it is invariably following a land breeze, which is slight to start with and not cooling. The humidity and heat on the seashore may be the same, but the greater motion of the air from the almost constant breeze is greater and promotes radiation. Of course we have to take into consideration the question of home environment.

It is an estblished fact that the humidity varies in different parts of the same city. In my private practice I find that the children of the well-to-do do not begin to have the so-called summer diarrheas until several days later than the poorer children in the same community, which to my mind is due to the fact, as brought out by Dr. Helmholz' paper, that the temperature in the poorer houses is much higher than in those of the more well-to-do.

The question of clothing as a preventive measure is an important one. I am accustomed early in the hot season to send out notices to remind my patients to decrease the baby's clothing and covering in hot spells. One of our text-books says a child should wear high neck and long sleeves all summer. Most of my children would die if they did. I advise the mothers to take off all of the baby's clothing except the diaper during the heat of the day. I feel that this question of the relation of heat and humidity should be studied carefully.

Dr. R. M. Smith, Boston: Humidity is certainly a large factor in the causation of digestive disturbances in infants. In our experience in the Floating Hospital, the days with high humidity, whether or not the temperature is much elevated, bring many patients for admission. A word should be said about therapeutics in these cases. These children require little starvation. Favoring the radiation of heat from the body is much more important than the treatment of the digestive tract.

Dr. Charles Douglas, Detroit: No one can deny the effect of heat as well as humidity on these babies. For many years I have been in the habit of educating the parents in anticipation of the warm weather, to lessen the food and clothing when a hot day comes, or even a hot half-day. Where I live we have no sea air, but I try to bring about a simulation of the same condition by affording opportunities for evaporation. Small children and young babies should be stripped to but one garment in hot weather, and with very young babies I would even remove the napkin and place them on a pad.

We should teach the parents to ask themselves how they feel on a hot day, and what do they do to become comfortable, and then give the child the benefit of the same reasoning. Unfortunately the people look on the child as some different animal and give it most outrageous treatment. They sacrifice the babies through their extreme ignorance.

Dr. John Zahorsky, St. Louis: No doubt the mortality in the early part of the summer is increased. The important question is, Does the direct external application of heat produce diarrhea? Is it the direct effect of heat that produces so-called summer diarrhea? That has not been proved. In fact the proof is the other way. I am not convinced that heat produces summer diarrhea. A few weeks ago the temperature was 100 in St. Louis. We had no diarrhea as a result of it. At our Foundling's Home the temperature was 99 in the nursery, and we did not have a single case of diarrhea. I do not think the evidence is conclusive that heat, by its direct effect, causes diarrhea. Heat does produce a bad effect on a sick infant. This is especially true in the early part of July. The atrophic infant cannot resist the heat, but it dies from the illness it already had. Not that these prophylactic measures of keeping the baby comfortable should be neglected. I think in these diarrheas there is still another factor. That other factor must be searched out. As to humidity, that has been studied again and again. No one has been able to prove that humidity and summer diarrhea are directly connected. In order to study summer diarrhea properly, a series of cases should be reported with all attending circumstances. We should know the temperature and all the conditions, and hundreds of cases should be studied. We will never reach a solution by studying figures from our mortuary tables. I think some other factor is the cause of summer diarrhea.

Dr. W. W. Butterworth, New Orleans: The greatest mortality in New Orleans is in the early part of the summer. We lose most infants in April and May and the latter part of the summer. High death-rate seems to be associated with seasons when we have a wide variation in the mercury. We have warm days and cold nights, and the infant cannot adapt itself readily to the wide variation. The new-born has possibly four times the surface area per pound of body-weight that the adult has. With their immature nervous systems the new-born are not able to respond to these wide variations. Certainly the mere matter of temperature does not account for these conditions.

Dr. S. W. Burton, Albuquerque, N. M.: I am in a city of 20,000 people, and the number of cases of summer diarrhea are very few there. We have a wide variation of temperature between day and night. This condition can be overcome by keeping the child in the shade in the day time. Our cases of children's disease in the summer are much less than those of eastern cities.

Dr. T. C. McCleave, Berkeley, Cal.: To one from the West it is interesting to hear heat spoken of as causing this condition, with a temperature running in the 90's. In many sections of the West, where the temperature goes still higher, we have none of this trouble. A temperature in the 90's in some of these sections would be welcomed as a cool summer day. For weeks at a time the temperature in some sections ranges well above 100. In some places it reaches 110 or 115, and still we have none of this trouble; therefore it is clear that either the heat has no effect of itself in the production of these cases, or else that our heat has some different quality. The humidity in these hot sections is very low. It seems to me that this infant diarrhea is due, not to any single factor, but that the East must show a complex etiologic condition.

Dr. Henry Helmholz, Chicago: I am glad to hear Dr. Royster's remarks. It is important to emphasize the clothing as a factor. The important thing in these observations is on the negative side. All of these babies were constantly under the supervision of nurses. I wish we could enter the homes every day to see that the child is clothed as nearly in accord with the temperature as possible. Our temperatures are high and then low. You can see the difficulty of clothing these children when the daily variation is as high as 50 degrees, and that for a long period. If the child is clothed for 90, and then a few hours after that the temperature drops to 50 or even 40, you can see how readily these changes would affect the child. It is unquestionably harder for a child to lose heat on a humid day than on a dry day—all the more reason that the child be properly clothed for a hot, humid day. The custom Dr. Royster mentioned is one we tell our mothers to use for their babies. In answer to Dr. McCleave, I would say that where they have no summer diarrhea of course the temperature cannot play a rôle. We have a great deal of summer diarrhea in Chicago.

We must find out the factors producing it. It seems by controlling the hygienic condition of the child we can influence that markedly. It seems to me particular emphasis should be laid on the clothing.

# THE INFLUENCE OF STARCH ON INFANT DIGESTION*

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No fact seems now to be more satisfactorily established in the physiology of infancy than that the starch transforming ferments of the saliva and pancreatic juice are actively present in very young infants, even at birth; and that such infants are therefore early capable of digesting moderate quantities of cooked starch.

Jacobi, in 1876, recommended the use of starch in the artificial feeding of infants from birth, and contended that it was utilized. This view was both confirmed and denied. Kerley and Campbell, in 1906, found by testing the stools for starch that twenty-three out of thirty infants showed a good starch capacity. In the same year Kerley, Mason, and Craig demonstrated the invariable presence of amylolytic ferment in 161 tests on the stools of twenty-six breast fed infants, of whom twenty-two were under two weeks old.

The latest important and conclusive work is that of Hess (1912), who aspirated with his duodenal catheter fluid from the duodenum of infants varying from a few hours to a year old. Amylase was found before new-born infants were put to the breast. During the first week of life the amount of pancreatic secretion thus obtained was very scanty, but contained the starch-splitting enzyme. Later there was both an increase of pancreatic secretion and a decided augmentation of amylolytic power. These findings seem to dispose permanently of the oft-repeated claims that starch has no place in the dietary of the first year, because of physiologic unpreparedness. In view of the known adaptability of the organism, it also seems reasonable to suppose that the starch-digesting function will develop more rapidly if stimulated by the administration of starchy food.

Until recently the ends attained by adding cereal, i. e., starchy decoctions to cows' milk feedings, have been presumed to be two-fold. Foremost stands the contention of Chapin that cereal diluents by their mucilaginous properties prevent mechanically the formation of large tough curds of casein, and render such coagula as are formed more permeable by the gastric juice. Second, though often very important, has been the view that the vegetable proteins of the grains thus added to the food serve to supplement the rather deficient absorption of the animal proteins of the milk in certain types of malnutrition.

While both of these facts seem well established, and have now long sufficed as explanations of the successful use of gruels as diluents in infant feeding, it would appear that they have another and probably more important field of action. This field is no longer exclusively that of the stomach and gastric digestion, but is transferred to the intestine, where the starch influences intestinal digestion, peristalsis, and absorption. The part played by these three functions in the normal nutrition of the infant cannot be minimized. Beside them, the functions of the gastric digestion may be said to take second rank, for the stomach is largely a receiving station, performing certain preliminary tasks. Comparatively little absorption takes place in the stomach, the greater part occurring in the intestine. Modern fluoroscopic examination of infants, after a fluid bismuth meal, has demonstrated what we have long suspected clinically, that the fluid contents of the stomach begin to pass the pylorus into the duodenum within a few minutes after ingestion. One of the chief duties of the stomach, therefore, is to retain behind the watchful pylorus all coarse masses of food, whether curds or other substances, which are not yet fitted for intestinal treatment, and to disintegrate them until they can properly be allowed to pass.

As already indicated, nutrition from the small intestine depends on the orderly conduct of its interlocking processes. Here the powerful and varied action of the hepatic, pancreatic, and intestinal secretions combine to split the food elements into their endproducts for absorption. Peristalsis slowly kneads and churns the chyme, so as to bring all portions into contact with the bowel wall for absorption, and also to mix its secretions with the mass. If peristalsis be hurried, or the intestinal mucosa be irritated, or denuded of its epithelium, the orderly processes are no longer followed and assimilation suffers. How, then, do such disturbances arise? Probably from two sources. First, from fermentation or other abnormal cleavage of the food elements in the stomach, which causes irritation when they are passed into the intestine. Again, either secondarily or primarily, from similar fermentation or abnormal cleavage during intestinal digestion.

We owe to Finkelstein the attention which has been directed to the effect of the fermentation of the carbohydrate sugars on the mucosa of the small intestine, and on intestinal peristalsis. His view is that the presence of sugars in excess, or the presence of the products of an abnormal fermentation of such sugars, especially of milk-sugar, irritates the mucosa, even at times causing partial denudation of its epithelium, and that both these and the increased peristalsis which they cause, hurry the contents through the bowel, not only causing loose movements or diarrhea, but also interfering with absorption and assimilation.

I would go further than Finkelstein in my belief that fats as well as sugars produce these untoward results.

Let us consider for a moment some of the historical and clinical evidence for accepting and extending Finkelstein's belief. Jacobi long ago called attention to the laxative effect of sugar. Also, certain types of diarrhea in infants with abundant frothy stools, acid reaction, and irritation of the buttocks, have been more or less generally associated with the sugar in the food, as well as with the fermentation of other carbohydrates in excess. In this connection, you will recall the use of molasses as a stimulating enema, and possibly some of you, in your earlier days, have been subjected to a personal spring housecleaning with the time-honored remedy of sulphur and molasses, under the delusion that the molasses played no more active part than that of an agreeable vehicle for the sulphur. You are doubtless conversant with the use of semi-fluid malt preparations as a laxative, when added to an infant's bottle or dietary.

When, however, Keller undertook to overcome the acidosis caused by a relative intolerance and malassimilation of the fat of cows' milk by the substitution for the hydrocarbon fats of approximately equal caloric values of the carbohydrates present in his "malt-soup extract," he promptly found that he could not give sufficient for his purpose without causing looseness of the bowels. To prevent this, he was forced to employ in his mixture the starch of wheat-flour. In the usual process of preparing malt-soup, the wheat flour is cooked with the water and milk and thereby gelatinized. With the addition of this gelatinized starch, considerable quantities of the thick, semi-fluid preparations of maltose and dextrin can be given to young children without causing undue looseness of the bowels.

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Again, when the use of so-called buttermilk began to be generally employed abroad for the feeding of infants suffering from fat intolerance, the preparation used was rarely straight buttermilk. The so-called buttermilk, which was almost universally employed, was a compound of ordinary buttermilk, or artificial fat-free buttermilk, boiled wheat, rice, or corn-flour, and cane sugar. The virtues of this mixture, which by the way, had at the time surprisingly little vogue in this country, in view of its wide use abroad, were generally ascribed to its low fat-content, and as I have elsewhere pointed out, were also undoubtedly due in part to the non-coagulability by rennet and acid of the already precipitated lactate of casein.

Teixeira de Mattos, in his original communication, states that the flour was added empirically to prevent the buttermilk curds from clumping together. He says also that the quantity of the flour is empirical, and, being small, that how much of it was retained in the infant's body was of minor importance. Even the sugar was added quite as much for taste as for food value. I think it certain that the starch was not expected to add materially to the caloric value of the mixture, for its assimilation in any considerable amount was not counted on. Did it, however, have an unsuspected action?

More recently, E. Schloss, in reporting his experience with "whey-modified milk" in infant feeding, found that infants under 3 months of age made better progress when the mixture was made with flour. On another hand, although Keller felt that his malt-soup was less adapted for very young infants, Israel-Rosenthal and Oerum have found that by reducing the amount of malt-soup extract recommended by Keller, but maintaining or even increasing the amount of flour, it was admirably borne by young infants under 3 months of age.

Further clinical evidence on the usefulness of starch has, in the meantime, steadily piled up in hospital and out-patient practice in this country. This has been due to the manifestly greater toleration of many marasmic infants, and of others with disturbed digestions, for feeding mixtures made up with a thin barley gruel as the diluent, as compared with mixtures made with plain water and lime-water. Indeed, it has become almost unconsciously the custom to use barley water or other cereal as a diluent in the stock formulae of many of the infants' hospitals and milk dispensaries.

Since no such element as starch is indicated by the composition of breast-milk, which has so largely figured as our model in feeding infants, is it not about time to again ask ourselves seriously why cereal additions in the form of boiled, and therefore gelatinized, starch should have crept almost as a necessity into the final composition of such diversified types of feeding as diluted cows' milk, fat-free buttermilk, whey-modified milk, and malt-soup mixture? Why should boiled starch be added to all of these? Certainly, the starch must play some part to account for its use. Is this part played similar in each diverse mixture? Chapin's theory of the influence of starch on the rennet coagulation of casein could not wholly account for it. Nor is it, primarily, to add caloric value; since, for example, that of the carbohydrates was already abundant in malt-soup.

It has always been characteristic of infant feeding to arrive at clinical results by empirical methods, and to find our scientific explanations later, even at the cost of upsetting carefully constructed theories. The experience with buttermilk, malt-soup, and even plain dilutions of cows' milk, pointed to the fact that when employed in disturbed conditions of the digestive tract they were better borne if gelatinized starch entered into their composition. From this, it would be a simple deduction that such boiled starch exerts some sort of protective action.

The next question which presents itself is whether this protective action is operative against the disturbing effects of one or more than one of the elements of our food mixtures or, of course, the products into which they may normally or abnormally be split during digestion. Keller's experience with the sugar of his malt-soup mixture seems to have clearly proved that boiled starch acts as a definite protection against the irritative effects of moderately large quantities of sugar. In further confirmation of this view may be cited the claim which I made recently, that dextrin, when present in large percentage, in maltose-dextrin preparations, exercises a similar protective action, and that this accounts in part for the relatively higher toleration of there saccharids as compared with cane-sugar and milk-sugar.

It will be recalled that dextrin, which is always present, though in different proportions, in all so-called "maltose" preparations, is closely allied to starch. It has many similar properties, being like starch, a poly-saccharid, a reversible protective colloid, and non-fermentable, and non-dialyzable. It is noteworthy that while the thick, semi-fluid, malt-preparations typified by malt-soup extract, have a low dextrin content of 10 to 15 per cent. and are laxative from their high content of maltose—requiring combination with boiled starch to overcome this drawback—on the other hand, such of the dry, powdered forms as contain a high percentage of dextrin—40 to 60 per cent.—have little or no laxative effect, and may, on the contrary, prove constipating.

Gelatinized starch also unquestionably acts as a protective against the undesirable effects of fat. This may be exerted on a high fat in breast milk—where the reduction of the fat cannot be readily accomplished—as well as in intolerance of the fat of cows' milk, where starch appears to have a curative action after the high fat has been reduced.

High fat in breast milk, during the early weeks of nursing, is one of the most prolific causes of gas, spitting-up, and loose mucoid stools with flaky curds. Many of these cases are the so-called "colicky" babies, whose mothers' milk is condemned as "poor" and the babies weaned, when with reasonable understanding of the condition and proper treatment they might readily continue at the breast. Such infants, already disturbed by the more readily digestible fat of breast milk, are not good subjects for the customary formulae of cows' milk commonly employed in bottle feeding, and weaning is liable to bring about a condition worse than the first. Complementary feedings, however, of some starchy gruel, are most useful in these nursing infants for overcoming the bad effects of the high fat percentage, not only when given so as to dilute the breast milk, but occasionally also, as I have knowledge, when the gruel is given by itself only once or twice a day.

In view of the proven mitigating action of boiled starch on the disturbances caused by over-fat breast milk, it seems to be a reasonable deduction that the favorable effects and toleration of both malt-soup and buttermilk on infants previously disturbed by the fat of cows' milk, have been due not only to the reduced amounts of such fat as they contain, but also to the presence of the starch which affects favorably the previously irritated small intestine and prepares the way for a more orderly resumption of its functions.

This brings us to a consideration of the extended use of barley water and other cereal decoctions for marasmic infants and others suffering from varying grades of digestive disturbance. In these, intestinal disorder is usually attested by the stools, and it is logical that here also the use of a starchy decoction, even though coincident with the correction of some serious error, in the composition of the feeding mixture, should play a part in the improvement of digestive conditions. I am therefore of the opinion that the use of a cereal diluent for cows' milk, as advocated by Chapin, not only influences the curd-formation and stomachic digestion, but, further, may act as a prophylactic or curative agent for disturbances of intestinal digestion. This salutary action might, at times, be favored by the use of his dextrinized gruel, which substitutes dextrin for the starch, and the more readily absorbable maltose for other sugar.

However unnecessary and inapplicable the majority of the so-called infant foods may be for the continuous feeding of normal infants with undisturbed digestions, it must be admitted that some of them, when used intelligently, are useful for temporary employment in disturbances of digestion. It is probable that the success of some of these containing starch or dextrin, is chiefly referable to this factor.

There seems, however, to be more than one way in which the giving of starch may influence digestive processes, and, indeed, from analogy, one would expect the matter to be complex. Since the digestion of carbohydrates proceeds most favorably in an alkaline medium, starch and dextrin, which less readily undergo acid fermentation than some of the sugars, may readily be conceived as more favorable to the maintenance of alkalinity and carbohydrate digestion. The value of this hypothesis is enhanced by the conclusion of Roger and Simon that the amylolytic action of saliva (ptyalin), although inhibited by the acidity of the stomach, is reactivated by pancreatic secretion in an alkaline medium, such as normally obtains in the duodenum. This undoubtedly increases the amylolytic power of intestinal digestion beyond our former conceptions.

Furthermore, Holsti has shown that a preponderance of carbohydrates in the food excites a prompt and long-continued secretion of pancreatic juice, which is the opposite of what obtains with fats. Combe, of Lausanne, has emphasized the usefulness of a starchy diet in the prevention of intestinal putrefaction. In view of the demonstrated success of starch additions, which, as we have seen, were practically compulsory in several of the most popular forms of emergency feeding, it may fairly be asked whether the slow conversion of starch may not be one of the vital factors in its usefulness? The more complex the form of carbohydrate the slower it is converted or broken down for absorption, and therefore the less opportunity is afforded at any given moment for fermentation (Stolte). While the practice of giving all the carbohydrates in the form of sugar frequently results in overtaxing the upper part of the small intestine, a slower conversion, as of starch, spreads the process of absorption over a greater length of intestine. These differences cannot be without influence in instances in which intestinal digestion has been disturbed.

Lusk has demonstrated that dextrose, given to dogs, raises the surface temperature, increases the volume of the blood, and definitely stimulates metabolism. Whether the ultimate splitting of starch into two molecules of dextrose, when this proceeds in the normal leisurely way, under the influence of the body enzymes, has a more favorable effect on the metabolism of the infant, must remain for the present a matter of conjecture.

Taking the above views into consideration, it is readily seen that the rôle played by starch in the intestinal digestion of infants may be a diversified one. Nevertheless a survey of the growing use of starch in infant feeding, forces the conclusion that whether its action is simple or complex, this action is in a broad sense protective, in that it allows the consummation of desired results, which with the same food, but in the absence of starch, are not obtainable. It would therefore appear that not only is starch tolerated and digested when given in moderation in the dietary of infants, but that it should be recognized as having a distinct field of usefulness in properly selected cases.

In this attempt to seek some rational explanation of the wide-spread use of cooked starch in the artificial feeding of infants, let us not confuse, as is so commonly done, the infant with a normal digestion and the infant with a disturbed digestion. In my experience, starch, as a rule, is unnecessary for the former before the seventh or eighth month. In the latter, however, it is often a remedial factor of great value. No sensible person would deny that relatively excessive amounts of starch have caused and always may cause, of themselves, disturbances of digestion, but instances of such abuse do not preclude its judicious employment.

In conclusion I may say that while it is an established fact that even young infants are prepared to digest moderate quantities of boiled starch, the indication for its use appears to lie in those suffering from disturbances of digestion and nutrition. With these, the chief end subserved by such addition to their food is not solely to nourish the infant, but to promote nutrition by making possible a more orderly digestion and absorption of its main nutriment, milk.*

807 Madison Avenue.

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* This paper was discussed with a paper by Drs. F. N. Talbot and Lewis W. Hill, entitled, The Metabolism of Carbohydrates with Special Reference to Its Effects on the Absorption of Fat and Nitrogen and on the Retention of Salts. The latter paper appeared in the American Journal of Diseases of Children for September, 1914. Both papers and the discussion will be found in the Transactions of the Section.

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**Science and National Progress.**—Pasteur was right when one day, exasperated by the politicians who were running his beloved France to ruin, he exclaimed: "In our century science is the soul of the prosperity of nations and the living source of all progress. Uundoubtedly, the tiring daily discussions of politics seem to be our guide. Empty appearances! What really leads us forward are a few scientific discoveries and their application."—L. H. Baekeland, *Science*, Aug. 7, 1914.

# PERCUSSION OF THE LUNGS

## PART I. AN EFFORT TO STANDARDIZE THE DEGREES OF DULNESS

## PART II. THE ADVANTAGES OVER THE OPPOSITE METHOD OF PERCUSSION FROM BASE TO APEX *

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### PART I

While studying physical diagnosis as a student, one of the things difficult for me to understand was percussion. As I talk to students in the medical schools now, I am told by them that percussion is one of the hard things for them to learn and that it means the least to them of the physical signs. It has interested me to study why this is so, especially as I have come to regard percussion as a distinctly definite and valuable diagnostic means. This is so true that instead of correcting my dulness by what I learn from auscultation, as I once did, I now correct my auscultation by what I learn from percussion

My studies have led me to recognize that the standards of clinicians for the various degrees of dulness, 1-2-3-4-line dulness—meaning respectively, impaired resonance, definite dulness, very marked dulness and flatness—are so individual, so lax and so diversified that they amount to no standard at all; certainly not a standard that can be grasped by an intelligent student. It is a common occurrence for a physician to percuss a chest which shows nothing but 2- or 3-line dulness, and to have him call the 2-line dulness normal resonance, and in consequence, call the 3-line dulness only 1. In this way serious pathologic conditions are overlooked. The following instance, which illustrates my point well, impressed me distinctly, as it was furnished by one of the leading hospitals of Boston and by one of the good instructors of physical diagnosis in the Harvard Medical School. This physician examined a well-built, muscular young man, a light-weight wrestler by trade, who had lost almost no weight, looked perfectly well and complained only of hoarseness. The examination, signed and written by the physician, stated that "the chest was normal throughout, lungs showed no disease." I examined the patient the next day at the Boston Consumptives Hospital and found 3- and 2-line dulness throughout both chests, and fine crackling râles with cough throughout. The larynx showed miliary tuberculosis and the sputum contained numerous tubercle bacilli. I think that the first clinician failed to recognize this very serious condition because he had no fixed standard of dulness.

In 1912 I began to study the pitch of the various notes of percussion in an effort to establish for myself some definite standard I made a frequent practice, therefore, of whistling the pitch of the notes as I percussed the lungs. I soon learned that the variation between normal resonance and flatness was a range of over two octaves. This winter I have carried the investigation further. With an assistant, who has no medical training, I plotted out on the piano the notes which corresponded to what I had come to consider my personal standard of 1-2-3-4-line dulness.

In each instance I took at least six patients and did not tell my assistant what note I expected to find. At first she hummed the note, found it on the piano; then we freed our minds of the notes by playing chords. I next hummed or whistled the note and she found that note on the piano. A comparison of our two notes showed that we never differed more than a half tone. Later we concluded that an easier and more accurate method was to strike middle C and then work up or down the scale until both of us agreed that the note on the piano corresponded with the percussion note.

In this way we examined six cases for each note. We also came back to the same case two or three times after examining others to determine how well we would agree with our former notes. When I percussed the same individual in the same place, we always agreed with our previous findings. Not only did we agree on the note previously found in a particular case, but the notes for the different degrees of dulness were the same in a variety of individuals. This proved that the problem was purely a matter of pitch and not one of individual variations.

I determined in this manner that normal resonance is F or F sharp below middle C; 1-line dulness A below middle C to middle C; 2-line dulness E flat to F above middle C; 3-line dulness B flat to intermediate C; 4-line dulness E to F above intermediate C. Thus it will be seen that there is an interval of an octave between normal resonance and 2-line dulness, and an interval of another octave between 2-line dulness and 4-line dulness or flatness.

Has this any practical value? Or is it simply an interesting thing theoretically and musically, requiring a specially trained ear to detect these changes of pitch? I think that it does not need a specially trained ear; that it is of distinct practical value and can be acquired readily by anyone who has had these differences pointed out to him. If it is not practical, then percussion as a physical sign is not practical. The discussion of this point, however, brings me to the second part of my paper.

### PART II

To percuss well, the stroke on the pleximeter must be sharp and quick. A rapid recovery is essential. The motion may be best illustrated by saying that it should be made exactly as a woodpecker uses his head in boring a tree. All the motion should come in the wrist, and none in the arm. This secures a crisp note The pleximeter may be held flat, or raised so that only the end of the finger touches the chest. In the latter position a distinctly smaller area is percussed at one time. The note, consequently, is less disguised by the surrounding normal or semi-normal tissue. It is essential, moreover, to remember in a disease like tuberculosis that normal lung is always in intimate contact with abnormal. This change from a flat to fingertip pleximeter does not alter the pitch of the pathological note It only makes the note much more evident.

Of far greater importance than the proper manner in which to use the plexor and pleximeter, however, is the direction in which the chest is percussed. It should be percussed upward and not downward, from the base of the lungs to the apex and not from the apex to the base as has been taught so universally. This is so important that I wish to state my reasons for it carefully.

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* Paper read before American Climatological and Clinical Association Atlantic City, June 20, 1914.

A. It is much easier for the ear to pick up a higher note from a lower, than it is to do the reverse.

B. It requires a much lighter stroke to bring out the normal note than the pathological.

C. It is the rational plan to work from the normal as a standard toward the pathologic. The reverse leads to faulty standards.

D. The apices, as is well known, are most frequently affected and more rarely give a normal note. To start at the apex, therefore, is usually to commence with a pathologic note. This prejudices the further examination. With downward percussion, the higher note merges into the lower too imperceptibly to do accurate work. This is so for two reasons; first, as I have already said, the mind becomes prejudiced in favor of a pathologic note and consequently does not attempt to make fine distinctions; secondly, a heavier stroke is required for the pathologic note and when the more resonant is reached, the percussion is continued too heavily to detect what should be readily appreciated differences in the force of stroke necessary to bring out a good note. In this way the examiner deprives himself of a very important guide to collect accurate data.

The best place, therefore, to start the percussion of the lungs is the left lower front, as this is most often normal. From there, work upward to the apex, and record the various notes without percussing the opposite side. Then percuss upward on the right side and finally from side to side and alter your first findings, if necessary. The comparative note between similar areas of the two lungs is often misleading, as both may be pathologic. This comparison, therefore, should only be used later to correct first impressions and to detect or confirm fine gradations. In doing the backs follow the same order, left lower to apex, right lower to apex, then from side to side. If this order is followed, I am sure that interesting observations will follow as regards the usual progress of a disease like tuberculosis, and the relative frequency between incipient cases and chronic ones of long standing with marked reparative ability.

I am absolutely convinced that a fine ear for percussion can be trained only by this upward method. I have been much impressed by the rapidity with which students appreciate the difference between the two modes and the readiness with which they acquire a standard of dulness as a result of it.

I said that I considered that a musical standard is practical and can be taught easily to the non-musical. I should like to prove that these statements are true. In the first place, I have had no difficulty in teaching such a standard to quite a wide range of students, good, fair and poor.

How then can this be taught the non-musical man? In the first place, the mind must be entirely freed from all preconceived ideas as to what pathologic process underlies the varying degrees of dulness; what stage of the disease is indicated and what bearing the dulness has on the prognosis. I am sure that I am correct when I say that many men to-day consider that 3-line dulness over all of both chests means a hopeless condition of the lungs. This very attitude of mind prevents them from making what should be an accurate scientific record of what they find. One of the chief reasons why I have so little difficulty with students is because their minds are open. I have several times been told by older men that the patient whom I was examining was too well to have such extensive dulness as I claimed. I am convinced that, until a more uniform standard of dulness is adopted, we are in no position to discuss the pathology of 1-2-3-4-line dulness, when applied to such a disease as tuberculosis. At present such terms are as much of a hindrance as a help in the diagnosis and prognosis of chest cases.

In the second place, and in teaching students this occupies the first consideration, when resistance is felt under the pleximeter finger, the note is close to B below intermediate C or 3-line dulness. As we are all accustomed to this feeling of resistance under the finger when percussing, we have here not only an easy guide to any man, but also an accurate one. This observation depends on the muscle sense of the fingers of the physician and not on his ears. Until you feel this resistance, you have, therefore, to decide only between normal resonance and 2-line dulness.

Now the differences between normal resonance and 2-line dulness can be detected readily by the muscle sense also. Here, however, it is the muscle sense of the plexor rather than that of the pleximeter. There is a very definite difference between the gentle tap which is sufficient to bring out the normal note, and the decided stroke necessary to make the note of 2-line dulness loud enough to carry any distance at all. The physician who trains himself to start with very light percussion will quickly learn to appreciate these differences. That is why the examination should begin with that part of the chest which is most likely to be normal.

Although I have placed stress on the muscle sense of the pleximeter in detecting 3-line dulness, and on the plexor in detecting 2-line dulness, in both instances the muscle sense of both hands comes into play. As we measure the resistance under the pleximeter, we naturally measure the force of the plexor stroke. On the other hand, as we measure the lightness of the stroke of normal resonance in the plexor wrist, at the same time we measure the force of the stroke on the pleximeter. This, then, is as much a matter of training the muscle sense of the fingers and hands as it is of making use of a well-trained musical ear.

I wish to repeat, however, that one of the great barriers to acquiring this skill is the preconceived ideas which we have as to what the underlying pathologic condition must be for a given degree of dulness. I am free to confess that my physical examination occasionally makes it hard for some of my patients to enter the state sanatoriums. That is because more attention is attracted by my lines of dulness than by my report of symptoms.

### CONCLUSIONS

1. Present methods of percussion are of little value, because, far from having any universal standard of dulness, there is not, in most instances, even an individual standard.

2. To a field in which there is no accurate standard, I bring some standard, to me one that is definite and easily acquired.

3. Normal resonance is F to F sharp below middle C; 1-line dulness, or impaired resonance, is A below middle C to middle C; 2-line dulness, or definite dulness, is E flat to F above middle C; 3-line dulness, or very marked dulness is B flat below intermediate C to intermediate C; 4-line dulness, or flatness is E to F above intermediate C.

4. No intelligent idea of diagnosis, prognosis, nor of the underlying pathologic condition can be formed by percussion without some such definite standard.

5. This standard can be acquired readily by the ear, and by the muscle sense of both hands, measured by the force of the plexor blow and the resistance under the pleximeter.

6. Upward percussion is an absolute essential of correct work. The old method of downward percussion should be discarded, and no longer taught to medical students.

# PROGRESSIVE LENTICULAR DEGENERATION

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Although progressive lenticular degeneration, first described under that title by S. A. K. Wilson[1], is well established clinically, it has not often been encountered in this country. Since Wilson's first publication, in 1912, a number of cases have been recorded in foreign literature, but, with the exception of a case recently reported by Auer[2] and some brief references made before the neurological societies of New York and Philadelphia, little or nothing on the subject has appeared in American literature.

The patients whose histories are recorded here were admitted at different times to the wards of the Orthopaedic Hospital and Infirmary for Nervous Diseases, Philadelphia, and first came under the care of Dr. S. Weir Mitchell, and later passed to the service of Dr. John K. Mitchell. They have both been under observation for a considerable length of time. Examinations have been made repeatedly by various observers, and all the facts have been corroborated carefully from time to time.

Case 1.—*History.*—B. R. H., man, aged 18. Patient's parents are healthy; a grandaunt was believed to have had myxedema; a first cousin and also an aunt had exophthalmic goiter. The patient was born at full term, the labor having been normal. He first walked and spoke at the usual age, and developed normally. He has never had convulsions or been otherwise ill. He was considered an unusually intelligent and attractive boy, always at the head of his class at school, and but for illness would have entered college at the early age of 14.

Present condition began when the patient was 14 years of age, while he was at boarding-school. The symptoms developed rather quickly, first manifesting themselves in the form of sluggish movements, indifferent table manners, a constant driveling of saliva, dysarthria and general lassitude. The condition continued for a number of weeks, and then the symptoms became more and more exaggerated. When first seen by his physician about six weeks after the onset, the patient appeared to be a driveling idiot, exhibiting general thickening of the skin and peculiar jerking movements of the extremities. A diagnosis of myxedema with multiple myoclonus was made, and thyroid extract administered. The mental improvement that followed was said to have been remarkable and almost immediate. Other symptoms attributed to the myxedema disappeared gradually in from one to three months, but the tremor became more pronounced. The thyroid medication was continued until the patient was 18 years of age. During the past two and a half years the patient's condition has remained stationary.

*Physical Examination.*—The facial expression is often quite vacant, especially striking being the more or less constant smile he wears. His complexion is dark and his hair is black; the skin is not thickened and in no way does it suggest a myxedematous change. Patient states that his complexion was always dark.

The pupils are equal in size and react normally to light, accommodation and convergence. The optic disks are normal, and the ocular movements are performed regularly; there is no nystagmus. When the patient winks, the eyelids occasionally remain closed and the lids cannot be elevated voluntarily without assistance. This appears to be due to a tonic spasm or contracture of the muscles of the eyelid. The mouth is not held open continually, but gapes more often than in most normal persons. The flow of saliva is not increased. The movements of the lower jaw, the tongue and the muscles of the pharynx and larynx are all performed with normal power. Laryngoscopic examination showed that the movements of the vocal cords were quite good, but somewhat slow. The hearing is normal. There is no difficulty in swallowing either liquids or solids. The voice is high pitched and has a nasal quality, and dysarthria is pronounced, being characterized by the slurring of syllables and the cutting off of the ends of words; the speech is quite different, however, from that of multiple sclerosis, in that the scanning tendency is lacking.

The movements of the facial muscles suggest a condition of spasticity. When tested by the customary methods, each of the cranial nerves appears to be normal. The thyroid gland is not enlarged, and the superficial lymph-glands likewise present no evidences of enlargement.

The left sternomastoid muscle is in a state of extreme hypertonicity, in consequence of which the head is often turned to the right; this is not, however, constant. The head can be rotated freely, but the rotation is accompanied by a fine tremor.

The musculature of the entire body and extremities appears to be good, but there is little subcutaneous fat, so that the outline of each muscle is well defined; nevertheless the patient does not appear to be emaciated. The skin everywhere is of a copperish-yellow hue, and a few small pigmented moles are scattered over the body. The most striking features are marked tremors, rigidity and a tendency to contractures, all of which are never absent, although they vary in intensity.

The upper extremities are in a state of almost continuous clonic tremor, more marked distally than proximally, and somewhat more exaggerated on the right side. The excursion of movements is wide, and the rate is rapid, but variable. On the slightest excitement or on exertion the tremor becomes violent. On attempting to place the palm of one hand against the cheek the hand strikes the face forcibly in a rapid succession of rhythmic flexor and extensor movements. A similar tremor of the lower extremities occurs while the patient lies in bed and on attempting voluntary movement of the trunk; it is also present when he is in the sitting and the standing positions. On starting to walk and in turning, one foot, generally the right, is thrown into a series of rapid clonic movements, the foot tapping the floor violently. When an effort, however, slight, is made to restrain the muscular movements, the tremor shows a decided tendency to involve the musculature of the entire body. At times, when the patient is standing quietly with his hands hanging at his sides, or when weights are placed in his hands, the tremor may disappear almost entirely for a few moments. The muscles of the entire body are in a state of more or less hypertonicity. The left foot is frequently in a condition of extensor spasm, assuming the equinovarus position, with the large toe flexed dorsally. On standing or in starting to walk there is often overextension of the trunk, and consequently a tendency to fall backward; equilibrium can be regained, however, by muscular effort. In this it differs from the uncertainty of ataxia, and appears to be due to muscular rigidity.

The abdominal muscles are tense and fixed, and the abdominal reflexes are equal and otherwise normal. Voluntary movements, such as are made in walking, are "wooden" and "mechanical" in character, and lack the smoothness that characterizes the working of a well-oiled machine, to which the normal body movements may be likened. Because of rigidity all voluntary movements are greatly retarded, yet the patient can perform flexion and extension of all joints, as well as adduction and abduction. Walking and rising from the sitting and prone position can be accomplished without assistance, but not, however, without considerable voluntary effort on the patient's part. The muscular power is unimpaired and does not differ in the extremities of the two sides, as estimated from the resistance exerted by the examiner. There is no paralysis present. With the exception of the incomplete contractures of the peroneal muscles of the left leg, the left sternomastoid and the elevators of the eyelids, previously mentioned, actual permanent contractures are absent.

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[1] Wilson, S. A. K.: Brain, March, 1912.
[2] Auer: Am. Jour. Nerv. and Ment. Dis., June, 1914.

Pain is never present, nor can any sensory change be discovered. The sensations, as tested for touch, heat, cold and pain, are everywhere normal.

The tendon and the cremasteric reflexes are all equal and entirely normal; they are active, but not exaggerated. There is no ankle-clonus, and no Babinski reflex is present. Owing to rigidity, overextension of the great toe sometimes occurs, and this could be mistaken for the Babinski sign.

Examination of the thoracic and abdominal organs reveals no abnormalities; the liver dulness is not diminished and appears to be normal. The systolic blood-pressure is 118. The electric examination gave entirely normal reactions. The blood and urinary examinations were negative, and there was no evidence of bile-pigment or other abnormalities in the urine.

The mental condition of the patient was fairly good; he was intelligent, although he lacked the power to concentrate, and was distinctly foolish and inclined to be childish, but apart from this nothing characteristic could be discovered.

Case 2.—*History.*—W. P., man, aged 36. Father is healthy; mother has had intermittent attacks of melancholia; one brother is well; one older sister and two brothers are afflicted with a condition similar to that presented by this patient, namely, tremors, spasticity and contractures of the muscles, which began in youth. This statement has been corroborated, but personal examination was not made. One of these brothers is mentally deranged, and displays outbursts of temper and other manifestations of disordered mentality. The other brother and sister are normal mentally.

This patient, as well as the other affected members of his family, was born at full term and developed normally. The present condition began in 1892, when the patient was 16 years old. The tremor at first affected the right side, the muscular rigidity and spasticity gradually increasing and spreading to the muscles of the neck, causing tremor of the head, and later involving the entire body and all the extremities. The patient was first seen in 1900, and has remained under observation ever since. He now presents a condition characterized by constant involuntary movements, the tremor increasing with emotional disturbances and voluntary effort, but not disappearing when he is at rest. The tremor is fairly regular, of the type which manifests itself by flexions and contractions, involving almost every group of muscles in the body; dysarthria is pronounced, but his speech is not marked by scanning.

Spasticity and rigidity of the muscles, as well as contractures are pronounced. The contractures are not permanent, however, except that affecting the larger muscles of the lumbar region, which causes the trunk to be bent to one side.

His physical inability seems to be due entirely to tremor, rigidity and apparent incoordination, and not to paralysis. All the tendon reflexes are slightly exaggerated, but equal. The skin-reflexes are normal. The Babinski sign is absent. Mentality is and always has been normal.

The disease was progressive at first, but five or six years after its onset it became stationary. Further examination shows nothing abnormal. The eyes present no abnormalities; there is no nystagmus, and sensation is normal. Both Wassermann and Noguchi reactions are negative. All thoracic and abdominal organs are normal, and there are no parasthesias; the sphincters functionate properly, and there is no ataxia or pain. The liver dulness is not diminished, and the patient asserts that he feels well. Electric examinations gave negative findings, and the urinary examination was also negative.

The clinical picture presented by these two patients differed but slightly, this difference being more particularly one of degree than of character. The two cases appeared to be of the same type. In Case 2 the disease seems to have commenced gradually, assuming a chronic nature from the beginning, but evincing no constitutional symptoms, the tremor having been the first visible evidence of the disease. This onset is similar to the one described by Wilson as chronic. In Case 1 the onset seems to have been acute, and the symptoms were regarded as myxedematous; after some weeks, however, these symptoms all subsided, but the tremor, rigidity and tendency to muscular contracture remained. The patient's mentality was impaired, and he displayed a tendency toward childishness. From the family history, and owing to the fact that the acute symptoms disappeared while thyroid extract was being administered, it might be assumed that some disturbance of the ductless glands was the etiologic factor; whether the acute symptoms merely subsided, as they always do in the beginning, or whether they really disappeared as the result of the thyroid treatment, is, indeed, questionable.

In neither case was there any clinical evidence of the presence of hepatic disease. The liver dulness was neither diminished nor increased in either case. The urine of both patients showed no abnormal characteristics, bile-pigment and the like being absent. The first patient did, however, exhibit a peculiar yellowish color of the skin, different from that of jaundice. This discoloration is undoubtedly similar to that described by Fleischer[3] and Rumpell.[4] Volsch's[5] (1911) patient also showed pigmentation of the cornea, a finding that was absent in my case.

The significance of corneal pigmentations when associated with tremor is still very uncertain, particularly when these are accompanied by skin changes and evidences of hepatic disease. This subject has recently been carefully studied by Holloway.[6] The first patient presented a very curious condition, in that he was unable to open his eyelids without assistance. In referring to this in his history it was spoken of as a form of contracture. I have never observed anything quite like it, and if it is part of the picture of lenticular degeneration, this manifestation has not previously been reported. At times when both eyes would be closed naturally the eyelids would remain closed and could not be opened voluntarily; when, however, the patient placed his index-finger on one orbital ridge and pushed upward, both lids could be elevated and the eyes remained open. This condition was markedly aggravated by any emotional disturbance, although the latter did not appear to produce the condition.

A relationship seems to exist between the disease known as progressive lenticular degeneration and the condition named by Westphal pseudosclerosis, the two diseases having some points of similarity. In December, 1912, I presented the patient here described as Case 2 before the Philadelphia Neurological Society as a case of pseudosclerosis, and called attention at the time to the possibility of the existence of lenticular disease. Since then Strumpell[7] has reported a similar case, drawing attention to the similarity or relationship of these two curious clinical pictures. Westphal[8] himself has reported a case of pseudosclerosis with necropsy findings. He was able to discover distinct changes in the nervous system, chiefly of the glia nuclei, and more especially in the gray substance of the large ganglia of the cerebrum, and also in the dentate nucleus of the cerebellum. The nuclei of the ganglia-cells were enlarged, altered in shape, and were deficient in chromatin substance. In addition, the liver was distinctly reduced in size and presented a cirrhotic appearance. In reporting this case Westphal calls particular attention to the relationship that pseudosclerosis seems to bear to this peculiar morbid process, characterized by pigmentation of the skin, cirrhosis of the liver, tremors and mental and nervous phenomena. It is my belief that the first case here recorded might belong to this group.

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[3] Fleischer: Deutsch. Ztschr. f. Nervenh., 1912, xliv, 179.

[4] Rumpell: Deutsch. Ztschr. f. Nervenh., 1913, xlix, 54.

[5] Volsch: Deutsch. Ztschr. f. Nervenh., 1911, xlii, 335.

[6] Holloway: Am. Jour. Med. Sc., August, 1914, p. 235.

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# THE PRESENT STATUS OF ORGANIC IODIN PREPARATIONS [*]

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The flood of organic preparations of the various metals introduced into therapeutics during the past few years has carried with it a considerable number of organic preparations of the non-metallic elements, chiefly the iodids and bromids. The advantages of these preparations over the older inorganic combinations have in general not been carefully considered by the makers or users, but the popularity earned by the organic preparations of arsenic and mercury has led manufacturers to seek new fields of endeavor. In a previous communication[1] I reviewed the evidence regarding the various organic iodin preparations on the market. Since that time some new evidence has been brought forward, and a summary of our knowledge at the present time seems desirable.

The larger number of commercial preparations resolve themselves naturally into two classes: (1) iodin products of the higher fats or fatty acids and (2) iodized albumins. These two classes are so dissimilar that they must be considered separately.

The chief iodized fats and fatty acids on the market at the present time are Iodipin (Merck), Sajodin (Farbenfabriken von Elberfeld), and Iodival (Knoll & Co.) These substances are products of the addition of iodin to the higher fats or fatty acids or their derivatives, and contain varying amounts of iodin. They are sufficiently similar in their characteristics to allow of their being considered together. The advantages over the alkaline iodids claimed by the manufacturers are chiefly as follows: (1) absence of gastro-intestinal irritation, (2) slower absorption, (3) longer retention in the body and a more uniform rate of excretion, and (4) less tendency to produce iodism. The first claim is in general well substantiated, as all of these substances are bland and unirritating, the iodin being so firmly bound in the molecule as to be inactive locally. These substances are in general absorbed without much change in their composition, the absorption being similar to that of fatty acids, and much slower than that of the alkaline iodids. While 75 per cent. of the iodin given in the form of potassium iodid is excreted in the urine within twelve hours, and the highest amount in the urine is in the second hour, the absorption and elimination of the iodized fats is much slower. When Sajodin is given, iodin does not appear in the urine until after from one to three hours, and while the highest point in the excretion is reached within twelve hours the amount excreted remains high for thirty-six hours, giving a much more uniform rate of excretion. Following absorption, as shown by me,[2] the iodized fats are carried to the various parts of the body and deposited at least in part in the fatty or lipoid constituents of the cells, this agreeing with the theory of "lipotropie" advanced by Loeb. On this account the central nervous system, being rich in lipoids, is found to contain relatively much more iodin following the administration of an iodized fatty acid than after potassium iodid. After being stored in the lipoids of the cells these substances may, as suggested by Meyer and Gottlieb,[3] give off free iodin when the proper conditions are present. These facts explain the longer retention in the body and the slower excretion of iodin following the administration of these preparations. The iodin is excreted in inorganic form, and probably is effective in the body only after it is separated from the organic molecule. Its action and fate after separation from the organic combination would naturally be the same as if an alkaline iodid had been administered, and the only advantage gained would be in its being held and liberated more slowly, as no one of these preparations has been shown to possess a specific action beyond that of the iodin which it liberates. The fact that relatively more iodin is found in the nervous tissues probably has little bearing on the efficiency of these substances in cerebral syphilis, etc., as their lipoid solubility would not favor their entrance into syphilitic tissue. The lessened tendency to iodism claimed by many observers may be explained by the retention of the iodin in the lipoids and its slower and more uniform release in the form of available iodin. According to our present ideas iodism may be dependent on a high concentration of easily available iodin in the tissues. A high concentration may be reached for a short time by a relatively small dose of potassium iodid, but in the case of an iodized fat there is never this sudden flooding of available iodin. Where continuous small amounts of iodin are desired, as in arteriosclerosis, bronchial asthma, lead-poisoning, etc., this iodin may be supplied in a form non-irritant to the stomach as an iodized fat or fatty acid, and the probability of iodism would not be great. The iodized fats and fatty acids may be compared to the organic combinations of arsenic and mercury, in that they seem to allow to a certain extent the maximum of therapeutic effect with the minimum of toxic effect. When large amounts of iodin are desirable, however, as in cerebral syphilis, etc., the therapeutic effect seems to depend on the same property that causes the toxic effect, that is, the high concentration of iodin, and any effort to decrease the concentration would result in a sacrifice of therapeutic efficiency.

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[7] Strumpell: Deutsch. Arch. f. Nervenh., 1914, l, 455.

[8] Westphal: Arch. f. Psychiat. u. Nervenkr., 1913, li, 1.

[*] From the Department of Pharmacology, Medical Department, University of Oregon.

[*] Investigation supported in part by a grant from the Therapeutic Research Committee, Council on Pharmacy and Chemistry, American Medical Association.

[1] McLean, Franklin C.: Organic Iodin Preparations, their Pharmacology and Therapeutic Value, Arch. Int. Med., November, 1912, p. 505.

[2] McLean, F. C.: The Distribution of Iodin in the Cell Following Administration of Organic Iodin Preparations, Arch. Int. Med., to be published.

[3] Meyer and Gottlieb: Pharmacologie, Berlin, 1911, p. 358.

The iodized albumins on the market are chiefly Iodalbin (P. D. & Co.) and Iodo-casein (Mulford). They are relatively unstable, and Iodalbin contains some free iodin and much more easily available iodin. Its claim for classification as an organic preparation is thus only partially borne out. As would be expected from the availability of its iodin, iodin appears in the urine within a few minutes after its administration. As I have shown[2] it completely loses its identity during the process of digestion and absorption, and its iodin is not found in the body in combination with protein. Any advantage of these preparations over the soluble inorganic iodids must lie in their behavior in the gastro-intestinal tract. In this way they resemble the organic iron preparations, most of which are protein in nature.

It has been repeatedly demonstrated that the iron preparations are not absorbed until after digestion and that their only advantage over the inorganic preparations lies in their better tolerance by the gastro-intestinal tract. In the case of iodized albumins there may be a somewhat slower absorption, owing to the time required for digestion, but their action and fate following absorption is practically that of soluble inorganic iodids.

Iothion (Farbenfabriken von Elberfeld Company) must be given a separate classification. It is chemically di-iodo-hydroxypropane, obtained by chlorinating glycerin and replacing the chlorin by iodin. It is recommended for local application and for percutaneous administration in solution in olive oil, and rapid absorption is claimed. It is apparently efficient in case percutaneous administration is desirable.

Another class of preparations, the iodized tannins, scarcely deserve classification as organic preparations. They are prepared in the form of wines or sirups, and contain tannin with a small amount of loosely combined iodin. The action of the small amount of iodin they contain is the same as the action of a corresponding amount of potassium iodid, as they decompose rapidly in the stomach.

The conclusions to be derived regarding the organic iodin preparations designed for general iodin medication are as follows:

1. So far as we now know these preparations have no specific action beyond the action of iodin after separation from the molecule.
2. The iodized fats and fatty acids, when small amounts of iodin are desired, seem to combine the maximum of therapeutic effect with the minimum of toxicity, chiefly because of their retention in the body and the slower release of the iodin. They are not of advantage when a high concentration of available iodin in the tissues is desirable.
3. The iodized proteins may be of some advantage in so far as they prevent gastric irritation and retard absorption of the iodin. Their behavior after absorption is the same as that of the soluble inorganic iodids.
4. Iothion and Iothion Oil are available for percutaneous administration, when that is desirable.
5. The sirups and wines of the so-called iodized tannins display no advantage over the soluble inorganic iodids.

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# INJURIOUS EFFECTS OF FORCIBLE PASSIVE MOTION IN DISEASED AND TRAUMATIC JOINTS *

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The terms "passive motion," "massage" and "Swedish movement" are, to say the least, very confusing in their application, they are used in such an indiscriminate way, in books of surgery, essays, monographs, clinical lectures and by the general profession. In many instances these treatments are advised regardless of the anatomic and pathologic conditions of the joints involved.

Passive motion is a different treatment from massage or Swedish movements, but all three treatments are many times suggested in such a perfunctory manner that one might regard them as the same, and the results are disastrous, especially in inflamed joints and in many forms of infected joints, as well as injuries, fractures and dislocations at or near the joints, and seldom if ever is any good accomplished in establishing normal motion. Passive motion should be abandoned in joint diseases. Personally I do not recall a case in which it has been beneficial so far as motion is concerned, by the use of forcible passive motion, *per se.*

The fact that I have advocated, pleaded and almost begged for protection and rest for inflamed joints, with Minnesota physicians, and that the opposite treatment quite frequently is practiced by the regular profession and the general surgeon, leads me to think that these recommendations are either too feeble, or not well founded. Whether or not the latter is true, will, I hope, be decided in the discussion which may follow this short paper.

Frequently too, my stiff joint patients consult medical men in New York, Boston, Philadelphia and Chicago, and return with a very courteous letter to me advising passive motion, or that the adhesions be "broken up," and this followed by forcible passive motion. Such advice, however, has never come from a strictly orthopedic surgeon. This leads me to feel that possibly the Eastern orthopedic men have similar trouble in instructing and keeping the general practitioner and the general surgeon from assaulting these unprotected inflamed and stiffened joints by forcible passive motion.

At Asheville, N. C., the past winter, a patient from Boston with stiffened and painful joints was being treated under his home doctor by passive motion. The child's nose was filled with adenoids, and his tonsils were so large that he could not speak plainly. This experience was some consolation to me, as he certainly came from a city in which he could have received much better advice, and did, but his physician failed to listen or read.

As a teacher, as a consultant, and by patients, I am sure I am asked this question more frequently than any other: "When should forcible motion be commenced in a joint in order to establish the natural movements?" The answer is, "Never forcible passive motion under an anesthetic or even active motion when it causes pain." There is always a look of surprise, or an expression by word or letter, showing that the interrogator believes the answer cannot possibly be based on good mechanical reasons. They forget that the human joints are the highest form of mechanical contrivance, so far as action, pulleys, leverage, etc., are concerned, and unlike any manufactured mechanism in their ability to repair and self lubricate, and that human mechanism never becomes rusty or wears out; some disease or injury must occur to destroy joint motion, and in order to restore motion, this disease or mechanical obstruction must be overcome before motion should be attempted either by force or otherwise.

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* Read before the American Orthopedic Association at Philadelphia, June, 1914.

When the orthopedic surgeon advises against passive motion to establish permanent motion, one's mind immediately turns to manufactured joints, gummed wheels and rusted hinges, wear, lack of lubrication and their exposure to weather producing this stiffened condition, which never prevails in persons, and they do not appreciate that Nature's "first aid" to the injured or inflamed joint is neuromuscular spasm. If inflammation is not checked by rest and constitutional treatment, or both, a stiffened joint will result, and the adhesions and inflammation would be distinctly increased by motion, and would finally result in bony ankylosis.

To this day few medical men, except orthopedists, recognize the great benefit derived from immobilizing dressings in so-called acute rheumatism or infected joints from whatever cause, with the possible exception of tuberculous joints. Even in tuberculous joints they do not do so, I fear, from reason, or they would apply the same protection to every inflamed joint, from whatever cause, but rather from clinical facts gleaned from books and the constant warning and teaching of their orthopedic professor; nor would they be constantly asking when to begin passive motion in a tuberculous joint.

We who treat these cases daily are quite pleased with a cure in a tuberculous joint with motion; but would we not all feel more secure with a cured tuberculous joint with the limb in good position and the joint immobile? I myself never advise passive motion, nor do I advise the patient to use forced motion in a cured tuberculous joint, no matter how many years the joint has been free from any evidence of disease. In former years I have been guilty of advising patients in a mild way themselves to increase motion gradually by using a little force after I felt that the disease was entirely eliminated; but in many instances inflammation was lighted up again, abscesses formed, or the disease appeared in other parts of the body, even after every evidence of inflammation in the joint had disappeared many years before.

Certainly there are many neglected deformed tuberculous joints which can be straightened only by force.. I refer to joints after the inflammation has so far subsided and they are held in the deformed position by contracted tendons and inflammatory adhesions. Even in these I almost never use force until I have attempted to overcome the deformity by rest, combined with extension, or, if I find that under an anesthetic there is motion, I frequently allow the patient to come out from under the anesthetic and complete the correction by rest and extension. While this takes a much longer time, the results compensate for the time and there is less likelihood of abscesses or disseminated tuberculosis. In our state cases, in which we have no time limit in the hospital, we have thoroughly tried this out, and we are convinced that we have gained time in this way rather than otherwise. So enthusiastic are we that many times in old flexed hips from tuberculosis, even though by using considerable force under ether we could overcome the flexion, if we feel that the adhesions are sufficient to prevent its flexing further we have done a subtrochanteric osteotomy rather than use force.

I have, even in chronically flexed thighs with slight motion and no pain, advised no mechanical treatment until the hip was fixed, in order later to perform a Gant's operation. This advice was given in cases of adults and when the patient could not spare the time longer for mechanical treatment.

In inflammatory stiffened joints, from any cause, passive motion is contra-indicated. The so-called stiff joints from arthritis deformans, in chronic, acute and subacute cases, respond to rest and extension, combined with constitutional and local treatment, better than from passive or active motion, until all pain has disappeared. Then if there is a little motion the patient is instructed very positively not to force motion beyond the point of pain.

It is surprising, as stated above, since these facts are so generally known, that in text-books of general medicine and surgery so little attention is paid to the importance of holding all acutely inflamed joints quiet by cast, brace or splints. I have not seen any form of acute inflammation of a joint, even gonorrheal, result in ankylosis, if immobilization by means of a splint, cast or extension be continually applied during the early and painful period, unless the joint disease was suppurative. Certainly even in suppurative cases they are much less likely to be stiff if immobilized after opening and draining, both of which we know are always indicated when pus is present, but never passive motion.

One cannot always ascertain by roentgenoscopy how firm are the bony ankylosis or fibrous adhesions. Frequently when the subject is chloroformed, gentle flexion and extension will demonstrate motion. If it gives without much apparent tearing of the tissue, one should stop before completing the full arc of motion. The joint should not be worked by moving the distal end back and forth like a pump handle, for every such motion increases the inflammation, and tears adhesions, which would otherwise stretch by extension and limited use.

We are constantly hearing and reading about gentle passive motion in sprains. On what theory this advice is based it is hard to conceive by those of us who are constantly being called to treat the injurious effects of such procedures. Certainly we know that a sprained joint can be immobilized too long, but we also know that there is an acute stage even in a simple sprain when rest is the treatment, and especially is this true, as the sprain is accompanied always by a stretching of the tendons, capsules and ligaments and more or less synovitis; and many times, and perhaps always, there is not only stretching, but also rupturing and tearing of the structures mentioned above. How often do we see in sprains of the shoulder, after a few days at most, passive motion begun, and later, as the shoulder becomes more and more painfully stiff, forcible passive motion under an anesthetic, "to break up the adhesions," until the patient himself discovers, as he states, that the shoulder is getting worse and more stiff after each manipulation?

Probably the greatest destruction of joint tissue occurs in fractures in and about the elbow joint, wrist joint, and the ankle joint, by attempting to improve motion and deformity by passive motion.

Many surgeons seem to think that if they place a fractured elbow in a straight splint, with elbow in full extension, or full flexion, or the old-fashioned way of partial flexion, that this is all that is necessary. Any fracture anywhere in the body should be examined by Roentgen ray after the splints are applied, to see that all of the fragments are in anatomically correct positions. If this is done the joint will never require further treatment other than use to develop motion, except possibly now and then in nervous cases, and then only just a start, but never passive motion. Even in cases in which bony deformity in the elbow prevents full flexion and extension full use of the arm is often developed in a year or two by active motion.

I recall such a fracture in a young boy about 9 years old, son of an army officer. The father was very much exercised over the matter as he wished to have his son go to West Point, and later enter the army. This could not be if the boy did not have full use of his right elbow. The injury had occurred about six months previous to the time of my examination. Two months previously the attending surgeon began passive motion both with and without narcosis, and the father was instructed to work the arm back and forth three times a day regardless of the boy's protest. Naturally, when I saw it the elbow was intensely swollen and painful, so much so that the bony position could not be made out. A cast was applied, and instructions given to carry the arm in a sling. At the end of two weeks the cast was removed, and the tenderness and swelling had so far subsided that it was easily demonstrated that a portion of the inner condyle of the humerus was in front of the joint. But there was also, to our surprise, some motion. I advised an operation either to replace the fragment or remove it, to which the father objected, as it moved better than it did before the dressing was applied. He continued to object as the boy continued to improve, simply by active motion, and no attempt whatever, either by the boy or any one else, was made to force it. At the end of two years he had perfect motion in every direction, which he would not have had, I am sure, if the passive motion had been continued, and possibly not if he had been operated on.

Numerous similar experiences have led me to give the following advice in all cases of injured joints in children, where there is a little motion: "Keep the joint quiet until all pain and inflammation have disappeared, and then just use it naturally, flexing and extending up to the point of pain." Since following this procedure, out of a great number of children only two required operation, as the joint motion in all other cases was so nearly perfect that it was unnecessary.

I feel that by the "let alone" treatment in such cases, the inflammation of the joint subsides, the inflammatory thickening disappears, the callus lessens, and the fragments or displaced bones in the children do not increase in proportion to the growth of the joint. This, together with the compensatory changes in the joint, and, most of all, no passive motion to combat Nature's healing, is the reason for these finally good functional elbows.

Fractures near the wrist joint, usually designated as Colles' fractures, furnish the most marked ill effects of passive motion, and naturally too, as our text-books on surgery are filled with advice as to when to begin passive motion, not massage or actively moving the fingers, but passive motion to the joint. This increases the irritation, the callus, the inflammation and certainly the tendon adhesions.

When the dressing is removed there always appears marked swelling and edema in fractures about the joint, and the patient, if he can endure the pain, must submit to passive motion, or have it done under anesthesia, which continues the swelling and inflammation. Sometimes the bones, too, are in bad position. Of late, since the Roentgen ray is so universally used, this complication is quite uncommon. In most of these wrist fractures, after the splints are removed, if a simple bandage were applied to immobilize, to a limited extent, and active motion only to the point of pain allowed, the patients would, without assistance, obtain good and painless motion.

In fractures in and about the ankle joint, and in any form of inflammation here, for that matter, we get the greatest interference with motion from the contraction of the Achilles tendon owing to the foot naturally dropping in this position, or, I regret to say, frequently being dressed in the position of equinus which, unless one is very mindful, will occur. This tendon is so very strong that in cases of stiffening following an improperly dressed fracture or inflammation, I prefer, if necessary, to divide the tendon to place the foot at a right angle, rather than do so by extensive force, as it will always be followed by more or less trauma to the joint.

In chronic rigid flat-foot, with the foot in the position of pronation, and the heel cord shortened, the better and quicker result will follow if, instead of forcibly correcting the deformity by manipulation, we tenotomize all contracted tendons, and then immobilize in the overcorrected position, and after the inflammation has disappeared, proceed with the usual mechanical protection.

After fractures of the patella, if there is slight motion in the knee-joint, give the patient a chance and he will gradually loosen the joint. In several instances the patella has again been fractured by forcible passive motion.

If a joint requires loosening, or bony adhesions take place, motion should be stopped just as soon as it is loosened, and no attempt should be made to complete flexion and extension. This should be followed by the usual orthopedic treatment for an inflamed joint. Then the patient should be instructed gradually to begin using the joint, as the irritation disappears, which will be indicated by the lack of swelling and the disappearance of pain.

I have not mentioned in this article other forms of treatment which might be employed to loosen joints and reduce inflammation; neither do I wish to condemn open operations to remove or fix misplaced bony fragments, when indicated, though too much of it is done, which could be accomplished mechanically.

I have tried to demonstrate that so-called passive motion to loosen joints, as a treatment, *per se*, is injurious. Hippocrates must have had this in mind when he said, "Hard rubbing binds."

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**The Moral Equivalent of War.**—The martial type of character can be bred without war. Strenuous honor and disinterestedness abound elsewhere. Priests and medical men are in a fashion educated to it, and we should all feel some degree of it imperative if we were conscious of our work as an obligatory service to the state.—William James, *Popular Science Monthly*.

# THE DETERMINATION OF THE NEXT DOSE IN TUBERCULIN THERAPY *

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In the determination of the appropriate dose for the individual patient lie both the difficulty and the danger of tuberculin therapy. A dose in excess of the exact amount required frequently proves disastrous and has even hastened death. The possibilities of giving the wrong dose are increased by the very wide limits of tuberculin dosage, one patient requiring a dose one thousand or one million times that required by another patient, who is sometimes apparently of the same type.

There is no way of determining accurately the proper dose for a patient who has never taken tuberculin. The initial dose is always a matter of guess. Experience and judgment may indeed help one to guess more correctly, but they do not insure accuracy. White and Williams estimate the initial dose from the size of the areola produced by a von Pirquet test made with a definite amount of tuberculin; but they use this method only for incipient afebrile cases and the dosage they use I would be afraid to employ. My own rule with regard to the incipient dose is to give an amount that will probably do no harm. When beginning tuberculin treatment, therefore, I give, in incipient cases, one ten-millionth to one millionth of a milligram; in moderately advanced cases one billionth to one one-hundred-millionth of a milligram, and in far-advanced cases one trillionth to one billionth of a milligram. My reasons for giving this dosage I have explained at length in a previous communication.[1]

The dose for a patient who has already been given tuberculin, however, should not be determined by guess, but by careful estimation. It is here that judgment and experience count. From the effect produced by the last dose of tuberculin we can determine the amount to be given at the next dose. The dosage must be distinctly individual. It is impossible to generalize in tuberculin therapy or even to group our cases. There is no rule of thumb to guide us, nor any general plan of approximate dosage. We must study critically in each individual patient the phenomena that have followed the previous administrations of tuberculin, and from the data presented decide what the next dose in that case should be.

In order to pass an intelligent judgment it is important to have a clear idea as to the effect one desires from the use of tuberculin. There are really three methods of giving tuberculin. Sahli, Denys, and most of the German authorities, as well as Trudeau and his associates in this country, desire to accustom the patient gradually to large doses of tuberculin without causing any reaction in the process. Others, such as Koch, C. Spengler, Petruschky, Löwenstein, Möller and Pickert abroad, and White in this country, endeavor to give the dose that will just produce a slight reaction. The English school, including Latham and Inman, and Bullock and others in this country, aim to give the dose that has a favorable influence on the symptoms and to maintain this dose until it loses its effect. I am in thorough accord with this third group and partially agree and partially disagree with the other two groups. This becomes possible if we distinguish between favorable and unfavorable reactions. I regard as signs of a favorable reaction: improvement in appetite, increase of strength, a feeling of well-being, lessening of the symptoms, flattening of the temperature curve, and all favorable phenomena occurring on the day tuberculin is given or on the day following. An unfavorable reaction is shown by weakness, fatigue, drowsiness, headache, malaise, anorexia and increase of the various symptoms on the day of or on the day after tuberculin treatment. I try to give the dose that will produce a favorable reaction—which is really the object sought by Latham and his school. At the same time I half agree with those who desire to produce a reaction, only the reaction I aim for is a favorable one. Inasmuch as I try to avoid producing an unfavorable reaction (unless very slight) I again half agree with those who would avoid reactions. This statement of the effects I seek to obtain and to avoid will explain the method I employ in determining the dosage.

The effect of tuberculin can usually be seen in the opsonic curve, the leukocytic count, the leukocytic differential picture, the Arneth count, the temperature curve, the subjective and the objective symptoms and the physical signs. A study of all or of any one of these will give valuable information as to its action. Wright recommended that dosage be regulated by the effect on the opsonic index, but the difficulty and the errors in making the test and the fact that three or more determinations of the index each day are necessary for accuracy, render this method impracticable. Strickler and I, in a preliminary communication,[2] suggested that tuberculin dosage be regulated by the effect on the Arneth and the lymphocytic curves, but we have not yet examined a sufficient number of cases to permit us to speak with any authority on this point. Dürel[3] determines his dosage by its effect on the Arneth index, but as his results differ from those of Strickler and myself, all I can say is that in his hands it seems a safe and accurate guide. The time required for a differential count militates against its availability as a routine procedure, especially in the hands of the busy practitioner and among patients who cannot afford to pay for such laboratory tests. It is possible, on the other hand, by carefully studying the clinical symptoms and the temperature curve, to gain some knowledge as to the effect produced by each dose of tuberculin; and, indeed, Latham and Inman[4] have shown that when a patient suffering from tuberculosis feels better and his symptoms show amelioration, his opsonic index is raised, and that a falling index is often associated with a peculiar frontal headache just above the eyebrows, with lassitude and a general feeling of malaise, with loss of appetite, a quickened pulse, increased expectoration, restlessness and inability to sleep. It has been my experience that slight clinical symptoms of an unfavorable reaction occur before there is any notable alteration in the temperature. These slight symptoms are often unnoted by the patient unless his attention is particularly

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* Read before the Philadelphia Clinical Society, May 4, 1914.

[1] Solis-Cohen, Myer: The Use of a Very Minute Initial Dose in Tuberculin Therapy, New York Med. Jour., 1913, xcviii, 268.

[2] Solis-Cohen, Myer, and Strickler, Albert: The Effect of Tuberculin Treatment upon the Leukocytic Picture (a preliminary report), New York Med. Jour., 1912, xcv, 53.

[3] Dürel, Wallace G.: The Polynuclear Neutrophil Leukocytic Count as a Guide for the Administration of Tuberculin. Tr. Nat. Ass'n for the Study and Prevention of Tuberculosis, 1912, p. 415.

[4] Latham, Arthur, and Inman, A. C.: A Contribution to the Study of the Administration of Tuberculin in Pulmonary Tuberculosis, Lancet, London, 1908, ii, 1280.

called to them and sometimes can be elicited only by persistent questioning. In order not to miss this important evidence as to the effect of the doses already given, which must serve as a guide in the determination of the next dose, I always question the patient closely as to how he feels on the day of the tuberculin and on the day afterward, as compared with the days of the interval between doses. Of course one should avoid leading questions and should be careful not to suggest the answers. I ask, for instance, if the appetite on the day tuberculin is given is the same as, or better than, or worse than on the day preceding or on the day following the dose, or on the next day. Every new symptom and every change in an old symptom I put down as possible evidence of a reaction—favorable or unfavorable. To be on the safe side, in regulating the dosage I regard the occurrence of new unpleasant symptoms or the exacerbation of old symptoms on the day of or after the dose as probable evidence of an unfavorable reaction.

The next dose of tuberculin can be the same as or greater than or less than the last dose. In determining this dose I am guided by the following rules:

The next dose should be the same as the preceding dose, when the latter was followed by a favorable reaction, such as a feeling of well-being, rise of spirits, increase of appetite, fall of an elevated temperature to normal, or reduction of the extent of the daily fluctuation; or when the preceding dose was followed by a very slight unfavorable reaction that lasted but a few hours, or at most a day, and was then followed by an improvement in the symptoms or general condition.

The next dose should be less than the preceding dose if the latter caused symptoms of an unfavorable reaction, such as rise of temperature, increase of symptoms, malaise, anorexia, pains, loss of weight, etc. (with the one exception just mentioned), or if definite and prolonged painfulness and inflammation occurred at the site of injection—the so-called skin reaction. If the rise of temperature and the other symptoms lasted but a few hours, the dose should be reduced slightly—a half, for instance. If the rise and the symptoms lasted all day, the next dose should be one-tenth, or less, of the preceding dose. When the reaction has been marked or has lasted several days in spite of rest, the next dose should be one hundredth to one thousandth of the last dose.

When the last dose has had no effect of any kind, it should be increased at the next administration. Even in febrile cases in which no change one way or the other is noted in temperature or symptoms, the dose should be increased until signs of a favorable or an unfavorable reaction appear. When the effect of a hitherto appropriate dose is passing off, as shown by the last dose being followed by a rise to a higher level of a temperature which has been kept down, or the reappearance of more marked daily fluctuations and an increase of symptoms which had been ameliorated, the next dose should be increased.

The rate of increase in ordinary cases should be about 50 per cent. of the preceding dose. The course of tuberculin so commonly given in series of nine doses beginning with 100 per cent. increase and ending with an 11 per cent. increase, followed again by 100 per cent. increase in the next series, I consider dangerous. The scheme is represented thus: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, etc. If a scheme is desired the following is much safer: 1, 1.5, 2, 3, 5, 7, 10, 15, 20, 30, etc. Occasionally, when a very minute initial dose is given without the slightest effect, a more rapid rate of increase—not exceeding 100 per cent.—may be justified, provided the patient is closely watched and quizzed for the first appearance of a slight reaction. In patients who have had to have their dose reduced on account of a reaction the subsequent increase or dose should be made very gradually and cautiously, from 10 to 25 per cent. of the preceding dose being sufficient increase.

The length of the interval between doses requires consideration. Ordinarily, in patients who have shown no effect of any kind from tuberculin and in those who are doing well on it, an interval of seven, five, or even three days is usually satisfactory. It is best to begin with a seven days' interval. In advanced cases and in susceptible and nervous individuals, and with the larger doses, ten days would often be better. After an unfavorable reaction one must wait until all the reactive symptoms have disappeared. If the reaction has been severe it is best to postpone the next dose until a week or more after the disappearance of all symptoms. When the depression of the temperature curve lasts but three days and then rises until the next dose is given, or when the symptoms that have been ameliorated return after three days, the next dose should be given at the end of three days, just before the effect of the preceding dose has passed away. One can often tell from the reappearance of fever and other symptoms about the length of time one dose of tuberculin exerts its influence and can then give the next dose as the effect of the last is wearing off.

The dosage and the interval are of the utmost importance in the use of this dangerous remedy. A physician who does not wish to give the time and attention their determination demands, should never administer tuberculin. Otherwise he cannot obey Hippocrates' injunction to do good or do no harm.

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# COLLARGOL IN PYELOGRAPHY

## WITH REPORT OF AN INTERESTING CASE

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In looking up the literature on the subject, I find but few mortalities reported following the use of collargol, but a number of cases in which great damage has been done the kidney as shown by subsequent operation. The pathologic findings in these cases have been similar but the theories as to the cause of the destructive action of the remedy differ with the various observers.

There is also great divergence of opinion as to the toxicity of this drug; some claiming that it has an irritating and even cauterizing effect, while others assert that it has no injurious effect whatever on the pelvic mucosa, the tubular epithelium or other tissues of the kidney. There are still others who seem to be of the opinion that the kidney cells have the power of ingesting and distributing the drug throughout the entire kidney, in other words, the theories are that the drug may be distributed by absorption or by active diffusion under pressure.

From my own observations, I am of the opinion that the injurious results following the use of collargol in pyelography are from a diffusive process under pressure rather than passive absorption. We are all familiar with the idiosyncrasies of certain people to certain drugs. I have seen in some cases more reaction follow the use of silver nitrate in 0.025 per cent. solution injected into the kidney pelvis than I have in others in which a 5 per cent. solution was used. There is no reason why a patient should not have the same idiosyncrasy for collargol and why a spasmodic contraction of the kidney pelvis should not be set up when the pelvis is filled with the collargol solution. Should a contraction occur while the ureter is blocked with the ureteral catheter and filled with this preparation and held in, even though the solution is not being injected at this time, is it not perfectly reasonable to suppose that diffusion would take place under pressure? This gives the gravity method a decided advantage over the syringe-forced method, since the fluid would have a back flow under nephritic pelvic contractions; yet I do not believe this is without danger.

### CASE REPORT

*History.*—The case I wish to report was referred to us by Dr. Gibbon for cystoscopy and radiography for persistent symptoms suggesting nephritic lesion. The patient was a married woman 35 years old, fairly well nourished. She had borne no children and enjoyed good health until three years previously when she suffered with acute cystitis and apparently never fully recovered from it. She was admitted to the hospital April 16, 1914. A roentgenogram was immediately taken of both kidneys and they proved to be negative as to stone. The ureters were then catheterized. A perfectly clear urine came from the right intermittently. This indicated that there was no hydronephrosis on that side. Chemical and microscopic examination of this urine was negative. The urine from the left kidney was cloudy and came away continuously until nearly 3 ounces of urine had been withdrawn, when it became intermittent. This urine contained pus, a few blood-cells and a few hyaline and granular tube-casts, which showed that we had to deal with a left hydronephrotic kidney.

A 10 per cent. solution of collargol was injected slowly into the pelvis of the kidney with a syringe until the first indication of distention or pain was experienced by the patient and a roentgenogram was taken. Twelve c.c. of the solution were injected into the pelvis of the kidney. This could not have filled the kidney pelvis more than half full at most. The catheter was allowed to remain for probably ten minutes to allow the collargol to drain away. There was no obstruction to the ureteral catheter to prevent the outflow of this preparation, or indications of hemorrhage.

A few minutes after the injection the patient complained of pain which gradually grew severe, the pulse weak and rapid, and she presented the appearance of a very sick woman. She suffered immediately almost complete suppression of urine, the catheterized specimens ranging from 2 to 3 ounces each twenty-four hours. This was loaded with albumin and blood. Morphin was given for the pain and various remedies were administered and applied to counteract shock but with no decided results. Her pulse ranged from 104 to 120, temperature from 96 to 100 F. until death on the fifth day. Large hemorrhagic areas appeared around the site of each hypodermatic injection. The patient suffered severe hemorrhage from mucous surfaces and especially from the mouth and bowel.

In this case an amount of collargol not more than one-third of the pelvic capacity was used.

It was impossible to get a complete post mortem in this case but fortunately I secured the kidneys. The pathologic report is as follows:

*Pathologic Findings.*—The left or injected kidney is somewhat harder than normal over certain areas. Pelvis about twice the size of the opposite or normal kidney. Just beneath the capsule at the upper pole and at the lower half of the anterior surface of the kidney are seen dark areas which are evidently collargol deposits. There is hemorrhage beneath the capsule at these points. The capsule is slightly adherent over the pelvis. On section, the cortex is very soft to the touch except where collargol is deposited. The pelvis and calices are partially filled with clotted blood. The pyramids are deep red. The cortex is grayish brown.

The right kidney is about normal in size, flabby and soft to the touch. Capsule slightly adherent. On section, no collargol is seen grossly. The pyramids have a pinkish color. Microscopically, the collargol is seen through the whole of the section. It is seen almost entirely in the interstitial tissue. A few granules are seen in some of the larger blood-vessels. The whole section is almost bloodless except for areas of old hemorrhagic spots in portions near heavy collargol deposits. The cells of only a few of the glomerular tufts show nuclear staining.

Microscopically, the right kidney may be divided into two distinct zones, one composed of the straight collecting tubules and the other the convoluted tubules and glomeruli. In the lower zone the blood-vessels are filled with blood. They show granules of collargol both in the lumen of the tubules and within the leukocytes. Several tubules contain hyaline casts. The cells of some contain granules of collargol.

In the cortical zone the blood-supply is completely cut off. There is diffuse degeneration both parenchymatous and interstitial. The individual cells of the tubules and glomeruli have lost their outline completely, the whole being composed of granular material. The outline of the tubules and glomeruli is still visible in most instances.

From gross and microscopic appearance we would say the changes present are due in the injected kidney to a mechanical blocking off of the blood-supply, probably from pressure of collargol in the kidney tissue. In the right kidney the condition is due to cutting off of blood from the secreting portion of the kidney. What caused this lack of blood-supply has not been ascertained from the gross kidney or from the sections examined. It may possibly be due to collargol embolism.

The disastrous results and findings in this case led me to perform the following experiments on dogs:

### EXPERIMENTS ON DOGS

Dog 1 was etherized, the bladder opened, ureteral catheter inserted into the right ureter for about 4 inches and 10 c.c. of a 10 per cent. solution of collargol were injected slowly into the pelvis. The dog died within five minutes thereafter. On post-mortem examination, we could find no special cause for the sudden death of the animal.

Gross examination of the right or injected kidney shows a dark green or black appearance beneath the capsule of the whole organ. On opening the kidney blood-clot and collargol are present in the pelvis near the opening of the ureter. The whole kidney is somewhat darker than normal. Collargol shows grossly only at the poles. The deposits are pyramid-shaped, being narrow near the pelvis and broader toward the cortex.

Microscopically, the collargol is seen in the tubules, blood-vessels and the interstitial tissue. It is thickest near the pelvis where there is considerable flattening out or massing of the tubules due to pressure. No collargol is seen in the glomeruli.

There are clots in the heart and especially the right side presenting a greenish appearance, due to collargol. There is no macroscopic lesion of any of the organs other than the injected kidney.

Microscopically, the liver shows collargol throughout the whole organ. The collargol is present in the intralobular capillaries. The capillaries are dilated and congested. No collargol is seen in the liver cells. Some of the larger vessels in the portal canals show minute granules of collargol.

No collargol is seen in the heart-muscle or interstitial tissue. Many of the vessels in the heart-wall show numerous granules of collargol. This is seen in the walls of both ventricles.

Granules of collargol are seen in many of the alveolar capillaries of the lungs and in a few of the larger vessels.

Dog 2 was etherized, the bladder opened and 5 c.c. of the solution were injected into the right kidney as in Dog 1. This animal did quite well and was killed in forty-eight hours. In gross appearance this kidney shows many small areas, black or green in appearance, over the whole surface just beneath the capsule. On the anterior surface near the center and at the upper pole are two larger areas having the characteristic color of collargol. When the kidney was sectioned these areas were seen to extend from the cortex to the pelvis. Above this the collargol was seen spreading out to the cortex.

Microscopically, the kidney shows acute diffuse nephritis. There are several areas of infarction, the kidney tissue being destroyed and its place being taken by leukocytes which show phagocytosis of the collargol. In the collargol area near the upper pole there is a distant break in the lining of the pelvis, the fissure extending about 2 mm. into the substance of the kidney. This break is partially filled with blood-clot. The collargol is present in the tubules, blood-vessels and interstitial tissue.

Macroscopic appearance of left kidney is normal. Microscopically, no collargol is seen. The kidney is apparently normal.

Macroscopic appearance of the liver, lungs and heart normal.

In the liver, microscopically, many of the endothelial cells show phagocytosis of small granules of collargol.

The lungs, microscopically, show a few deposits of granules in the interstitial tissue.

In the heart, microscopically, granules are seen in some of the larger vessels in the heart-walls.

In the spleen, microscopically, the large endothelial cells show phagocytosis of particles of collargol throughout the whole of the organ.

From the pathologic findings in this case and our experimental work on dogs, I am convinced that this preparation in pyelography is not without danger, and that we should continue our search for a substance less harmful for this purpose.

I am indebted to my associates, Dr. J. W. Squires and Dr. Harvey P. Barrett, pathologist at the Charlotte Sanatorium, for the radiographic and pathologic findings in connection with this work.

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# THROMBOPHLEBITIS OF THE SIGMOID SINUS OF OTITIC ORIGIN WITHOUT LOCAL MANIFESTATIONS

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The frequency with which the sigmoid sinus is involved in middle-ear inflammations is greater than was formerly suspected. This advance in our knowledge can be attributed to several factors: the more radical technic in operating on the mastoid and thus laying bare and exposing an unsuspected diseased sinus, and the comprehensive diagnostic aids which we resort to in interpreting the true condition underlying unusual cases of middle-ear inflammation. There is, however, one fact to be borne in mind—that the severity of an acute or chronic purulent inflammation is not the only cause of the possible extension of the original disease into the neighboring venous channels.

It is very possible for a mild acute inflammation of a very short duration, when the pain and discharge cease, to be followed in a few days by such serious complications as phlebitis and thrombosis of the sigmoid sinus. During this interval of apparent well-being, the patient and family may have paid no attention to the ear, while the patient may present a train of symptoms not at all referable to the ear but to some intercurrent acute affection, say of the abdomen or of the knee with their usual clinical pictures.

If medical advice be then sought, the patient may be found to have a temperature of 104 or 105 F., perhaps preceded by a chill. The slight ear disturbance of the previous week may have been forgotten. There may be at this time no subjective symptom referable to the ear. A physical examination is made, and possibly a tentative diagnosis of typhoid fever may suggest itself in the case of an adult, or, if a young child, a central pneumonia or an influenza. If the patient enter a hospital he may be considered a medical case, nothing of an otologic nature being suspected.

At the hospital a general examination is made, and nothing is revealed, whereupon an examination of the eye-grounds and of the ears is resorted to. I have had opportunity to see in a small hospital, in a comparatively short time, four cases of unexplained high temperature turn out to be due to sigmoid sinus thrombosis in patients who subjectively gave no evidence of ear disease. In addition to these four cases, I have had two similar experiences in private practice. My first experience was with a private case. The patient was a young man whose temperature had been high for a number of days, with marked remissions. He was under the care of an experienced practitioner, who could not account for the febrile movement. A few hours before I saw the patient, a laboratory expert, also an excellent clinician, saw the patient, but failed to interpret the high temperature. I was asked to see the case as an otologist as a routine measure.

I examined the temperature chart before seeing the patient. It showed the typical pyemia curve as we observe it in thrombophlebitis. The patient had no visible discharge from the ear, but down in the fundus of the canal was found a small quantity of foul pus.

There was no manifest pain anywhere around the ear, or any swelling in the canal. Ordinary pressure over the mastoid revealed no tenderness, whereas deep pressure on the mastoid at the auricle, on the level with the roof of the external auditory canal disclosed tenderness. Examination of the opposite side was negative. It was thus very apparent that we were dealing with a case of sinus thrombosis and not of typhoid fever. I advised immediate operation irrespective of the laboratory report, as I feared too much time had already been lost.

The patient was operated on at midnight. The mastoid was found to be markedly sclerotic, and on exposing the lateral sinus groove, thin pus welled up. Further exposure showed the entire sigmoid sinus to be empty, the sinus having disintegrated, while a large area of the dura was bathed in pus.

At the close of the operation the patient's pulse was very weak, either as the result of the shock of the operation or of the narcosis, or possibly of both, especially as the loss of blood was not great, and it was considered inadvisable to prolong the operation by ligaturing the jugular vein.

The next day there were symptoms of pulmonary involvement and nephritis, and further operative procedures were abandoned. The patient's condition was critical for five or six days; nevertheless recovery took place without further eventualities.

While the patient had ear symptoms, they were not marked enough to attract attention.

The second case also was one that I was called to see as a routine measure, because of a temperature of 105 without apparent cause. (This patient had chills with high temperature.) The examination of the ear showed a subacute process in the tympanum; the drum membrane was lusterless and somewhat boggy; there was no apparent swelling of the roof or posterior wall of the canal. Incision of the drum membrane gave vent to a slight serous discharge. This measure did not improve the patient's condition. Three other otologists saw this case, but none expressed a positive opinion, though the temperature continued to zigzag in the characteristic manner. Finally an abscess (metastatic?) showed itself somewhere in the abdomen, followed by others in other parts of the body. The patient eventually recovered. This history was obtained from the family physician, and I cite it even in this superficial manner because of my experience, in a similar case, with the mildest form of otitis.

This other patient was admitted to the hospital on the recommendation of her family physician as a typhoid suspect. She was a young woman from Eastern Europe, whose mind was not sufficiently clear to enable her to furnish a reliable history, but it was learned that ten days previously she had a slight pain in the right ear, for which she went to the outdoor service in one of the well-known otologic hospitals, where the drum membrane was incised. The pain continued but no discharge followed. I saw the patient at the request of the attending hospital physician, twenty-four hours after admission, as he could not reach a diagnosis. A slight swelling over the right knee was present. During this time the temperature had risen twice to 105, with a fall to 102, not accompanied by chills. The blood-count was abnormally low—5,500 leukocytes, and 85 per cent. polynuclears—which indicated profound sepsis with slight resistance. Examination of the ear revealed a lusterless and uniform drum membrane and canal free of secretion. The canal wall was perfectly normal in appearance, neither red nor swollen in the slightest degree. The mastoid was not tender to deep pressure, when compared with that of the opposite side. There was a suspicion of tenderness in the neck along the anterior border of the sternomastoid in the region of the tendon. An incision of the drum membrane showed it to be flabby, while the drum cavity contained only a slight amount of serous fluid; this latter, when examined microscopically, proved to be free from pathogenic organisms. A blood-culture had been made and proved negative. The agglutination test for typhoid was also negative.

A surgeon of large experience did not think the case a general surgical one, and an otologist expressed a negative opinion in regard to the possibility of a thrombosis of the lateral sinus.

In the meantime, the patient's temperature continued to rise and fall, ranging from 102 to 105 and 106, until a week had been wasted in seeking a cause for the temperature. No chill had been observed, nor any sweating. The patient took food; there was no disturbance of the bowels; the urine, however, showed some albumin and hyaline casts. The fundi oculi were normal. Repeated blood-counts showed the same leukocytosis. Delirium was frequently present. On the eighth day of the patient's stay in the hospital, I ventured to make an exposure of the mastoid and lateral sinus on the right side. The mastoid cortex and subcortical cells appeared free from pus and granulation tissue until the region of the antrum was laid bare, when a small quantity of creamy, odorless pus welled up. The sinus was found to be close to the posterior wall of the external auditory canal, and on being exposed was found to be solid almost from the torcula down to the bulb. A roentgenogram would have shown this very well. The neck was laid open for the removal of the internal jugular vein, and on incising the carotid sheath the jugular was found to be empty, the thrombosis having disintegrated into the sheath. Six hours after the operation the temperature rose to 108, and thirty-six hours after the patient succumbed. Two weeks later, by a strange coincidence, the surgeon who saw this case was called by a colleague to see a man who was having a temperature of 105, with a slight red swelling over the patella. The patient was asked casually by the surgeon whether he had had any trouble with his ears, and replied that two weeks previous he had had an earache with a discharge of fluid, but that it did not bother him further. The patient was removed to the hospital, though the otologist, a man of wide experience, believed that neither the ear nor lateral sinus was responsible for the condition. A positive blood-culture, however, resulted in a decision to open the mastoid and expose the lateral sinus, whereupon the sinus was found to be thrombosed. The patient likewise succumbed.

About a year ago I reported a case before the Otological Section of the New York Academy of Medicine, which had many of the features of the first case herewith reported, but which was first seen by me in a general hospital.

The report of this case aroused no discussion or comment. After the meeting, one of the members expressed surprise that no discussion was occasioned by the report of the case, as the experience was a rather unusual one. I could understand this, because his observation is limited entirely to an otologic hospital service. However, I am not unmindful of the fact that others have had experiences similar to mine, but the literature on this subject has been more or less buried away in periodicals devoted to otology, though the subject deserves a wider publicity.

In connection with this complication of otitis, either in recent or old cases, I would like to direct attention to the great importance that attaches to pain in the region of the ear, either spontaneous or induced, as a diagnostic factor in the clinical picture. This is apt to be misleading, for one cannot always depend on the pain factor as a symptom in the diagnosis of ear-disease and its complications.

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**The Code of Hammurabi.**—Medical remuneration and the legal regulation of medicine were accurately defined as early as the reign of Hammurabi (c.2200 B.C.).

The laws of Hammurabi on this subject lay down that:

"If a physician cause a severe operation wound with a bronze operating knife and cure the patient, or if he open a tumor (cavity) with a bronze operating knife and save his eye, he shall have ten shekels of silver.

"If it be a freed man, he shall have five shekels.

"If it be any one's slave, his owner shall give the physician two shekels of silver.

"If the physician make a severe wound with the bronze operating-knife and the patient die, or if he open a growth with a bronze operating-knife and the patient lose his eye, he shall have his hands cut off.

"If a physician heal a broken bone or cure diseased bowels, the patient shall pay the physician five shekels of silver."—Neuburger, *History of Medicine.*

# A CASE OF SPASMODIC ILEUS IN AN INFANT SIMULATING INTUSSUSCEPTION

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The following case is reported because of the rarity of such occurrence, judging from the literature.

Hilda B., aged 8 months, breast-fed, well-nourished, previously healthy infant, suddenly became ill at 7 p. m., July 28. Two hours later she was seen by me. The mother reported that the infant had a normal bowel movement about 5 p. m. and had been playful and happy until about 7 p. m., when suddenly it began to scream. The face became pale, a cold sweat suffused it, and the legs were drawn up over the abdomen. The screaming continued at about five-minute intervals, the child dozing between and not noticing any one.

On examination, I found the child listless and inclined to be drowsy, the thighs held flexed on the abdomen, twisting and squirming every few minutes as if in severe pain and crying out at intervals. The abdomen was flat, soft and relaxed with the exception of the upper right quadrant which was slightly rigid. Here a soft, smooth, cylindrical mass could easily be made out extending slightly across the midline just above the level of the navel rolling under the fingers. This spot was quite tender. The remainder of the abdomen was negative. The temperature was 97½ by rectum, pulse 130. Thd child had been given nothing except the breast. The mother, however, had been working very hard, ironing all day and was hot and very tired at the last nursing. A small soap-suds enema was given; the first portion returned clear, the very last was blood-stained and contained considerable mucus. No feces or gas passed. A rectal examination was negative, with the exception of about a dram of bloody mucus appearing on the withdrawal of the finger. Because of the suddenness of the onset, collapse, subnormal temperature, apathy alternating with crying spells, presence of a palpable mass, localized tenderness and the bloody mucous stools, a diagnosis of probable intussusception was made. The child was removed to the hospital for further observation. During the night the child vomited several times, first stomach contents, then a greenish-yellow fluid and a brownish liquid, was restless and cried out frequently. A bloody stool was passed, but no gas. The mass was still palpable in the morning.

Operation at 9 a. m., assisted by Dr. Kiesel. When the abdomen was opened the distended small intestine pressed up through the incision; this was traced downward for about 3 feet where the remainder of the small intestine was found in a state of complete collapse, absolutely empty and as flat as a piece of tape. The dilatation had ended as abruptly as if a clamp had been applied. The colon was normal but contained a considerable quantity of blood. The condition was that of spasmodic ileus. The intestines were replaced, abdomen closed, lower bowel washed out with saline solution, atropin and morphin administered. The infant was in fair condition after the operation and slept most of the day. There was no further vomiting; the bowels moved three times during the night, stools being of blood and mucus. Nursing was resumed on the second day; the following stools were normal with exception of a few greenish particles. Recovery was rapid, the child playing in the crib on the fourth day.

I have been able to find very little mention of this condition in infants in the text-books on children's diseases. Is it not probable that many of the reported cases of intussusception in which spontaneous reduction has been said to take place, and others, in which medical measures, enemas, morphin, etc. have been reported successful as cited by Still, Treves, Holt and others have been cases of spasmodic ileus and not cases of intussusception? I know of no safe way to differentiate the two except by an exploratory operation.

506 Dime Bank Building.

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# Therapeutics

## PREVENTION IS GREATER THAN CURE

(*Continued from page 1297*)

### IV

### HOOKWORM DISEASE

### (*Uncinariasis*)

This disease is found in all tropical and southern temperate zones; in the United States southward from the Potomac River latitude through to the Pacific coast. The symptoms are laziness, lassitude, weakness, loss of physical and mental ability and vitality, loss of weight and anemia. Children do not properly grow and adults become shiftless, incompetent, and poverty stricken, and they, with their families, become a tax on the community. Hence hookworm eradication is an economic question.

Hookworm disease is said to go back to ancient Egyptian times, but the parasite was not found until 1838, by an Italian; its relation to anemia was not discovered, however, until 1877, by Grassi and Colomiatti. It was named *Ankylostoma duodenale.*

The hookworm was discovered in Porto Rico by Major Ashford, Surgeon of the United States Army, but to Dr. C. W. Stiles of the United States Public Health Service belongs the honor of having found the worm in the southern states and of having shown that it differs generically from the Old World worm, but that it causes the same symptoms. The American type of worm is called *Necator americanus.*

Not to go into the life history of this parasite, suffice it to say that it may live in large numbers in the intestines of human beings for years, not only feeding on the blood and using up its nutriment, but biting the intestinal walls and causing hemorrhages, and by both means producing a progressive anemia. Eggs from these worms pass off with the feces, grow into minute larvae in the soil so contaminated, enter another human intestine, rarely by means of infected food such as uncooked vegetables and fruit. In the majority of cases the larvae pierce the skin of the leg or other part exposed to contaminated feces and reach the intestine. In this way a barefooted child or adult may acquire infection through exposure of his feet.

The excrement of carriers of the disease must never be allowed to infect the soil. Also every carrier must be discovered, and it is the duty of each community to discover and treat every carrier within its confines, and even to be suspicious of visitors.

The establishment of sewerage systems in cities should eradicate the disease from those localities. Compelling the erection and use of sanitary privies, be they ever so inexpensive and simple, is another necessary preventive measure outside of sewered towns. An old-fashioned privy, wherever found, should be abolished. Its odors are offensive, it breeds flies and contaminates the soil, and the drainage may reach water-supplies. A privy to be modern and sanitary should be properly ventilated and well lighted, but thoroughly screened with fine-mesh copper wire, to prevent flies and mosquitoes from entering the building. The building should be firmly cemented to the foundation; there should be no leaks or openings. There should be a hinged door in the rear, opening under the seats for cleaning purposes. The seat covers should be self-shutting. The excreta should be received into a water-tight box or pail, and whether the wet or dry system is selected is a matter for the decision of the local health authorities. Just what disinfectant shall be used, chlorinated lime, or phenol (carbolic acid) solutions, or some oil that repels flies and other insects, is also for the decision of the local board of health. The sanitary privies recommended by the United States Public Health Service will be found described in United States Farmer's Bulletin 463.

Another preventive of infection by hookworm is to insist that shoes be worn in all infected regions.

The disease can be discovered by giving the specific treatment in a suspected case and then sifting or washing the stools through cheese cloth, when worms will be found, if present.

The treatment is to give little or no supper, and at bedtime a dose of magnesium sulphate. In the morning, as soon as the bowels have moved freely, one-half the dose of thymol, in capsules, is given, and in two hours the remainder of the thymol. Two hours later another dose of magnesium sulphate is administered. After movements of the bowels from this dose food may be taken, but only coffee or tea, without milk, should be allowed during the period of the treatment, namely, until the thymol has supposedly all passed out of the body. Absorption of thymol is not desired, as it may cause unpleasant symptoms. Alcohol and oils should not be given either before, during, or even soon after the treatment. For one hour after taking the thymol the patient should lie on his right side to hasten the passage of the drug and liquid through the pylorus into the intestines.

The dose of thymol depends on the age, but is large. Ferrell[1] suggests 4 gm. (60 grains) for an adult dose (that is, from 20 years of age upward). Doses for children and youth may be readily estimated by the following formula, namely: At 15 years, 3/4 of the age, 3/4 of the adult dose; at 10 years, 1/2 the age, 1/2 the dose; at 5 years, 1/4 the age, 1/4 the dose; at 2 1/2 years, 1/8 of the age, 1/8 of the dose. If the patient is much underweight for his age, the dose should be reduced accordingly. The thymol should be powdered and placed dry in capsules. One-half the dose decided on is given at 6 a. m. If the bowels have been well moved from the dose of magnesium sulphate of the night before, the other half of the dose of thymol should be given at 8 a. m., both doses being taken with plenty of water. Ferrell adds sugar of milk in equal parts to the thymol, and says he thinks the drug acts better.

In one or two weeks the treatment should be repeated, unless the microscope shows the feces to be free from the parasite and its eggs. Sometimes a third and even a fourth treatment may be needed. The action of the thymol may be hastened by (at the moment of swallowing) uncapping the capsules.

Thymol when absorbed acts like phenol, but it is slowly dissolved by the gastro-intestinal fluids and hence, is absorbed slowly. Any oil or fatty substance hastens its absorption. Convulsions are probably not often caused by thymol poisoning, but great weakness and finally collapse are the gross subjective symptoms. Objective symptoms of its undesired absorption are albumin and even blood in the urine. Fatty degeneration of the liver and congestion of the kidneys and lungs are pathologic findings.

To forestall any possible great absorption of thymol after large doses are administered in hookworm disease, a brisk cathartic (Epsom, Glaubers, or Rochelle salt) should be given and repeated, if free catharsis does not occur within a few hours after taking the thymol. Castor oil, or any other oil, should of course not be the cathartic used. If symptoms of poisoning occur, stomach-washing, colon-washing, and sodium sulphate or potassium and sodium tartrate should be the means used to promote elimination. Strong black coffee should be given, and hypodermic injections of atropin, strychnin, and pituitary extract should be administered and the patient should be surrounded by dry heat. Later, any kidney congestion should be treated as an acute nephritis.

Except as a specific for hookworm, thymol should probably never be used internally. As a bowel antiseptic it is too dangerous a drug to be used repeatedly, unless the dose is too small to be of any value.

Ferrell's dosage for adults for hookworm disease is as follows:

gm.
℞ Thymolis................ 4| or gr. lx
Fac capsulas siccas 10.

Sig.: Take 5 capsules, with plenty of water, in the early morning, as soon as the bowels have moved. Take the other 5 capsules in two hours. Two hours later take 1/2 ounce of Epsom salt, which should be repeated if it does not act in four hours.

### MOSQUITO PEST

This ubiquitous tormentor may be eradicated and malarial fever abolished in most communities. It is only necessary to remember the following facts, and to act accordingly:

1. Salt water marshes diluted by fresh-water streams breed mosquitoes; kerosene oil will prevent their development.
2. These salt-water mosquitoes do not carry disease.
3. Fresh-water mosquitoes may carry disease (anopheles, malaria; stegomyia, yellow fever).
4. Fresh-water mosquitoes may develop in any little pool of water, in the street, in a back yard, in a tin can, in a pail of stagnant water, in a gutter or drain, and even when water stands in a vessel in a building.
5. Such pools of water being abolished, no mosquitoes can develop.
6. Kerosene, 1 ounce to 15 square feet of water, added from time to time to water that will not readily flow or tends to be stagnant, but cannot be eradicated, will prevent all growth of mosquitoes.
7. Mosquitoes, unless wind-blown, travel only a few hundred yards from their source of breeding.
8. Most disease-breeding mosquitoes are active only at night.
9. Fine mosquito-netting keeps them out of houses.
10. If they have entered a house they can only be thoroughly eradicated by complete fumigation.
11. If one must go to malarial districts, the prophylactic dose of quinin is from 3 to 5 grains a day of the sulphate.

### OPHTHALMIA NEONATORUM

The prevention of this disease, so serious for the babe's future, is not attained by discussing the value of eugenics, or attempting the regulation of prostitutes, or demanding the always non-successful reporting of gonorrheal cases. It will be more certainly secured by insisting that every physician and every midwife (by continued and repeated instruction) shall use Credé's method, namely, to instill into each eye of every new-born babe 2 drops of a 2 per cent. solution of silver nitrate. Every eye inflammation in the new-born or occurring shortly after birth should be considered ophthalmia until the microscope shows that it is an innocent inflammation. If gonococci are found, the little patient should be placed in the care of a skilled oculist.

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[1] Ferrell, John A.: Hookworm Disease, THE JOURNAL A. M. A., June 20, 1914, p. 1938.

### TONSILS

The danger from chronically diseased tonsils is not sufficiently recognized by the majority of physicians, although specialists and bacteriologists have long urged that they are a menace to health and should be extirpated. Some laryngologists, and they have a goodly number of internists as followers, would extirpate (enucleate) all tonsils that have the least signs of chronic inflammation, especially if they are even slightly enlarged.

Before advising radical operation, that is, enucleation, it should be remembered that these glands probably have a function as outposts of our fortifications against disease germs, and when they are extirpated or are hopelessly diseased the deeper neck and bronchial glands become more readily affected by pathogenic germs. It should be remembered that complete enucleation is a major and serious operation. With the above caution, the therapeutic necessity of eradicating all diseased tissue in a tonsil by slicing, curretting, cauterizing, or, if need be, complete enucleation, is strongly urged. Also, as a measure of disease prevention, to eradicate tonsils containing infected pockets is more necessary than to pull or fill a decayed tooth.

It should be recognized that a tonsil may be badly diseased and yet not be prominent. Also, disease may proceed from a tonsil and yet there may be no immediate preceding tonsillar inflammation.

It has been shown that pathogenic germs, as pneumococci and various streptococci, especially hemolytic streptococci, may be harbored in diseased tonsils. These germs have been found so many times in acute and chronic arthritis and acute and chronic endocarditis, and in other infections, as to show a direct causation.

The surface bacteria may not give the cultures that the deeper-seated pockets or abscesses in the tonsils produce. Hence, in rheumatic cases, before the tonsils are considered innocent, whether a tonsillitis precedes the rheumatic attack or not, a careful examination of the tonsils should be made.

Infected tonsils may be the cause of influenza, chorea, nephritis, endocarditis, and various pyemic and septic processes, as well as of rheumatism. In fact, all and more than has been said of infected gums and teeth may be said of the danger of chronic suppuration in tonsils. The relation of tuberculosis to the tonsils has long been known. It is quite supposable that anemia, meningitis and neuritis could emanate from infected tonsils as well as from infected gums. While all diplococci found on tonsils are not pneumococci, the latter are found often enough to show that they could be a cause of pneumonia through the infection of others, if not in the carrier. Diphtheria, follicular tonsillitis, and, doubtless, scarlet fever, are caused by infection from carriers who have the causative germs of these diseases on or in their tonsils.

To summarize:

1. The total extirpation of non-suppurative tonsils is not necessary.

2. The extirpation of all diseased parts, or total extirpation, if it is necessary to eradicate the diseased portions, is proper treatment and advisable as soon as discovered.

3. Operative interference is therapeutically urgent in all cases of recurrent tonsillitis, in rheumatic cases, acute or chronic (arthritis deformans), in nephritis, etc., if the tonsils are found diseased.

*(To be continued)*

## New and Nonofficial Remedies

The following additional article has been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Its acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

**CYMARIN.**—Cymarin is a neutral, non-glucosidal substance obtained from *Apocynum cannabinum* L. and *Apocynum androsemifolium* L.

*Actions and Uses.*—Experiments on animals show that cymarin is about equal in activity to the official amorphous strophanthin, which it resembles closely in many of its pharmacologic actions, being far more active after intravenous or intramuscular injection than after oral administration. Toxic doses cause emesis through the action on the vomiting center in the medulla.

Its uses are much like those of digitalis, but it is not absorbed so readily from the gastro-intestinal tract, at least in animals, and probably in man; hence it is better suited for those cases in which intramuscular or intravenous injection is required to elicit the action promptly. (The usual precautions are necessary.)

*Dosage.*—Single dose for *oral administration* 0.0003 Gm. (1/200 grain); daily 0.001 to 0.002 Gm. (1/60 to 1/30 grain). Single or daily dose by intravenous or intramuscular injection, 0.0005 to 0.001 Gm. (1/130 to 1/60 grain).

Manufactured by Farbenfabriken vorm. Friedr. Bayer and Company, Leverkusen, Germany (The Bayer Company, Inc., New York). U. S. patent applied for. German patent No. 255,537. No U. S. trademark.

*Tablets Cymarin.*—Each tablet contains cymarin 0.3 mg. (1/200 Gr.).

*Ampoules Cymarin Solution.*—Each ampoule contains cymarin solution representing 0.001 Gm. (1/60 grain) of cymarin.

Cymarin was described by Taub and Fickewirth (*Arch. f. d. ges. Physiol.*, cliii, 239), and according to the German patent (No. 255,537) is prepared by extracting *Apocynum cannabinum* and *Apocynum androsemifolium*, with organic solvents at a low temperature to prevent decomposition of the active substance, and subsequent recrystallization.

Cymarin occurs as colorless, thick, prismatic crystals possessing a bitter taste. It is only slightly soluble in cold water, more soluble in hot water. It is difficultly soluble in benzene, ether and carbon disulphide, but dissolves easily in acetone, alcohol and chloroform. When heated it begins to soften at 130 degrees and becomes completely liquid at 135 to 140 C. Cymarin is very sensitive even to weak organic acids, although it is not a glucoside.

If cymarin be dissolved in hydrochloric acid (Sp. Gr. 1.19), a colorless solution results which on standing becomes green and on heating becomes turbid and then yields a resinous precipitate. If cymarin be dissolved in concentrated sulphuric acid a brown solution results. If a trace of cymarin be dissolved in 2 Cc. of glacial acetic acid, to which is added 3 drops of a 1:20 solution of potassium dichromate, a solution will be formed which, when poured on an equal volume of concentrated sulphuric acid, will exhibit at first a brown zone and above that a bright green colored layer. If a trace of cymarin be dissolved in 2 Cc. of glacial acetic acid, to which is added a drop of concentrated ferric chloride solution, a solution will result which, when poured on an equal volume of concentrated sulphuric acid, will develop a dark zone, and then a bluish green line, which gradually colors the acetic acid a deep blue. If a trace of cymarin be dissolved in 10 Cc. of water and 5 Cc. of normal sodium hydroxide solution, a solution will result which when diluted with 1 or 2 drops of a hydrochloric acid solution of diazobenzene chloride or sodium nitrite yields a blue violet color, which, on acidifying changes to a brick red. If a trace of cymarin be dissolved in 2 Cc. of glacial acetic acid, containing a drop of bromine a solution will be formed which, after being warmed on the water bath a few minutes, yields a precipitate of white flakes on the addition of double the volume of distilled water.

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SATURDAY, OCTOBER 17, 1914

## ALLEGED DANGERS TO THE EYE DISPROVED

The eye is of such supreme importance to man in the conduct of his daily life, and its mechanism is so delicate in its structure and adjustments, that it is quite naturally regarded as peculiarly susceptible to all sorts of offending agencies and exposed to a myriad of unsuspected dangers. Many of these fears and beliefs are well grounded. Some of them, on the other hand, have led to unwarrantable conclusions. Certain of the modern illuminants have acquired the reputation, in a somewhat popular way, of being dangerous by reason of injurious effects of the ultraviolet radiation delivered by them.

Drs. Verhoeff and Bell[1] of Boston have just published a preliminary summary of an extensive investigation of the effects of radiation on the various mediums of the eye from the corneal epithelium back to the retina. This work deserves careful study because they have properly emphasized the quantitative aspect of the questions involved. As expressed by them, the vital question is not whether a light source gives ultraviolet radiations, but whether it gives them of such kind, and in sufficient quantity, as to make an injury to the eye possible under practical conditions. The findings of Verhoeff and Bell are expressed, broadly, by the statement that no artificial source of light used for illuminating purposes contains enough ultraviolet radiation to involve the slightest danger to the eye from its effects under any readily conceivable conditions of use, and that such pathologic action as can be obtained experimentally from the ultraviolet is confined to a strictly limited region of the spectrum and obeys perfectly definite quantitative laws in its action.

Among the numerous interesting experimental facts definitely determined is the lack of penetration of most of the effects beyond the outer eye. Even with exposures as great as one hundred and fifty times the liminal for photophthalmia the lens substance is affected to a depth of less than 20 microns (1/1,250 inch), and this superficial effect undergoes in the rabbit complete repair. The lens protects completely the retina of the normal eye even from the small proportion of feebly abiotic rays which can penetrate the cornea and vitreous.

Experiments on rabbits, monkeys, etc., and observations on the human subject prove that the retina may be flooded for an hour or more with light of extreme intensity (not less than 50,000 luces[2]), without any sign of permanent injury. The resulting scotoma disappears within a few hours. Only when the concentration of light involves enough heat energy to produce definite thermic lesions is the retina liable to be injured. The retina of the aphacic eye, owing to the specific and general absorption of abiotic radiations by the cornea and the vitreous body, is adequately protected from injury from any exposures possible under the ordinary conditions of life, even without the added protection of the glasses necessary for aphacic patients. To injure the cornea, iris or lens, by the thermic effects of radiation, requires a concentration of energy obtainable only under extreme experimental conditions. Infra-red rays have no specific action on the tissues analogous to that of abiotic rays. Any effect due to them is simply a matter of thermic action, and such rays are in the main absorbed by the mediums of the eye before reaching the retina. Actual experiments made on the human eye show conclusively that no concentration of radiation on the retina from any artificial illuminant is sufficient to produce injury under any practical conditions.

Regarding a number of alleged pathologic effects which have been charged up against radiation, Verhoeff and Bell have this to say: Eclipse blindness, the only thermic effect on the retina of common occurrence clinically, is due to the action of the concentrated heat on the pigment epithelium and choroid, this heat being almost wholly due to radiations of the visible spectrum, within which the maximum solar energy lies. Erythropsia is not in any way connected with the exposure of the eye to ultraviolet radiations, but is merely a special case of color fatigue, temporary and without pathologic significance. In the case of vernal catarrh and senile cataract they can find no evidence for considering them as due to radiations of any kind. Glass-blowers' cataract, often charged to specific radiation, ultraviolet or other, is regarded as probably due to the overheating of the eye as a whole with consequent disturbed nutrition of the lens.

It is comforting to be told that commercial illuminants are entirely free from danger under ordinary conditions of their use. The glass enclosing globes used in all practical commercial illuminants are amply sufficient to reduce any abiotic radiations very far below the danger point.

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[1] Verhoeff, F. H., and Bell, L.: The Alleged Dangers to the Eye from Ultraviolet Radiation, Science, Sept. 25, 1914, p. 452.

[2] The lux is the unit of intensity of light; it equals the illumination given by a standard candle at a distance of 12⁷⁄₁₀ inches.

According to Verhoeff and Bell, further, the chief usefulness of protective glasses lies not so much in their absorption of any specific radiations as in their reducing the total amount of light to a point where it ceases to be psychologically disagreeable or to be inconveniently dazzling. Glasses which cut off both ends of the spectrum and transmit chiefly only rays of relatively high luminosity give the maximum visibility with the minimum reception of energy. For protection against abiotic action in experimentation, or in the snow fields, ordinary colored glasses are quite sufficient.

From the therapeutic point of view the Boston investigators maintain that so far as direct destruction of bacteria within the cornea or any other tissues of the body is concerned, abiotic radiations possess no value. This is due, they add, to the fact that abiotic radiations that are able to penetrate the tissues are more destructive to the latter than to bacteria.

## THE BASAL METABOLISM OF MAN

Respiration apparatus designed for the estimation of the output of carbon dioxid and the absorption of oxygen—the gaseous metabolism—has now become sufficiently common in physiologic laboratories and even in hospital wards to cease to arouse the surprise occasioned by any scientific device of exceptional novelty. Respiration calorimeters which permit the direct measurement of the heat output are still decidedly uncommon adjuncts to the scientific outfit of the clinic, owing in part to the expense of construction and operation, and in part also to the lack of trained workers who are capable of experimenting in this field of the study of animal heat. The determination of the heat production by so-called indirect calorimetry—by calculation from the data of the gaseous metabolism and certain other factors—is developing into such satisfactory form that the respiration apparatus alone promises to supply adequate information regarding the heat output and energy metabolism, and to render unnecessary the more difficult procedures of direct estimation in a large number of conditions.

The entire subject here referred to has been developed to a point at which there is an imperative need of ascertaining what the "normal," fundamental metabolism and heat production are under recognized conditions. This necessity of establishing "standards" makes itself felt in all fields of investigation, in the clinic and laboratory alike, where new methods and new apparatus are brought into use. One is repeatedly confronted with the question as to what constitutes "normal" values and what are the ranges beyond which pathologic manifestations are unquestionably indicated. This inquiry has arisen in connection with various common constituents of the blood, like hemoglobin, sugar and urea; it followed in the wake of the earlier experiments with the electrocardiograph when the users of this sensitive and elegant apparatus began to be puzzled as to the interpretation of the great variety of "curves" furnished by the registration devices employed; and in a similar way the demand is arising for the establishment of some index of normal metabolism measured by the newer methods.

The impetus given to the study of the gaseous and gross metabolism in recent years has resulted in a large number of observations both in the domain of physiology and pathology. In recognition of the paucity of admittedly normal data the Nutrition Laboratory of the Carnegie Institution of Washington, in Boston, has now published a rather elaborate group of statistics gathered from measurements of many men and women.[1] The ranges of age, body-weight, and occupation in this list are wide and, therefore, exceptionally useful. Obviously the average values obtained even from people in presumably good health are likely to vary widely with the presence or absence of certain factors. Muscular activity plays a prominent part in determining the extent of metabolism, and the effects of various diets on it may become of no mean significance. The ingestion of food almost invariably produces some increase in metabolism. It has been found best, therefore, to attempt, in all fundamental measurements in this field, to eliminate the uncertain factor of food stimuli and to exclude as far as possible the element of voluntary muscular exertion. This is accomplished by studying the individual at complete rest and at least twelve hours after a meal.

Benedict and his collaborators have shown in the past that there is a clearly established relationship between the pulse-rate and the total metabolism.[2] Theoretically, therefore, the ideal condition under which to attempt to secure the minimum or basal metabolism would be at a period when the individual was having the minimum pulse-rate (as well as a body temperature well within normal limits.) In part these ideal requirements have been successfully met in the trials made in various places and compiled by the Boston laboratory. In quoting the figures of most immediate interest to the physician and of direct application to his work we shall not err widely in placing the basal metabolism of fasting man at rest at approximately one calorie per hour per kilogram (2.2 pounds) of body weight—a "round" number easily remembered. Exceptionally small individuals tend to exceed this average, though their requirements per unit of body surface (which Rubner recommends as the proper basis for comparisons) is not so widely divergent from that of larger subjects.

In a practical way this means that when a woman of 50 kg. (110 pounds) or a man of 60 kg. (132 pounds) body-weight is receiving a diet in which the

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1. Benedict, F. G.; Emmes, L. H.; Roth, P., and Smith, H. M.: The Basal Gaseous Metabolism of Normal Men and Women, Jour. Biol. Chem., 1914, xviii, 139.

2. Pulse-Rate and Metabolism, editorial, The Journal A. M. A., June 28, 1913, p. 2049.

digestible nutrients do not exceed 1,200 to 1,500 calories in fuel value, they are unquestionably underfed even when at complete rest in bed. And when their energy requirement is increased by the inroads of fever with its stimulation of metabolism,[3] or by some degree of bodily activity, as well as by the food factor, higher levels of dietary wants are at once reached. The first step in satisfying any need is to have its extent clearly outlined.

## THE ENTRANCE OF THE INFECTIVE AGENT OF EPIDEMIC POLIOMYELITIS INTO THE BODY

For only five years have we definitely known that anterior poliomyelitis must be classed among the acute infectious diseases. In 1909 Landsteiner and Popper reported the successful inoculation of monkeys with the disease, using for inoculation material an emulsion of the spinal cord of a patient who had died in the early stages of the disease.

Since then, notably through the researches of Flexner and his associates in this country, and of Landsteiner, of Levaditi, of Kling, Wernstedt and Petterson and of Römer abroad, many additions have been made to our knowledge of the disease. Especially is this true concerning the nature of the virus, the morbid anatomy and histology of the natural as well as the experimental disease, and the routes by which the virus escapes from the body.

Of especial importance has been the announcement by Noguchi and Flexner of the successful cultivation of the causative organism by the use of special methods of cultivation. Of important public-health interest was the finding of the virus in the nasal mucosa of healthy persons who had been in contact with persons sick with the disease. Such persons or "carriers" undoubtedly play a most important part in the epidemiology of the disease, and, on account of the difficulties connected with their detection, play an equally important part in the spread of the disease wherever such persons may go.

The discovery of the existence of such "carriers" is of more practical importance from the side of the prevention of the disease than was the discovery of the ambulatory cases. The important question of the means of entrance of the virus into the body has been under discussion with no definite conclusion having been reached. The early reports on the transmission of the disease by the stable-fly (*Stomoxys calcitrans*), as reported by Rosenau, indicated that the disease was transmissible by the bite of that fly, but the work of later investigators suggested that the disease was not usually transmitted in that manner. Some workers have steadfastly insisted on the transmission of the disease by contagion, with the nasal mucosa as the avenue of entrance. Among those who have held such views have been Flexner and his associates, and, in a recent paper, Flexner and Amoss[1] have produced experimental data of a convincing character in support of this view.

They report a large number of experiments showing the affinity between the virus and various organs and tissues, as shown by the infectivity of such organs and tissues from animals in which the virus has been introduced in different ways. It was found that when the virus was injected intravenously it was deposited promptly in the spleen and bone-marrow, but not in the kidneys, spinal cord or brain; and in spite of the affinity between the virus and the nervous tissues, the virus was not removed from the blood by the spinal cord and the brain until the choroid plexus and blood-vessels had suffered injury.

It would appear from their experiments that, although the virus is brought to the nervous tissues by the lymph, the distribution through the nervous system is, in large part, by means of the cerebrospinal fluid.

The authors believe that their experimental evidence supports the view that epidemic poliomyelitis is caused by the entrance into the body of the specific agent through the upper respiratory mucous membrane to the olfactory lobes, from which, by means of the cerebrospinal fluid, it is distributed throughout the nervous organs. They add, however, that in exceptional cases other modes of infection may occur.

Should it be that these authors are correct in their view as to the upper respiratory mucous membrane being the infection atrium, we will have a full explanation of the reason for the failure of efforts to control the disease that have not taken this view into account. Strict isolation of the sick and those who have been in contact with the sick should have a material effect in limiting the spread of the infection.

## THE ARMY AND MENTAL DISEASE

The mental anguish, depicted by the numerous tales of suicide, madness and desertion among soldiers, to say nothing of mental frenzy expressing itself in wanton murder, that have come to us from our ill-fated friends across the sea, leads us to realize that there have been made as yet no scientific studies of the effect of war on the minds of officers and enlisted men in the army. Fortunately for our nation, there has been no opportunity to study the effect, on a large body of men, of short rations, loss of sleep, great emotionalism, exhausting exposure, excessive physical exertion, homesickness, etc., yet these in combination produce a strain that might well prove fatal to the equilibrium of many a mind that in regular routine would show no weakness. To be mentally sound in such conditions is of more importance than to pass the eyesight test, or to be typhoid proof.

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[3] Metabolism in Fever, editorial, The Journal A. M. A., Sept. 19, 1914, p. 1035.

[1] Flexner, Simon, and Amoss, Harold L.: Localization of the Virus of Epidemic Poliomyelitis, Jour. Exper. Med., Sept. 1, 1914, p. 249.

In the light of modern psychiatry it is rumored that more than one great battle has been lost by a general who was in the early stage of paresis, and doubtless dozens of men who have met the fate of deserters had their doom written in their brains, could their officers have read the signs of dementia praecox. Although the mental effects of war strain have not been studied, our War Department has been carrying on, under the Surgeon-General's advice, a very interesting inquiry concerning the mental status of the army.[1] The studies show that the mentally diseased, and those who are congenitally or otherwise mentally defective, form an important problem in armies and navies.

Of all the discharges for disease or external causes, practically speaking, one-fifth are on account of mental disease in some form. That is to say, out of 1,062 men discharged in 1912 on account of disability from all causes, more than 200 were found to be mentally diseased or defective during the year; and these did not include the retirements for neurasthenia or hysteria, which, although the patients are not insane in the accepted sense, are in reality mental diseases that will seriously affect one's efficiency in time of strain.

Of all the mental diseases, it was found that dementia praecox was by far the most frequent form; it averaged about 56 per cent. each year, of all the dismissals. In addition to these, there is no knowing how many cases there might have been among the soldiers who deserted through the year, or were dishonorably discharged on account of "previous convictions by summary court," or who attempted suicide. Many of them, without doubt had mild or unrecognized cases of dementia praecox.

The report gives a clear, concise outline of the modern conception of dementia praecox, explaining the way in which it may appear in the army in young men who have never shown any of the symptoms of irresponsibility when sheltered by their parents or friends, but who cannot "get along" when they are required to speak, act, and even think in prescribed and orderly fashion.

The symptoms, with the vivid case descriptions that follow, will afford the regular army surgeon much insight into cases that would seem to be merely undisciplined. In fact, the text of this bulletin will be of tremendous social value to every officer, as well as to any one dealing with large bodies of men whether in reform schools, prisons, factories or mines.

In the same clear, concise manner paranoid mental states are treated, also manic depressive psychoses, general paresis, syphilis of the nervous system, arteriosclerotic mental disturbance, hysterial psychosis and the constitutional psychopathic states.

It is interesting to note that the military prisons frequently turn over men who have been convicted for desertion, assault, murder, theft, who were probably at the time suffering from mental diseases that were not recognized until they became so pronounced that the prisoners had to be sent to the Government Hospital for the Insane.

Even despite the advice of experienced alienists, men are condemned to death by jurors, instructed by lawyers who fail to grasp the significance of these peculiar disturbances in the emotional sphere—delusions, hallucinations and sexual perversities. The pages of this bulletin would be excellent reading for the occupants of the jurors' box in a criminal law court; for what holds true of enlisted men matches up in a pretty fair average to men in general.

## NEW ASPECTS OF PURIN METABOLISM

The mysterious indefiniteness which was attached, only a few years ago, to the then newly coined word "nuclein" is rapidly disappearing with the advent of new and precise information. The word itself is being abandoned for the expression "nucleoprotein," which is intended to designate the salt-like combinations of protein and nucleic acids.[1] The latter can be disintegrated into a group of well-defined substances—purin and pyrimidin base, sugars, phosphoric acid—which may properly be looked on as the chemical units out of which they are built up, precisely as proteins are constructed out of amino-acid units. The purin bases, adenin and guanin (with their derivatives hypoxanthin and xanthin) have been the subject of exceptional interest because of their precursor relationship to uric acid.

Although the nucleic acids can be split up into these primary groups through the agency of vigorous hydrolytic procedures, Levene and his collaborators in the Rockefeller Institute have shown in a series of brilliant experiments that suitable methods of cleavage may lead to more complex fragments of the nucleic acids. Thus the phosphoric acid may be split off, leaving a residue of purin-sugar or pyrimidin-sugar compounds which have been termed nucleosids.

How are the nucleic acids prepared for absorption in the digestive processes? Are they broken down in alimentation into the simplest fragments, such as the purins, or do more complex groupings, like the nucleosids, arise? The question is analogous to that which has been raised in regard to the proteins, that is, whether they are absorbed in the form of amino-acids or of combinations of the latter in the guise of polypeptids. The phosphoric acid component of the nucleic acid is readily liberated by suitable enzymatic intervention; and the investigations of a number of biochemists who are active in

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1. King, E.: Mental Disease and Defect in United States Troops, Bull. 5, Dept. of War, Washington, D. C.

1. Compare Jones, W.: Nucleic Acids, Their Chemical and Physiological Conduct, Longmans, Green & Co., London, 1914.

this field leave little doubt that intact nucleosids may also arise among the products of fermentative reaction. Indeed, there is reason to believe that successive stages of decreasing chemical complexity can be identified in the digestive hydrolysis of the nucleic acids, precisely as in the case of the proteins or carbohydrates.[2]

If, then, the possibility of the absorption of nucleosids, as such, must be admitted, the study of their fate in possible contrast with the simpler purins or pyrimidins demands investigation. These glucosid-like compounds of purin and sugar, for example, still represent the structural grouping present in the original nucleic acid molecules. An added interest in them arises from the fact that the free purin bases and particularly adenin, which have hitherto been supposed to represent the products absorbed, are rather insoluble and apparently not devoid of toxic properties.[3] Adenosin and guanosin, on the other hand, are fairly soluble and can be injected into man in doses of a gram or more without untoward symptoms. This has been established in von Müller's clinic in Munich by Thannhauser and Bommes.[4] Furthermore, the injection of these nucleosids is followed by an increase in the output of uric acid, precisely as when nucleoproteins are ingested. A gram of guanosin induced the output of 0.5 gm. of additional uric acid, without any change in the uric acid content of the blood.

These unanticipated results made it appear highly probable that the water-soluble purin-sugar complexes —the nucleosids—may be the precursors of uric acid in the metabolism. It is quite conceivable that deamination and oxidation—both essential steps in the conversion of adenin and guanin into uric acid—take place before the sugar residue is removed from the molecule. Enzymes which can deaminate amino-nucleosids are now known;[1] and the probability of the participation of the nucleosids as such in metabolism is further enhanced by the fact that free adenin is admittedly toxic, and that adenase—the enzyme which deaminates adenin—has been missed in human organs and tissues.[1] To this may be added the indication that the purins circulate in the blood in some form other than the free bases.[5]

The probability that the nucleosids function as the physiologic precursors of uric acid in intermediary metabolism has also been subjected to the test in gouty subjects by the Munich investigators.[4] In severe cases the injection of the nucleosids (adenosin and guanosin) in 1-gm. doses is not followed by an augmentation in the excretion of uric acid. In milder cases there is an increase, though greatly delayed. On the other hand, the uric acid content of the blood in the gouty patients is invariably increased by nucleosid injections; and these usually precipitate so-called gouty attacks.

With respect to the theory of gout it is to be noted that the delay in the output of uric acid after nucleosid injections cannot be attributed to a delay in uric acid formation; for the content of the latter in the blood increases very promptly within a few hours. We are thus reminded that it would be a far-fetched hypothesis which would attribute the perversion observed in gout to anything other than a disturbance in the excretion of the uric acid.

## THE AMINS IN COMMON FOODS

The amins have of late come into prominence as representative protein decomposition products arising through the action of bacteria on amino-acids. They are formed from the latter by the cleavage of carbon dioxid. Reactions of this type are known to take place under the conditions obtaining in the alimentary tract, though normally amins are not recovered from the intestinal contents or feces in detectable amounts. There are individuals in whom the long-known amins — putrescin (tetramethylendiamin) and cadaverin (pentamethylendiamin), derived from the amino-acids arginin and lysin, respectively — are found in both the feces and the urine. This has been true particularly in cases of cystinuria, though the precise connection between this anomaly and the diaminuria is not understood. It may be that amins arise in the gastro-intestinal tract through the action of the bacterial flora more freely than is currently believed, but that after absorption these derivatives are then promptly further decomposed by the body tissues and thus disappear from view. In the light of the fact that some of the amins are physiologically active and many promptly reappear in the urine in some form or other when they are introduced into the organism directly, it seems more probable that under the usual conditions of alimentation amins are not formed in such conspicuous quantities.

A more recent accession to the list of possible amins arising in the intestinal canal is beta-imidazolylethylamin, which can be produced from histidin through the agency of bacteria found in the bowel and which may possibly also be a product of cellular activity. The occasion for this statement is the observation that extracts of various tissues produce physiologic effects quite comparable with that incited by administration of this amin. This is particularly true of extracts of the hypophysis, which seems to elaborate products related to the amins. From the amino-acid tryptophan, indolethylamin is obtainable. The amins may exhibit a more or less pronounced influence on the animal organism. They stimulate the sympathetic nervous system. Some of them compare with epinephrin in producing contraction of the arterioles and consequent rise in blood-pressure. Some of them, like imidazolylethylamin, markedly stimulate the involuntary muscles, notably those of the uterus. A further member of the group, oxyphenylethylamin, derived from the amino-acid tyrosin, has been identified as an active constituent of ergot.

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[2] Compare Thannhauser, S. J.: Experimentelle Studien über den Nucleinstoffwechsel. I. Mitteilung. Verdauung der Hefenucleinsäure durch menschlichen Duodenalsaft, Isolierung der Triphosphonucleinsäure, Ztschr. f. physiol. Chem., 1914, xci, 329.

[3] Compare Minkowski, O.: Arch. f. exper. Path. u. Pharmakol., 1898, xli, 406.

[4] Thannhauser, S. J., and Bommes, A.: Experimentelle Studien über den Nucleinstoffwechsel. II. Mitteilung. Stoffwechselversuche mit Adenosin und Guanosin, Ztschr. f. physiol. Chem., 1914, xci, 336.

[5] Bass, R.: Arch. f. exper. Path. u. Pharmakol., 1914, lxxvi, 40.

There can be little doubt that since the amins are, under suitable conditions, characteristic products of bacterial action on proteins, small quantities are not only presumably formed in the bowel, but may frequently be present in food. It is, however, somewhat surprising to learn from competent authority that they occur regularly and in not inconsiderable quantity in so common a food as cheese. Oxyphenylethylamin had earlier been isolated in very small amounts from overripe Emmenthal cheese by Winterstein and Küng,[1] and even before that in detectable amounts from American cheddar cheese by Van Slyke and Hart.[2]

Now, however, Ehrlich and Lange[3] have easily separated the same amin in amounts corresponding to 0.06 per cent. of the fresh product from Swiss cheese of the finest edible quality; and they regard it as a regularly recurring constituent. There is no question that the amin owes its origin to the bacterial processes associated with the usual ripening of the cheese; in fact, the product is readily produced from tyrosin in suitable culture mediums by the action of bacteria isolated from cheese. Other types of cheese — the Camembert, Roquefort and Emmenthal varieties, for example — all yield the same amin.

The demonstration of the regular occurrence in foods of a compound which has a marked blood-pressure-raising potency and is identical with one of the toxic bases which lend a pharmacologic action to ergot[4] is of more than passing interest. One is reminded anew of the possibilities described in a general way as alimentary toxemia. There can no longer be any doubt that the foods we eat may contain preformed some of the physiologically active products which have hitherto been charged solely to the bacterial transformations initiated in the digestive canal by supposedly abnormal flora.

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[1] Winterstein, E., and Küng, A.: Ueber das Auftreten von p-Oxyphenyläthylamin im Emmentaler Käse, IV. Mitteilung, Ztschr. f. physiol. Chem., 1909, lix, 138.

[2] Van Slyke, L. L., and Hart, E. B.: New York Agricultural Exper. Station, Bull. 231, 1903.

[3] Ehrlich, F., and Lange, F.: Zur Kenntnis der Biochemie der Käsereifung, I. Ueber das Vorkommen von p-Oxyphenyläthylamin im normalen Käse und seine Bildung durch Milchsäurebakterien, Biochem. Ztschr., 1914, lxiii, 156.

[4] The Active Principles of Ergot, editorial, The Journal A. M. A., June 20, 1914, p. 1969.

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**Susceptibility to Disease as Atavism.**—The special vulnerability shown at times by certain tissues or cells as regards bacteria which at ordinary times do not trouble them may, perhaps, be looked on (apart from the occasions when it comes from a temporarily heightened virulence of these bacteria) as a reversion to a period in the individual or racial history prior to that at which immunity to these bacteria was acquired.—A. J. Brock, *Edinburgh Med. Jour.*

# Current Comment

## HIGHER DEGREES IN MEDICINE

Attention has previously been called[1] to a two-year graduate course offered by the University of Minnesota for the training of physicians who desire to specialize in ophthalmology. It was also shown that this course was a parallel to the graduate courses offered by several high-grade medical schools[2] for the training of health officers. In both courses those who expect to obtain the degree are required to have graduated from a medical college; in both instances definite, carefully planned courses of study have been laid down, and such higher degrees as are granted will hold a distinct educational value. Meanwhile, in these courses, instead of devoting his time exclusively to clinical work, the physician will also secure a thorough knowledge of the fundamental facts of anatomy, physiology, chemistry, pathology and the like, which have a direct bearing on his chosen specialty. Nowhere can such graduate courses be so carefully planned or so well given as in universities which are also equipped to give thoroughly the undergraduate medical courses. It is quite probable that following the example of these courses in public health and ophthalmology, similar courses will be established to prepare those who wish to limit their practice to the other specialties of medicine. It is highly important, therefore, that care be used in deciding what degree is to be granted in each of these specialties. A great multiplicity of higher degrees in medicine would lead to their being confused with the worthless lot now being granted by the innumerable drugless sects and fads. The University of Minnesota has shown wisdom, therefore, in providing one higher degree for all, that of Doctor of Science (Sc.D.), the particular specialty to be designated by adding the words "in surgery," "in ophthalmology," etc. Meanwhile, the establishing of these special graduate courses in high-grade universities points to a new field in which there are great opportunities for the development of medical education.

## REGIONAL VARIATIONS IN THE CONTRACTIONS OF THE SMALL INTESTINE

A careful observation sometimes upsets preconceived notions in science by centering attention on facts which cannot be reconciled with current views. An illustration of this has been furnished by Alvarez in the physiologic laboratory of the Harvard Medical School.[3] It is commonly believed that the small intestine is a tube of uniform properties throughout. Alvarez was accordingly surprised to find that when comparable segments from different parts of this portion of the bowel were allowed to contract rhythmically in a suitable medium under identical external con-

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[1] Special Training for the Specialist, Current Comment, The Journal A. M. A., June 20, 1914, p. 1972.

[2] Harvard University, the Universities of Pennsylvania, Michigan and Wisconsin, the University of New York, Tulane University and now the University of Minnesota have established courses in public health leading to the degree of Doctor of Public Health.

[3] Alvarez, W. C.: Functional Variations in Contractions of Different Parts of the Small Intestine, Am. Jour. Physiol., 1914, xxxv, 177.

ditions, the rhythm of the upper end of the small bowel was decidedly greater than that of the lower. The rate, roughly expressed, varies inversely as the distance of the selected segment from the pylorus. The oral end of an intestinal loop beats with more regular rhythm and amplitude than the aboral portion. The amplitude of contraction of segments with approximately the same length is greater with segments from the ileum than with those from the duodenum. According to Alvarez the more rapid rhythm and the smaller amplitude of duodenal segments are apparently associated with a greater tone of this region compared with the lower ileum. The duodenal region is more irritable to mechanical and thermal stimulation than the lower parts of the small intestine; and it is suggested that the greater tone and irritability and the faster rhythm of the upper part are associated with more rapid peristalsis in this region.

## INHERITED DEFECTS ATTRIBUTABLE TO ALCOHOL

The influence of alcohol as a detrimental factor in inheritance is one which has not readily lent itself to convincing experimental proof in the past. During the last four years Professor Stockard of the Cornell University Medical School in New York City has been engaged in a study of the effects of alcohol in heredity. He has demonstrated conclusively that the germ cells of males can be so injured by allowing the individuals to inhale the fumes of alcohol that they give rise to defective offspring although mated with vigorous untreated females.[1] The extension of these unique investigations, in which the offspring from the treated animals which reach maturity are usually nervous and slightly undersized, have further shown that the effect of the injury of the germ cells is not only exhibited by the immediate offspring of alcoholized animals, but is conveyed through their descendants for at least three generations.[2] There are many instances of matings followed by negative results or early abortions, stillborn young or defectives. An instructive illustration was afforded in a case in which two of the four young were completely eyeless, the eyeballs, optic nerves, and chiasma being absent. Such defects result, according to Stockard, from the injury originally inflicted on the germ cells by the experimental treatment. Yet this injury may have been received by earlier generations only. Thus the parents of the anophthalmic guinea-pigs just mentioned were untreated, their four grandparents were also untreated, but their great-grandfathers were all alcoholized and their great-grandmothers were all normal animals. The defective eyes of descendants are due to impaired development, not to the direct action of alcohol. Plainly the spermatozoön is actually weakened, if not disabled by the alcohol treatment and all individuals arising from combinations involving such a germ cell are likely to be below normal. There is food for reflection in these facts.

# Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

## ARKANSAS

**Pellagra at State Hospital for Nervous Diseases.**—According to the current monthly report of the State Hospital for Nervous Diseases, Little Rock, thirteen of the thirty-four deaths occurring during August were due to pellagra. It is said that there are more than seventy-five cases of the disease at the hospital.

**Personal.**—Dr. Owen K. Haydon, Conway, has gone to Europe as a member of the medical staff of the American Red Cross.——Dr. Robert E. Weaver, Hope, has been appointed house surgeon in the Missouri Pacific-Iron Mountain Hospital, St. Louis.——Dr. Chester Jennings, Little Rock, who has been seriously ill with cerebral hemorrhage, is reported to be improving.

**Hookworm in Arkansas.**—Dr. Charles W. Garrison, Little Rock, state director of the Rockefeller Hookworm Commission in Arkansas, reports that during the quarter ended September 30, the commission made 6,433 examinations, finding 895 infections with intestinal parasites of which 738 were infections with hookworm. The percentages of infection in the counties in which the work was carried on during the past quarter were the following: Crittenden, 19.9, Drew 15, Greene 13.8, Madison 6, Marion 25.3, Montgomery 12.9, Polk 10.9, Scott 6.7, Van Buren 16.9 and Chicot 3.8. Since coming into the state four years ago, the commission has made 49,961 examinations at a cost of about $60,000 and has found over 10,000 cases of infection. Dr. Tillman B. Bradford, Cotton Plant, began work in Searcy County October 5, and will remain about four weeks, visiting the rural schools of the county, and making his headquarters at Marshall.

## COLORADO

**Home from Abroad.**—Dr. Oscar J. Pfeiffer and Dr. and Mrs. James Rae Arneill, Denver, have returned from abroad.

**Dr. Work Wins Senatorial Nomination.**—The returns of the state canvassing board show that Dr. Hubert Work, Pueblo, Republican candidate for United States Senator, received 22,413 votes, a plurality of 6,100.

## DISTRICT OF COLUMBIA

**Personal.**—Drs. William Cline Borden and John H. Selby, Washington, have returned from abroad.——Col. Champe C. McCulloch of the Medical Corps of the Army, has purchased a residence at 1831 Lamont Street.

**Urge Leper's Removal.**—The commissioners of the District of Columbia have requested the Secretary of the Treasury, who has supervision of the United States Public Health Service, to take steps for the immediate removal from the district, of the burden of caring for John R. Early, leper, who returned to the district from the United States Quarantine Station at Diamond Head, Wash., in June last. Action is asked by the commision on the ground that Early never was a resident of the district and has no claim whatever on the government.

## GEORGIA

**New Officers.**—Eighth District Medical Association at Athens, September 24: president, Dr. Daniel H. DuPree; secretary, Dr. Edward M. Coleman, both of Athens. The next meeting of the association will be held at Franklin Springs.

**Personal.**—Dr. David B. Hawkins, Atlanta, has started for Europe to work under the American Red Cross.——Dr. Harry R. Slack, Jr., La Grange, has been appointed a Red Cross staff surgeon and sailed for Europe September 5.——Dr. Emory R. Park, Atlanta, and Dr. Samuel Brock, Carrollton, have returned from abroad.

**Hospital Plans Accepted.**—Plans for the proposed Georgia Baptist Hospital, Atlanta, have been approved by the special committee of trustees and it is expected that work will begin soon after November 15. The plans call for a building to accommodate 500 patients and will cost about $500,000. The building will cover an entire block and will be made up of five units, each having accommodations for 100 patients.

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[1] Stockard, C. R.: Arch. f. Entwcklngsmechn. d. Organ., 1912, xxxv; Arch. Int. Med., 1912, x, 369; Am. Naturalist, 1913, xlvii.

[2] Stockard, C. R.: A Study of Further Generations of Mammals from Ancestors Treated with Alcohol, Proc. Soc. Exper. Biol. and Med., 1914, xi, 136.

## ILLINOIS

**Streptococcus Sore Throat.**—The Illinois Board of Health has sent experts to Carbondale to investigate an epidemic of streptococcus sore throat, of which infected milk is supposed to be the cause.

**Personal.**—Dr. Vincent J. Cohenour, Joliet, has been elected physician of Will County.——Dr. Wilmot L. Ransom, formerly proprietor of the Ransom Sanitarium, Rockford, has established a new sanitarium at Roscoe.

**Infantile Paralysis Epidemic Under Control.**—The epidemic of infantile paralysis on the North Shore appears to have spent itself, no new cases having been reported recently. Strict measures are being taken to prevent any further spread of the disease.

## IOWA

**Home from Abroad.**—Dr. and Mrs. Charles Ramage, Charles City; Dr. Elmer Weih, West Liberty, and Dr. Bert A. Bowers and family, Granville, have returned from abroad.

**Clinical Laboratory Opened.**—The clinical laboratory of Mercy Hospital, Davenport, installed at a cost of $3,000, has been opened and is in charge of Dr. F. H. Lamb, formerly of Ann Arbor, Mich.

**State Board Bulletins.**—The Iowa State Board of Health has issued special bulletins for general distribution, one on small-pox, setting forth the necessity of vaccination, and another on the health and care of babies.

## KANSAS

**Personal.**—Dr. John C. Rudolph, Lawrence, has returned from Europe.——Dr. Franklin P. Hatfield, Olathe, has been appointed physician for the State Deaf and Dumb School in that city.

**To Revise Medical Laws.**—At the request of the Kansas State Medical Society, the governor has appointed the following committee to revise the medical laws of the state of Kansas and recommend changes to be brought before the next legislature: Dr. James Milligan, Garnett; Dr. Joseph E. Sawtell, Kansas City, and Messrs. W. L. Burdick, Lawrence; Fred Dumont Smith, Hutchinson, and F. T. Ransom, Wichita. The society in its letter to the governor declared that the Kansas laws having a bearing on the practice of medicine, are "inadequate, contradictory and confusing."

## KENTUCKY

**Personal.**—Dr. Ernest Rau has succeeded Dr. Garland E. Huddle as health officer of Bowling Green.——Dr. Joseph N. McCormack, Bowling Green, who has been under treatment at Rochester, Minn., has returned home recovered.

**Small-Pox Patients Lack Vaccination.**—Of 714 cases of small-pox at the Louisville Eruptive Hospital during the year ended August 31, but one resulted fatally. The superintendent of the hospital calls attention to the fact that 99 per cent. of the small-pox patients received at the hospital had never been vaccinated or had been vaccinated without result.

**University of Louisville Opens.**—The Medical Department of the University of Louisville began its seventy-eighth annual session and its first year under the new régime, with a special program, September 28. The laboratories of the institution have been reequipped. The laboratories of pathology and clinical microscopy are maintained at the City Hospital under the direct charge of Dr. F. S. Graves, chief pathologist of that institution. The libraries of Dr. James M. Bodine and the late Dr. James B. Marvin have recently been added to the library of the institution which now numbers about five thousand volumes and is open during the entire day for the use of the medical profession.

**Trachoma Clinic at Oneida.**—Drs. Joseph A. Stucky and Samuel B. Marks, Lexington; Louie E. V. Stegman, Battle Creek, Mich., and C. Adaline McConville, Brooklyn, N. Y., with the assistance of the county physicians and local officials and several nurses, held a clinic for trachoma and other diseases during the week ending October 3 at Oneida, Clay County, in the heart of the eastern Kentucky mountains. Fully 300 patients were examined, twenty-six operations performed and nine lectures delivered. A well-equipped little hospital has been established at Oneida, but arrangements have been made for a larger hospital building. Dr. McConville has remained at Oneida to assist in the work for some time.

**New Officers for State Society.**—At the sixty-fifth annual meeting of the Kentucky State Medical Association held at Blue Grass Inn, Newport, September 22 to 25, the following officers were elected: president-elect, Dr. James W. Kincaid, Catlettsburg; vice-president, Dr. Frederick G. LaRue, Smithland; Dr. Charles L. Heath, Lindsey, and Dr. James C. Mobley, Elizabethtown; delegates to the American Medical Association, Drs. Milton Board, Louisville, and Arthur T. McCormack, Bowling Green; councilors, seventh district, Drs. Achilles W. Cain, Somerset; ninth district, Dr. Albert S. Brady, Greenup, and eleventh district, Dr. James S. Lock, Barbourville; orator in medicine, Dr. O. P. Nuckols, Pineville, and orator in surgery, Dr. Joseph G. Gaither, Hopkinsville. Louisville was selected as the next meeting place.

## MARYLAND

**Johns Hopkins' Anniversary.**—The twenty-fifth anniversary of Johns Hopkins Hospital opened with a meeting at the Lyric on October 5. During the celebration an inspection of the Brady Urological Clinic, of which Dr. Hugh H. Young, Baltimore, is director, was made. This clinic is a gift of Mr. James Buchanan Brady of New York, and is the only one of its kind in this country. Tablets to Dr. Daniel C. Gilman, president of the university and organizer of the hospital, and to Dr. John Hewetson were dedicated and a portrait of Sir William Osler, by Sargeant, was presented.

**Disease Prevention.**—The Federated Charities, Instructive Visiting Nurses' Association, Tuberculosis Division of the Health Department, Babies' Milk Fund Association and Johns Hopkins Hospital Social Service Department, have completed arrangements for a course of public lectures to begin November 4 and continue to March 31. The scope of the lectures will include public health, the family, labor conditions, domestic science, children, social bearing on mental diseases, social treatment of specific diseases, pulmonary tuberculosis and diseases of the eye resulting from bad social conditions.

## MINNESOTA

**Windom Site Accepted.**—The State Advisory Board has approved the selection of the Windom site for a district tuberculosis sanatorium.

**School Inspectors Appointed.**—Drs. Frank A. Grawn, John H. Andres and Murdoch A. Nicholson have been appointed medical inspectors of the public schools of Duluth.

**Hospital Staff Appointed.**—Dr. Herbert O. Collins, city physician of Minneapolis, has announced the general staff of the Minneapolis City Hospital. Under arrangements with the faculty of the University of Minnesota, one-half of the staff are members of the medical faculty and the other half are practitioners not affiliated with the school of medicine.

**Sanitary Conference.**—At the joint session of the Minnesota Sanitary Conference and the Minnesota Public Health Association held in St. Paul, September 30, the following officers were elected: The Minnesota Sanitary Conference, president, Dr. Ignatius J. Murphy, Duluth; vice-president, Dr. Emery H. Bayley, Lake City; secretary, Dr. Albert J. Chesley, Minneapolis.

**Personal.**—Dr. Samuel M. Kirk, St. Paul, has been obliged to give up his practice and is taking a long rest on a ranch near Arbsarobee, Mont.——Drs. William A. Jones and Carl J. Ringnell, Minneapolis, have returned from abroad.——Dr. Harold E. Robertson, Minneapolis, has been appointed bacteriologist to a hospital in Berlin.——Dr. John W. Lee, Minneapolis, has arrived in London from Vienna.

**State Association Meeting.**—The annual meeting of the Minnesota State Medical Association was held in St. Paul, September 30 to October 2, under the presidency of Dr. Alfred E. Spalding, Luverne, and the following officers were elected: president, Dr. John T. Rogers, St. Paul; vice-presidents, Drs. Lemuel M. Roberts, Little Falls; and Edwin S. Muir, Winona; secretary, Dr. Thomas S. McDavitt, St. Paul (reelected); treasurer, Dr. Earle R. Hare, Minneapolis; councilors, Drs. Frank R. Weiser, Windom; and Hugh F. McGaughey, Winona. Rochester was selected as the place of meeting for 1915.

## MISSOURI

**Personal.**—Dr. Mazyck P. Ravenel, Madison, has assumed the duties of his new position as professor of preventive medicine at the University of Missouri, Columbia.

## NEW JERSEY

**Personal.**—Dr. Fred M. Corwin has been reappointed medical inspector of the public schools of Bayonne.——Dr. Joseph S. Nicholson, Camden, is reported to be ill with pneumonia.

——Dr. Albert S. Harden has been appointed health commissioner of Newark.

**Diphtheria Epidemic Checked.**—Strict quarantine is believed by Riverside health officials to have checked the spread of an epidemic of diphtheria that caused the closing of the public school September 23. The boards of health and education decided, however, to keep the schools closed as long as necessary.

## NEW YORK

**Hospital for Children in Rochester.**—A proposed certificate of incorporation for a children's hospital of Rochester, N. Y., has been sent to the State Board of Charities for approval. The following are named as directors of the proposed hospital: Drs. Montgomery E. Leary and John M. Lee; and Messrs. Clarence A. Barbour, Henry T. Williams and Michael J. O'Brien.

**Personal.**—Dr. Wilhelm Gaertner, Buffalo, has been appointed by the governor a member of the Public Health Council of the state to fill the vacancy caused by the resignation of Dr. Edward Clark who has been appointed state sanitary supervisor.——Mr. Garnet Smith, executive secretary of the Children's Welfare Association, New York City, has been appointed secretary of the Rochester Public Health Association.——Dr. Albert E. Mott, Akron, announces his retirement from the practice of medicine. He will reside in Canada.——Dr. Milton H. Goldberg, Buffalo, has returned from abroad.

**Schick Test in a Diphtheria Outbreak.**—During the months of April and May there was an outbreak of diphtheria at the Howard Orphanage at Kings Park, L. I., where there are about 260 children. Among the measures used for the suppression of the disease were the Schick test for the purpose of determining susceptibility of the children and the removal of tonsils and adenoids from carriers. From the epidemic the following conclusions were drawn:

1. The Schick test is of great value in detecting susceptible persons in an epidemic of diphtheria.
2. One thousand units of antitoxin usually afford protection for from 21 to 28 days, while a second dose, as a rule, protects for only about a week, as shown by the Schick test.
3. The indications of the Schick test are that the immunity conferred by an attack of diphtheria is usually of short duration.
4. The removal of adenoids and diseased tonsils is a valuable means of freeing diphtheria carriers from the germs.

### New York City

**Ship Held in Quarantine.**—The Italian freight steamer, *Cerea*, which arrived from Italian ports October 2, has been detained at quarantine until the health officer of the port may be assured that the vessel is free from all suspicion of Asiatic cholera.

**Surgeons for France.**—The last of the surgeons whom it will be possible to send to France with the $1,000 supplied for that purpose by the Duchess of Talleyrand have been selected. Dr. David E. Wheeler sailed October 7 and those who will follow on October 17, are Dr. A. S. Cook, Dr. Thomas Nisbet, an intern in the French Hospital; Dr. S. C. Moore, an intern in Gouveneur Hospital; Dr. H. L. Cookingham of Red Bank, N. J., and one other.

**No Quarantinable Disease Admitted to New York.**—The annual report of Dr. Joseph O'Connell, Health Officer of the Port of New York, for the year ended September 30, shows that not a single case of quarantinable disease was admitted during the year. The department removed 571 patients from ships and 4,342 persons who had been exposed to quarantinable disease were held for observation. From 13 ships, 20 cases of typhoid fever were removed and treated with 18 recoveries. On account of the presence of plague in Havana, Santiago and New Orleans, the department fumigated during the year about 997 vessels for the destruction of rats.

**Personal.**—Dr. Benjamin White, formerly director of the department of bacteriology of the Hoagland Laboratory, Brooklyn, is now assistant director of bacteriological laboratories of the department of health, New York City, and is in charge of the Research and Antitoxin laboratories at Otisville.——Dr. Harold Lyall, formerly associate director of the department of bacteriology of the Hoagland Laboratory, is now bacteriologist at the Research and Antitoxin laboratories, Otisville.——Dr. William H. Allen, director of the Bureau of Municipal Research, has resigned.——Dr. Paul B. Clark, of the Rockefeller Institute for Medical Research, has been appointed associate professor of bacteriology in the University of Wisconsin, succeeding Dr. Mazyck P. Ravenel. ——Dr. H. McDonald Peggs has gone to Europe to make a reconnoissance in the war zone for the British Imperial Club. He goes first to England and then to the front to learn what surgeons, nurses and supplies are needed. The club will send what is recommended. Dr. Peggs then expects to serve with the British hospital corps.——Dr. John Ravers-wood Hicks, New Brighton, has accepted Dr. Hermann M. Bigg's request to help organize local health work on such lines as promise a maximum return for a given amount of money expended. Dr. Biggs believes that before such an adjustment can be effected it will be necessary to secure some uniformity in health department accounting, so that the expenditures for various purposes in various communities may be fairly compaired.——Dr. E. C. Baldwin of Ft. Wadsworth, bacteriologist and director of the old laboratory at the Quarantine Station, has resigned in favor of Dr. Oscar Teague, recently of Cornell.

## OHIO

**Hospital Reopened.**—The Children's Hospital, Columbus, which was closed in August for renovation and improvements, was reopened October 1.

**New County Society.**—Through the efforts of local physicians of New Philadelphia, the Carroll County Medical Society was organized at Carrollton, September 17.

**Personal.**—Drs. Charles Sidney Smith, Frederick K. Kislig and Elmer R. Arn have been appointed assistants on the senior surgical staff of the Miami Valley Hospital, Dayton. ——Dr. William B. Bryant has been appointed assistant on the senior medical staff of the same institution.——Dr. Evan Cameron, Elyria, coroner of Lorain County, is seriously ill with pneumonia at the Memorial Hospital.——Dr. William H. Stover, Tiffin, after more than forty years of active practice, has moved to Toledo.——Dr. Elza A. Dye, Springfield, is reported to be seriously ill in the Springfield City Hospital. ——Dr. Mark Milliken, Hamilton, who has been seriously ill in the Mercy Hospital, Hamilton, with septicemia, is reported to be convalescent.

### Cincinnati

**Health Officer Meets Emergency.**—Cincinnati, through the quick action of Dr. John H. Landis, health officer, has demonstrated the efficiency of a first-class health department to successfully meet a grave emergency. This city is separated by the Ohio River from several municipalities situated on the southern bank of the river in Kentucky. These municipalities include the cities of Newport and Covington. Ludlow, one of these communities, suffered an epidemic of scarlet fever, several hundred of its children being infected. These little ones were permitted to play on the streets, and quarantine of the residents concerned was made in only a few cases, because the local health officer did not grasp the situation. Several of the Ludlow physicians appealed to the Cincinnati Board of Health for relief. On determining the facts Dr. Landis notified the Ludlow authorities he would take measures to quarantine the State of Kentucky from Cincinnati unless the City of Ludlow proceeded to cure itself. In many essentials the people of Cincinnati and those of these adjoining Kentucky municipalities are one. Naturally there was a protest from Kentucky, and the Health Board of Ludlow was descended on by its neighboring cities and villages, and, by pressure of public opinion, Ludlow was made to act promptly. The plan of Dr. Landis was to take possession of the bridges crossing the Ohio at these points, and if necessary to invoke the aid of the state militia through the State Board of Health, in order to accomplish the purposes of this phase of the campaign for health. His maneuver of threatening to quarantine the State of Kentucky from Cincinnati proved to be an admirable bit of strategy.

## PENNSYLVANIA

**Personal.**—Dr. G. F. Bretz, who has been seriously ill at the Pottsville Hospital, has returned and is reported to be convalescent at his home.——Dr. Edward A. McLane, chief resident physician at the Scranton State Hospital, has resigned, to take effect October 31, and will take up private practice in Scranton.

**Jewish Sanatorium Dedicated.**—The new buildings of the Philadelphia Sanatorium for consumptives at Eaglesville were dedicated October 4. The ceremonies were presided over by Louis Gerstley, president of the institution, and the principal address was made by Dr. Martin G. Brumbaugh, Republican candidate for governor. The new buildings were erected at a cost of $30,000 and will increase the capacity of the institution from 72 to 100 patients.

### Philadelphia

**General Wood the Guest of Honor.**—The Medical Club of Philadelphia gave a reception at the Bellevue-Stratford Hotel, October 16, in honor of Major General Leonard Wood, U. S. Army.

**Enforced Vaccination at University.**—More than 250 students in the evening school at the University of Pennsylvania have been notified to leave unless they produce certificates showing they have been vaccinated.

**To Prevent Defective Hearing.**—As nearly 3 per cent. of the children of school age have defective hearing the Department of Public Health and Charities is issuing a bulletin urging parents to carry out the instructions of school medical inspectors when they report that a child has defective hearing.

**War Zone Scenes Narrated.**—A meeting of the Philadelphia Clinical Association, October 5 was devoted to the "War Victim Social Evening," in which Drs. James C. Anders, Edward E. Montgomery, Henry W. Cattell and Wendell Reber detailed their experiences in Europe since the outbreak of the war.

**Moving Pictures for the County Society.**—The possibility of moving pictures as an aid to diagnosis and investigation of disease was demonstrated at a meeting of the Philadelphia County Medical Society at the Academy of Natural Sciences, October 14. Views of patients and of microscopic life, truly representing objective symptoms of several diseases, were shown.

**Philadelphia Hospital Modernization Assured.**—The inclusion of an item for one million dollars for improvement of Philadelphia General Hospital, in the new loan bill for $11,500,000 just passed by councils and signed by the mayor, means the definite and early change of the city's great charity into one of the world's models for treatment and teaching purposes. At least 3,000 beds are in view for this notable object.

**Instructions for Mothers in Street Signs.**—Street signs educating mothers in the care of their children and spreading the doctrine of personal and civic hygiene will be adopted as a new educational method by the Child Federation, which held its first annual meeting at the Bellevue-Stratford. As it is difficult for the mother sitting on her doorstep to be reached by boards of health and private agencies, it is planned to place 300 iron frames in conspicuous places in back alleys and courts of the city. Signs will be printed to fit in these frames that will deal with health topics and give seasonal warning to mothers.

**Typhoid in South Philadelphia Due to Political Greed.**—Because the political machine values a few petty jobs more than the health of a residential section, South Philadelphia is forced to live in conditions which breed typhoid fever cases. According to the report of Chief Davis of the Water Bureau, since January 1 there have been 208 cases of typhoid fever in downtown wards, 1st, 2d, 3d, 4th, 5th, 7th, 8th, 26th, 30th, 36th, 39th and 48th. In the same period there have been only 309 cases in all the rest of the city. To wipe out the conditions which make this state of affairs possible the legislature was induced to pass a law creating the division of housing and sanitation in the Bureau of Health. The necessary appropriations have been denied by the political machine councilmen, despite the fact that the courts on several occasions have practically ordered councils to act. For more than sixty years private owners in these areas have waited for the city to build sewers. They have paid taxes on these unsewered properties only to see city councils appropriate funds for improvements in undeveloped areas.

### SOUTH CAROLINA

**Malaria and Pellagra Made Reportable.**—The Greenville board of health has decided to place malaria and pellagra among reportable diseases.

**Banquet to New York Philanthropist.**—The Spartanburg County Medical Society and citizens of Spartanburg gave a buffet supper, September 22, in honor of Col. Robert M. Thompson, New York City, of the Thompson-McFadden Pellagra Commission, the principal contributor to the maintenance of the commission.

**Infant Mortality Should be Reduced.**—The most recent bulletin issued by the Committee on Health and Public Inspection of the South Carolina Medical Association, deals with infant mortality and the ways and means of reducing the excessive death-rate of infants under 1 year of age.

**Medical Examination of Schoolchildren.**—The superintendent of schools at Aberdeen has been authorized to have all children medically examined before admission to school. Those who wish may be examined by their family physicians, or they may be examined free at the schools. No child will be admitted without examination.

### UTAH

**Personal.**—Dr. Abraham Fernlund, Ogden, has recovered from his recent severe illness.——Dr. Ernest D. Hammond, Salt Lake City, has been elected president of the Utah Baptist Association.

**New State Officers.**—At the twentieth annual meeting of the Utah State Medical Association held in Salt Lake City, September 29 and 30, the following officers were elected: president, Dr. Robert S. Joyce, Ogden; vice-presidents, Drs. John W. Aird, Provo; Edward I. Rich, Ogden, and Lashbrook B. Laker, Eureka; secretary, William Brown Ewing, Salt Lake City (reelected); treasurer, Howard P. Kirtley, Salt Lake City (reelected), and councilors, Dr. Eugene H. Smith, Ogden, first district, and Dr. Thomas C. Gibson, Salt Lake City, second district. Salt Lake City was chosen as the meeting-place for 1915.

### WISCONSIN

**Home from Abroad.**—Dr. and Mrs. Frank J. Wochos, Kewaunee; Dr. Wm. Weber Kelly, Dr. Richard C. Buchanan and James P. Lenfesty, De Pere, have returned from abroad.——Dr. Mathias A. Lee, Superior, has arrived in London on his way from Vienna.

**Women Physicians Elect Officers.**—At the annual meeting of the Wisconsin Medical Women's Society held in Oshkosh, October 6 and 7, the following officers were elected: president, Dr. Carrie A. Frost, Chippewa Falls; vice-president, Dr. Mary Houck, LaCrosse; secretary, Dr. Helen A. Binnie, Poynette; and treasurer, Dr. Maude F. Pratt, Appleton.

**Advocates Free Dispensaries.** — Health Commissioner George C. Ruhland of Milwaukee is planning to establish a series of free public dispensaries in the school buildings of the city where citizens may take physical examinations annually or at frequent intervals. The purpose of these dispensaries is to protect the public health by detecting physical illness in its incipient stages.

**Sanatorium Notes.**—Work on the construction of the Winnebago County Sanatorium, Oshkosh, is advancing so rapidly that it is expected that the institution will be in readiness for occupancy early in February.——Dr. John W. Coon, superintendent of the State Sanatorium, Wales, in his annual report, asks for new buildings and other expenditures which will enable the state to expand the work of the institution to the needed scope.

**State Society Meeting.**—At the annual meeting of the State Medical Society of Wisconsin held in Oshkosh October 7 to 9, the following officers were elected: president, Dr. Theodose J. Redelings, Marinette; vice-presidents, Drs. Hoyt E. Dearholt, Milwaukee; Spencer D. Beebe, Sparta, and Henry W. Morgenroth, Oshkosh; delegates to the American Medical Association, Drs. Alfred H. Levings, Milwaukee, and John F. Pember, Janesville; and committee on public policy and legislation, Dr. Joseph P. McMahon, Milwaukee; Charles S. Sheldon, Madison, and John J. McGovern, Milwaukee.

**Personal.**—Dr. Samuel D. Huntington, Milwaukee, who stabbed himself in the breast with a scalpel recently, is reported to be improving.——Dr. William W. Witcpalek, Collins, recently underwent an operation at Manitowoc.——Dr. Frank A. McJunkin, successor to Dr. A. F. Boretti, deceased, as director of pathology and bacteriology of the Marquette University School of Medicine, has arrived from Boston and assumed the duties of his position.——Dr. Michael A. Cunningham, Janesville, is reported to be ill with diphtheria.

### CANADA

**Toronto Academy of Medicine.**—The first open meeting of the Academy of Medicine, Toronto, for the season 1914-1915, was held October 6, when Dr. Harry B. Anderson delivered the annual presidential address and Dr. Lewis Gregory Cole of New York City, gave a most interesting and instructing paper on "Roentgenologic Diagnosis of Lesions of the Gastro-Intestinal Tract," illustrated with lantern slides and cinematographic demonstrations.

**Checking Pollution of the Great Lakes.**—The International Waterways Commission is holding a sitting in Ottawa and is dealing with the levels of the Lake of the Woods and the pollution of international waters. As the source and extent of this pollution was investigated some time ago, from municipalities and steamers, the meeting is to determine a remedy. This will then be submitted to the United States and Canadian governments.

**Ontario to Regulate Slaughter-Houses.**—The Provincial Health Board of Ontario is bringing all rural and municipal slaughter houses under strict regulation and inspection. Hereafter before any one can construct a slaughter-house in Ontario the plans and specifications must be approved by the Board of Health. The board is determined to stop the handling of meat by dirty employees. No person affected with tuberculosis or other communicable disease will be permitted to be employed at or in any department where meat is handled.

**Quebec Physicians Contribute to Patriotic Fund.**—The College of Physicians and Surgeons of the province of Quebec at its recent meeting donated $1,000 to the Canadian Patriotic Fund. It also decided to allow final students in medicine going to the war, exemption from study during such period. Dr. Art A. Simard, Quebec, was elected president, and Dr. Henri A. LaFluer, Montreal, first vice-president. Notice was given of motion to reduce the number of representatives from 41 to 21 and this will be brought up at the next regular meeting.

**Personal.**—Dr. John George Adami, Montreal, has enlisted as a private in the McGill University Battalion.——Majors Edward A. LeBel and Robert P. Wright and Captains Conrad G. Geggie and Robert Mayrand, Quebec, have volunteered for service in Europe.——Sir Edward S. Worthington, R.A.M.C., surgeon and medical aide to the Duke of Connaught, the Governor General of Canada, has started for England.——Dr. Andrew A. Fletcher has arrived at Toronto from Germany.——Dr. G. B. Archer, medical missionary from India, is in Toronto.——Dr. O. R. Avison, formerly of Toronto, but for several years a medical missionary in Korea where he superintends a large hospital, is visiting in Toronto.——Dr. William H. Ellis, for many years chemical expert for the Ontario Government, has been appointed Dean of the School of Practical Science at Toronto University.——The Hon. Dr. William J. Roche, Minister of the Interior for Canada, has returned from Rochester, Minn., much improved in health.

## GENERAL

**Heiser Returned to the Orient.**—Surgeon Victor G. Heiser, U.S.P.H.S. Health Commissioner of the Phillipine Islands, who has been on leave in the United States for several months, has returned to his former field of duty at Manila.

**Eye, Ear and Throat Specialists Meeting.**—The nineteenth annual meeting of the American Academy of Ophthalmology and Oto-Laryngology will be held in the Hotel Copley-Plaza, Boston, October 19 to 31, under the presidency of Dr. James M. Ray, Louisville, Ky.

**Railway Surgeons' Meetings.**—The Association of Seaboard Airline Railway Surgeons will hold its annual meeting in Petersburg, Va., October 19 to 21 under the presidency of Dr. Hampden Aulick Burke, Petersburg, Va.——The New York and New England Association of Railway Surgeons will hold its twenty-fourth annual session at the Hotel Astor, New York City, October 21, under the presidency of Dr. Clifford A. Pease, Burlington, Vt.

**District Association Meeting.**—The Iowa and Illinois Central District Medical Association held a meeting in the Outing Club, Davenport, Ia., October 5, at which Dr. William J. Mayo, Rochester, Minn., delivered an address on "Cancer and Its Cure," and Dr. Richard H. Hart, Philadelphia, discussed the "Relation of the Milk Supply of Cities to Tuberculosis."

**Plague Situation.**—Since the report made in The Journal of October 10, one case of human plague has been discovered, number 30, Ching You, address, 1054 Baronne Street, male, chinese, aged 51, was taken to Isolation Hospital October 4 at 2 a. m., and died four hours later, right femoral bubo. This makes nine human deaths in New Orleans up to October 4. Rodent cases, numbers 178 to 181, are also reported.

**London Heart Specialist Lectures in America.**—Dr. Thomas Lewis, assistant physician and lecturer on cardiac pathology in University College Hospital Medical School, London, editor of *Heart* and leader in the newer methods of studying cardiac functions, delivered the eighth course of lectures under the Herter Foundation at Johns Hopkins University, Baltimore. On October 6 he discussed "Observations Exemplifying Electrocardiography"; on October 8, "The Relation of Auricular Systole to Heart Sounds and Murmurs," and on October 9, "Observations on Dyspnea with Especial Reference to Acidosis."——On October 12, Dr. Lewis addressed the Section of General Medicine of the College of Physicians of Philadelphia on the subject of "Heart Sounds."——Dr. Lewis expects to spend the week beginning October 25 at the Peter Bent Brigham Hospital, Boston, as visiting physician *pro tem* to that institution. He will also act as visiting lecturer in medicine at Harvard Medical School and will conduct ward visits, clinics and other student exercises. This is a part of the Harvard plan of having prominent medical men from other cities or abroad as visiting lecturers and temporarily in charge of the wards of the Peter Bent Brigham Hospital, a plan similar to that inaugurated last year by Dr. William S. Thayer at Johns Hopkins Hospital, Baltimore.

**Bequests and Donations.**—The following bequests and donations have recently been announced:

Philadelphia Blind Asylum and Asylum for the Aged in Germantown, each one-half of the estate of $63,000 contingent on the death of certain relatives, by the will of Kate Worley.

St. Luke's Hospital, New York City, $50,000; Association for Improving the Condition of the Poor; Charity Organization Society and House of Rest for Consumptives, each $10,000, by the will of Herman C. von Post.

New York Skin and Cancer Hospital, $5,000; State Charities Aid Association, $8,500 by the will of Florence Phillips.

New York Foundling Hospital, $5,000 by the will of Rosina M. Nagle.

St. Luke's Hospital and Roosevelt Hospital, New York City, each $79,440, and after the death of beneficiaries the principle to go to the Society for the Ruptured and Crippled, by the will of Frank J. Ransom.

Presbyterian Hospital, Philadelphia, $50,000; Ladies' Aid Society of the Presbyterian Hospital, $5,000; Home of the Merciful Savior, $5,000 by the will of Jane McKee Norris.

Children's Hospital, Philadelphia, $2,000 by the will of Lucy Jones.

Columbia University, New York City, donations of $2,500 for the surgical research fund, by Clarence Mackey; $2,000 by Prof. Frederick S. and Mrs. Lee for the department of physiology; $2,000 to be added to the Frank Hartley scholarship fund in the College of Physicians and Surgeons, by an anonymous donor.

Faulkner Hospital, Jamaica Plain, Mass., $20,000 for the endowment of a bed in the name of the testatrix's father, Thomas B. Proctor, by the will of Mary P. Proctor.

Boston University School of Medicine, donation of $100,000 for the establishment of a Maternity Hospital.

## WAR NOTES

**Radiographic Service Established.**—Madame Curie has established in the Pantin Hospital at her own expense, a radiographic service.

**Ambulance Donated.**—The Autocar Company of Ardmore, Pa., has donated an ambulance to the American National Red Cross for foreign war service.

**French Wounded Rushed to South of France.**—The stream of wounded from the battle-fields of the Aisne and Marne are not held in Paris, but are sent to the base hospitals in the south of France.

**Russia Needs Medical Supplies.**—Victor C. Lassen, an American resident of Petrograd, has returned to the United States to purchase medical supplies and instruments for the Russian government.

**Few Wounded.**—Of the eight thousand patients in Netley Hospital only about one hundred have gunshot wounds and few of these wounds have been caused by rifle bullets, most of them having been due to shrapnel.

**Osler to the Front.**—Sir William Osler, formerly dean of the Medical School of Johns Hopkins Hospital, Baltimore, and now Regius Professor of Medicine at Oxford University, has been appointed a colonel in the medical corps of the British army, and has been placed in charge of the hospital service at the front.

**Patriotic Physicians of England.**—In many places in England the medical men have held meetings and adopted resolutions undertaking to safeguard the interests of their professional colleagues who are called on to leave their practices in the service of their country and also agreeing to take up the medical duties of their associates for the sole benefit of the absentees.

**Prophylaxis of Epidemics in Eastern Austria.**—Two expeditions have recently been sent to Dalmatia to direct a campaign of prevention against epidemic diseases. One is in charge of A. Ghon, professor of pathologic anatomy at the Prague university; the other is in charge of O. Bail of the chair of hygiene.

**The Wounded at Munich.**—The first big consignment of wounded came into Munich on the night of August 20-21, consisting of men from the engagements at Mülhausen and Lagarde. Most of the wounds were slight injuries of the soft parts or long bones. They were found well bandaged and in good condition, showing the excellent status of first aid at the front at that time.

**Gold Medals Presented to Germans by British Societies Melted Up for Relief Work.**—Roentgen, Lenard and Behring have each recently repudiated the gold medals conferred on them by scientific associations in Great Britain, and have donated them to the Red Cross or other relief work, and now the Hanbury medal, representing a value of about $125, has likewise been donated for relief work by its recipient, E. Schmidt, professor of pharmacology at Marburg.

**Navy Medical Organization.**—The Royal Navy of England is said to be fully mobilized and the medical officers of the Royal Navy Volunteer Reserve have been called on for service. This reserve consists of civilian practitioners who have been trained in time of peace in the special work of navy surgeons and many of these are now on duty at the navy hospitals on shore and as surgeons on the war ships at sea.

**No More "Appendicitis", Etc., in Germany or Austria.**—A campaign of extermination is being urged by German-speaking scientists against all words of English, French or Russian origin. If no German equivalent is available, the Greek and Latin root term is to be used. The *Münchcn. mcd. Wchnschr.* comments on the difficulty of always finding an exact equivalent, and proposes that a committee should be appointed to draw up a list of acceptable German equivalents for the more common terms.

**Red Cross Appeals for Funds.**—The American National Red Cross reports that the returns from the Peace Sunday collections are disappointingly small and urges that liberal responses be made to the appeal for help.——Through the generosity of the Russian-American Steamship Line, the American National Red Cross has been afforded the opportunity to send three thousand pounds of bandages and one hundred stretchers to Russia without transportation charges, by the steamer *Dwinsk*, which sails for Archangel, October 13.

**Physicians Appointed on Austrian Army Medical Staff.**—The professors of hygiene at the universities of Vienna, Cracow and Lemberg, Schattenfroh, Bujwid and Kutchera, and also K. Büdinger, professor of surgery at Vienna, have been appointed consultants on the chief medical staff of the Austrian army. Other members of the various university medical faculties have been appointed regimental surgeons, including A. Klein, W. Zweig, O. Porges, v. Jagic, F. Wechsberg and A. Herz, all of the internal-medicine teaching force; A. Pilcz and E. Stransky, neurology; Ranzi and Leischner, surgery; and K. Sternberg, W. Pick, Cristofoletti and J. Tandler.

**Notes on French Medical Service.**—The Paris Academy of Medicine has received from Prof. Edmund Delorme a report on the condition of the French ambulance and sanitary service. Dr. Delorme believes that the service should attempt to treat more wounded, especially those suffering from shrapnel wounds, in order to prevent gangrene and tetanus. For the latter he suggests preventive injections of oxygen, water and antitetanic serum. Dr. A. Dastre gave details of the successful use of a powerful electromagnet for the extraction of splinters of steel and even of rifle bullets. The use of specially prepared paper underclothing to prevent cold was also advised.

**Disposition of Red Cross Units.**—The Red Cross units transported to Europe on the American Hospital Ship *Red Cross* have been disposed of as follows: Two units, each consisting of three surgeons and twelve nurses with equipment, will be sent to the German, British, French and Austrian armies.——One unit will be sent to Saloniki to join the Servian army.——Belgium has declined the service of surgeons and nurses, but has accepted the medical supplies which will be forwarded from Rotterdam.——It is reported that one or more Red Cross units may be placed on board the English hospital ship which transfers sick and wounded men from the continent to the base hospitals in England and that one unit may be assigned to duty at the American Women's Hospital near Torquay.

**A New Missile.**—Surgeon Johannes Volkmann (*Münchcn. mcd. Wchnschr.*, Sept. 15, 1914) reports thirteen cases of punctured wounds from arrows dropped from an aeroplane on September 1. The missiles were 10-15 cm. long, of pressed steel, about 8 mm. thick and weighing 16 gr. The lower part was solid, terminating in a needle point. The upper part of the arrow consisting of a skeletal arrangement of 4 thin staves, the whole making a star-shaped figure in cross section. The men of the regiment were surprised lying down by sharp sudden wounds suggesting to some that they had been prodded by one of their comrades as a practical joke. The arrows penetrated arms, feet, calves, fingers, ankles, the cheek, the neck, and in one case, the skull, the latter furnishing the only fatality. In some cases the arrows had to be cut out. The treatment consisted in a sterile bandage, and the wounds healed rapidly by first intention. Only one case was treated with tincture of iodine.

## LONDON LETTER

LONDON, Oct. 2, 1914.

### The War

In London we can now see thousands of Belgium peasants who have been driven from their homes. The hospitality of this country has been given to these victims by the government. They are accommodated in various parts of the metropolis in poorhouses and in the spacious glass building known as the Alexandra Palace. They can be seen walking about still dazed by the horrors they have witnessed. Most of them come from Antwerp, where they had sought refuge from their burning homes. They are medically examined to see that they are free from infectious disease and put on a British ship. Many of them are of such primitive habits that they have to be taught the use of the bath and the water-closet.

An English citizen recently returned expected to find nothing but terror and distress, whereas if it were not for the newspapers, the wounded, and the thousands of prisoners and refugees coming here, we should not know we were at war. Prices are normal, theaters are open, business goes on just as usual, as do also social affairs, and there seems to be less distress and unemployment than for years past.

As stated in my previous letters, arrangements have been made all over the country for the reception and treatment of the wounded from this titanic war and appear to be working without a hitch. The wounded are conveyed as rapidly as possible from the front to the base hospitals in France on the coast, whence they are conveyed by hospital ships to Southampton, where there is a special staff for their reception and distribution. The arrangements are under the control of a surgeon-general, who holds the appointment of a deputy director of medical service. He has at his command twelve ambulance trains specially constructed for the conveyance of four officers and ninety-six men lying down, or for a considerably greater number of patients sitting up. Twice weekly telegrams are received by him from all the larger military and territorial force general hospitals, stating the number of beds vacant in each. With this information before him he arranges convoys of sick and wounded on arrival and dispatches them to their destination in one or more of the ambulance trains. Already the sick and wounded from overseas have been comfortably placed under treatment in most of the large military or territorial force hospital centers. At the railway stations of these localities arrangements are made by the military authorities for conveying sick and wounded in motor or other ambulance vehicles from the railway stations to the hospitals. Voluntary aid detachments have already done useful work in connection with this stage of the movements of the sick and wounded, and it is expected that the scope for utilizing voluntary aid in this direction will be extended as its value becomes better known. As the military hospitals get filled up arrangements have been made for transferring sick and wounded from them to various hospitals arranged by voluntary effort. Many schemes have been submitted to the war office, through the British Red Cross, in accordance with field service regulations. At present the opportunity of using private hospitals to any great extent has not arisen, as there are still several thousand beds vacant in the military and territorial force hospitals. There is no doubt, however, that in time private hospitals will be of much use as an overflow, and also when it is necessary to set free a sufficient number of beds for future requirements in the larger military hospitals. When sick and wounded are sufficiently convalescent to be granted sick furlough, advantage is being taken of the many offers of accommodation for them in convalescent homes in different parts of the country. In order to prevent overlapping and to facilitate the means of placing men on sick furlough, so far as possible, in their own counties, a central registry of convalescent homes has been formed. Convalescents who require continued hospital treatment will be sent either to the special home in connection with the hospital from which they are transferred (under the supervision of the medical officer of the hospital) or to one or other of the private hospitals already referred to. In all the hospitals arrangements are made for replenishing any deficiencies in the men's kits and for giving them any additional clothing which it may be desirable for them to take with them when they go on sick furlough. The hospitals are for this purpose receiving many generous gifts of pajama suits and other articles of clothing. At the end of their sick furlough the men are required to rejoin the depots of their regiments in order to be refitted, until arrangements are made for their rejoining their units, either in this country or abroad. They are provided with railway warrants to enable them to go to convalescent homes and to rejoin at their depots. Arrangements have also been made that they shall receive their pay both while they are in hospital and while they are convalescent.

### The New Edition of the British Pharmacopeia

Advance copies of a new edition of the British Pharmacopeia have been sent to the press. There are a number of important modifications. No figures or detailed descriptions of plants yielding official substances are given. The histologic characters of the parts of plants officially recognized are fully described whenever the information is important. In many instances in which drugs of vegetable origin are used in a powdered form, the histologic characters of the powder are given when by chemical testing alone the identity of the article in question could not be certainly determined. Abbreviations of the Latin titles have been adopted in the index. The suggestion that a list of such abbreviations should be appended to the British Pharmacopeia in the interest of international uniformity was made by Dr. Remington, chairman of the United States Pharmacopeial Convention. Similar abbreviations are likely to be adopted in the forthcoming Pharmacopeia of the United States. The metric system has been employed for all pharmaceutical and analytical computations and for the specification of doses, in the expectation that in the near future the system will be generally adopted by British prescribers. As a transitional provision, doses have also been expressed in terms of the imperial system. It has been found desirable to indicate a limit to the proportion of lead or of arsenic permissibly present as an impurity in many pharmacopeial substances. Such limits are noted in the text, while details of the mode of employing the appropriate quantitative tests are given in an appendix. The same practice has been adopted with respect to many of the methods relating to the determination of acid value, saponification value, iodin value, unsaponifiable matter, esters and alcohols. These methods are given in an appendix, while in the text of the several monographs relating to fixed oils, fats, waxes, resins and volatile oils, only the numbers expressing the appropriate pharmacopeial values are stated. In the present Pharmacopeia the number of crude drugs and of their galenic preparations which are required to contain a definite proportion of the chief active constituent or constituents has been increased, and the official processes for their "assay" have been revised. It has also been found desirable to prepare extracts of belladonna, hyoscyamus, nux vomica and opium in the form of dry powders, of which the alkaloidal strengths are officially defined. In the case of drugs of definite chemical composition there has been a similar extension of the number to which "assay" processes are to be applied, and, in general, the minimum degree of purity required is specified in the definition of the drug. An international conference respecting the unification of the formulas for potent drugs and preparations in the several national pharmacopeias, held at Brussels in 1902, led to the adoption in 1906 by the participating states of a series of recommendations commonly referred to as "the international agreement." These recommendations have necessitated certain changes in the preparation, composition and strength of important galenic compounds containing potent ingredients, with the object of promoting uniformity in the pharmacopeial usage of different countries. They have already been embodied more or less completely in the various national pharmacopeias that have been issued since 1902. The changes in the British Pharmacopeia thereby occasioned are generally slight; they have been indicated in the prefatory tables and in footnotes, while a separate prefatory table gives a list of deviations from the international agreement, with the reasons for departure from the recommendations. The British practice of measuring liquids by volume and solids by weight has been maintained. It is more convenient, both to prescribers and to dispensers, than the continental practice, contemplated in the agreement, of weighing liquids as well as solids. The variations caused by this difference of usage are, however, of no great importance. It is noteworthy that the number of omissions of drugs in this edition vastly exceeds the number of additions, and surprisingly few of the newer synthetic drugs of German origin have received official sanction.

## Marriages

Carroll Hampton Morgan, M.D., Briceville, Tenn., to Miss Katherine Elma Lloyd of Coal Creek, Tenn., September 21.

Elijah White Titus, M.D., Washington, D. C., to Miss Julia Dove Beardsley of Charleston, W. Va., September 22.

William Maxwell Empie, M.D., Virginia, Minn., to Miss Lucy Margret Sterne of Ishpeming, Mich., October 5.

Edward John Kempf, M.D., Baltimore, to Helen Dorothy Clarke, M.D., of Longwood, Boston, September 28.

Clarence Michael Schuldt, M.D., Platteville, Wis., to Miss Julia Smith of Madison, Wis., September 23.

Captain Ralph Harvard Goldthwaite, M. C., U. S. A., to Miss Agnes Pruyn of Albany, N. Y., October 10.

Oswald Patrick Goodall, M.D., DeWitt, Iowa, to Miss Harriet Blake of Los Angeles, September 1.

Charles Nelson Race, M.D., Onondaga, Mich., to Miss Edna Griffin of Battle Creek, Mich., recently.

George W. Lang, M.D., Alicia, Pa., to Miss Leta McAlpine of South Brownsville, Pa., September 26.

Walter Charles Hammond, M.D., to Miss Florence May Nieman, both of Chicago, October 3.

Charles Henry Hecker, M.D., St. Louis, to Miss Sula Anderson of Ottawa, Ill., October 1.

Lyman Allen Steffen, M.D., to Miss Erma Edith Hessel, both of Antigo, Wis., September 23.

Herbert William Allen, M.D., to Miss Gertrude Joliffe, both of San Francisco, September 24.

Francis Downing, M.D., Moosup, Conn., to Miss Rose Shea of Boston, September 29.

Francis Augustine Collins, M.D., to Miss Laura Carey, both of Chicago, recently.

## Deaths

**John Claudius L'Engle, M.D.** Medical College of the State of South Carolina, Charleston, 1861; a surgeon in the Confederate service throughout the Civil War; later a physician and druggist of Jacksonville, Fla.; president of the State Bank of Florida; chairman of the Board of Public Works and a member of the city council of Jacksonville; twice a member of the house of representatives from Duval County and senator from the eighteenth district; for many years a member of the board of trustees of St. Luke's Hospital; died at his home in Jacksonville, September 9, aged 73.

**John Goodell, M.D.** College of Physicians and Surgeons in the City of New York, 1859; once a member of the New Hampshire legislature from Hillsboro County, for twenty years town historian of Hillsboro and for many years a member of the board of health; died at his home in Upper Hillsboro, N. H., about September 13, aged 85.

**Daniel Vincent O'Leary, M.D.** Albany, N. Y., Medical College, 1866; once president of the Albany County Medical Society; for many years district and city physician of Albany; for seven years a member of the board of public instruction and from 1885 to 1889 postmaster of Albany; died at his home in that city, August 5, aged 70.

**Elbert Rowland, M.D.** New York Medical College, New York City, 1858; surgeon of U. S. Volunteers during the Civil War; for several terms a member of the Illinois State Legislature and a resident of Olney, Ill.; died at the home of his son in Mt. Carmel, Ill., September 20, from senile debility, aged 82.

**Charles William Harrison, M.D.** College of Physicians and Surgeons in the City of New York, 1889; of Hidalgo, Tex.; fell down a stairway at a hotel in Brownsville, Tex., September 11 and died from his injuries two days later, aged 52.

**Daniel W. Coble, M.D.** Jefferson Medical College, 1867; for more than forty years a practitioner of Westerville, Ohio; a veteran of the Civil War; died at his home, September 19, from organic heart disease, aged 73.

**William Rice Saltzgaber, M.D.** Rush Medical College, 1899; formerly of Knoxville, Tenn., but for eight years a practitioner of Alamogordo, N. Mex.; died at his home, September 9.

**Joseph H. Lopez, M.D.** Jefferson Medical College, 1876; medical director for many years of Charity Hospital, Philadelphia, and examining physician and chief of staff of St. John's Orphanage and St. Vincent's Home; died at his home in Philadelphia, September 15, from heart disease, aged 68.

**Pitts Edwin Howes, M.D.** Eclectic Medical Institute, Cincinnati, 1881; once a member of the Massachusetts State Board of Registration and well known as an editor of medical journals of his school of medicine; died at his home in Dorchester, Boston, September 18, aged 61.

**William W. Hawk, M.D.** College of Physicians and Surgeons, Keokuk, Ia., 1880; for five years mayor of Colfax, Ia., and for two terms a member of the state legislature from Jasper County; died at the home of his daughter in Newton, Ia., September 15, aged 71.

**Edward Wood Markwell, M.D.** Indiana University, Bloomington and Indianapolis, 1914; an intern in the Indianapolis City Hospital; died in that institution September 22, from septicemia eleven days after an operation for removal of the tonsils, aged 28.

**John Franklin Mackley, M.D.** College of Physicians and Surgeons, Baltimore, 1882; a clergyman of the Reformed Church; and secretary of the board of health of Fairfield, Pa.; died at his home in that place, September 16, from heart disease, aged 59.

**Oscar Lamar Holmes, M.D.** Atlanta College of Physicians and Surgeons, 1899; of Covington, Ga.; a Fellow of the American Medical Association; aged 38; was killed by the explosion of a boiler at a saw mill near Covington, September 23.

**Jennie Mary Turner, M.D.** University of Michigan, Ann Arbor, 1879; for thirty years a practitioner of Newark, N. Y.; a member of the Medical Society of the State of New York; died in the Rochester, N. Y., General Hospital, September 17, aged 63.

**Horatio Roy Luckey, M.D.** Indiana Medical College, 1906; of Seymour, Ind.; a Fellow of the American Medical Association; died in the Schneck Memorial Hospital, Seymour, Ind., September 23, a week after an operation for appendicitis, aged 33.

**William Frisbie, M.D.** New York University, New York City, 1860; a veteran of the Civil War and for half a century a practitioner of Mankato, Minn.; died in the hospital of the Minnesota Soldiers' Home, Minneapolis, September 15, aged 79.

**Hal F. Bishop, M.D.** University of Wooster, Cleveland, Ohio, 1898; formerly of Lakewood, Ohio; died at his office in Akron, Ohio, September 23, from the effects of poison believed to have been self-administered with suicidal intent, aged 39.

**Richard A. Bailey** (license Miss., 1882), for many years a practitioner of Crawford, Miss.; aged 73; died at the home of his sister in Gore, Ga., September 4, from the effects of accidental burns received by the explosion of a kerosene lamp.

**Herman B. Mohr, M.D.** University of Alabama, Mobile, 1891; former chief clerk of the State Board of Health of Alabama, Montgomery; died in a hospital in Birmingham, Ala., September 19, after a surgical operation, aged 56.

**George Ivison Ross** (license, Massachusetts, 1894) for thirty-eight years a practitioner, and for thirty years a physician of Canton, Mass.; died at the home of his daughter in that city, September 14, from heart disease, aged 67.

**Raymond Benjamin Coonley, M.D.** New York Homeopathic Medical College, New York City, 1911; of Detroit, Mich; died in Grace Hospital in that city, September 19, from septicemia, due to an infected wound of the lip, aged 25.

**William Perry Markland** (license, years of practice, Illinois, 1878); a veteran of the Civil War and for nearly half a century a practitioner of Cuba, Ill.; died at his home September 13, from intestinal obstruction, aged 83.

**William H. Annowski, M.D.** University of Buffalo, N. Y., 1893; of Buffalo; for thirty-five years an official of the police department of the city; died on his yacht near Crystal Beach, Ont., August 1, from cerebral hemorrhage, aged 61.

**Harry J. Huber, M.D.** Jefferson Medical College, 1909; a Fellow of the American Medical Association and a member of the Ephrata, Pa., Borough Council; died at his home in Ephrata, September 22, from nephritis, aged 31.

**George Harkness Payne, M.D.** Boston University School of Medicine, 1875; a member of the Massachusetts Surgical and Gynecological Society; of Salem, Mass.; died in Medford, Mass., August 5, aged 73.

**Stanley Forbes Duncan, M.D.** Tuft's College Medical School, Boston, 1912; later house physician of the Malden, Mass., Hospital; died at his home in Quincy, Mass., September 23, aged 27.

**Robert W. Eanes, M.D.** Washington University School of Medicine, Baltimore, 1870; a Confederate veteran; died at his home in Eanes Cross Roads, Va., September 19, from nephritis, aged 68.

**Louis O. Carson, M.D.** Indiana Medical College, Indianapolis, 1877; a member of the Indiana State Medical Association; died at his home in Indianapolis, August, 21, from tuberculosis, aged 61.

**John G. Albers, M.D.** Cincinnati College of Medicine and Surgery, 1871; a member of the Ohio State Medical Association; died at his home in Fulda, Caldwell, Ohio, September 18, aged 78.

**Leigh Seward Krake, M.D.** Johns Hopkins University, Baltimore, 1914; of Plainview, Neb.; died in Johns Hopkins Hospital, Baltimore, July 9, from gangrene of the lung, aged 28.

**Robert Briggs, M.D.** Rush Medical College, 1869; Bellevue Hospital Medical College, 1875; of Clayton, Ill.; died in the Jacksonville State Hospital, September 16, from exhaustion, aged 67.

**Bernard Clausen, M.D.** New York Homeopathic Medical College, New York City, 1888; formerly of Hoboken, N. J.; died at his home in Binghamton, N. Y., September 24, aged 50.

**William C. Ransom, M.D.** Vanderbilt University, Nashville, Tenn., 1877; a member of the Tennessee State Medical Association; died in his home in Lewisburg, Tenn., August 2.

**Charles C. L. Rudicil, M.D.** Atlanta, Ga., Medical College, 1888; a member of the Medical Association of Georgia; died at his home in Chickamauga, Ga., August 14, aged 48.

**Charles P. Garland, M.D.** Hospital College of Medicine, Louisville, 1891; of Rock Island, Va.; died recently in the Tucker Sanatorium, Richmond, Va.; from pellagra, aged 47.

**John Robinson Rutherford, M.D.** Victoria, Cobourg, Ont., 1868; of Aurora, Ont.; died at the home of his daughter in Windsor, Ont., September 23, from pneumonia, aged 74.

**L. G. Danner** (license, Tenn., 1889); a Confederate veteran and for about forty-five years a practitioner of Milan, Tenn.; died at his home in Barton, Fla., September 10, aged 69.

**Dennis Cuddahy, M.D.** Fort Wayne, Ind., College of Medicine, 1902; of South Bend, Ind.; died in St. Joseph's Hospital in that city, September 26, from diabetes, aged 53.

**Arthur Lee Heglar, M.D.** Tennessee Medical College, Knoxville, 1895; of St. John, Wash.; died in St. Luke's Hospital, Spokane, August 17, from septicemia, aged 44.

**J. H. Bell, M.D.** McGill University, Montreal, 1888; for fifteen years a surgeon on steamers of the White Star Line; died in Liverpool, England, September 15, aged 49.

**Samuel Buzzard, M.D.** Philadelphia University of Medicine and Surgery, 1871; of Russell, Ia.; died in the Methodist Hospital, Des Moines, Ia., September 16, aged 74.

**Louis C. Pappa** (license, Ohio, 1897) a practitioner of Ohio for forty-eight years; died at his home in Youngstown, September 23, from heart disease, aged 83.

**Myron H. Parmelee, M.D.** Hahnemann Medical College, Chicago, 1870; a veteran of the Civil War; died at his home in Toledo, September 22, aged 65.

**George James Gladman, M.D.** McGill University, Montreal, 1886; died at his home in New York City, October 13, from cerebral hemorrhage, aged 50.

**Adam Eddmon, M.D.** Friedrichs University, Halle, Germany, 1867; died at his home in Tontogany, Ohio, September 16, from septicemia, aged 65.

**Charles Mariner Coolidge, M.D.** Dartmouth Medical School, Hanover, N. H., 1888; died at his home in North Waterford, Maine, August 12, aged 50.

**Joseph Mosher Heller, M.D.** Rush Medical College, 1877; died at his home in Osage City, Kan., September 19, from heart disease, aged 61.

**A. E. Currier** (license, Kansas, seven years' practice, 1901); for many years a resident of Fort Scott; died at his home, September 19, aged 80.

**Constantine Lomax Dickens, M.D.** Rush Medical College, 1879; died at his home in LaFontaine, Ind., August 19, from heart disease, aged 58.

**Julia Agnes Milmoe, M.D.** Syracuse, N. Y., University, 1912; died at her home in Nyando, N. Y., August 8, aged 35.

# The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

## "PROFESSOR" SAMUELS AGAIN

### Denied the Use of the Mails and Convicted of Fraud in the United States Court

Many readers of The Journal will remember the exposés[1] of "Professor" Samuels of Wichita, Kan. Briefly, Samuels was a mail-order medical faker, who advertised to cure practically all disease by means of a wonderful liquid that he had discovered, which was administered by dropping it into the eye of the afflicted person. His marvelous liquid was analyzed by the Association's chemists and found to consist essentially of a little common salt and sugar dissolved in hydrant water. The Samuels fraud flourished and the faker himself waxed rich. Probably because he thought he could carry on his operations on a more extensive scale in a larger city than Wichita, he moved his fakery to Detroit. This change of base was called attention to editorially in The Journal.[2] The public prosecutor of Detroit immediately "got busy," raided the Samuels concern, seized the quack's card-index of present and prospective victims and carried off a barrel of sugar and a bin of salt. Finding Michigan so unsympathetic, Samuels went back to his old stamping ground in Wichita and continued to fleece the sick as before.

On March 28, 1914, a memorandum, charging that "Professor" H. Samuels and the Professor H. Samuels Remedy Company, both of Wichita, Kan., were violating the postal laws in that they were obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, was delivered to both Samuels and his company. They were further called on to show cause, on or before April 10, 1914, why a fraud order should not be issued. A continuance was granted, at the request of Samuels, until April 30, 1914, at which time Amos W. Marston, a Chicago attorney, appeared before the government officials on behalf of the Samuels fakery. At the conclusion of the hearing, the attorney was given, at his request, until May 16 for the filing of a brief. When the brief was received by the federal authorities it was given careful consideration, and after a thorough examination of all the evidence in the case, Assistant Attorney-General Lamar recommended the issuance of a fraud order. On June 1, 1914, a fraud order was issued.

The government's investigation brought forth but few additional facts to those published in The Journal. The government chemists found, as did the chemists of the Laboratory of the American Medical Association, that the preparation sold by Samuels was essentially a pinch of sugar and a pinch of salt in ordinary hydrant water. The postoffice inspectors wrote to the Samuels concern under various names and received at different times letters representing that the Samuels remedy would cure bow-legs, flat-foot, sprained ankle, epileptic fits and lack of weight. Speaking of the Samuels nostrum, the Assistant Attorney-General says:

> "The claims for this solution, when considered in connection with its analysis, are palpably fraudulent, and it is clear that no one could be induced to purchase it if its real composition were revealed. Hence it is described as a new, peculiar and secret remedy in the advertising matter; and its real character fraudulently concealed. The analysis shows that there is nothing new, peculiar or secret about this solution and I so find."

An investigation was also made by the federal authorities of one case described in Samuels' testimonials. This particular testimonial, which has been used by the quack for some years, was to the effect that Samuels had cured an old character known as "Blind Joe" of Topeka, Kan. According to the claims made by Samuels, "Blind Joe" had been sightless for several years and "had exhausted all of the means in his power to be cured," had given up in despair until he "fell into the hands of Professor Samuels." Then: "In a short time he was able to see practically as well as he ever had in his life." The federal authorities interviewed the father and sister of "Blind Joe," both of whom swore that "Blind Joe" was blind; was never cured by "Professor" Samuels but died blind, and they declared further that the representations made by Samuels were absolutely false.

It was shown further at the trial that "Professor" Samuels was not, in fact, a professor at all. In March, 1914, Samuels was sued by a woman who was suffering with cataract and had taken Samuels' "treatment" without success. She was awarded $400 damages against this faker. At the trial Samuels admitted, under oath, on the witness stand, that he was not a scientist or a physician, that he had not read any medical or scientific books on diseases of the eye for twenty years; that he was not competent to testify whether the woman had a cataract or not and that he had treated her without examination.

In addition to being debarred from the use of the United States mails, Samuels was indicted by the federal grand jury and put under $20,000 bonds for appearance in the United States court. This trial has just been completed and Samuels was found guilty in the federal court at Wichita on eleven counts of using the United States Mails to defraud; the maximum penalty for each one of the eleven counts is a fine of $1,000 and five years in prison. It is to be hoped that this cruel and heartless swindler will be given a penitentiary sentence.

## CONVICTIONS UNDER FOOD AND DRUGS ACT

### NURITO

Nurito was exposed in The Journal, Aug. 10, 1912. It was analyzed by the Association's chemists and found to consist of milk sugar, phenolphthalein and pyramidon. The Journal's article called attention at the time to the falsity of some of the claims made by the Magistral Chemical Company of New York, the manufacturers of Nurito. One statement made was that "Only U. S. P. ingredients are used in Nurito." As neither of the two essential drugs in this nostrum, phenolphthalein and pyramidon, is in the United States Pharmacopeia, this claim was evidently false.

On June 17, 1913, United States officials charged the Magistral Chemical Company with shipping in interstate commerce a product, Nurito, that was misbranded in violation of the Food and Drugs Act. This charge was made on the grounds that the following statements on the label were false:

> "Only U. S. P. ingredients are used in Nurito . . ."
> "Nurito is absolutely free from sugar and sweetening matter."

The government chemists analyzed the stuff and found that Nurito contained both pyramidon and milk sugar, the former a drug that is not in the United States Pharmacopeia and the latter a sugar and sweetening matter. On July 1, 1913, the company pleaded guilty and the court suspended sentence. The report of the case was issued Aug. 3, 1914.—[*Notice of Judgment, 2997.*]

### RADAM'S MICROBE KILLER

This wretched fraud has been repeatedly exposed and has twice been declared misbranded under the Food and Drugs Act (Notices of Judgment, 205 and 623). It is interesting to note that the first two cases against this fraud were quickly decided. In the first instance twelve cases of Radam's Microbe Killer were seized, and the makers did not appear in defense of the suit. The court ordered the stuff destroyed by the United States marshal. In the second case, the Radam Microbe Killer Company pleaded guilty and twenty-five cases of the nostrum were destroyed. Both of these cases against Radam's Microbe Killer came before the Supreme Court's decision on the Food and Drugs Act which held that, as originally passed, the law did not refer to curative claims when it prohibited "any statement . . . which shall be false or misleading in any particular. . . ." This decision, it will be remembered, so seriously weakened the law as to call forth a presidential message urging an amendment that would specifically fill the gap discovered by the Supreme Court. The Shirley amendment was the result. This declares that a product shall be considered misbranded "if its package or label shall bear or contain any statement, design or device regarding the curative or therapeutic effect of such article, or any of the ingredients or substances contained therein, which is false and fraudulent."

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[1] Reprinted in "Nostrums and Quackery"; also in pamphlet (price 4 cents).

[2] "What's the Matter with Michigan?" The Journal A. M. A., March 23, 1912, p. 863.

The latest conviction against Radam's Microbe Killer was brought on the charge that the claims for the curative effect of the nostrum were "false and fraudulent." The government officials declared that the claim made for the stuff that it would destroy microbes in the human system was false; that the claims that it was "harmless," was a "tonic," was "antiseptic" and a "digestive," were false; that the claim that it was "food for the blood" was false; and that the claim that it was effective in the treatment of consumption, cancer, catarrh, yellow fever, leprosy, diphtheria and small-pox, was also false.

In this instance, the claimant, D. W. Ham of Minneapolis, fought the case in the courts. The matter came to trial before an intelligent jury whose understanding of the case was not befogged by the specious arguments of those who were defending the fraud. The jury returned a verdict in favor of the government's contention that the stuff was falsely and fraudulently misbranded and the court adjuged it condemned and forfeited, and ordered the stuff destroyed by the United States marshal.—[*Notice of Judgment, 3004.*]

### DR. HILTON'S SPECIFIC NO. 3

Dr. Hilton's Specific No. 3 is said to be prepared by G. W. Hilton, M.D., Lowell, Mass. Some of the nostrum was shipped in interstate commerce and the federal authorities charged that the preparation was misbranded in violation of the Food and Drugs Act. Some of the claims made on the label for this stuff were:

> "Cures colds, the grippe, and absolutely prevents pneumonia."
>
> "Kills the cold, prevents pneumonia, grippe, bronchitis, and all ills that develop from a cold."
>
> "In Boston where Hilton's No. 3 is almost universally used, it has reduced the death rate from pneumonia more than one-half since 1891."

The stuff was analyzed by the government chemists and found to have "no medicinal properties whatsoever." No claimant appeared for the property and the court entered judgment for condemnation and forfeiture and it was ordered by the court that the product *should be sold by the United States marshal!* The moral and ethical problem involved in the sale by the government of a product of this sort is not discussed in the federal bulletin.—[*Notice of Judgment, 3043.*]

### DR. SULLIVAN'S SURE SOLVENT

Dr. Sullivan's Sure Solvent is manufactured by the Dr. Sullivan Sure Solvent Co., Buffalo, N. Y., and St. Catherine's, Ont. A consignment of the preparation, shipped in interstate commerce, was seized by the federal authorities on the charge that it was misbranded under the Food and Drugs Act. The stuff, which contained 9 per cent. alcohol, bore the following claims on the labels and shipping cases:

> "Gives the most rapid cure of those suffering from the abusive use of alcoholic beverages."
>
> "Cures all kidney, stomach and liver troubles."
>
> "The only remedy in the world today that positively will cure rheumatism and kidney trouble."
>
> "If a tumor is growing, a cancer developing . . . Sullivan's True Solvent will disperse it for good."

Misbranding was alleged because of the false, misleading and fraudulent statements regarding the curative properties of this nostrum. The company did not appear to defend the suit and judgment of condemnation and forfeiture was entered, the court ordering that the product be destroyed.—[*Notice of Judgment, 3130.*]

### WEST BADEN SPRUDEL WATER

West Baden Sprudel Water is bottled by the West Baden Springs Company, West Baden, Ind. The federal authorities filed a libel for seizure and condemnation of twenty-eight cases each containing twenty-four bottles of this "water" that had been shipped in interstate commerce, charging that it was both adulterated and misbranded in violation of the Food and Drugs Act. The product was declared adulterated for the reason that it contained and in part consisted of a "filthy and decomposed animal substance." Misbranding was alleged because the labels on the bottles, etc., were false, misleading and deceptive in that they represented and indicated that West Baden Sprudel Water was a natural spring water without additions or abstractions of any kind. The government chemist declared such was not the fact as sodium sulphate (Glauber's salt) magnesium sulphate (Epsom salt) and sodium chlorid (common salt) had been added to the water. Neither the West Baden Springs Company of West Baden, Ind., nor the firm of Levi and Ottenheimer of Cincinnati, Ohio, in whose possession the shipment was found, appeared to defend the case, although due notice of the proceedings had been given both. The government's charges were upheld by the court and the judge ordered that the product should be destroyed by the United States marshal. —[*Notice of Judgment, 3136.*]

### RUSSELL'S WHITE DROPS

The Russell Medicine Company, Providence, R. I., manufactured Russell's White Drops. The nostrum contains, among other things, both alcohol and codein. It was sold under the following claims:

> "Warranted to be free from any injurious effects or drug forming habits. . . ."
>
> "A safe and effectual remedy for babies and children teething."
>
> "An invaluable remedy for the relief and cure of wind colic, acidity of the stomach, diarrhea, dysentery, restlessness, etc., in children teething."
>
> "Harmless and effectual."

The label of this "baby killer" admitted the presence of 10 per cent. alcohol and codein ¼ grain to each fluidounce, but the admission was, according to the government's report, in inconspicuous type. Misbranding was alleged for the reason that the true amount of alcohol and codein was not given, the nostrum containing more than 10 per cent. alcohol and a much larger quantity of codein than that admitted on the label. Misbranding was further alleged because of the false and fraudulent claims made on the label of the stuff. No one appeared in defense of this wretched nostrum and the court ordered the stuff destroyed.— [*Notice of Judgment, 3154.*]

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**Causes of Tuberculosis.**—Tuberculosis may be put into three groups. All of us who are here come in the first. If I had an instrument here with which I could look into the chest or the abdomen of each of you, the probability is that in 90 per cent. of you would be found somewhere a small area of tuberculosis. So widespread is the bacillus that practically all humans by the time they become adults harbor the germ of the disease. Why don't you die? Because we are not guinea-pigs or rabbits, we have obtained a certain immunity. But the germ is in us, though negative, and with all of us there is the possibility of slipping into the two other groups. The second group comprises those in whom the disease is active enough to produce symptoms, but in whom there is the possibility of arrest or cure, with restoration to working health. Those in the third group are doomed, the disease progresses week by week, month by month, year by year and from one year to five sees the end. When workers have living wages, when the house becomes the home, when the nation spends on food what it spends on drink, then, instead of hundreds of thousands, there will be millions in the first group, with practically immunity. The enemy has been traced to its very stronghold, which is defended by the three allies poverty, bad housing and drink. —Sir William Osler's address at Leeds Conference for the Prevention of Tuberculosis.

## Correspondence

### The Twilight Sleep in Obstetrics

*To the Editor:*—While Krönig and Gauss are engrossed in their military duties, the propaganda for the twilight sleep still goes on in McClure publications. The article in *McClure's* for October is a good example of the fallacious arguments and pictorial intimations that are being pressed on the American public in support of this very doubtful procedure in obstetrics. Pictures of scopolamin-morphin or Freiburg babies adorn several pages of the magazine. They generally represent vigorous children from 3 to 5 years of age as if the vigor depended on the fact that their mothers had received a sixth of a grain of morphin and an indeterminate amount of scopolamin during their birth. One illustration shows a child of 6 born without scopolamin and a sister of 4 granted the blessing of "twilight sleep." The legend reads: "A Freiburg mother and her two children. The older child (at the right) was born in the 'old school' way, and, though 6 years old, is being rapidly outdistanced in physical development by his 4-year-old sister, born under scopolamin." Thus the intimation is continually presented to the reader that scopolamin-morphin has some magic far-reaching influence that changes the physical destiny of the child. The whole question is confused in the reader's mind. The issue is changed from a technical question of the practice of obstetrics to one of sociologic importance. The fallacy that these are selected cases and that there is no reason to suppose that a single dose of a drug given the mother at the time of birth will affect the future of the child is lost sight of. Let us dress up a hundred handsome children whose mothers bore the pangs of labor without any anesthetic (and such could easily be found) and take their pictures and what have we proved? Nothing at all. Even the layman can see the utter futility of trying to decide a question by such evidence.

Again, the facts are not fairly represented in the picture drawn of the course of labor under scopolamin-morphin. The authors note that at a certain period the relatives unostentatiously withdraw. No hint is given of the reason for this precaution. This reason, however, is supplied by Krönig, who says:

"The disadvantages of this method consist in the fact that with some women, especially when the surroundings are not very quiet, transitory states of confusion of mind and excitement occur. These are of no material importance, so long as the relations of the mother do not remain in the room, for these states of excitability make an unpleasant impression on the family. In consequence of this, we only carry out the method of twilight sleep in cases where the relations promise to be out of the room during the whole time of the birth" (*Surgery, Gynecology and Obstetrics,* May, 1914, p. 529).

Is it not time that this misleading popular exploitation of a practically discarded method be met by clear statements from the medical profession through the press? Such statements ought to show that a degree of anesthesia satisfactory to most patients is already achieved in the routine practice of obstetrics; that "twilight sleep" is not absence of pain but abolition of memory; that, as Lequeux says, "the patient is delivered as in a delirium." The psychic influence on the subconscious mind of the pain of labor felt but not remembered in the absence of friends remains for the neurologist to elucidate. J. H. Salisbury, M.D., Wheaton, Ill.

### The Duck as an Insect Destroyer

*To the Editor:*—Corroborating Dr. Dixon's interesting report on "The Duck as a Preventive Against Malaria and Yellow Fever" (The Journal, Oct. 3, 1914, p. 1203), I have been observing the food of the wild duck for the past three years, and find that the mosquito and larvae are readily devoured by the duck. I have eight varieties under observation and note that the best insect destroyers are the beautiful wood duck (*Aix sponsa*) and the green-winged teal (*Nettion carolinensis*). These ducks are smaller than the mallard (*Anas platyrhynchos*) and their diet more insectivorous. The wood duck is almost extinct except in captivity. It is the most beautiful of all the duck family; therefore the introduction of this duck would serve to perpetuate its kind and also be of use in keeping down all noxious aquatic insect life.

William C. Herman, M.D., Cincinnati.

Instructor in Pharmacology, Medical College of the University of Cincinnati.

## Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

### POISONING FROM PHENOLAX

*To the Editor:*—I have just examined a young nurse from Johns Hopkins Hospital for an apparent poisoning of the skin (dermatitis medicamentosa) from "Phenolax." As this is my first observation of poisoning from this drug I write to ask (1) if you have heard of similar cases, and (2) if you can tell me the composition of this drug. The patient is 33 years of age, and, on her three weeks' vacation, had been eating voraciously of fresh vegetables "because they were so good." A mild constipation had developed into a rather marked one and for this reason a friend advised Phenolax, which the patient had never before taken. This was at 11 a. m. (1 pill) September 14. At 4 o'clock p. m. the first skin eruption appeared on the lower abdomen and at 6 o'clock there was a violent movement of the bowels and extreme nausea but no vomiting. At 6:30 the patient felt better but very "wobbly." The skin eruption appeared over larger and larger areas but the subjective symptoms were almost nil. To-day, September 15, at 11:30 there is on the skin over the lower abdomen and down the thighs to the knees (with the exception of a white band at the top of the stockings) and on the right breast a claret-red, mottled but almost homogeneous erythema tending toward purpura. The border is not sharply defined. The temperature is normal and the patient thinks that the eruption has faded a little.

Charles J. White, M.D., Boston.

Answer.—1. We have no record of a similar effect from the taking of phenolphthalein. It is generally believed that the remedy is not absorbed, although albuminuria following its ingestion has been reported. It is quite possible that the eruption observed in this case was due to reflex disturbances of the vasomotor system from intestinal irritation or to the absorption of toxins already present in the intestine when the drug was taken.

2. Phenolax is one of many proprietary phenolphthalein preparations which physicians are asked to prescribe although we know no reason why they should do so, unless it be that they have failed to familiarize themselves with the properties, dose, etc., of phenolphthalein itself (The Journal, April 30, 1910, p. 1458). Phenolax wafers are tablets containing in each, according to their exploiters: phenolphthalein, 1 grain, and "aromatics" and sugar enough to make 5 grains. Just what purpose aromatics and sugar serve we are not informed. We imagine that it is to mislead the unthinking into believing that the combination has some mysterious value that phenolphthalein does not have. It is certain that the combination can be sold at a much better profit than can phenolphthalein alone.

In this connection we again ask, Why should we prescribe phenolphthalein under a proprietary name when we can do so under its own name and without mystifying ourselves? Since phenolphthalein is practically insoluble in water and tasteless, there can be no need for adding aromatics and sugar, especially when it is swallowed in the form of a tablet.

### TEST FOR DETERMINING ALCOHOL

*To the Editor:*—Can you give me a simple test for determining the presence of alcohol in a beverage which looks and smells like port wine, but is claimed to be non-alcoholic?

George Minges, M.D., Dubuque, Iowa.

Answer.—Many tests for alcohol (ethyl, or grain) have been proposed, but most of them are too complex for application in a physician's office. As a general rule liquids to be tested for alcohol should be distilled and the identification tests applied to the distillate. In the absence of other distillation apparatus, one that is satisfactory may be improvised by fitting a 6-inch test-tube with a perforated cork carrying a glass tube bent downward, the lower limb being wrapped with wet filter paper. Another test-tube may be used to collect the distillate. Ten c.c. of the solution to be tested are placed in the apparatus and cautiously heated with a Bunsen burner or spirit lamp until about 1 c.c. has passed over. Five or six drops of a 10 per cent. solution of sodium hydroxid are added to the cold distillate and just sufficient compound solution of iodin (Lugol's solution) to produce a faint brownish-yellow tint. The solution should be shaken two or three times during an interval of two minutes. No precipitate of iodoform should be produced, indicating absence of acetone and a few other substances which yield iodoform under these conditions. The solution is now warmed to about 60 C. (140 F.), which is about as hot as one can hold in the hand. On shaking the test-tube a pale lemon-yellow precipitate of iodoform should appear within two minutes. To be successful with the test in every case requires a little practice, and it may be found necessary to add a few drops more of the iodin solution if the mixture becomes colorless, or a drop or two more of the alkali solution if the test mixture be too highly colored. If the distillate contains much alcohol it should be diluted with two or three volumes of water before applying the test. Unfortunately there are some substances other than ethyl alcohol which give this test; but in a liquid which is sold as a beverage these substances are not likely to be present in interfering amounts.

### USE OF PARAFFIN OIL

*To the Editor:*—1. Do you regard the continuous administration of paraffin oil over a long period especially liable to cause cancer? A recent report of Dr. H. C. Ross of the British Government Commission for the study of the causes of the frequent occurrence of cancer among paraffin workmen indicates that there are substances in paraffin oil associated with anthracene which may cause cancer, but that these substances are soluble in water and may be removed by washing.

2. Is paraffin oil now obtainable from which these substances have been removed? If so, where?

3. Will you kindly give formula for a satisfactory emulsion of paraffin oil for those unable to take the plain oil?

Thomas J. Tuder, M.D., Keokee, Va.

Answer.—1. The occurrence of cancer from chronic irritation is recognized. If paraffin has any influence in the production of cancer it is probably due to the presence of irritating ingredients. The purified paraffin oil, such as is recommended for medicinal use, is entirely bland and non-irritating. There is no reason to suppose that the continued use of this would cause cancer.

2. A paraffin oil corresponding to the requirements of a bland, non-irritating oil is on sale by dealers in pharmaceutical preparations. This oil may be obtained by prescribing Paraffinum Liquidum or Petrolatum Liquidum, Grave, as described in The Journal, May 30, 1914, p. 1740.

3. The following is a modification of Emulsio petrolei, British Pharmaceutical Codex, a book corresponding somewhat to our National Formulary:

| | |
|---|---|
| Liquid paraffin.................... | 30.00 |
| Gum acacia, in powder........... | 15.00 |
| Tragacanth, in powder........... | 1.36 |
| Oil of cinnamon................... | 0.20 |
| Elixir of gluside (saccharin).... | 0.33 |
| Distilled water...........to make | 100.00 |

Triturate the liquid paraffin and the oil of cinnamon with the powdered gums, and add all at once 25 parts of distilled water; then add the elixir of gluside and dilute with sufficient distilled water to produce the required volume. The dose is from 4 to 15 c.c.

### PAPINE, CELERINA AND ALETRIS CORDIAL

*To the Editor:*—Please tell me the principal ingredients of the following preparations now being sold to the profession through the drug stores: (1) Papine, made by Battle & Co.; (2) Celerina, and (3) Aletris Cordial, the two latter made by the Rio Chemical Company. On what does their virtue (if they have any) depend?

E. R. Miller, M.D., Frederick, Md.

Answer.—1. Papine is a simple aqueous-alcoholic solution of morphin (1 grain to each ounce). It is exploited under the utterly unwarranted claim that it "does not nauseate, constipate nor create a habit." (See The Journal, April 29, 1911, p. 1278.)

2. Celerina is a shotgun mixture, said to contain, in addition to 42 per cent. alcohol (about the same percentage as that found in whisky), kola, viburnum, celery, cypripedium, xanthoxylum and aromatics.

3. Aletris Cordial is declared to contain 28 per cent. alcohol (a much higher percentage than is found in the strongest wine), besides three obsolete and valueless drugs, aletris, helonias and scrophularia. Whatever virtue there may be in either Celerina or Aletris Cordial is that derived from alcohol.

### STANDING OF A NON-RESIDENT PHYSICIAN

*To the Editor:*—During the past summer I spent my vacation in a small town in Michigan and I was frequently consulted by the resorters, both in emergencies and at other times, the nearest resident physician being located in a town about eight miles distant. I wish you would kindly answer the following questions for me, remembering that I am licensed to practice in the state of Ohio, only:

1. Have I the legal right to treat these people gratis?

2. Have I the legal right to charge for my services and would I have any standing in court in event payment of my bill was refused and I should decide to sue for the same, irrespective of where the patient lives?

A. B., Cincinnati.

We submitted the foregoing questions to Dr. Beverly D. Harison, Secretary of the Michigan State Board of Registration, who sent the following answers:

Answer.—1. The Michigan law requires that all practitioners should possess a certificate of registration, or license, issued by this board, and that such certificate should be filed with the clerk of the county in which the physician practices. The Michigan medical act exempts persons giving emergency treatments, but of course there is a limitation to the attendance, when persons giving such treatment could not charge a person for same. The Michigan act does not require that a person, in order to be convicted, should charge a fee. Therefore, a non-registered physician giving his services to people would be in violation of the act.

2. Absolutely no standing whatsoever in any court.

### ORTHOSTATIC ALBUMINURIA

*To the Editor:*—Can you refer me to literature embodying recent investigations concerning orthostatic albuminuria?

Luella E. Axtell, M.D., Marinette, Wis.

Answer.—The following is a partial list of references to works on this subject:

Reyber, P.: Relation between Orthostatic Albuminuria and Tuberculosis, *Monatschr. f. Kinderh.*, July, 1913. Abstracted in The Journal, July 19, 1913, p. 230.

Fitzsimmons, H. J.: Orthostatic Albuminuria Treated by Exercise, *Boston Med. and Surg. Jour.*, Nov. 13, 1913.

Dietl, K.: Pathology of Lordotic Albuminuria, *Wien. klin. Wchnschr.*, Feb. 13, 1913. Abstracted in The Journal, March 22, 1913, p. 951.

Gomolitsky, V.: Orthostatic Albuminuria, *Ztschr. f. klin. Med.*, 1913, lxxvii, Nos. 1-2. Abstracted in The Journal, April 5, 1913, p. 1117.

Arnold, W.: Orthostatic Albuminuria and Tuberculosis, *München. med. Wchnschr.*, March 4, 1913. Abstracted in The Journal, April 12, 1913, p. 1196.

Jehle, L.: Correction of Spinal Anomalies in Orthostatic Albuminuria, *Wien. klin. Wchnschr.*, Feb. 27, 1913.

Sturm, J.: Orthostatic Albuminuria, *München. med. Wchnschr.*, April 8, 1913.

Wendenburg, F.: Etiology of Orthostatic Albuminuria with Special Regard to Tuberculosis, *Arch. f. Kinderh.*, 1914, lxii, Nos. 1-2.

Bass, M. H., and Wessler, H.: Blood-Pressure in Children Showing Orthostatic Albuminuria, *Arch. Int. Med.*, April, 1913. January, 1914. Abstracted in The Journal, Feb. 7, 1913, p. 487, and The Journal, June 7, 1913, p. 1832.

### LYMPH-NODES AND LYMPH-GLANDS

*To the Editor:*—Will you please define for me your understanding of the words "nodes" and "glands"? Is there a proper field for the term "lymphatic gland" and what is the field of application for the term "lymphatic node"?

H. E. Pearse, M.D., Kansas City, Mo.

Answer.—This question was answered in The Journal, May 17, 1913, p. 1560.

### LITTEN'S SIGN

*To the Editor:*—Please explain Litten's sign, as mentioned in The Journal Sept. 12, 1914, p. 943.

B. J. Leahy, Port Jervis, N. Y.

Answer.—Litten suggested in 1892 a procedure for noting the movements of the diaphragm. The patient should lie on his back with his face away from the light which should fall from the head or foot of the bed. The observer stands three or four feet away with his back to the light and observes the chest at an angle of about 45 degrees. In inspiration, a short, narrow shadow or wave starts on either side at about the sixth interspace and passes downward over two or more ribs or even to the margin of the ribs. In expiration it begins below and moves upward, but is less easily seen. In normal persons it moves, usually, more than 6 cm. It is best seen in spare, muscular persons whose chest walls are not too thick. It is absent when the pleural cavity contains fluid or air, and when it is obliterated by adhesions, in pneumonia of the lower lobe in emphysema of the lungs, and in intrathoracic tumors low down in the chest. With lessening of the extent of the movement, the respiratory capacity is diminished and tuberculosis may be looked for.

# Medical Education and State Boards of Registration

## COMING EXAMINATIONS

Arkansas: Little Rock, November 10-11. Sec., Dr. W. S. Stewart, 404 Citizens Bank Bldg., Pine Bluff. Homeopathic, Little Rock, November 12. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic, Little Rock, November 10-11. Sec., Dr. C. E. Laws, Ft. Smith.

Connecticut: New Haven, November 10-11. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, New Haven, November 10. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Louisiana: New Orleans, October 29-31. Sec., Dr. E. L. Leckert, New Orleans.

Maine: Portland, November 10-11. Sec. Dr. Frank W. Searle, 776 Congress St., Portland.

Mississippi: Jackson, October 27-28. Sec., Dr. E. H. Galloway, Jackson.

Nebraska: Lincoln, November 11-12. Sec., Dr. H. B. Cummins, Seward.

Nevada: Carson City, November 2. Sec., Dr. S. L. Lee, Carson City.

New Jersey: Trenton, October 20-21. Sec., Dr. H. G. Norton, Trenton.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Waco, November 10-12. Sec., Dr. W. L. Crosthwait, Amicable Bldg., Waco.

### Higher Preliminary Requirements in Oklahoma

A letter from Dr. John W. Duke, secretary of the Oklahoma State Board of Medical Examiners, says that, in accordance with the requirements of the medical practice act, one year of collegiate work, in addition to an accredited four-year high-school education, will be required of all applicants who graduate in 1918 and thereafter. This applies to all students matriculating in the session of 1914-1915 and thereafter who may desire to practice medicine in Oklahoma.

There are now twenty-two states in which the requirement of one or two years of collegiate work has been made obligatory for those who intend to practice in those states. These states, the number of collegiate years required and the time the requirement is effective are as follows:

| State Examining Board of: | Number of Years Required | Affects Students Matriculating | Affects Applicants Graduating |
|---|---|---|---|
| Minnesota | 2 | 1908-09 | 1912 |
| North Dakota | 2 | 1908-09 | 1912 |
| Colorado | 2 | 1910-11 | 1914 |
| Connecticut | 1 | 1910-11 | 1914 |
| Kansas | 1 | 1910-11 | 1914 |
| Indiana | 2 | 1910-11 | 1914 |
| Utah | 1 | 1910-11 | 1914 |
| Iowa | 2 | 1911-12 | 1915 |
| South Dakota | 2 | 1911-12 | 1915 |
| Vermont | 1 | 1912-13 | 1916 |
| Kentucky | 1 | 1914-15 | 1918 |
| Michigan | 1 | 1914-15 | 1918 |
| New Hampshire | 1 | 1914-15 | 1918 |
| Oklahoma | 1 | 1914-15 | 1918 |
| Pennsylvania | 1 | 1914-15 | 1918 |
| Rhode Island | 1 | 1914-15 | 1918 |
| Virginia | 1 | 1914-15 | 1918 |
| Washington | 1 | 1914-15 | 1918 |
| Alabama | 2 | 1915-16 | 1919 |
| Arkansas | 1 | 1915-16 | 1919 |
| California | 1 | 1915-16 | 1919 |
| Illinois* | 1 | 1915-16 | 1919 |

* Illinois requires a five-year course, including a preliminary year in physics, chemistry and biology, of all applicants for license to practice medicine in that state who graduate after July 1, 1918.

# Book Notices

Serology of Nervous and Mental Diseases. By D. M. Kaplan, M.D., Director of Clinical and Research Laboratories of the Neurological Institute, New York City. Cloth. Price, $3.50 net. Pp. 346, with illustrations. Philadelphia: W. B. Saunders Company, 1914.

The author, having already published several articles on serology, has now combined in one volume everything of value contained in these articles. The book is divided into four parts. Part 1 deals with technology. In the space of eighty-three pages he describes and pictures the technic of lumbar puncture as well as methods of examination and interpretation of findings, not omitting the gold-sol reaction of Lange. In this chapter, though brief, nothing of importance has been sacrificed. At its conclusion the author indulges in some reflections on the attitude of the serologist which laboratory workers may well consider. He believes that "every serologist learns, sooner or later, that no matter how conscientious his working methods are, a number of errors cannot be avoided with the Wassermann reaction, and that some of the positive reports submitted were unquestionably of negative material." The author advises, therefore, to regard the entire test as only of secondary importance in making a complete study of a case of syphilis. In his opinion the serologist's attitude is a greater factor in the value of a Wassermann reaction than is the standardization of the reagents. "The question of reliability resolves itself into this: A worker reports either too many positive Wassermann reactions in non-syphilitic persons, or too many negative reactions in those who were infected. Unless, therefore, the serologist determines on which side he intends to err, his results will, accordingly, be uncertain." He urges, therefore, never to diagnose syphilis in the laboratory, as the laboratory worker should not consider himself competent to give a final decision. He believes that only those serums should be reported as positive which have withstood every attempt at negativation. Further, to obtain an unbiased opinion from the laboratory, it is necessary to withhold the clinical findings in the case. He deprecates the attempts which have been made to increase the sensitiveness of the test by using methods that are calculated not to make the number of negative findings greater, but, on the contrary, to make the number of positives as great as possible. These methods, he thinks, are the result of laboratory overzealousness combined with insufficient clinical knowledge. From this point of view he criticizes Noguchi's modifications of the Wassermann reaction and also Hauptmann's *Auswertungs-Methode*, the last of which consists in the use of quantities so large that a positive result is eventually obtained in some non-specific spinal fluids. In concluding this section of the book the author admonishes clinicians to acquaint themselves with the views of the serologist before placing any confidence in his results. He warns clinicians against the "unerring" serologist, whom he considers a menace to physician and patient. In Part 2 the author discusses without bias the serology of nervous and mental diseases of non-luetic etiology. This constitutes a fairly complete summary of work done by himself and others.

Of greatest value to the neurologist is Part 3. Here the author displays a practical acquaintance with the diagnostic difficulties of nervous and mental diseases scarcely to be expected from a serologist. While it is impossible in this review to enter into details, we are compelled to state that the views expressed therein are on the whole sound and will meet the approval of neurologists. Part 4 is devoted to the therapeutic uses of salvarsan, its administration, dosage, technic, after-treatment, etc. This section comprises sixty-three pages and is complete in itself. No less praiseworthy is the addition at the end of the volume of seventy pages of bibliography, culled from the most important literature of the world. If it is permissible to use a common figure of speech, we may predict that Kaplan's book will find a public ready to receive it with open arms.

The Art of Compounding. A Text-Book for Students and a Reference Book for Pharmacists at the Prescription Counter. By William L. Scoville, Ph.G., formerly Professor of Theory and Practice of Pharmacy in the Massachusetts College of Pharmacy. Fourth Edition. Cloth. Price, $3 net. Pp., 390, with 76 illustrations. Philadelphia: P. Blakiston's Son & Co., 1914.

This book is intended as a text for students in pharmacy and as a reference work for pharmacists at the prescription counter. Chapters are devoted to the prescription, nomenclature, mixtures, incompatibilities, sterilization and disinfection, biologic products, and the various forms in which pharmaceuticals are dispensed—such as emulsions, pills, tablets, ointments, suppositories, etc. The directions for pharmaceutical manufacturing processes are brief but for the most part clear. While intended primarily for students in pharmacy, the book should prove useful to a physician who dispenses if he has not taken a course in pharmacy. Little pitfalls which the dispenser is constantly liable to meet are pointed out and methods for overcoming them when encountered are discussed. In some respects the work is not up to date. For example, in the discussion of enteric coatings no reference is made to the formaldehyd-gelatin combination which has come into use of late years.

A Handbook of Psychology and Mental Disease. For Use in Training Schools for Attendants and Nurses and in Medical Classes and as a Reference for the Practitioner. By C. B. Burr, M.D., Medical Director of Oak Grove Hospital (Flint, Mich.) for Mental and Nervous Diseases. Fourth Edition. · Cloth. Price, $1.50 net. Pp. 235, with illustrations. Philadelphia: F. A. Davis Company, 1914.

This manual is offered by its author for use in training schools for attendants and nurses. The expert psychologist who studies it will probably be able to analyze what the author intends to convey. The average attendant or nurse will be far beyond his depth after leaving page one. A new chapter has been added entitled "Symbolism in Sanity and in Insanity." It is practically a catalog after the Freudian concept of common objects and their sexual equivalents. The nurses will possibly find this entertaining. The reporting of numerous cases from the author's experience is interesting, and treatment is given in simple, easily understood language. It seems doubtful, however, whether a book of this character can have much of a field of usefulness.

The Aspley Cookery Book. Containing 503 Recipes for the Uric-Acid-Free Diet. By Mrs. John J. Webster and Mrs. H. Llewelyn. New Edition. Cloth. Price, $1.40 net. Pp., 268. Philadelphia: P. Blakiston's Son & Co., 1914.

This is a guide for those who wish to avoid the use of meat and other substances containing uric acid or its precursors and yet secure palatable dishes somewhat resembling those cooked with heat. Little space is occupied with argument to sustain the peculiar practices of the followers of Haig, but the practical recipes are at once set before the reader. Much use is made of vegetables and nuts, and the directions are very explicit and seem calculated to secure good results. Some of the terms used will not be readily understood by American readers, being provincial English. Reference may be made to "coker" butter, which, however, appears to be a proprietary article although "coker" is used in England as equivalent to coco.

Mental Deficiency (Amentia). By A. F. Tredgold, L.R.C.P., M.R.C.S., Consulting Physician to the National Association for the Feeble-Minded. Second Edition. Cloth. Price, $4.25 net. Pp. 491, with illustrations. New York: William Wood & Co., 1914.

The revised edition of Tredgold's valuable book contains a new chapter dealing with mental tests and case-taking which is interesting and scientific. Many chapters have been entirely rewritten, bringing the work up to date. The subject of mental deficiency in its various phases, including the sociologic and medicolegal aspects, has been handled with great skill and conservatism. An admirable feature of the book is the willingness to give credit to those who deserve it, regardless of nationality. In common with most English authors, Tredgold makes use of simple phraseology, intelligible alike to specialist and general practitioner. We commend this work as one of the best short text-books on the subject in any language.

# Miscellany

### Health of Flax and Linen Workers

The government has issued the report of the Departmental Committee on humidity and ventilation in flax mills and linen factories. Reference is made to Dr. Legge's report based on 1,500 observations on the body temperature of the operatives in wet spinning rooms and humid weaving sheds during the summer of 1912. The figures so obtained, he thinks, "suggest that, continued for hours, day after day, and year after year, the effect would be likely in the long run somewhat to affect health. In other words, persons in an atmosphere where the wet-bulb exceeds 75 F. are working under adverse physiologic conditions." The investigations of the committee have shown that the conditions in wet spinning rooms might, without detriment to the process of manufacture, be improved in such a manner as to give additional comfort and better conditions to the persons employed. The existing regulations have done much in this respect, and in some mills had been carried out in a most exemplary manner; in others, however, there is ample room for improvement. It is at present required that in wet spinning rooms the difference between the dry and wet-bulb temperatures shall be not less than 2 degrees, and it might be thought therefore that this small difference is necessary for manufacturing purposes. The work might be carried on with a much wider temperature difference. It is impracticable in every instance to require that the temperature of the rooms should not exceed a given point. The committee is therefore of the opinion that whereas at all times ventilation conforming to the present standard of five volumes of carbon dioxid per 10,000 in excess of that in the outside air should be provided. Special requirements are called for when the wet-bulb temperature reaches 75 F., the point at which bodily discomfort begins. When this point is reached they recommended that means shall be taken to introduce 1,000 cubic feet of air per hour for every linear foot of trough installed in the room, the ventilation to be arranged so as to insure that the distribution is uniform throughout the room. With regard to linen weaving factories the committee states that for the manufacture of fine linens a difference of about 2 degrees between the dry and wet-bulb temperatures must be maintained, even at high temperatures. This in one sense is much to be regretted, for the records taken by the committee show that in summer the wet-bulb temperature frequently exceeds the limit at which bodily discomfort begins and above which long-continued work can hardly fail to be injurious. The results of their inquires and experiments have compelled them to recognize that unless an important industry is interfered with in such a way as to risk loss of trade and its transference to other countries in which no special regulations for flax are in force, with its incidental hardships falling largely on the operative classes, work in a limited number of factories must continue under conditions causing bodily discomfort and possibly injury in the long run. On the other hand, the medical evidence points to the fixing of a definite limit of wet-bulb temperature at which artificial humidification should cease. The committee accordingly recommends that all artificial humidity (except such as was caused by the evaporation of cold water) should cease when the wet-bulb temperature reaches 80 F.

### Safety and Sanitation Maxims and Observations

E. R. Hayhurst, in the *Monthly Bulletin of the Ohio State Board of Health*, presents the following drawn from speeches made at the recent Safety and Sanitation Conference held in New York City:

German unions penalize their own members for failing to observe health regulations within workshops.

Varnish works of Germany have been rendered practically free of odors by exhaust ventilation systems.

Children under 14 years of age cannot be taught ideas of foresight-to-be-remembered; therefore they are intellectually irresponsible. Many of our ignorant foreign workmen are beneath the 14-year-old child in power of foresight.

Bad ventilation, heat, fatigue and night work lead to drowsiness, to accidents and to disasters to health.

Fourteen nations of Europe do not allow night work of any kind for women, and limit the kind and hours of day work.

Sanitary measures lead to efficiency, economy and contentment, as well as greater production and more wages.

The representatives of two of the largest lead and paint corporations in America stated that they had been able to make some of their plants so mechanically perfect as to be fool-proof against dangers of lead poisoning.

First aid in the Carnegie Steel Company's plants has reduced infections from 50 per cent. to 0.1 per cent.

It is five times as much to the interest of the employer as to that of the employee to promote welfare work.

There are 400,000 maimed and debilitated workers in the United States. In New York a special trade school and employment bureau has been started on account of this. In Boston, one company, employing 1,000 men, does not discharge its defectives, but fits the job to the man. They have noticed that heart diseases have not only been checked, but markedly improved within a few months' time. Through a well-regulated "first-aid" system this company has had no infections for two and one-half years.

The Carnegie Steel Co., by first-aid measures, has handled 8,000 cases of foreign particles in the eyes, with no infections.

The representative of a company employing 20,000 men said: "We use the physician to get to all of our people. We have found out that workmen will listen to advice and counsel from physicians even on industrial questions without the ever-present suspicion of some ulterior motive."

Mr. George B. Cortelyou, president of the Consolidated Gas Co., New York, stated that to the employee is due proper remuneration, good sanitation, relief when sick or injured, insurance for old age, and a guarantee of protection to his family after death. There must be no charity about this. The self-respect of both capital and labor must be maintained. This is necessary for future competition in business.

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### A Big Field for a Big Man

Sooner or later Congress will find it necessary to pass on the proposal that a United States Department of Public Health be established. The best medical opinion of America demands it. The American Medical Association has memorialized Congress in its favor. Calling the American Medical Association "the Medical Trust" will not serve the opponents of the proposed department. The fact remains that this Association is the great and influential medical body of the country and that its proposals carry enormous weight.

It is claimed that half a million Americans die yearly of preventable disease. The figure is doubtless under rather than over the mark. Health departments do lower the death-rate of city, state and nation. The work of the United States Public Health Service in California and New Orleans during recent outbreaks of the bubonic plague evidences its efficiency. The chief opponents of the proposed bureau seem to be medical men of the various smaller schools of practice.

The *Southern Medical Journal,* in its September issue, makes a proposal that will appeal very powerfully to the average American, indifferent to professional jealousies and unconcerned in the warfare of the schools. This Southern journal proposes that a public health department be created and Surgeon-General Gorgas, the man who fought the health battles of the Panama Canal and cleaned up "the Zone," be placed at its head.

The world knows the work of Surgeon-General Gorgas. Congress is about to give him the highest honors within its power. The American people rank him with Colonel Goethals. Should such a department, in the wisdom of Congress, be created, and its headship awarded by popular election, we prophesy that Colonel Gorgas would sweep the country from Calaveras County, California, to the Island of Nantucket, which is "east of daown East."—St. Louis *Republic.*

# Medicolegal

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### Physician Made Agent to Contract with Hospital for Care of Injured Employee

*(Omaha General Hospital vs. Strehlow (Neb.), 147 N. W. R. 846)*

The Supreme Court of Nebraska reverses a judgment which was rendered in favor of the defendant in this action which was brought to recover for the care and treatment for twenty-nine weeks of an employee who had been seriously injured. The court holds that when an employer, at the time his employee receives a serious bodily injury, calls his own regular physician and surgeon over the telephone and instructs him "to come and take care of the injured man," and at the time of giving such direction well knows that the injuries of his employee are of such a serious character as to render it necessary immediately to remove him to a hospital, and the physician at once responds and takes the man to a hospital, and for the purpose of inducing the hospital authorities to receive him states to them that the principal for whom he is acting will be responsible for the payment of the bill of the injured man, the employer is bound by such acts and declarations on the part of his agent, the physician.

Nor will the employer have any right to terminate his liability by subsequently giving notice that he will not be responsible for care and treatment "from now on," when the patient is yet incapable of being removed or discharged from the hospital without grave danger to his life or health. Under the circumstances it is an implied condition of the contract that the employer can terminate his liability to the hospital only by removing the patient, or when he can be dismissed by the hospital without serious danger to his life or health, or by showing that the injured man has means out of which the hospital can or should collect its pay.

Here the defendant did not direct the physician simply to administer first aid or to give emergency treatment, but he told him "to come and take care of the injured man." He did the proper and humane thing, just what any employer ought to do when an employee is lying helpless as the result of an injury received in his employment. He knew, as well as he knew anything, that the physician would at once take the injured man to a hospital, and, if he wanted to place any limitation on the physician's authority to bind him for services rendered by the hospital, then was the time for him to impose such limitation. In other words, when the physician took the injured man to the hospital and stated that the defendant would be responsible for his treatment, it was the same as if the defendant had himself taken him there and made that statement, and he had no more right to disaffirm what was done and said by the physician than if he had done and said the same things himself. After having unloaded his helpless employee on the hospital, he could not relieve himself from further liability by his own declaration, but it was rather his duty to pay the hospital charges up to that time and remove the man to some other place. Nor was it a case to expect the hospital to dispose of by giving notice to the poor authorities.

### Admissibility in Evidence of Hospital Records

*(Ribas vs. Revere Rubber Co. (R. I.), 91 Atl. R. 58)*

The Supreme Court of Rhode Island holds that a hospital record is admissible in evidence in a personal injury case to show misconduct of the plaintiff at the hospital, preventing to some extent a satisfactory recovery from his injuries. More particularly, the court holds that in this case, where the plaintiff suffered a fracture of the left leg between the hip and the knee, the hospital record should have been admitted in evidence to show his unruly behavior and disobedience of the positive orders of the surgeons and nurses as to keeping quiet and refraining from movements which would be likely seriously to interfere with the proper adjustment and knitting together of the fractured bone.

The court says that it is not necessary that there should be any express statute or regulation creating the authority or duty to make such a record. If the duty of making it devolved, under the rules and regulations of the hospital, on the person, say an intern, who made it, that is sufficient in that regard, and the source from which that duty originated is not material. Such duties may arise from the casual direction of a superior, or from functions necessarily inherent to the position which the recorder occupies.

In making a record of this character which shall be admissible in evidence it is necessary that the entries therein be made contemporaneously with the facts to which such entries relate. That, however, does not mean that a record must be made at the moment of the occurrence, but within such time thereafter as would reasonably make it a part of the transaction. The record in question in this case was kept by an intern or assistant surgeon at the hospital. It appeared to have been his business, as the recording official, to place on the record such facts relating to the patient as were communicated to him by his associates and subordinates, as well as those which came under his personal observation. It also appeared that the record in question was written up by him every third day. The court thinks that, taking into consideration the regular method in which these records were made and the apparent impracticability, in a hospital, of recording each event as it occurred, the facts relating to the plaintiff were recorded within such reasonable time as would make them a part of the transaction, and therefore contemporaneous within the meaning of that term. The record was not rendered inadmissible because some of the facts recorded were not within the personal knowledge of the recorder; neither because the facts reported to him and by him recorded were capable of proof by those making such reports, nor because the witnesses who made reports to the recorder had testified at the trial of the case. They were two distinct sources of testimony, each having a value independent of the other, and the defendant was entitled to the corroborative effect of the record on the testimony of the witnesses.

### Second Physical Examination Should Be Allowed to Defendant Misled in First

(*Rief vs. Great Northern Railway Co.* (*Minn.*), *148 N. W. R. 309*)

The Supreme Court of Minnesota holds that it is error in a personal injury case not to permit a second physical examination of the plaintiff, the defendant having been misled by the plaintiff in the first examination as to the injury claimed. The court says that compelling a plaintiff in a personal injury case to submit to a physical examination is largely within the sound discretion of the trial court. And where one examination has been had a refusal to grant a second will not ordinarily be sufficient grounds for a new trial. But the circumstances in this case were unusual. When the plaintiff was being examined physically by the defendant's physicians, one of them, in manipulating the injured arm, asked the plaintiff whether he had any pains elsewhere, and he answered in the negative. Consequently no effort was made to examine with a view to ascertaining any defect in the spine or sacro-iliac joint, where the two medical experts of the plaintiff subsequently by their testimony located what they concluded to be the serious injury. Of course one familiar with personal injury actions knows that a defendant must be prepared to meet injuries and shocks to the nerves and nervous system; for they are almost always alleged and attempted to be proven. But these and other allegations involving the whole body must be considered reasonably when applied to the facts of each case. It was perfectly plain in this case that when the plaintiff was examined neither the defendant nor any of its medical experts, one of whom was the surgeon who set the arm and had the plaintiff under observation and treatment for a month, suspected that he suffered or would claim any evil results from his fall, except such as might be traced to the fractured arm. Moreover, during his examination the plaintiff himself, as above noted, led them to believe that none other was claimed. Wherefore the court holds that it was error not to permit a second physical examination of the plaintiff, and, because it was not done, grants the defendant a new trial, after a judgment had been rendered in favor of the plaintiff.

# Society Proceedings

## COMING MEETINGS

Amer. Academy of Ophthal. and Oto-Laryn., Boston, Oct. 19-21.
Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
Amer. Public Health Association, Jacksonville, Fla., Nov. 30-Dec. 5.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Mississippi Valley Med. Assn., Cincinnati, Oct. 27-29.
Southern Medical Association, Richmond, Nov. 9-11.
Virginia Medical Society, Washington, D. C., Oct. 27-30.

## NEW YORK ACADEMY OF MEDICINE

(*Meeting held Oct. 1, 1914*)

The President, Dr. William M. Polk, in the Chair

### Wesley M. Carpenter Lecture: The Physiologic Equivalent of War

Dr. Walter B. Cannon, Boston: My original intention was to present an account of some of the recent investigations which we have conducted in the Harvard Physiological Laboratory, but the events of the past summer have presented a practical application of their results pertinent to present interest.

The doctrine of human development from subhuman antecedents has done much to unravel the complex nature of man in solving the puzzle of the details and conditions of anatomic structure and in accounting for functional peculiarities, but in no respect has biology contributed more to clarify our views than in throwing light on the ways of human behavior. The comparative study of the behavior of men and lower animals is making it clear that the springs of action are to be found in the influence of certain emotions which express themselves in characteristic instinctive acts. The combinations, anger-emotion with pugnacity-instinct, and fear-emotion with flight-instinct, are common to lower animals and to man. The major emotions, fear and anger, are peculiar in being accompanied by bodily changes which are probably more profound than those attending any other affective states. The parts of the organism peculiarly called into action in emotional excitement are glands and the smooth muscle of viscera. The pouring out of tears, the "cold sweat," the dilation of pupils, the erection of hairs, the pallor from contracted blood-vessels are well-known changes from the routine of life in organs not subject to voluntary control, but there are other important visceral responses in strong emotions. Observations with the Roentgen ray brought to my attention the fact that in animals any sign of rage, anxiety or distress would be accompanied by total cessation of the movements of the stomach and intestines. It has since been shown that the secretion of every one of the digestive glands, as well as the flow of bile, is stopped under great excitement.

These emotional alterations are directly wrought by the so-called sympathetic division of the visceral system. The adrenals are subject to the same impulses. When these glands are stimulated through their nerve supply they pour into the blood stream epinephrin, which has peculiar properties in relation to the organs to which sympathetic fibers are distributed. It is capable of evoking in these organs all the changes that are evoked by the sympathetic nerve impulses themselves. Experiments with the blood of "quiet" and "excited" animals demonstrated that the inhibitory influence of excited blood is in fact due to adrenal secretion and that, therefore, the adrenal glands were brought into action under strong emotions. This conclusion has been confirmed both in this country and in England. For many years it has been recognized that the injection of epinephrin brings about a liberation of sugar from the liver and thereby may increase the sugar content of the blood to such an extent as to produce glycosuria. It alters the distribution of blood in the body, depleting abdominal viscera, and flushing the heart, the lungs, the central nervous system and the limbs. It seems also to be an antidote for muscular fatigue. After these investigations the question arises, "Does the adrenal secretion poured out in emotional excitement likewise produce or cooperate in producing these same effects?" We have found that from emotional excitement alone a greater or less degree of glycosuria results. The glycosuria fails to appear if the adrenals are removed. The establishment of glycosuria, therefore, implies help from the adrenal secretion. Epinephrin, besides checking the function of the digestive organs, drives out the excess of blood no longer needed there and forces it more rapidly through the heart, lungs, central nervous system and the limbs. It is significant that all these organs are intimately cooperative in vigorous muscular exertion. Small doses of epinephrin serve to restore fatigued muscles. These remarkable changes are involuntary, and hence it is pertinent to inquire as to their utility in either preserving the welfare of the organism or guarding it from injury. Underlying both fear-flight and anger-attack emotions is the instinct of self-preservation. Under circumstances demanding either flight or combat there is use of the great muscular masses in supreme and perhaps prolonged effort. The stored up sugar together with the adrenal secretion poured out under great excitement would place the muscles of the body unqualifiedly at the disposal of the nervous system. At the same time the difficulty which nerve impulses might have in calling the muscles into action are practically abolished. In harmony with this interpretation are the vascular changes wrought by the epinephrin in cooperation with sympathetic discharges which give to the parts called on for action a bounteous supply of blood. Forced respiration and "sweating" are also adaptive reactions directly serviceable in making the organism more effective in the struggle which fear or rage may involve.

The major emotions fear and anger exert an energizing influence which may lead to the accomplishment of extraordinary feats. Periods of intense excitement frequently yield a sense of overwhelming strength. These moments give intense satisfaction, and there is a fascination found in the critical dangers of adventure. For these reasons vigorous men go forth to seek danger and to run large chances of injury. In the major sports the conditions are favorable for the development of intense emotional excitement and for the exhibition of great feats of strength and endurance. Football with all the preparation and circumstances attendant on a great contest and the additional excitement furnished by the large crowds of spectators makes every member of a team realize his individual responsibility for the supreme, all important result—victory for his group. Last fall twenty-five members of the Harvard University football squad were examined directly after the game with Yale, and glycosuria was found in twelve of the men. Five of the twelve were substitutes who did not have a chance to play, and it was clear in the case of these athletes that the bodily responses were wholly analogous to those previously found as accompaniments of strong emotions in the lower animals. Furthermore, the changes in the men were quite as directly adapted to the powerful muscular efforts which their game demanded as were the similar changes which occurred in the lower animals and which were adapted to their occasional fierce struggles for existence. What is true of football is true to a lesser degree of such sports as rowing, running and hurdling. The analogy between fear and rage as exhibited in animals in their struggle for existence is analogous to those emotions in human beings which sometimes seize on individuals in groups and spread like wildfire into larger and larger aggregations of men, until vast populations are shouting and clamoring for war. The strength of the fighting instinct in man has been one of the main arguments of the militarists. They argue that the warlike qualities are essential to human welfare, and they must be occasionally exercised lest the people sink into self indulgence and become weakened and softened. War disciplines character, teaches men to be brave and patient, promotes virility and hardihood and renews the true order of life's values. These arguments are to-day strongly contested. War has become too horrible, it is conducted on too stupendous a scale of carnage and expenditure, it interferes too greatly with consecrated efforts to benefit all mankind by discovery and invention; it involves too much suffering among persons not directly concerned in the conflict; it is too vastly at variance with the methods of fair dealing that have been established between man and man; the human family has become too strongly knit to allow some of its members to bring on themselves and all the rest poverty, distress and a long heritage of bitter hatred and resolution to seek revenge. There is then a war against war.

The situation reveals clearly the necessity of preserving the martial virtues. What is needed is not a suppression of these capacities to feel and act, but their diversion into other channels where they may have satisfactory expression. Henry James suggested as a moral substitute for war, service for the state in hard and difficult occupations, and believed that the thing needful was to inflame the civic temper as past history has inflamed the military temper. As an alternative to these assertions, since it has been shown that as a result of excitement the body goes on a war footing, a number of fundamental physiologic changes occurring, all of them adapted to the putting forth of supreme muscular and nervous power which was what primitive battle consisted of through countless generations, I would suggest international athletic contests, such as the Olympic games, which would do for our young men much that is now maintained as peculiar to the values of military discipline. They have further to commend them the high standards of honor and fairness in sport, its unfailing revelation of excellence without distinction of class, wealth, race or color; the ease with which it becomes an expression of patriotism; the respect which victory and pluckily borne defeat inspire in competitors and spectators alike; the extension of acquaintance which follows from friendly and magnanimous rivalry among strong men.

The evidence is perfectly clear-cut that pugnacious tendencies of men are invited by primitive emotions and are supported by fundamental physiologic changes that through eons of racial inheritance have given the body vigor for combat. No dull routine of drill, or any other deadening procedure, will call these energizing mechanisms into action. On the other hand, the hazards of hard-fought athletic contests stir the elemental excitements and mobilize the bodily forces just as the hazards of ancient war used to do. War and the preparedness for war nowadays have become too machine-like to serve as the best means of preserving and disciplining these forces. Bending the trigger finger is too trifling a business. The exhilarating swing and tug and quick thrust of the big limb muscles have vanished. There must be no emotion because it spoils the aim. If, then, the fighting abilities are to be continued, how much better to exercise them in natural rather than in artificial actions, how much more reasonable that men should struggle in the ancient ways, one against another, body and spirit, for victory in the supreme tests provided by the great games.

## KENTUCKY STATE MEDICAL ASSOCIATION

*Sixty-Fourth Annual Meeting, held at Newport, Sept. 23-25, 1914*

The President, Dr. John J. Moren, Louisville, in the Chair

### Renal Tuberculosis, Its Diagnostic Difficulties and Surgical Problems

Dr. Filipp Kreissl, Chicago: In a small number of cases in which we have recovered bacilli-carrying urine before nephrectomy, the bacilli disappeared permanently after the operation. Extensive vesical ulcerations oftentimes point to bilateral kidney involvements, but should not contra-indicate nephrectomy. We have seen extensive lesions heal spontaneously after the operation, and at other times a few small ulcerations required prolonged postoperative attention. By conservative surgery, unilateral or bilateral nephrotomy, and later ureterostomy, we can do a great deal to alleviate the torturing cystitis, reduce the septic fever, and prolong and make life bearable.

DISCUSSION

Dr. Carl L. Wheeler, Lexington: In the last eight or ten years I have encountered sixteen cases of renal tuberculosis. Four were bilateral, twelve were unilateral. Of these there were nine females and two males. In ten cases the tuberculosis was on the right side, and in two on the left. Of the bilateral cases three patients were operated, and of the near deaths three went down with lung involvement within six months. The other patients have had a stormy existence with hematuria, irritable and contracted bladder.

Dr. J. Garland Sherrill, Louisville: In 2 per cent. of the cases only do we find solitary involvement of the kidney. The age of the patients is usually from 20 to 30 years. This is an important point in diagnosis. The earliest symptoms are frequency of micturition and an increased amount of urine. The first symptom that calls the patient's attention to the condition is hematuria. The second, perhaps, is the painful urination or dysuria. Vesical tenesmus develops frequently after the tubercle bacillus passes down and with it pus products from the inflamed kidney. This occurs after there has been a breaking down of the kidney tissue in the calices and emptying into the pelvis of the kidney.

Dr. Irvin Abell, Louisville: From experience gained in removing stones from the lower end of the ureter in tuberculous patients, as a rule I think it should be conserved. The operation which will give permanent relief is the one which should be done. A ureter that is left behind may not give permanent trouble and eventually clears up without requiring a secondary procedure.

Dr. J. W. Kincaid, Catlettsburg: Three diagnostic points should excite suspicion as to a tuberculous condition being present. One is the presence of indigestion. The next is progressive loss of weight, however slight, coupled with a rise of temperature in the evening, with subnormal temperature in the morning. These will nearly always—at least in very many cases—point out a beginning tuberculous process somewhere.

Dr. Curran Pope, Louisville: A word of caution is necessary regarding the danger of the general practitioner dismissing patients so frequently with a diagnosis of neurasthenia. Neurasthenia vera is, comparatively speaking, a rare disorder. Frequently such cases are really cases of latent tuberculosis.

### Alcohol and the Public Health

Dr. J. N. Hurty, Indianapolis, Ind.: Where squalor, immorality, bestiality and poverty exist, there alcohol and other drugs have sway. Insanity and crime trail after alcohol, and in its wake come ill health and disease. A high authority says 25 per cent. of insanity is due to syphilis; 10 per cent. is due to accident; 40 per cent. is hereditary, and 25 per cent. is due to alcohol. Farmers are great buyers of patent medicines. They generally have dyspepsia first. The dyspepsia comes from bad food, bad cooking and rotten teeth preventing proper mastication. When dyspepsia accepts the cordial invitation extended to it, and arrives with both feet, the victim rushes to patent medicines and finds fatuous relief in the alcohol they contain. Then diseases appear; for on top of the dyspepsia climbs alcoholism, and on it ride many kinds of disease. Alcohol is opposed to the public health, for it hurts any animal organism into which it is taken. It is not a food; it does not aid digestion; it does not further the good of the body; on the contrary it hurts. Its use as a beverage not only opposes personal health, but also the public physical and moral health, and also the public economic health. Alcohol is dope. For every dollar of revenue derived from alcoholic beverages $2 of public cost for crime, insanity and delinquency is endured.

#### DISCUSSION

Dr. Virgil E. Simpson, Louisville: Alcohol in quantities prescribed as carefully as you would prescribe drugs of any sort, and that have a potentiality for harm, is not only a therapeutic agent, but it likewise has a place as a food. The objection to the use of alcohol as a food is that patients continue the use of alcohol not as a food, but as a beverage.

Dr. W. W. Anderson, Newport: Alcohol has a place as a drug. It should be put under the same restraint of law that applies to other narcotics, belonging to the same class as opium, chloral and chloroform.

Dr. W. E. Senour, Bellevue: It is the duty of every physician to lend his assistance to study this question by scientific analysis, and to cast aside the false theories, the stupid delusions, and false conclusions, and study for himself the laboratory experiments which are taking place throughout the land, and after doing so it is his duty in the interest of the children of this country and to posterity to carry the gospel to every home he visits.

Dr. Curran Pope, Louisville: In the class of nervous and chronic invalids with whom I am thrown in daily contact, it would be suicidal to prescribe alcohol in any form. Occasionally in crises it seems as though it has been of some help, but in the ordinary everyday prescription for non-acute diseases, alcohol does not occupy a place. How many of you have the courage to tell a patient he shall not have your prescription refilled without the stamp of your approval? I never write a prescription of any kind that I do not stamp on it in red ink, "no copy, no repetition." We must be careful every time we write a prescription containing alcohol that we may not lay the foundation for alcoholism and for other drug addictions.

### Uterine Myomata and Malignancy

Dr. Joseph G. Gaither, Hopkinsville: Uterine myomata are a serious menace to health, and although they may be quiescent for years, causing little trouble from either pressure or hemorrhage, yet they slowly poison the musculature of the heart. Uterine myomata should never be given a chance to become sarcomatous, but as soon as they reach sufficient size to give symptoms they should be removed.

### Enuresis in Children

Dr. N. W. Moore, Cynthiana: Each case should be studied closely with an effort to find the cause or causes responsible for this condition, and in many instances when found the enuresis can be relieved or cured. If a careful examination shows that there is no malformation or central nervous lesion to deal with, the urine should be examined. A hyperacid urine should be treated by a milk diet and no meat, and the administration of potassium citrate after each meal. If the urine is alkaline, leave meat in the diet and give either hexamethylenamin or benzoate of ammonium in 4-grain doses after meals. After the urine has been brought to a normal condition, tincture of belladonna in increasing doses is the drug which will prove most valuable. It should be given a long time—from three to six months being required in some cases—for a complete cure. If the urine contains bacteria, hexamethylenamin should be administered; in mixed infection salol and possibly vaccine therapy.

### Trachoma in Eastern Kentucky

Dr. J. A. Stucky, Lexington: Education should be more widely attempted by means of home-instruction, lectures, demonstrations, moving-picture shows, etc. Insofar as practicable each house should be restricted to the use of but one family, thus avoiding overcrowding. Hospital facilities should be provided for the reception of people suffering from severe trachoma. Sufficient authority should be granted to require them to undergo such treatment when they are a menace to the public health. In each infected sanitary district a dispensary should be provided for the treatment of cases of trachoma not requiring hospital care. A sufficient number of field nurses should be provided to administer, under the direction of the physician, home treatment and instruction to those who cannot be sent to the hospital or attend the dispensary. No children suffering from trachoma should be admitted to uninfected schools. Separate schools, where practicable, should be established for trachomatous children. All boarding schools where trachomatous pupils are admitted should be provided with adequate facilities for the care and treatment of trachoma, such facilities to include the permanent services of a nurse trained in the care and treatment of diseases of the eye.

### Periodic Examination of Supposedly Well Persons

Dr. Eugene Lyman Fisk, New York City: The fact that an ordinary group of people, at an average age of 30, taken, not from a hospital, but from one of the leading business institutions of the world, is found suffering from so many disabilities which can be corrected, checked or cured, points a way to sensible, practical and easy methods of distinctly raising the general level of the vitality and well being of the race, which so many people, even life-insurance experts, have thought was a fixed and unalterable quantity. It should be remembered, however, that while saving the unfit, we are also improving the so-called fit, which is a powerful influence in keeping ahead of the game.

(*To be continued*)

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## AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

*Twenty-Seventh Annual Meeting, held at Buffalo, Sept. 15-17, 1914*

(*Concluded from page 1321*)

### Myomectomy with Extensive Resection of the Uterus in Fibroid Tumors

Dr. X. O. Werder, Pittsburgh: A comparison of the mortality of hysterectomy and myomectomy would seem to be rather in favor of the latter according to my experience. Since 1898, inclusive, 707 cases of uterine fibroids have been operated on by me with a total mortality of 3.25 per cent. This does not include over a hundred cases in which small fibroids were removed coincident with other operations, but only those in which this neoplasm constituted the principal indication for operation. In these 707 cases, hysterectomy was performed 536 times and myomectomy 171 times. The total mortality in the latter cases is 4, or 2.33 per cent., while hysterectomy was accompanied by a death rate of 3.45 per cent., or more than 1 per cent. in favor of myomectomy. The morbidity of myomectomy also compares even more favorably with that of hysterectomy, as the myomectomy patients almost uniformly make a smooth, uncomplicated recovery, and almost without exception enjoy perfect health after the operation; they are, in fact, among the most satisfactory cases in my experience. I feel justified, therefore, in making a plea for more conservative treatment of uterine fibroids in younger women than they now receive.

DISCUSSION

Dr. J. Henry Carstens, Detroit: When a young woman has one or two fibroids, I perform myomectomy. If she has a number of small ones, I am inclined to remove the uterus. In some cases I have taken out one side of the uterus, about one-half, but have not tried systematically to save any uterine tissue by taking away half of it or one-quarter or three-quarters. It is a matter of very little consequence whether we take it all away or half of it, if the ovaries are intact. Whether or not this woman menstruates afterward is of no great moment, because I do not think menstruation is of benefit to these women. The question of ovarian secretion is all important, and if you leave the ovaries the woman will go on and never know whether the uterus is out or not, except that she does not menstruate every month.

Dr. Robert T. Morris, New York: There is one important factor which we are apt to forget, and that is the patient herself. Ask her what she wants. I say to a patient who has these small masses, "If we do a myomectomy, remove a part of the uterus and leave a part, you will probably have a further development of this neoplastic growth because the original conditions persist. If you want me to leave a part with the possibility of having further neoplastic growths develop, with the idea of having a child, all right." I leave it to the patient.

Dr. Hugo O. Pantzer, Indianapolis: The importance of Dr. Werder's contribution lies in the fact that he has materially lessened the mortality by not removing the entire uterus. To me that is a very strong and sound argument in favor of myomectomy as against a more radical operative procedure.

Dr. Julius H. Jacobson, Toledo, Ohio: Last year, when abroad, I was impressed with the number of patients with sloughing fibroids who were operated on, patients in whom the Roentgen-ray treatment had been applied, so I came to the conclusion that these cases treated with the Roentgen ray give a larger mortality than if we operate on these patients when the fibroids are smooth, when we can do myomectomy or hysteromyomectomy.

Dr. A. B. Miller, Syracuse, N. Y.: I have had six cases of fibroid tumors in women of advanced age that have been treated with the Roentgen ray with very good results.

### Abdominal Distention Following Operations on the Pelvic Viscera

Dr. Francis Reder, St. Louis: The most encouraging measures at our disposal are embodied in the stomach lavage and in the enema. The former should be used every four to six hours while the patient continues to vomit, whereas in the latter it may be said that our greater hope rests. The alum enema of Hardon, slowly introduced into the rectum every two hours, if necessary, has proved so efficacious that I have given it the preference over all enemas. The alum is not irritating to the bowel, so that a large number can be administered provided the nurse exercises gentleness.

### Two Cases of Cancer of the Uterus Apparently Cured by Postoperative Infection

Dr. John W. Poucher, Poughkeepsie, N. Y.: In both these cases the laboratory reports showed the disease to be adenocarcinoma, and in neither of them could I claim to have removed all the diseased tissues; consequently the cure must be attributed to some other cause, namely, the suppuration and the formation of a toxin that destroyed the cancer cells. There are areas of broken-down tissue filled with masses of dead cancer cells. The operation opened up fresh fields for their absorption. May we not have here a genuine auto-inoculation of dead or modified cancer germs? In the literature I find several instances of spontaneous cures of cancer, and several pathologists with whom I have discussed this subject say they have found post-mortem evidences of such cures.

### Operations at the Home; When and Under What Circumstances Are They Justifiable?

Dr. J. E. Sadlier, Poughkeepsie, N. Y.: In my surgical work in the hospital covering a period of twelve years, 1902 to 1914, and with an average of 60 per cent. abdominal work, there was a mortality of 3.4 per cent. The average mortality during the past three years was 2 per cent. No attempt was made to exclude any properly operative case, and all patients dying in the hospital regardless of when or what complication were included. After a careful and exhaustive study of my results when operation was done at the home, covering the same period of twelve years, I find that the mortality is 4.3 per cent. When we consider that the cases in which operation was performed at home represent the severest type, and that the performing of elective surgery at the home was discouraged, I think that the foregoing statistics, covering several thousand hospital and home cases, in about 20 per cent. operation being performed at home, speak for a fair amount of safety for the home operation.

### Treatment of Puerperal Thrombophlebitis

Dr. James F. Baldwin, Columbus, Ohio: I have had four cases with one death. Williams advised ligation of the veins only, while Jellett resected the involved veins. I recommend instead hysterectomy with ligation of the arteries only, the veins being left wide open for drainage into a gauze fluff which fills the pelvis and is brought out through the vagina, the sigmoid being sutured all around to the pelvis so as completely to isolate the peritoneal cavity. This gives the fullest drainage with the least trauma, and removes the original source of infection.

### Resection of Ovaries

Dr. Albert Goldspohn, Chicago: This procedure is almost wholly an incidental or auxiliary one, to be done when abdominal section is needed for other reasons, chiefly for displacements of the uterus, freeing of adhesions, and removal of neoplasms from the uterus or its adnexa. The objections to it are theoretically (*a*) that all the hydropic graafian follicles and follicle cysts of any size do or may contain ova, and, therefore, being physiologic structures, should be left alone. This assertion was soon proved to be unwarranted and untrue by numerous investigators of the histology. (*b*) That these follicle cysts and cystic corpora lutea cause no symptoms has been abundantly disproved by clinical experience by unbiased observers. Pain continues from such resected ovaries, too frequently, and secondary operations are too often needed for their removal. This has likewise been demonstrated to be untrue by several operators, aside from my own experience. According to newer studies, these follicle cysts and persistent corpora lutea sometimes give rise to hemorrhages, even of a fatal nature; likewise, they may furnish an atrium for infection by bacteria or neoplasms. In my paper I point out the kinds of ovaries that are best suited for resection and the feasibility of saving ovarian tissue from the wall of larger ovarian cysts. Elevation or suspension of ovaries to relieve venous engorgement is of equal importance and must not be omitted after resection. It is important to adopt a strictly aseptic technic and the use only of fine and readily absorbable suture material.

The following papers were also read: "Abdominal Drainage," by J. W. Keefe, Providence, R. I.; "Some Thoughts and Views on the More Common Gynecologic Conditions Necessitating Operation," by W. H. Humiston, Cleveland; "Some Observations on the Technic of Intestinal Anastomosis, with Special Reference to a Modification of Maunsell's Method," by F. D. Gray, Jersey City; "Mineral Springs of Saratoga," by D. C. Moriarta, Saratoga Springs, N. Y.; "Biliary Surgery," by J. F. Erdmann, New York; "Transverse Involution of the Colon; a Technical Step in the Short-Circuiting Operation," by R. T. Morris, New York; "The Statistics of Labor in Elderly Primiparas," by J. R. Freeland, Pittsburgh; "The Treatment of Abortion on the Basis of Its Pathology," by C. W. Barrett, Chicago; "Kinetic System and Treatment of Peritonitis," by G. W. Crile, Cleveland; "End-Results after Operation for Displacement of Uterus, Bladder and Rectum," by H. A. Wade, Brooklyn; "Ruptured Gastric and Duodenal Ulcer, by E. A. Vander Veer, Albany, N. Y.; "Repair and Reconstruction of Bile-Ducts," by J. H. Jacobson, Toledo, Ohio; "Pyloric Stenosis," by C. L. Bonifield, Cincinnati; "Treatment of Urinary Calculi Based on Chemical Composition," by C. B. Schildecker, Pittsburgh.

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## AMERICAN ROENTGEN RAY SOCIETY

*Fifteenth Annual Meeting, held in Cleveland, O., Sept. 9-12, 1914*

*(Concluded from page 1323)*

## SYMPOSIUM ON GASTRIC AND DUODENAL DIAGNOSIS

### Cinematography of the Stomach and Duodenum

Dr. A. Howard Pirie, Montreal: This process is so complicated that it is never likely to be a routine method of examination. Nevertheless, in certain cases it is worth the time, labor and expense. I use a specially constructed table, and make sixteen exposures on one plate for thirty-two seconds, insuring a complete stomach cycle. Taking the usual time as twenty-two seconds for a stomach cycle, I get eleven views of the stomach during the twenty-two seconds. These are for practical purposes sufficient to show all the movements of the stomach in order to form a diagnosis. I make cinematographic views of doubtful cases.

### Negative Diagnosis of Surgical Lesions of Stomach and Cap

Dr. Lewis Gregory, New York: In thirty cases in which operation was performed by nineteen different surgeons, and in which a negative diagnosis of ulcer or cancer of the stomach or cap had been made solely on the roentgenologic findings in not a single instance was a lesion demonstrated by the surgical exploration. In twenty-nine out of the thirty cases the surgical findings corresponded with the Roentgen findings in every essential detail, but in one case they differed to such an extent that it was impossible to explain the difference.

### Observations from the Study of a Thousand Gastro-Intestinal Cases

Drs. Arial W. George and Isaac Gerber, Boston: Gall-bladder disease is detected either by showing an enlarged gall-bladder, adhesions to the duodenum, gastric antrum, hepatic flexure or transverse colon, and, finally, by the direct demonstration of gall-stones. Care must be taken that the parts are quiet; not only must the patient himself be still, but the plates must be taken rapidly enough so that the entire gall-bladder is at rest in the true sense of the word. A large number of plates must be taken. Frequently the very last plate of a series will be sufficient to make a positive diagnosis of stones, when all the others merely gave "suspicious" evidence.

We believe that all gall-stones will show on the Roentgen plates. In every single case in which gall-stone plates were later carefully studied we were always able to see the shadows of the gall-stones. The trouble was not with the Roentgen method. The trouble was with our own acuteness of observation at the time of the preoperative diagnosis. The problem of the future, then, is to learn to recognize these shadows which the Roentgen rays will surely produce. When this can be done, then 100 per cent. of gall-stone diagnoses will be made.

DISCUSSION

Dr. L. T. Le Wald, New York: There are cases of pylorospasm which we must recognize, and many of them are surgical conditions, because they cannot be relieved unless the pylorus is divided. I have seen five such cases. I do not believe that these cases are associated with chronic appendicitis, as is generally supposed. I think some of these cases are neuropathic in origin.

Dr. George C. Johnston, Pittsburgh: I like to examine these cases fluoroscopically first, and then make roentgenograms. I think that with Dr. Pirie's method we should be able to get better results than we have heretofore.

Dr. A. F. Holding, New York: The amount of indefiniteness and inaccuracy in this work varies directly as to the amount of time spent on the examination.

Dr. A. M. Crane, Kalamazoo, Mich.: It has been said here that all gall-stones would have a shadow on the plate, but that has not been my experience. If we have a pure cholesterin stone, it cannot be seen on any plate, because it does not offer any resistance to the ray different from the tissues around it.

Dr. George E. Pfahler, Philadelphia: I do not think that any one ever asserted that all gall-stones could be shown. Our present technic does not enable us to do that. As to the pure cholesterin stones, only 0.5 per cent. of all gall-stones are of that type, and about an equal number are pure calcium carbonate stones. The composition of the stone, the weight of the patient, and the density of the tissues all enter into the question. Gall-stones are more frequent in some localities than in others, and the calcium content is probably also greater in some localities than in others, just as is the case with kidney stones. But I am sure we shall all find more gall-stones if we will look for them more carefully.

Dr. E. H. Skinner, Kansas City, Mo.: I do most of my work fluoroscopically; although I do make roentgenograms in every case so as to be able to show the doctor something of the case. It is not easy to describe the full scope of the possibilities of the fluoroscope. Many of the conclusions arrived at by serial roentgenography could also be obtained with the fluoroscope.

Dr. F. J. Palmer, Rochester, N. Y.: A year and a half ago I started in doing fluoroscopic work, and now eight-tenths of my work, whether I make a negative or a positive diagnosis, is made with a screen entirely.

### Operative Indications in Gastro-Intestinal Lesions: A Study of One Hundred Cases in which the Roentgenologist was Present at the Operation

Dr. Leon Theodore Le Wald, New York: The roentgenologist after determining the organic nature of a lesion, such as hour-glass deformity of the stomach, should not rest there. He must go further. He must determine the exact size and shape of each pouch, the time it takes each pouch to empty, whether or not any other lesion, such as ulcer, is present in some other part of the stomach or duodenum, and he must ascertain the condition of the remainder of the digestive tract. On the accuracy of his findings, the kind and extent of operative procedure will largely depend. If he has overlooked a pyloric stenosis (even though it be only spasmodic), and a surgeon performs only a gastrogastrostomy, instead of a gastro-enterostomy, the result will not be a complete cure. Likewise, if the surgeon operates without a complete Roentgen examination having been made, or without due consideration of all aspects of the findings, the best results may not be obtained. In fact, the closest cooperation between the roentgenologist and the operator is essential to the securing of the best results to the patient. It is even wise, if possible, for the roentgenologist to be present at the operation, in order that his opinion may be obtained on doubtful points which may arise in complicated cases during the course of the operation.

### Early Diagnosis of Pulmonary Tuberculosis

Dr. Frank S. Bissell and Dr. Ernest T. F. Richards, Minneapolis: Pulmonary tuberculosis should be suspected in all cases presenting obscure symptoms suggesting a low-grade intoxication. The Roentgen method offers the only possible means of diagnosis in these cases, and the only means of immediate corroboration of the Roentgen diagnosis at present available, is the subcutaneous tuberculin test. While, for many reasons, it would be a desirable consummation to eliminate the tuberculin test and rely entirely on the objective signs offered by the Roentgen rays, this is not practicable until we have very definite proof that such signs are pathognomonic. The present series of cases offers some evidence that there are pathognomonic Roentgen signs of this disease, but this evidence must be supported by a great many more controlled cases. All Roentgen signs of disease must be founded on a sound pathologic hypothesis. Hilus tuberculosis is usually secondary to a focus in the lung. The primary focus may occupy any area in the lung field, but is particularly prone to elect certain points near the apex of any lobe.

### Roentgen Studies of Acute Small Intestine Obstruction

Dr. James T. Case, Battle Creek, Mich.: Owing to the gas and fluid distention of the bowel it is possible to differentiate roentgenologically between acute obstruction in the small or large bowel at a glance without giving the patient any opaque salt by mouth. Judging by the disposition and relations of the distended coils one may estimate closely where in the small bowel the obstruction has occurred. No harm has been noted in cases in which barium by mouth was used, and where the case is under observation for several hours, it is helpful to administer a few drams of bismuth. The barium enema will aid in the recognition of intussusception and colonic obstruction. The progress of an obstruction may be estimated by comparing roentgenograms made at successive observations when diagnosis is in doubt. Operation is not unnecessarily delayed in any of these cases for the examination need not occupy more than a very few minutes. The patient is simply lifted onto the stretcher and carried to the Roentgen-ray room. There the stretcher is transferred to the horizontal fluoroscope, the proper field found with the screen, a plate superimposed and a flesh exposure made. The patient is then returned to bed without further manipulation or inconvenience than is required to lift him onto the stretcher and back again.

#### DISCUSSION

Dr. L. T. Le Wald, New York City: In a case of intussusception the clinical diagnosis located the lesion on the left side. A bismuth enema traveled all the way to the cecum and one could see the gas content of the distended loop of ileum overlapped by the injection. No tumor could be felt in this case even when the patient was anesthetized. The roentgenogram made it possible for the surgeon to make his incision directly over the intussusception. In another case the obstruction was easily shown in the roentgenogram at the ileocecal valve region, the small intestine being much distended. The cause was an acute appendicitis, producing an inflammatory exudate, which obstructed the lower ileum.

Dr. H. K. Pancoast, Philadelphia: I had one case in which I doubt that the diagnosis could have been made without the aid of a roentgenogram. The distended loops of intestine proximal to the site of obstruction in the small bowel easily located the lesion. In another case 5 pints of fluid had to be aspirated before anything at all was done toward obliterating the obstruction.

Dr. Paul Eisen, Chicago: In one case which I roentgenographed and located the seat of obstruction, the operation disclosed a band, ⅛ inch thick and 4 inches long, extending across the abdomen and strangulating the bowel. In another case the small intestine was seen in the roentgenogram to be contained in a femoral hernia, causing intestinal obstruction. The obstruction was relative, not absolute.

Dr. James T. Case, Battle Creek, Mich.: In a number of cases the loops of bowel were filled with fluid above the bismuth. Much can be learned by studying the gas-distended coils of intestine.

## *Current Medical Literature*

### AMERICAN

Titles marked with an asterisk (*) are abstracted below.

#### American Journal of Public Health, Boston

*August, IV, No. 8, pp. 633-720*

1 Applications of Water Analysis. E. Bartow, Urbana, Ill.
2 Value of Routine Water Analysis in Sanitary Surveys. H. E. Barnard, Indianapolis.
3 Alaskan Eskimo. J. A. Watkins, Washington, D. C.
4 Relation of Public Health to Race Degeneracy. J. H. Kellogg, Battle Creek, Mich.
5 All Typhoid of Community for Five Years from Carrier Through Milk. H. W. Hill, London, Ont.
6 Analysis of Cost Keeping as Applied to Municipal Management of Street Cleaning. F. C. Bamman.
7 Recent Progress in Methods and Character of Street Cleaning. S. Whinery, New York.
8 Uniformity in Annual Reports of Local Boards of Health. F. L. Hoffman, Newark, N. J.
9 Period of Incubation of Diphtheria Cultures. H. Albert, Iowa City, Ia.
10 Use of Hypochlorite Capsules for Treatment of Small Quantities of Drinking Water. H. A. Whittaker, Minneapolis.

*September, No. 9, pp. 721-818*

11 Chemical and Bacteriologic Study of Wrapped Bread. B. R. Jacobs, J. A. LeClerc and M. L. Mason, Washington, D. C.
12 What States and Cities of United States Are Doing in Public Health Education Work. H. Greeley, Brooklyn.
13 Pottery Industry and Its Relation to Tuberculosis. H. R. M. Landis, Philadelphia.
14 Sewage Disposal Problem in Villages and Small Cities. G. C. Whipple, Boston.
15 Scarlet Fever. E. H. Place, Boston.
16 Relation of Biologic Therapy to Public Health. G. H. Krall, New York.
17 Yellow Fever in Mexico. E. Liceaga, Mexico City.

#### Annals of Otology, Rhinology and Laryngology, St. Louis

*June, XXIII, No. 2, pp. 273-522*

18 *Anaphylactic Reactions Occurring in Horse Asthma and Allied Conditions. J. L. Goodale, Boston.
19 Intranasal Operation for Relief of Nasolacrimal Stenosis. E. M. Holmes, Boston.
20 Evolution of Tonsillotome. S. A. Friedberg, Chicago.
21 Chronic Influenza of Nose and Throat. L. B. Lockard, Denver.
22 Study of Vincent's Angina. J. J. Richardson, Washington, D. C.
23 Case of Cavernous Sinus Thrombosis Complicating Suppurative Labyrinthitis. A. Braun, New York.
24 Nasopharyngeal Myxosarcoma; Several Operations and Final Spontaneous Recovery. E. F. Ingals, Chicago.
25 How Patient Can Help Himself in Cases of Chronic Catarrhal Otitis Media. S. H. Lutz, Brooklyn.
26 Two cases of Sarcoma of Dura Mater Arising in Vicinity of Mastoid Process, with Vague Symptoms Simulating Mastoiditis. J. F. Barnhill, Indianapolis.
27 Case of Latent Mastoiditis Complicated by Toxic and Irritative Cerebral Symptoms, Blindness and Streptococcemia. S. Kopetzky, New York.
28 Sinus Operation: Resection of Internal Jugular Vein; II. Id. Ligation of Internal Jugular Vein. M. D. Lederman, New York.
29 Nitrate of Silver Applied within Mouth of Eustachian Tube for Relief of Tinnitus. W. C. Braislin, Brooklyn.
30 Temporosphenoidal Abscess Secondary to Chronic Suppurative Otitis Media. J. M. Ingersoll, Cleveland.

31 Diffuse Serous Labyrinthitis Complicating Acute Purulent Otitis Media. E. Danziger, New York.
32 Case of Simultaneous Bilateral Cavernous Sinus Thrombosis Twelve Hours after Simple Mastoid Operation. I. Friesner, New York.
33 Cerebellar Abscess. C. E. Perkins, New York.
34 Meningitis without Definite Symptoms Occurring Late in Mastoidectomy Convalescence. G. E. Steel, New York.
35 Variations of Sphenoid Sinus Disease. G. M. McBean, Chicago.

18. **Anaphylactic Reactions in Horse Asthma.**—In five patients with horse asthma the application of horse-serum to an abrasion of the skin produced within a few minutes sharply localized edema and reddening. In three of these cases the introduction of horse-serum in the nose caused edema of the nasal mucous membrane, together with profuse watery discharge and sneezing. One case of horse fever without asthma gave a delayed reaction to the nasal test (although this was reported and Goodale cannot vouch for it), but was negative for the skin test. A similar case gave a delayed but definite reaction to the skin test, but showed no nasal symptoms. Four of the horse-fever cases without asthma were negative for both tests. It is worth noting that in two cases, one patient who had horse asthma, reacted markedly to both tests, the other patient whose vasomotor symptoms from horses affected the nose alone, showed no reaction. Six cases of bronchial asthma and five cases of hay-fever were negative for both tests. Three cases without vasomotor symptoms which had received immunizing doses of antitoxin several months previously showed no reaction to the tests.

The results of Goodale's experiments indicate that a localized anaphylactic reaction from horse-serum may be occasioned in certain individuals who experience asthmatic disturbances from the neighborhood of horses. The severity of these vasomotor symptoms appears to be a determining factor in the production of the reaction, since patients with nasal symptoms alone do not appear to be sufficiently sensitized to horses to give an immediate positive skin test.

The number of cases thus far tested is, in Goodale's opinion, too small to justify definite conclusions in regard to the value of these tests in detecting the existence of a state of sensitization to horse-serum, but if further studies should confirm them they should prove to be of assistance to the physician who is in doubt whether in a given case it is safe to administer antitoxin. It is therefore suggested by Goodale that a preliminary skin test with horse-serum be made in all patients who have previously received an injection of antitoxin derived from horses, whether tetanus, diphtheria or plague serum. Furthermore, in all patients who are about to receive antitoxin for the first time, inquiry should be made as to whether they have ever been disturbed by asthmatic symptoms when in the neighborhood of horses, and if so they should first be tested. So far as these experiments go, they would indicate that in horse asthma a dangerous anaphylactic shock may occur after the hypodermic administration of horse-serum. In horse fever with nasal symptoms alone, this danger is less or not at all to be feared, and in other types of asthma and of vasomotor rhinitis it is not present.

### Annals of Surgery, Philadelphia

*September, LX, No. 3, pp. 281-408*

36 *Course of Acquired Disease of Thyroid and Principles which Seem to Control Its Progress. J. Rogers, New York.
37 How Shall Clinician Interpret Wassermann Reaction? W. H. MacKinney, Philadelphia.
38 *Pathology, Diagnosis and Treatment of Seminal Vesiculitis. B. A. Thomas and H. K. Pancoast, Philadelphia.
39 *Treatment of Bladder Papilloma by High Frequency Destruction. A. A. Uhle, Philadelphia.
40 Clinical Manifestations of Polyps of Male Urethra. A. Randall, Philadelphia.
41 *Method of Treating Adherent Perforating Ulcer of Posterior Wall and Lesser Curvature of Stomach. E. Archibald, Montreal, Que.
42 Congenital Pyloric Stenosis. A. J. Walton, London.
43 Diffuse Lymphangio-Endotheliomatous Growths of Peritoneum. T. S. Tirumurti, Madras, India.
44 *Tumor at Meatus Urinarius in Female. B. Tenney, Boston.
45 Traumatic Intra-Acetabular Separation of Pelvic Bones (Epiphyseal Diastasis in Acetabulum.) H. Neuhof, New York.
46 *Preparation of Dry Bony Areas for Skin Grafting. C. H. Mayo, Rochester, Minn.
47 Thumb Forceps to Facilitate Anastomosis. A. N. Collins, Duluth, Minn.

36. **Acquired Disease of Thyroid, Principles Which Control Its Progress.**—Rogers has observed sixty-two patients who applied for relief after one or more partial thyroidectomies. Only the minority had failed to show any benefit and a considerable part of this minority stated that they were worse than before the operation. An analysis of all these cases, however, has failed to yield any definite rules for avoiding poor results. Thirty-eight, for example, showed the presence of exophthalmos, and twenty-four did not, though some of them said that it was present formerly. Tachycardia was present and so had not been relieved in thirty-five. Eight of these were later subjected to more extensive thyroidectomy and five were thus cured of their rapid heart action. If enough of the gland is ultimately removed, or removed in successive stages, the pulse-rate can evidently be reduced, but it probably cannot be reduced by removing more than two-thirds of the gland at once. The worst results in these sixty-two cases seemed to have occurred in subjects who were operated on before they had attained their maximum growth and development; that is, before the age of 25, and in those who had small goiters.

All of the sixty-two patients complained of a greater or less amount of asthenia, or inability to expend the normal amount of mental and physical energy, and a considerable majority showed a blood-pressure above 140 mm. of mercury, and it is noticeable that the few Rogers has been able to follow have from year to year shown a more or less steady increase in their blood-pressure. A large proportion of these cases have shown some signs he interprets as those of hypothyroidism, although many in conjunction with the hypothyroidism have presented a more or less constant tachycardia.

With the exception of the few successful, or partially successful, secondary thyroidectomies, the only treatment which Rogers has found beneficial in these cases has been rest in combination with organ therapy. The most frequently useful agent, especially for those with high blood-pressure, has been the adrenal proteins which contain no adrenalin. The pituitary, the thymus or the pancreas have seemed indispensable for the relief of others. The indications for the particular organ have been ascertained by experiment in each case. A few seemed most relieved by a combination of thyroid with some other organ feeding.

The impressions derived from these experiences are summed up as follows: That partial thyroidectomy is to be especially avoided in patients who have not completed or have just completed their growth and development; that it is to be avoided in symmetrically enlarged thyroids as these seem peculiarly prone to relapse even after a considerable period; that it is be avoided in subjects of the very "nervous" type; that patients with marked exophthalmos of long duration bear any operation badly and can seldom be more than moderately improved.

38. **Seminal Vesiculitis.**—Thomas and Pancoast claim that chronic seminal vesiculitis is a far more prevalent disease than the average physician surmises, and masquerades under a manifold symptomatology, finding its expression ofttimes remote from the urinary tract; the inflammation is invariably due to a mixed infection, from which in its chronic state it is commonly impossible to isolate the gonococcus. The disease, analogous to pus-tubes in the female in many respects, presents serious and similar problems from the standpoint of treatment, and is not accorded the consideration that its medical importance demands. The particular treatment in any given case should depend on the anatomico-pathologic state of the vesicles, ejaculatory duct and vas deferens. This can be determined by proper vesicular palpation, massage and microscopic examination, supplemented when necessary by vasopuncture and collargol radiography. Experienced massage will in the majority of patients suffice to effect a cure in due time; in many, however, massage having proved ineffectual, convalescence may be accelerated by vasopuncture, vasostomy and direct medication of the seminal vesicles; in certain cases, not so few as may be imagined, seminal vesiculotomy or vesiculectomy should and must be performed if these patients are to be cured or relieved of their annoying symptoms.

Bilateral vasopuncture and collargol medication has resulted at least in the temporary cure of a number of cases of persistent chronic seminal vesiculitis. Collargol roentgenograms in a series of normal and pathologic cases have demonstrated, (a) by comparions *in vivo* and *in vitro*, the graphic portrayal of an ejaculatory duct sphincter; (b) the intimate relationship between the ureter and seminal vesicle, whereby ureteral irritation and urinary obstruction may occur in the event of an enlarged and inflamed vesicle; (c) the presence of stricture or obstruction of the vas; (d) congenital anomalies of the vesiculae seminales; (e) inflammatory enlargements of the vesicles, especially loculated collections of pus or seminal pyovesiculosis.

39. **High Frequency Treatment of Bladder Papilloma.**—A brief analysis of Uhle's eight cases shows that hematuria, intermittent or constant, is the most prominent, frequently the only symptom present. It is also interesting to note that it was of a terminal type in two cases. That hematuria, unfortunately, is still regarded as a disease, and not a symptom of some condition, usually a severe one, of some part of the genito-urinary tract, is evidenced by the fact that most of the patients were treated internally for some time, and no attempt was made definitely to locate the cause and site of the hemorrhage. The symptomatology is at times misleading, as symptoms may be referred to one organ, when the actual source of disease is another.

Uhle states that high-frequency destruction of benign growths of the bladder is a very effective method of treatment, even when the bladder is extensively involved. Recurrences are frequent after any method of treatment, therefore cystoscopic examinations at stated intervals should be advised in every case of bladder papilloma. The immediate effects in malignant growth of the bladder are apparently good, as is shown by the diminution in the size of the growth and cessation of hemorrhage, but a cure should not be expected; at least, this has been his observation with these few cases.

41. **Treatment of Perforating Ulcer of Stomach.**—When in July 1913, a case came under Archibald's care, in which excision was practically out of the question, and a posterior gastro-enterostomy was impossible on account of adhesions, he carried out an exclusion of the ulcer-bearing area by tying off the stomach above the ulcer with a fascial strip taken from the anterior sheath of the rectus, passed through a slit in the great omentum, about 1 cm. above the upper limit of the inflammatory mass. On tightening the ligature and securing it with a few silk stitches, the stomach was found to be tied off about its middle, forming an artificial hourglass stomach. An anterior gastro-enterostomy was performed in the cardiac half of the stomach at a point of the jejunum about 12 inches from the duodenojejunal juncture. The stoma was about 2 inches above the greater curvature, about a third of the way from the greater to the lesser curvature. The abdomen was closed without drainage.

A bismuth meal was given during the last week in August. After four hours, a trace of the bismuth was seen at a point toward the pyloric side of the ligature, and it was thought that the ulcer must have burrowed through and established some slight communication with the cardiac half of the stomach. It became clear at post mortem that this must have been a slight overflow of the bismuth through the opening afforded by a partial yielding of the fascial ligature.

In view of the persistence of symptoms, and the progressive loss of weight and strength of the patient, the abdomen was reopened through the old scar August 28. There were extensive adhesions of the wall of the stomach and the jejunal loop, together with the gastrocolic and gastrohepatic omenta to the anterior abdominal wall. These were all freed, though with some difficulty. It was found that the anastomosis was patent for two fingers at least; that the band of fascia was apparently holding and that the distal portion of the stomach was slightly distended, although not abnormally so. The ulcer was buried in adhesions high up under the ribs, and the cardiac portion of the stomach seemed to bulge over toward the midline so as partly to cover the area. It was impossible to tell whether the ulcer had burrowed its way into the proximal part of the stomach or not. It was decided to do a second gastro-enterostomy as near the greater curvature as possible. Owing to the difficulty of pulling the stomach forward from under the ribs, it was impossible to get a stoma of more than 1¼ to 1½ inches. This operation failed to relieve the patient's pain or vomiting, and she went steadily down hill, vomiting several times a day, and occasionally vomiting a good deal of blood—sometimes pure blood. On September 5 a jejunostomy was done under local anesthesia, for the purpose of feeding. In the evening after the operation she had a large hematemesis. This was repeated on the second day following, and on September 7 she died of inanition and hemorrhage.

The post mortem revealed an ulcer of large size, almost quite round, with thickened walls, and over its floor coursed a large vessel in which was found an opening large enough to admit a small probe. Clearly it was from this point that the repeated hemorrhages had come. The gastro-enterostomy openings were healed and patent. The fascial ligature had yielded to the extent of admitting the tips of three fingers in the opening joining the cardiac with the pyloric portions. The ulcer measured 5 cm. in both diameters, and the tissues of the stomach wall were thickened to the extent of about 1½ cm. The wall was perforated at the base of the ulcer, and the bed was formed by the pancreas. The pancreatic substance itself was not invaded. The cardiac half of the stomach showed a pouching below the two gastro-enterostomy openings, somewhat analogous to the pouching of the bladder behind an enlarged prostate, and this clearly accounted in part for the retention of the stomach contents.

44. **Tumor at Meatus Urinarius in Female.**—According to Tenney there are six conditions under which tumor may appear at the female meatus. Papillary adenoma—dysuria, pain witn physical contact, sometimes slight bloody staining. Not larger than 1 cm., and usually smaller, usually single, varying shades of red, attached on one side of canal and usually the posterior, uncommon, except between 15 and 40 years, rarely malignant, frequently recur after removal. Prolapse of dilated ureter—dysuria, pollakiuria. Tumor cyst like a flaccid mucous membrane, "size of thumb" or less, appearing either within a few weeks of birth or after months or years of vesical irritation and one-sided symptoms. Probe can be passed all around the pedicle except for one spot. Sometimes mouth of ureter can be identified. Constant tenesmus. Prolapse of bladder tumor—hematuria, dysuria, pollakiuria. Size and structure must vary. Rare in children. Tumor follows long train of bladder symptoms. Prolapse of urethra—symptoms like papillary adenoma except for absence of pain and tenderness. In one case came out ⅝ of an inch. Prolapse of bladder mucosa—only recorded case had symptoms corresponding to intravesical stricture and dilatation of ureter followed by appearance of a fold of mucous membrane at the meatus. Prolapse of bladder wall—pain, tenesmus, spasm and incontinence at intervals preceding appearance of tumor. Tumor "size of cherry" to "size of duck's egg," tender, purple, pyriform in shape, bleeding on handling. Sometimes ureteral orifices can be identified on the back of tumor. May be reducible or not. May occur in infants as results of imperfect sphincter apparatus or in adults after injury to same.

46. **Preparation of Dry Bony Areas for Skin Grafting.**—By means of a small drill Mayo perforates the entire dry area of bone like a sieve, or cribriform plate, all over its surface. These perforations are about ¹⁄₂₅ of an inch apart and penetrate to the diploe of the skull or to the blood-supply of the bone involved so that each perforation shows a slight hemorrhage. Through these perforations, granulations are rapidly thrown out and soon merge together on the surface, allowing an abundant blood-supply for the skin grafts.

### Archives of Internal Medicine, Chicago

*September, XIV, No. 3, pp. 289-452*

48 Second Progress Report of Thompson-McFadden Pellagra Commission. J. F. Siler, P. E. Garrison and W. J. MacNeal, New York.

49 *Relation of Pellagra to Use of Certain Foods and to Location of Domiciles in Six Selected Industrial Communities. J. F. Siler, P. E. Garrison and W. J. MacNeal, New York.

50 *Nitrogen and Sulphur Metabolism in Cretin. I. Greenwald, New York.
51 *Lymphocyte Increase and Altitude. M. E. Stains, T. L. James, Colorado Springs, Colo., and C. Rosenberg, New York.
52 *Glycyl-Tryptophan Reaction in Meningitis. R. H. Major, San Francisco and E. Nobel, Vienna.
53 *Elliptical Human Erythrocytes. F. W. Bishop, New York.
54 *Pituitary Gland in Epileptics. J. F. Munson and A. L. Shaw, Sonyea, N. Y.
55 *Specific Rôle of Foods in Relation to Composition of Urine. N. R. Blatherwick, New Haven, Conn.

49. **Relation of Pellagra to Use of Certain Foods.**—The authors summarize the results of their very extended investigation as follows: Pellagra spread from a preexisting case as a center in the six villages studied. It was transmitted to new victims only through very short distances and chiefly to those immediately associated in the home with a preexisting case of the disease. Frequent use of corn-meal as an article of diet was not a factor in the causation of pellagra in these villages. There was discovered no evidence that canned goods have anything to do with the causation of pellagra. Frequent use, even daily use, of fresh meats and of eggs afforded no relative protection from pellagra in these villages. The daily use of milk seemed to diminish to some extent the danger of contracting pellagra in these mill villages in 1912 and 1913, although its use did not fully insure against the development of the disease.

50. **Nitrogen and Sulphur Metabolism in Cretin.**—Examination of the results of Greenwald's examination show few deviations from the normal. The absorption of nitrogen is poor. The ratio of ammonia nitrogen to total nitrogen is rather high. The creatinin output is very low, and a considerably greater amount of creatin is excreted. Aside from these the findings seem to be quite normal.

51. **Lymphocyte Increase and Altitude.**—The authors assert that at an elevation of 6,000 feet the larger lymphocytes are absolutely increased in the circulating blood by at least 20 or 30 per cent. in both man and monkey. The basophilic mononuclear elements in the blood of man at sea-level are approximately 34 per cent., and at 6,000 feet are about 42 per cent. The total white blood-cells per cubic millimeter are approximately the same at sea-level and at an altitude of 6,000 feet, namely, about 7,500. The total polymorphonuclear cells diminish in the exact proportion in which the mononuclear cells increase. The red corpuscles increase by 22 per cent. at an altitude of 6,000 feet.

52. **Glycyl-Tryptophan Reaction in Meningitis.** — The authors feel that in glycyltryptophan they have another valuable addition to our diagnostic measures in meningitis. In cases having a peptolytic index higher than 1 they have consistently found meningitis present. Only one case of tuberculous meningitis showed an index as low as 1. The striking variations in peptolytic powers which were observed frrom time to time makes it probable that cases showing a low index might at some time have shown a much higher one. Also there was noted an interesting tendency for the peptolytic powers of the cerebrospinal fluid to increase as the disease progressed.

53. **Elliptical Human Erythrocytes.**—The patient whose blood was studied by Bishop gave a typical history of acute appendicitis. No lesions of heart, kidneys or lungs were discoverable. Operation was performed two hours after the patient entered the hospital and a gangrenous appendix with a small amount of seropurulent fluid free in the abdomen, was found. Recovery was uneventful, the temperature being normal on the seventh day after operation and the patient being discharged cured on the tenth day.

During his stay in the hospital a careful study of his blood was conducted. About 75 to 80 per cent. of the erythrocytes were observed to be elliptical in outline. The proportion between the long and short diameters of these cells varied considerably, some of them being only slightly elliptical, while others were very distinctly elongated. The fragility of the erythrocytes was determined and found normal. Vital staining showed only 3 per cent. reticulated cells. —well within normal limits. The Wassermann reaction was negative. The possibility of this condition being a congenital characteristic of the man's blood suggested itself. Working on this theory the blood of his sister was obtained and was found to show an exactly similar condition. A few of them showed a more extrême deformity than those of her brother. As far as she could remember she had never had a sick day in her life.

The other members of the family—a second sister, her father and her two children (both boys)—were found to have normal erythrocytes; the mother of the patient is not living. To exclude the possibility of some chronic poisoning by lead, coal-gas, or other chemical, the blood of all persons living in the same house with this family was examined and found to be normal.

54. **Pituitary Gland in Epileptics.**—For some time the authors have been collecting material which might cast some light from an anatomic point of view on the conditions of the ductless glands in epilepsy. The thyroid and pituitary glands were the only ones showing any great change in appearance; both of these showed more or less variation from what might be considered an average or normal type.

The sella turcica has not as a rule been enlarged; ordinarily the gland has completely filled it. There has, however, been a distinct group of cases in which there has been a marked difference between the size of the sella and the size of the gland. In these cases the dura is seen pouched down into the sella, instead of the more usual flat membrane between the clinoid processes. When this pouching is found, the gland may be flattened (scaphoid) in shape, but small glands or large fossae may also account for the condition in different cases. In only one such case have they taken measurements of the sella; they were as follows: between anterior clinoid processes, 28.3 mm.; between posterior clinoid processes, 17.5 mm.; between optic foramina, 19.8 mm.; from optic foramen to posterior clinoid process, 15.5 mm.; width in sagittal plane, 15.5 mm.; depth, 16.6 mm. The gland itself in this case (A 416) measured 17.5 by 15.5 by 4.7 mm. The woman in whom this was found was decidedly fat; ovaries small and fibrous, uterus unicornus; age at death 44 years. Also, in a case of internal hydrocephalus, a much-pouched dura was found.

The twenty-two glands recorded in this paper appear to be somewhat below the average in size. No large *tumors* of the pituitary were found, but in three cases large tumor-like structures have been found. There were no clinical symptoms in any of these cases; the condition was not suspected, and thus significant clinical conditions may have escaped notice. One of the most striking variations in the appearance of sections of the pituitary is variation in the blood-content of the gland. In many cases it considerably exceeds the normal. All degrees are present and an uneven distribution of the congestion is not uncommon. No particular cell type can be said to predominate in the glands examined. There are occasionally glands in which the cyanophil cells are considerably more common than the average. There is also a distinct tendency toward an increase of connective tissue in the region between the neurogliar and glandular portions.

55. **Foods in Relation to Composition of Urine.**—According to Blatherwick the composition of the urine is markedly influenced by the character of the food intake. Foods which have a preponderance of basic elements lead to the formation of a less acid urine. Conversely, foods with a predominance of acid-forming elements increase the urinary acidity. Potatoes, potato ash, oranges, raisins, apples, bananas and cantaloups are very efficient in reducing the acid output. Tomatoes are of less value in this respect. Rice and whole-wheat bread increase urinary acidity. Plums, prunes and cranberries, although yielding a basic ash, nevertheless increase the acid formation. The latter foods contain benzoic acid, which increases the acidity owing to the formation of hippuric acid. An increase in $H^+$ is accompanied by a significant increase in the ammonia excretion. The authors' results indicate that ammonia exerts an unmistakable influence in the preservation of body neutrality. Titratable acidity and $H^+$ are closely related in behavior. A lack of relationship between $H^+$ and urine volume is pointed out. The solubility of uric acid in urine is closely dependent on the $H^+$. All urines with an acid reaction are supersaturated with

uric acid, while alkaline urines are capable of dissolving added uric acid. Further evidence for the interrelationship of the alveolar $CO_2$ tension and the $H^+$ of the urine is submitted and their dependence on diet is pointed out. The $H^+$ of the urines of thirty vegetarians was 6.64, in contrast with the value of 5.98, reported by Henderson and Palmer, for persons living on a mixed diet.

### Arkansas Medical Society Journal, Little Rock

*September, XI, No. 4, pp. 93-112*

56 Tumors of Breast. St. C. Cooper, Fort Smith.
57 Vesicovaginal Fistula. A. Watkins, Little Rock.
58 Conservation Versus Stimulation in Treatment of Shock. C. S. Holt, Fort Smith.

### Boston Medical and Surgical Journal

*October 1, CLXXI, No. 14, pp. 509-544*

59 Demand and Supply as Related to Nurses and Nursing. F. T. Murphy, St. Louis.
60 Roentgen Ray Evidence in Early and Latent Cancer of Stomach. F. W. White and R. D. Leonard, Boston.
61 Traumatic Endocarditis. S. G. Webber, Brookline.
62 *Intraspinous Use of Salvarsanized Serum. C. W. McClure, Iowa City, Ia.
63 *Report of Cases of Lung Abscess at Massachusetts General Hospital. C. L. Scudder, Boston.
64 Behavior of Neosalvarsan. W. J. McGurn, Boston.

62. **Intraspinous Use of Salvarsanized Serum.**—In four cases of cerebrospinal lues under treatment by McClure with intravenous injections of salvarsan, mercurial inunctions and the intraspinous use of salvarsanized serum, there has been observed improvement in the subjective and objective symptoms. With this improvement there has occurred a diminution in the cell count, the proteid content, and the strength of the Wassermann reaction in the cerebrospinal fluid. The Wassermann in the blood remained unaffected up to the time of leaving the hospital. Two cases of tabes were relieved of subjective symptoms and the number of cells in the cerebrospinal fluid reduced. A case of taboparesis showed no change in the laboratory findings and only slight improvement symptomatically. One case of paresis showed marked improvement in the symptoms and the laboratory findings. The Wassermann reaction became negative in the cerebrospinal fluid. One case of paresis showed no improvement in either the symptoms or the laboratory findings but grew progressively worse.

The results in cerebrospinal lues and tabes in the small series of cases studied in this hospital and those collected from the literature are encouraging not only as regards cessation of symptoms but also in the laboratory findings in the cerebrospinal fluids. The results in paresis are either discouraging or problematic. The most marked improvement has occurred in the laboratory findings and in these there has been a relapse in those cases followed for several months. McClure here admits that the improvement in mentality so far recorded may be but the result of remissions to which the disease is prone, even in the absence of treatment. But the fact that improvement may occur, even if only apparent, warrants the use of the intraspinous treatment in a disease otherwise hopeless.

63. **Cases of Lung Abscess.**—The details of sixteen cases of lung abscess treated by operation are reported by Scudder. He states that the bronchiectatic process should be attacked by the surgeon while it is limited to one lobe of a lung. There was one case of actinomycosis cured by surgical operation. Attention is attracted to lung abscess following tonsillectomy. There is one case in this series which followed operation on the nasal septum. Scudder suggests that the inhalation of foreign material may have been the starting point in this case. From certain cases in this series it is suggested that the surgeon should be alert to the occurrence of lung abscess associated with embolism following ordinary surgical operations. A patient suddenly suffering severe pain in the chest following surgical operation associated with a rise in temperature and pulmonary signs should be very carefully studied lest such signs may mean the beginning of pulmonary abscess. Early operative interference on the lung in such cases may not only preclude the possibility of the extension of a pulmonary lesion, but may save the life of the individual.

An increasing number of intra-abdominal infections are associated directly with an infection through the diaphragm of the diaphragmatic pleura, and then of the lung with pulmonary abscess. The cases of subdiaphragmatic origin must be attacked early to prevent subsequent damage intrathoracically. The Roentgen ray is of great value in the diagnosis of lung abscess. The thorough roentgenologic examination necessitates fluoroscopic observations, stereoscopic plates, and both anterior and posterior views. Scudder believes that this total series of sixteen cases demonstrates the efficacy of surgical measures in the treatment of abscess of the lung. There were nine deaths, eighteen recoveries and eleven cases were practically well without cough or sputum.

### Journal of Parasitology, Urbana, Ill.

*September, 1, No. 1, pp. 1-53*

65 *Destruction of Vitality of Cysticercus Bovis by Freezing. B. H. Ransom, Washington, D. C.
66 *Two Years' Study of Insects in Relation to Pellagra. A. H. Jennings, Washington, D. C.
67 Variation in Oxyurias: Its Bearing on Value of Nematode Formula. S. B. Fracker, Chicago.
68 Eggs of Ascaris Lumbricoides. W. D. Foster, Washington, D. C.
69 Dr. Nott's Theory of Insect Causation of Disease. W. A. Riley, Ithaca, N. Y.
70 Rhabditin. N. A. Cobb, Washington, D. C.
71 Experimental Ingestion by Man of Cysticerci of Carnivore Tapeworms. M. C. Hall, Washington, D. C.
72 Peculiar Morphologic Development of an Egg of Genus Tropidocerca and Its Probable Significance. W. D. Foster, Washington, D. C.
73 Action of Arsenic Dips in Preventing Tick Infestation. H. W. Graybill, Washington, D. C.
74 Eorhynchus: Proposed New Name for Neorhynchus Hamann Pre-Occupied. H. J. Van Cleave, Urbana.

65. **Destruction of Cysticercus Bovis.**—From his experiments Ransom concludes that if measly beef carcasses are exposed for six days to a temperature not exceeding 15 F. (—9.44 C.) the vitality of the cysticerci will be destroyed, that some may survive in carcasses exposed for five days to this temperature, though it is doubtful whether they will retain sufficient vitality to develop in the human host, and finally that a considerable proportion may survive in carcasses exposed to a temperature of 15 F. for four days or less. Though it is possible that the vitality of the cysticerci, which were observed to be alive after exposure of the infested beef to a temperature of 15 F. for four days, has been so seriously affected that they would have been incapable of producing tapeworm infestation, the fact that they were alive and active justifies the adoption of a longer period of retention when refrigeration is employed as a sanitary measure. Likewise it would seem, notwithstanding the evidently weakened condition of the only cysticercus which survived in beef exposed five days to a temperature of 15 F., that it is not justifiable to accept five days as a safe period for refrigeration, and that six days should be required until it shall be shown that a shorter period of refrigeration is fully sufficient to prevent the possibility that cysticerci present in the refrigerated meat may retain enough vitality to continue their development in the human host. On the basis of the results which have been herein recorded, an amendment to the federal meat inspection regulations has been issued providing that beef carcasses showing a certain slight degree of infestation may be passed for food if held for six days at a temperature not exceeding 15 F., as an alternative to the requirement of retention for twenty-one days.

66. **Study of Insects.**—Jennings' studies have led him to believe that ticks, bedbugs, mosquitoes, fleas, horseflies, and, in the absence of further and more incriminating evidence, lice may be dismissed from consideration as transmitters of pellagra; that there is not only insufficient evidence to incriminate flies of the genus *Simulium*, but much evidence directly opposed to such incrimination, and that the biting stable-fly, *Stomoxys calcitrans*, shows in marked degree those characteristics of distribution, habit and association with man which would preeminently fit it to be the vector of pellagra if transmission of the disease by a blood-sucking insect is shown to be possible.

### Journal of Pharmacology and Experimental Therapeutics, Baltimore

*September, VI, No. 1, pp. 1-146*

75 *Control of Respiratory Exchange by Heating and Cooling Temperature Centers. H. G. Barbour and A. L. Prince, New Haven, Conn.
76 *Action of Drugs on Isolated Pulmonary Artery. D. I. Macht, Baltimore.
77 Influence of Temperature on Action of Strophanthin on Mammalian Heart. J. W. C. Gunn, London.
78 Condition of Sugar in Blood. C. L. v. Hess and H. McGuigan, Chicago.
79 *Pharmacologic Action of Opium Alkaloids. D. E. Jackson, St. Louis.
80 Combined Action of Camphor and Lack of Oxygen on Isolated Mammalian Heart. A. N. Richards, Philadelphia.
81 Convulsant Action of Acid Fuchsin in Cardiectomized Frogs after Removal of Anterior Lymph Hearts. D. R. Joseph, St. Louis.
82 Influence of Lymph Hearts on Action of Convulsant Drugs in Cardiectomized Frogs. J. J. Abel and B. B. Turner, Baltimore.
83 Vascular Response of Kidney in Acute Uranium Nephritis. W. deB. MacNider, Chapel Hill, N. C.

75. **Control of Respiratory Exchange.**—Barbour and Prince found that heating the region of the corpus striatum in rabbits results in a diminution in $CO_2$ output, $O_2$ combustion and in the respiratory volume, as well as in decreased body temperature. Cooling the same region gives precisely the opposite effects. These measures have no demonstrable effect on the respiratory rate except that the first mentioned may produce marked "heat polypnea." The decreased and increased oxidations thus produced by respectively heating and cooling the temperature centers are contributing causes rather than effects of the changes in body temperature. These results furnish proof that metabolic processes can be diminished by an agent (heat) whose activity is, under the conditions of the experiment, restricted to a limited region of the central nervous system. Heat centrally applied reduces body temperature therefore not only by favoring heat dissipation but by diminishing heat production.

76. **Action of Drugs on Pulmonary Artery.**—The action of a large number of drugs on strips and rings of surviving pulmonary arteries was studied by Macht. Epinephrin causes a powerful constriction of the pulmonary artery. After ergotoxin and a number of other drugs, the action of epinephrin on the isolated artery is inhibited. These observations speak strongly in favor of a vasomotor supply of the pulmonary artery. Of the digitalis bodies, all except digitonin produce constriction. The latter causes a dilatation of the pulmonary ring. The nitrites were found to produce a constriction of the pulmonary artery. It is suggested that this anomalous action of the nitrites is due to the pulmonary artery being richly supplied for the most part with vasoconstrictor nerve terminals. This action of the nitrites is corroborated by other experimental and clinical data, and points to a rational method of treating hemoptysis.

79. **Pharmacologic Action of Opium Alkaloids.**—While only a part of the opium alkaloids have been studied by Jackson, enough was demonstrated to indicate that probably a considerable majority of these derivatives are capable of producing marked bronchoconstriction.

### Lancet-Clinic, Cincinnati

*September 19, CXII, No. 12, pp. 305-332*

84 Overweights. H. A. Baker, Pittsburgh.
85 Glands of Internal Secretions. B. Holmes, Chicago.

*September 26, No. 13, pp. 333-360*

86 Surgical Treatment of Infantile Palsy. J. K. Young, Philadelphia.
87 Work of Life Extension Institute Viewed Especially from Standpoint of Medical Examiner. A. T. Gaillard, Philadelphia.
88 Nature's Method in Cure of Tuberculosis. W. J. George, Johnstown, Pa.

### Medical Record, New York

*October 3, LXXXVI, No. 14, pp. 573-614*

89 Surgical Management of Pericystitis. E. Fuller, New York.
90 Insanity Among Jews. A. A. Brill and M. J. Karpas, New York.
91 *Rational Diet for Typhoid. E. E. Cornwall, Brooklyn.
92 Oil-Ether Colonic Anesthesia. J. T. Gwathmey, New York.
93 Infection of Middle Ear with Bacillus Tuberculosis and Bacillus Coli. G. B. Lake, Jolo, Moro, P. I.
94 Abdominal Aneurysm as Cause of Left-Sided Abdominal Pain. E. H. Goodman, Philadelphia.
95 Country Physician and Congenital Club Foot. J. C. Schapps, Butte, Mont.

91. **Rational Diet for Typhoid.**—Cornwall has devised a plan of feeding in typhoid which is formulated in three dietetic prescriptions with modifications. Prescription 1, for the febrile period: At 6, 8, 10 a. m., 12 m., 2, 4, 6 and 8 p. m., give 8 ounces of a 2 to 1 mixture of milk and barley water, to which has been added 4 grains of sodium chlorid. At 9 a. m. and 5 p. m., give 7 ounces of orangeade made with the strained juice of 1 orange, 1 ounce of milk sugar and water. At any time during the day or night give water to drink but not more than enough to bring the total fluid ingested to 110 ounces, unless the weather is very warm and the patient desires it. If the patient has a weak heart the fluid should not exceed 90 ounces. This prescription supplies daily about 50 gm. of protein and fuel of the value of about 1,350 calories.

Prescription 2, for the transitional period: At 6 a. m. and 4 p. m., give 8 ounces of a 2 to 1 milk and barley water mixture, to which has been added ½ ounce of a predigested cereal food, 1 ounce of cream and 4 grains of sodium chlorid. At 7 and 11 a. m. and 5 p. m., give 7 ounces of orangeade. At 8 a. m., 12 m. and 6 p. m., give 7 ounces of well-boiled rice, cream of wheat, or similar cereal, with 5 ounces of milk and 4 grains of sodium chlorid. At 10 a. m., 2 and 8 p. m., give 8 ounces of artificially soured milk, or, if preferred the same as at 6 a. m. This prescription supplies daily about 70 gm. of protein and fuel of the value of about 2,100 calories. It can be given in the average case between the fifth and seventh day after defervescence.

Prescription 3, for the convalescent period: At 7:30 a. m., give 8 ounces of well-boiled cereal, with butter, milk or cream; 2 slices of dry toast, with butter; the juice of 1 orange, plain, or as in prescription 1. At 10 a. m., 4 and 10 p. m., give 8 ounces of artificially soured milk, or 8 ounces of the milk and barley water mixture described in prescription 2. At 12 m., give 8 ounces of a milk soup (cream of corn, celery, potato, carrot or spinach), or 8 ounces of artificially soured milk; 2 ounces of lean boiled, broiled or roasted beef, mutton, lamb or chicken; 6 ounces of boiled macaroni or rice, with butter, milk or grated cheese; 2 slices of toast with butter; fresh fruit juice, namely, of orange, grapefruit, grape or pineapple, to the amount of 4 ounces. At 6 p. m., give 16 ounces of milk in which has been crumbled 6 ounces of old bread or toast; or 4 slices of toast with butter, 2 ounces of cream cheese or pot cheese and 8 ounces of the milk and barley water mixture described in prescription 2. Orangeade, as in the preceding prescriptions, or similar fruit juice preparations, may be given freely at any time.

This prescription supplies daily about 90 gm. of protein and fuel of the value of about 2,500 calories. It serves as a standard convalescent diet which can be modified by additions and substitutions as convalescence progresses. It can usually be given on the twelfth day after defervescence. The fruits and vegetables should be added cautiously, especially those containing much cellulose. The plan of feeding in typhoid above described was employed by Cornwall in a series of 200 cases of that disease treated by him between June 15, 1910, and Aug. 12, 1914. This series is continuous. The number of deaths was eighteen; the mortality 9 per cent.

### Mississippi Medical Monthly, Vicksburg

*June, XIX, No. 2, pp. 23-44*

96 Classification Diagnosis of Acute and Chronic Arthritis. J. B. Elliott, Jr., New Orleans.
97 Infantile Fermentative Diarrhea: Some Hygienic and Preventative Methods. H. M. Burnham, Moss Point.

### New York Medical Journal

*October 3, C, No. 14, pp. 649-696*

98 Modern Warfare Against Tuberculosis as Disease of Masses. S. A. Knopf, New York.
99 Non-Operative (Tuberculin) Treatment of Tuberculous Glands of Neck. R. T. Morris, New York.
100 Effect on Blood-Pressure of Decapsulation of Kidney. E. H. Goodman, Philadelphia.
101 Postdiphtheritic Paralysis. W. M. Barton, Washington, D. C.
102 Los Angeles Bronchitis. J. A. Guthrie, Portsmouth, Va.
103 Acute Intestinal Obstruction. H. M. Armitage, Chester, Pa.
104 Expert Testimony from Standpoint of Lawyer. A. M. Holding, West Chester, Pa.
105 Quantitative Estimation of Albumin In Urine. M. Kahn and M. Silberman, New York.
106 Newer Teachings Concerning Disease of Gastro-Intestinal Tract. M. I. Knapp, New York.

### Old Dominion Journal of Medicine and Surgery, Richmond, Va.

*September, XIX, No. 3, pp. 77-119*

107 Pyelitis in Children: Cause of Obscure Fever. F. H. Smith, Abingdon.
108 Plea for Early Clinical Diagnosis of Cancer of Rectum and Recto-Sigmoid Junction. B. C. Willis, Richmond.
109 Ureteral Calculus. L. T. Price, Richmond.
110 Rheumatic Fever—Cardiac and Renal Complications. O. C. Brunk, Richmond.

### Texas State Journal of Medicine, Fort Worth

*September, X, No. 5, pp. 179-214*

111 Subconjunctival Injections. H. W. Woodruff, Joliet, Ill.
112 Double Cataract Operations Under Difficulties. E. H. Vaughn, Tyler.
113 Amblyopia Due to Tobacco and Alcohol. C. Joyes, Fort Worth.
114 Tobacco Habit: World-Wide Injury to Humanity. A. S. Garrett, Springtown.
115 *New Sign Differential Between Dilatation of Heart and Pericarditis with Effusion. W. J. Calvert, Dallas.
116 *Adrenals in Acute Infections. G. C. Kindley, Galveston.
117 Case of Banti's Disease, with Splenectomy, Death. R. L. Ramey, El Paso.

115. **New Sign Between Dilatation of Heart and Pericarditis with Effusion.**—The differential sign described by Calvert in The Journal, Aug. 22, 1910, p. 763, is as follows: In pericarditis with effusion the right lobe of the liver is low, varying in its position from the fifth interspace to the sixth rib; in dilatation of the heart the right lobe of the liver is high, varying in position from the fourth to the fifth rib. In each condition a narrow area of relative lung-liver dulness is present. Two cases of pericarditis with effusion are reported to confirm the clinical value of this sign.

116. **Adrenals in Acute Infections.**—Kindley believes that examination of the adrenals in patients dying of acute infectious diseases furnishes strong evidence in favor of the theory of adrenal insufficiency as an important factor in bringing about a reduction in blood-pressure and feebleness of heart action in many of these cases. He states that there is great need of further investigation on the part of clinicians, as to the value of epinephrin in raising blood-pressure and supporting the heart in acute infections, the indications for the use of the drug in these diseases and the best method of administration.

### Vermont Medical Monthly, Burlington

*September, XX, No. 9, pp. 221-242*

118 Anoci-Association. G. W. Crile, Cleveland.
119 Intestinal Short Circuit for Intra-Abdominal Tubercles. Report of Case. G. S. Foster, Manchester.
120 Infantile Paralysis. C. K. Johnson, Burlington.

## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### Archives of Roentgen Ray, London

*August, XIX, No. 3, pp. 83-118*

1 Curious Case of Spine and Hip Disease. C. Gouldesbrough, London.
2 Radioscopic Compressor Diaphragm Based on Bucky Effect. G. Holzknecht, Vienna.
3 Diathermy—Its Production and Use in Medicine and Surgery. E. P. Cumberbatch, London.

### British Journal of Children's Diseases, London

*September, XI, No. 129, pp. 385-432*

4 *Cardiac Arrhythmia in Diphtheria. E. B. Gunson.
5 *Subacute Atrophy of Liver in Childhood. R. A. Chisolm.
6 Fatal Hemoptysis in Child Four Years Old. J. D. Rolleston and J. E. Robertson-Ross.

4. **Cardiac Arrhythmia in Diphtheria.**—Gunson's present paper is based on more than 750 polygraphic curves obtained from children under 10 years of age, in whom the diagnosis of diphtheria was confirmed bacteriologically: 120 cases were investigated. Polygraphic tracings were taken in all the severe cases, with a single exception, at least once a day from the time of admission. Twenty-five consecutive mild and moderately severe cases were traced on alternate days throughout their stay in hospital, a period varying from five to eight weeks, in order to determine the incidence and the nature of the arrhythmia in this type of case. Antitoxin.—Mild cases received on admission 8,000 units, cases of moderate severity 12,000 to 16,000 units, severe cases 16,000 to 20,000 units. In moderate and severe cases the antitoxin was repeated once or twice. Intramuscular injections were given in each case. The records were taken with a Mackenzie polygraph. By this means simultaneous tracings of the jugular and radial pulses were obtained with a time-marking record. The observations were made about the same time each afternoon.

Apart from normal sinus arrhythmia, the only type of irregularity met with in these cases was due to premature auricular contractions, which occurred in 28 per cent. of cases. They appeared as early as the ninth and as late as the sixty-sixth day of disease; their average duration was three days. They produced only slight arrhythmia and were ignored in treatment, as they were unaccompanied by any other symptoms or signs of cardiac involvement. Three cases, fatal from toxemia, developed no arrhythmia. Five cases developed so-called "cardiac paralysis," with gallop rhythm on auscultation, cardiac dilatation, hepatic enlargement and marked arrhythmia. This arrhythmia was due to the presence of frequent premature contractions, and in two cases these were followed by paroxysms of tachycardia. The nature of the arrhythmia is discussed in each case, together with the other physical signs present at the time.

5. **Subacute Atrophy of Liver in Childhood.**—Of the nine cases collected by Chisolm five were girls and four were boys, so that, unlike the acute form of the disease which is commoner in females than in males, there was no marked inequality of sex distribution, but of course the number of cases is very small. Jaundice was present in every case and was usually the first symptom to attract attention. In one case in which the jaundice was deep, the liver picture was that of acute necrosis attacking a liver previously affected with subacute necrosis. It would appear, therefore, that the depth of the jaundice is more or less proportional to the acuteness of the changes in the liver. The jaundice when once established usually tended to become progressively deeper. In two cases there was a history of previous attacks of jaundice.

Ascites was present in three cases. In two of these cases the changes in the liver were of the chronic type, approaching the cirrhotic, and the regenerative processes were widely diffused through the organ, while in the third case regeneration was limited to a small area in the left lobe, and the rest of the organ showed the microscopic picture of acute yellow atrophy. In none of the reports of these three cases is there mention of the condition of the portal vein or its branches.

The liver was somewhat enlarged at some period of the disease in all except one case in which it was normal to percussion, but slightly reduced in size at the necropsy, and another case in which it was not palpable during life and was reduced in bulk after death. In another case there is no note as to the size of the organ during life, but after death it was small. The enlargement was not always to be detected during life; it was usually regular, but in one case the left lobe was more affected than the right. Progressive diminution in size, which is such a marked feature in the acute type of the disease, and of considerable diagnostic importance, was noted in two cases and in both the diminution followed a previous increase in size. In one case the liver was enlarged to palpation on admission, but at the subsequent operation, eighteen days later, it was found to be normal or slightly reduced. The spleen was noticed to be slightly enlarged in one case, just palpable in another case and not palpable in a third case. In the other cases there is no note of its condition during life. Of the more general symptoms abdominal pain was of inconstant occurrence. Its absence is expressly recorded in one case while in three cases it was present with intermissions, and was never very severe in character. Vomiting was recorded in two cases in which it was severe. Light-colored motions were the rule, but neither diarrhea nor constipation was a marked feature of the series. Hemorrhages, which are so notable a symptom in the acute form of the disease, were only seen in two cases in which, while regenerative changes were present in the liver, acute necrosis predominated. The temperature was noted as regularly and slightly subnormal in one case, high in two cases, normal in one case and irregular in one case in which, however, there was also present a general staphylococcal infection.

Drowsiness with death in coma was seen in two cases, while delirium was a terminal symptom in one case. Screaming and twitching followed by coma with localized paresis of the face and leg on the left side are recorded of one case but nervous symptoms were expressly noted as absent in another case and in none of the cases do they appear to have been very prominent. In all cases in which it is alluded to the urine contained bile; leucin and tyrosin, so often found in the acute type of the disease, were noted as absent in one case and in the other cases no mention is made of them.

### British Medical Journal, London

*September 19, II, No. 2803, pp. 493-524*

7 Open-Air Hospitals in War-Time. R. Saundby.
8 Sterilization of Water Supplies for Troops on Active Service. G. S. Woodhead.
9 Examination of Recruits of Territorial Force and their Early Training. B. Hughes.
10 Insects and War: Lice. A. E. Shipley.
11 *Cardiac Fibrillation and Its Relation to Chloroform Anesthesia. J. A. MacWilliam.
12 *Blood-Pressure. G. S. Melvin and J. R. Murray.
13 Ventricular Fibrillation and Cause of Death Under Chloroform. A. G. Levy.
14 Rôle of Carbohydrate in Nutrition. E. P. Cathcart.
15 Recent Experiments Bearing on History of Sugar in Animal Body. J. J. R. MacLeod.
16 Influence of Excessive Water Ingestion on Excretion of Creatin and Creatinin. D. Burns and J. B. Orr.
17 *Action of Enzymes. E. S. Edie.
18 *Congenital Anomaly of Duodenum Encountered During Operation. S. Boyd.

**11. Cardiac Fibrillation and Its Relation to Chloroform Anesthesia.**—Although MacWilliam's observations were made on animals, he says, that the essential features of fibrillation and the general conditions favoring and determining its occurrence are so strikingly constant in all the warm-blooded animals examined that there is no warrant for assuming an exception in man, but, on the contrary, a strong presumption in favor of a broad similarity in the essential nature of its behavior in man and in mammals and birds. Further, there is the striking resemblance between the general features antecedent to or associated with early collapse in the cat and in many recorded instances in man tendency to excitement and struggling, with disturbance of respiration (holding the breath, exaggerated breathing, etc.). There is also a remarkable resemblance between the recorded phenomena of many cases of early collapse seen in man and those observable in the cat. MacWilliam believes that the conclusion is warranted that ventricular fibrillation is certainly the chief cause of the early chloroform collapse in the cat, and is probably a very important cause of early chloroform collapse in man.

**12. Blood-Pressure.**—In the application of the oscillation method Melvin and Murray have made use of two instruments: (a) the Erlanger sphygmomanometer, which yields a graphic record, and (b) the Pachon sphygmo-oscillometer, in which the oscillations are examined by visual inspection. As index of systolic pressure they adopted that known as the Recklinghausen-Erlanger index, namely, the pressure corresponding to the point at which, with falling external pressure, there is an appreciable increase in the magnitude of the oscillations. With regard to the estimation of diastolic pressure, they have departed from the index suggested and employed by Erlanger. Prolonged investigation with an experimental schema convinced them that diastolic pressure was to be read at a lower level and from the results brought forward in that experimental study they decided to adopt as the index of diastolic pressure the pressure corresponding with the point on the record at which, with diminishing external pressure, the oscillations showed an appreciable diminution in magnitude. The method of study consisted in the concurrent application of these two methods in a large number of cases, and in the correlation of the results obtained from each.

Roughly, two classes of individuals were examined: first, a set of healthy young adults of average age 20.9; and secondly, a series of old people and of patients manifesting pathologic conditions of circulation. In the "normal" series the authors examined 59 cases, and in all were able to make some determination of diastolic index from the tracing obtained by the Erlanger apparatus. In 19 cases, that is, 31 per cent., however, there was a discrepancy amounting to 10 or more millimeters between the oscillation and the auditory readings. Yet the average diastolic pressure of these 59 cases differed by the two methods by only 2.3 mm. Were the Erlanger index of diastolic pressure to be taken, that is, the reading corresponding with the last stage at which the oscillations are maximal, then the averages differed by 12.6 mm., with the oscillation reading higher than the auditory. In such cases as there occurred a marked difference between the oscillation and the auditory readings they accepted the latter, and for these reasons: At the systolic level similar differences frequently obtained, but at this point the pressure estimated by the tactile method confirmed the auditory reading. The actual pressures which they regard as the normal pressures may then be given as follows: Systolic pressure normally amounts to 111.8, diastolic to 65.7 and pulse pressure to 46 mm. This estimate of diastolic pressure is decidedly lower than the values commonly given, and the estimate of pulse pressure correspondingly higher. The average pulse rate was 80.1 per minute, but they failed to establish any definite relationship between the variations in the pulse rate and diastolic-pressure level.

In the second series of cases there is frequently great difficulty in making a reading of diastolic pressure from the tracing, frequent and serious discordance between readings thus made and the auditory reading. Here, as before, they accept the auditory indications. As the cases examined in this series yield a collection of pressure values in many varied conditions, there is little value in assessing averages. The authors compared the ranges of variation of the different pressures with the corresponding ranges in the "normal" series. Thus, in the latter, diastolic pressures from 82 to 50 were obtained, while in the "pathologic" series, value from 150 to 50 were got. Similarly, the range of variation of pulse pressure was, respectively, in the normal and the pathologic series, 73 to 22 and 163 to 26. There is thus a much greater range of variation in the pathologic series. The authors advance its simplicity, accuracy and applicability as reasons for the adoption of the auditory method as the most satisfactory method of blood-pressure estimation.

**17. Action of Enzymes.**—A consideration of the general similarity of the action of pepsin and trypsin or protein led Edie to the idea that both enzymes might unite with protein by combining with the same side-chains, but that the specific digestive side-chains differ by being active in acid and alkaline solution, respectively. If this were so, we might expect that pepsin, however, would be able to unite with protein in an alkaline solution, and trypsin would similarly unite with protein in acid solution, neither enzyme being in such cases able to exert any digestive action on the protein. In the former case the pepsin would act similarly to the zymoid of trypsin, excess of pepsin inhibiting the action of trypsin on protein. Excess of trypsin, on the other hand, might be expected to inhibit the digestion of protein by pepsin in acid solution. Experiments have shown that such is the case. If pepsin is mixed with excess of trypsin, its action on protein in acid solution is inhibited, the amount of inhibition being roughly proportional to the amount of trypsin present. For these experiments boiled fibrin was principally used as the substrate.

In a number of cases Edie found that boiled trypsin inhibits the action of fresh trypsin on fibrin, but not on caseinogen. This would seem to show that trypsin unites with fibrin by means of side-chains which are more thermostabile than those with which this enzyme unites with caseinogen. It was found also that excess of pepsin acting in an alkaline solution inhibits the action of trypsin on proteins, the inhibition again being proportional to the amount of pepsin present. Both enzymes acting in appropriate solution begin to digest fibrin practically immediately, there being no preliminary interval during which any dissolved protein is first broken down into simpler products. While boiled solutions of pepsin varied considerably in their behavior, Edie found in some cases that practically all power to inhibit the action of trypsin was destroyed when the pepsin was boiled for half an hour, but different specimens of the enzyme show great variations in their power to resist destruction by heat. It is seen from these observations that the usual text-book statement that enzymes are destroyed in solution at a temperature of 70 to 80 C. must be modified. If trypsin solutions can be boiled in presence of acid without being destroyed, and in some cases without any appreciable loss of activity, there seems no inherent reason why other enzymes under suitable conditions should not resist considerably higher temperatures than they are generally supposed to withstand.

18. **Absence of Part of Duodenum.**—There was in Boyd's case a complete absence of the third and fourth parts of the duodenum and of the duodenojejunal flexure, and an abnormal position of the proximal part of the jejunum. The duodenum passed to the right and emerged as a coil of jejunum from under cover of the hepatic flexure, thence passing vertically downward through the right loin lateral to the ascending colon to the right iliac fossa, in which case it lay on the lateral side of the cecum. It then passed over the pelvic brim into the pelvis, beyond which point it was not traced.

### Lancet, London

*September 19, II, No. 4751, pp. 731-782*

19 Dysentery. F. M. Sandwith.
20 Sterilization of Water Supplies for Troops on Active Service. G. S. Woodhead.
21 Juxta-Epiphyseal Strain of Lower End of Humerus and Its Detection by Diagnostic Line. E. W. H. Shenton.
22 *Cultivation of Tubercle Bacillus. A. H. Miller.
23 Ankylostomiasis in Fiji. P. Harper.
24 Earlier Indications of Gas Formation by Coliform Organisms. I. W. Hall and F. Nicholls.
25 Paratyphoid Inoculations. W. Broughton-Alcock.
26 Open-Air Hospitals in War Time. R. Saundby.

22. **Cultivation of Tubercle Bacillus.**—While working on the cultivation of the tubercle bacillus with the aid of waxy substances Miller found that the tubercle bacillus on glycerin-egg (Dorset's medium), to which has been added a little sperm oil, a liquid wax, loses its power in part to stain with carbolfuchsin. When stained with carbolfuchsin and simply washed, without being further decolorized, a peculiar appearance is presented. In shape it becomes plumper, much longer, and its ends terminate somewhat finely; this is best seen when stained by Gram's method. The protoplasm refuses to stain with carbolfuchsin in certain parts. In many of the bacilli the staining to non-staining parts assumes some regularity, first a staining portion either in the form of a band, or "granule," then a non-staining band or zone, and so on through the length of the bacillus, so that the bacillus looks extremely "beaded." These "granules" are large, round, refractile bodies, distending the body of the bacillus; they are extremely acid-alcohol-fast, and usually are the last to go on decolorizing with acid-alcohol. The bacillus can be, within quite a short time of decolorization, some few seconds, rendered colorless except for these refractile "granules." There does not appear to be any method in which the bands or "granules" are situated in the length of the bacillus.

### Grèce Médicale, Athens

*August 15, XVI, Nos. 15-16, pp. 29-32*

27 Congenital Myotonia; Author's Third Case. (Cas de maladie de Thomsen.) B. Conos. Concluded in No. 17.

### Beiträge zur Geburtshilfe und Gynaekologie, Leipsic

*XIX, No. 3, pp. 315-478. Last indexed May 16, p. 1587*

28 *Tubercles in Carcinoma of Uterine Cervix. (Tuberkelknötchen in einem Portiokarzinom.) E. Schmidt.
29 *Febrile Abortion and Its Treatment. F. Walther.
30 The Three Segments of the Uterus. (Zur Frage des Isthmus uteri.) H. Sternberg.
31 *Injury of Eye during Delivery, Especially Forceps Delivery. (Augenverletzungen bei der Geburt und bes. bei der Zangenoperation, und ihre gerichtlich-med. Bedeutung.) J. Goldwasser.
32 Serodiagnosis of Cancer by Abderhalden's Method. S. Blackstein.
33 Influence of Menstruation on the Blood-Picture in the Healthy. G. Gumprich.
34 The Antitrypsin Findings and Leukocytosis at Laparotomies. D. Gorbakowsky.

28. **Giant Cells in a Cancer.**—The *Beiträge* had just concluded its nineteenth volume when death took its founder and editor, A. Hegar. This article by Schmidt reports the discovery of tubercles scattered over the expanse of a cancerous growth in the uterine cervix. Necropsy revealed also multiple tuberculous foci in one kidney although the woman of 55 had been apparently healthy until the cancer developed. There were traces of horny substance near the giant cells in the cancer, and Schmidt thinks that the "tubercles" were the response to irritation from these foreign particles of horny substance, and were not the work of tubercle bacilli. None was found outside of the tuberculous kidney.

29. **Febrile Abortion.**—Walther reviews the experiences with 834 cases of abortion in Fehling's service at Strassburg; 134 were examined bacteriologically. Hemolytic streptococci were found in 50 and non-hemolytic in 24; hemolytic staphylococci were found in 24; in only 12 were the bacteriologic findings negative. In 212 cases there was fever but in exactly 50 per cent. of these the fever subsided at once after evacuating the uterus, including 49 cases in which the evacuation was done with the curet. In the 23 febrile cases with hemolytic streptococci, cureting was done in 54.4 per cent. In 3 cases the course was normal notwithstanding the presence of the hemolytic streptococci. In 3 cases with the latter, disaster followed expectant treatment. In another case colon bacilli were associated with the hemolytic streptococci and one patient, already a prey to sepsis when first seen, died. He tabulates further 26 cases in which the germs evidently had passed beyond the confines of the uterus as the fever kept up after the uterus had been evacuated; 84.6 per cent. in this group died, showing the gravity of these secondary streptococcus affections. In 12 other cases the fever was traced to peritonitis or pneumonia or an abscess.

The practical conclusion of these and other data cited is that the uterus should be emptied at once and as cautiously as possible and that we should not be deterred from this or from curetting by the discovery of hemolytic streptococci. After thorough examination, if the uterine process is found to extend beyond the uterus, treatment should be addressed to the secondary process first. If the infection is still restricted to the uterus, this should be evacuated, and he advocates the curet rather than the fingers. It does not scrape out so much as the fingers, but asepsis is much easier to realize with an instrument than with the hand. Even rubber gloves do not insure positively against mishaps, and the cervix has to be opened much wider for the fingers than for the curet. Still another advantage of the latter, he says, is that detritus of muscle tissue is much easier to remove with the curet than with the fingers; the finger does not even feel it, as a rule. The only exception is when large scraps of membrane and clotted blood cling fast to the uterus wall—here the finger does better than the curet. The latter glides over them, taking them to be part of the uterus wall. He adds that an expert is no more liable to perforate the uterus with a curet than with the finger. When hemolytic streptococci are found he advises evacuating the uterus with the fingers rather than with the curet although his experience has been so favorable with the curet that its use is justified in many cases. If the cervix is closed and rigid, and laminaria do not answer the purpose, he dilates with the metal dilator (Bossi). The fever drops and the patient usually promptly recovers. A vaginal douche with a little hydrogen dioxid or other disinfectant then washes out the last scraps of the fetal membranes. If the bleeding keeps up, he tampons with gauze dipped in 10 per cent. camphorated oil. The whole procedure is concluded with a dose of ergot.

31. **Obstetric Injury of Eye During Birth.**—Goldwasser declares that the physician should not be held to blame if the eye gets injured during the birth process as this may occur from deformity somewhere in the pelvis even with spontaneous delivery. If the injury should be done with

forceps, this may be unavoidable; it has happened to more than one skillful and long experienced obstetrician. He has compiled 132 cases of injury of an eye during birth and in only 3 of the cases had version and extraction been done. In 43 cases the presentation was not mentioned; in 86 the head came first. In 80 of the total 132 cases the injury was done with forceps, but in 25 cases delivery had been spontaneous but difficult on account of deformed pelvis. In 2 of the spontaneous cases the injury was exceptionally severe. Even when one is convinced that the forceps or awkward management of the delivery are responsible for the injury, yet it is hard to prove it. Goldwasser asserts there is actually no means certainly to avoid trauma of the eye during forceps delivery. It is wiser to refrain from applying the forceps to the fronto-occipital diameter. If it has to be done, the forceps should be guided by the left hand.

### Berliner klinische Wochenschrift

*September 7, LI, No. 36, pp. 1605-1620*

35 *Differential Atmospheric Pressure Procedures. (Die jetzige Gestaltung des Druckdifferenzverfahrens.) L. Dreyer.
35 *Some Hitherto Unappreciated Actions of the Roentgen Rays. (Einige unbekannte Wirkungen der Röntgenstrahlen und ihre therapeutische Verwertung.) H. Eckstein.
37 Roentgenography of Liver and Spleen. (Klinische Anwendung der Röntgenphotographie der Leber und Milz.) E. Rautenberg.
38 Lupus of Syphilitic Origin. O. Heinemann.
39 Simple and Convenient Receptacle to Receive and Send Stool for Examination. (Faecotenor.) W. Kiel.

35. **Differential Atmospheric Pressure as Aid to Operations.**—Dreyer relates the history of the application of overpressure and underpressure in operations on the chest, saying that the positive-pressure procedure seems to have won most favor although all recognize that conditions with negative pressure are more physiologic. The use of oxygen instead of pure air has materially facilitated the method, as with oxygen the positive pressure need be only very little above normal. Intratracheal insufflation is a close competitor of the overpressure procedure, but he has found it difficult to get the right-sized catheter; too large, it hinders the outflow of air, and too small, it does not permit adequate inflow. He has also found difficulty in introducing the catheters without doing harm.

36. **Immediate Relief from Pain under Roentgen Rays.**—Eckstein declares that too little attention has been paid as yet to the analgesic action of the Roentgen rays. He discovered it accidentally in his own person when he sprained his hip-joint and suffered from constant pain. Finally he had it examined with the Roentgen rays to see if there was not some fracture in the joint, and to his surprise he had no more pain in the joint for a week and then it was mild and subsided permanently under a second exposure. The power of the rays to arrest pain immediately has been utilized in treatment of tumors, leukemia and pelvic disease, and it will probably prove equally effectual in neuralgia, gout, deforming arthritis, furunculosis, malarial spleen and tuberculosis. The dermatologists have long proclaimed its value in arresting pruritus with eczema, lichen ruber and fungoid mycosis. Eckstein relates several striking instances from his own practice; one patient after severe contusion of the spine came on crutches into the Roentgen room and left at once after the exposure, free from all pain, carrying the crutches in one hand.

Another promising field is to ward off after-pain in operative cases. The patient is wheeled into the Roentgen room and an exposure made as soon as the operation is finished, before he rouses, and not until then is he taken back to bed. Exposure of the chest and neck arrested reflex spasm preventing introduction of the larynx mirror in one case. Eckstein says that the above by no means exhausts all the indications for the analgesic action of the Roentgen rays. He has never witnessed any harm from the procedure. With inflammatory processes the results sustain his assertions of twenty years ago that checking the transmission of pain impulses seems to have an inhibiting effect on inflammation. He found that wounds dusted with an anesthetic powder healed much more rapidly than the controls.

### Deutsche medizinische Wochenschrift, Berlin

*September 3, XL, No. 36, pp. 1705-1724*

40 *Dietetic Treatment of Hyperacidity, Hypersecretion and Peptic Ulcer. H. Strauss.
41 *Progress in General Anesthesia by Inhalation. D. Kulenkampff.
42 *Indicanemia and Uremia or Azotemia. J. Tschertkoff.
43 Albumin Content of Tuberculous Sputum. (Eiweissgehalt im Sputum Tuberkulöser.) G. Hafemann.
44 "Peanut Milk" in Infant Feeding. (Erdnussmilch statt Mandelmilch.) R. W. Raudnitz.
45 *The Wounded in the Present War. (Aus Verwundetenlazaretten.) V. Czerny.
46 Advantages of Ethyl Chlorid for Minor Operations. (Kleine feldärztliche Mitteilungen; Chloräthylrausch.) L. Fränkel.

40. **Dietetic Treatment of Hyperacidity, Hypersecretion and Peptic Ulcer.**—Strauss expatiates on the significance of the frequent coincidence of these conditions and preliminary stages of ulceration in the stomach or duodenum. The irritation from the erosion or ulcer keeps up excessive secretion and the excessive secretion keeps irritating the ulcer. Treatment should aim to break up this vicious circle, and treatment for one should always include treatment of the other. Experience is showing that only the superficial ulcers are amenable to internal treatment. Ulceration that burrows deep into the tissues is more rebellious, as also ulceration in or near the pylorus as this entails disturbance both in motor and secretory functioning. To spare the stomach and yet give sufficient nourishment while at the same time combating hypersecretion and hyperacidity is best accomplished, he is convinced, by feeding fat. He gives it in the form of butter, cream, egg yolk and cream cheese but not bacon fat.

In a specimen case of gastric ulcer, nothing was allowed by the mouth for three days; nourishment to a total of 600 calories was given by the rectum alone each day. The main reliance in feeding was on cream, egg yolk, butter, soft custards, white cheese, and vegetables and chicken or pigeon meat. The vegetables and meat are forced through a sieve and not given till the twenty-second day. The stomach gets thus nothing for three days; 231 gm. the fourth to sixth days; 823 gm. the seventh to ninth, representing 1,296 calories, and so on to 2,829 gm. by the end of the fourth week, with 3,976 calories a day. Nothing but fluid foods are permitted until the stools have been free from blood for eight or ten days. Then ten or twelve days are allowed for healing before the patient is permitted to get up. Each case must be individualized as to duration of the periods, and preparation of the food to tempt the appetite. By planning the diet in this way to combat hyperacidity and hypersecretion, we can scarcely ever do harm, while the neglect of this has often wrought serious damage, he is convinced.

41. **Recent Progress in Inhalation Anesthesia.**—Kulenkampff remarks that the published statistics of the mortality from general anesthesia are generally compiled from the larger institutions and present a more favorable picture than is true of smaller institutions. He cites a recent American compilation from private or small public hospitals which places the mortality of ether anesthesia at 1 to 500. He says that a general anesthesia is an experimental intoxication, and that when mixtures are used the ingredients vaporize under different conditions so that the exact amount of either actually inhaled cannot be ascertained. With deep and regular breathing, inhalation anesthesia is very different from what happens when the respiration is shallow and irregular. The slightest change in the tint of the lips or aspect of the face is a warning that should be looked for every two or three minutes at least.

He protests most decidedly against Henderson's views, reiterating that everything should be avoided which in any way tends to increase the poisonous carbon dioxid in the body or cause its retention in amounts above normal. Free air, not oxygen, is the main thing. Kulenkampff emphasizes the necessity for the anesthetics being given so that they steal insidiously over the patient, saying that not the narcosis but the impatience of the operator is the danger. When very slight anesthesia is desired, he keeps talking to the patient and insisting on his answering and he gives more or less ether as the answers are rational or show confusion. When this simplest and entirely harmless "conversation *Rausch*" is not practical, he uses ethyl chlorid. The outward relaxation of the patient is less important than inward tranquillity. The main progress in recent years, however, he thinks, is in the use of apparatus; with them the maximal concentration is not left to the arbitrary judgment of the anesthetist.

42. **Indicanemia and Uremia.**—Tschertkoff has been estimating the proportion of urea and indican in the blood-serum in 120 cases, including 51 of Bright's disease. He tabulates the findings in 13 cases of nephritis without azotemia; in 14 of acute nephritis with azotemia; in 13 of chronic nephritis with azotemia and in 24 controls. He never found—independently of the food—retention of urea in the serum nor any indican when the kidneys were functionally capable in sick or well. Indican is found constantly in the serum whenever there is retention of urea in kidney diseases. Indicanemia unfailingly accompanies a urea content of 1.5 per thousand, and this with chronic nephritis is a sign of severe and irreparable changes in the kidneys. This does not have the same grave prognosis in acute nephritis as with the chronic form. Even after the azotemia has been corrected by appropriate measures, the indicanuria may persist as the only sign of insufficiency of the kidneys.

### Medizinische Klinik, Berlin

*September 6, X, No. 36, pp. 1441-1460*

47 Care of the Wounded in War. (Organisation des Feldsanitätsdienstes.) A. Köhler.
48 Epidemics during War Time. (Seuchengefahr im Biwak und in der Ortsunterkunft.) K. Brandenburg.
49 Care of the Wounded in Naval Battles. (Sanitätsdienst auf Kriegsschiffen beim Seegefecht.) Haenlein.
50 *The Accessory Cavities of the Nose in Connection with the Pathology of the Eye. (Bedeutung der Nasennebenhöhlenaffektionen in der Pathologie des Auges.) A. Elschnig.
51 Syphilitic Axillary Paralysis and Aneurysm; Two Cases. K. Tuczek.
52 Examination of the Urine for Sugar. (Welches sind für den praktischen Arzt die brauchbarsten Methoden zur Zuckeruntersuchung des Urins?) B. Glaserfeld.

50. **Importance of Sinusitis in the Pathology of the Eye.**—Elschnig expatiates on the great importance of the part played by the nasal accessory sinuses in the pathology of the eye. This is a discovery of the last decade, he says, and even now its importance is not appreciated until one witnesses the prompt cure of a recurring iridocyclitis, for example, when a suppurating process in an accessory sinus is discovered and cleared out. Neuritis of the optic nerve may develop from propagation of the suppurative process to the brain indirectly through the meninges or directly. In other cases the trouble is from compression of the orbit, eyeball or optic nerve from the enlarged sinus.

The most serious and the most common eye trouble secondary to sinusitis is inflammation of the optic nerve. He has encountered 16 unilateral cases of this kind; in 3 the ophthalmoscopic findings were normal, the neuritis being altogether retrobulbar; in 9 there were slight evidences of inflammation in the papilla and in 4 severe intra-ocular neuritis with choked disk. In 6 of the 14 cases measured, there was slight exophthalmos. In 7 cases the pupil was dilated but the reactions were not impaired. In 10 cases vision had been almost entirely lost on that side; in 3 there was merely central relative scotoma and in 3 absolute scotoma. Only in the severest cases was there restriction of the field of vision, especially for colors.

In all but 4 cases vision returned nearly or entirely to normal after treatment of the suppurative process in the accessory nasal sinus. In these 4 the eye trouble was of from four to fourteen days' standing; in 2 there was advanced intra-ocular neuritis; in 1 slight neuritis, and the findings were normal in the other case.

The sinus trouble ranged from mere catarrh to the severest hypertrophy, polyp growths or suppuration in the different cases, but only in 5 cases was the sinusitis suspected by the patient or physician, and only in one of these had its connection with the eye affection been suggested. The blind spot was not enlarged in any instance. When both eyes were affected the pupils were widely but irregularly dilated and the reactions were not always quite normal.

The diagnosis is peculiarly difficult when there is some nervous affection in addition to the sinusitis. Retrobulbar neuritis with central scotoma is by no means uncommon in multiple sclerosis. Sinusitis was found also in 3 cases of brain tumor and 1 of multiple sclerosis but the eye trouble persisted unmodified after the cure of the sinusitis under treatment. Syphilis was demonstrated in 5 of the total 35 cases of nasal sinusitis in ophthalmologic cases; orthostatic albuminuria, extreme indicanuria or cardiac defect was evident in one case each. In 5 cases the amblyopia had been attributed to tobacco poisoning until the sinusitis was discovered.

During the seven-year period in question, Elschnig has encountered 208 cases of disease of the optic nerve; the 35 cases with sinusitis thus form 15 per cent. of the total material. A cancer in the nose led to an abscess in the optic nerve in a case (soon to be published by Gradle of Chicago).

The prompt subsidence of the neuritis when the sinusitis is treated in time shows that with irritation of the optic nerve there is generally a curable stage if the toxic and mechanical influences can be removed. Sometimes vision improved immediately as the contents of the sinus were aspirated out.

### Münchener medizinische Wochenschrift, Berlin

*August 25, LI, No. 34, pp. 1833-1864*

53 *Diagnosis of Form of Pulmonary Tuberculosis. E. Romberg.
54 The Granular Form of the Tuberculosis Virus. S. Weiner.
55 Mechanism of Development of Presbyopia and of Cataract. (Entstehung der Weitsichtigkeit und des Stars.) F. Schanz.
56 *Insomnia and Restless Sleep. (Schlafstörungen.) C. Happich.
57 *Salvarsan May Prove Dangerous with Latent Insufficiency on the Part of the Kidneys. (Zur Pathogenese eines Salvarsantodesfalles.) W. Wechselmann.
58 Hygiene in War. (Kriegshygiene.) A. Dieudonné.
59 The French Infantry Bullet. W. Straub.
60 *Acute Nephritis from Chilling. (Fall von akuter Erkältungsnephritis.) Gehrmann.
61 Dressings for Gunshot Fractures. (Wundverband bei Schussfrakturen.) Schönwerth.

*September 1, No. 35, pp. 1865-1896*

62 *Roentgenograms of the Bladder. (Ueber Zystographie.) O. Zuckerkandl.
63 Action on Blood of Roentgenized Serum. (Experimentelle Untersuchungen über die Wirkung von röntgenisiertem Serum (X-Serum) auf das Blut.) J. Glaubermann.
64 *Industrial Poisoning in Manufacture of Fertilizer. (Ueber neuartige gewerbliche Erkrankungen in Kalkstickstoffbetrieben.) F. Koelsch.
65 *Fatal Poisoning from Chinconal. (Vergiftungstod durch "Chinconal.") V. Erdt.
66 Electric Treatment of Obesity. (Ueber therapeutische Erfolge mit dem Degrassator nach Dr. Schnée.) A. Schnée.
67 The Phenolsulphonephthalein Test of Kidney Functioning. (Unsere Erfahrungen mit der Phenolsulfophthalein-Methode als Prüfungsmittel der Nierenfunktion.) O. Hess. Commenced in No. 34.
68 Surgical Notes from the Front. (Chirurgische Beobachtungen vom Kriegsschauplatz.) P. Kraske.
69 Distribution of Pseudo-Dysentery Bacilli. (Verbreitung der Y-Dysenteriebazillen.) O. Mayer.
70 Vaccine Therapy of Gonorrhea. (Zur Gonorrhöebehandlung mit Gonokokkenvakzin Menzer.) F. Becker.
71 Care of the Wounded in Naval Battles. (Seekriegschirurgie und kriegschirurgische Dogmen.) M. zur Verth. Commenced in No. 34.

53. **Diagnosis of Form of Pulmonary Tuberculosis.**—During the last twenty years Romberg has paid special heed to the nature of the anatomic process at necropsy, comparing it with the physical findings recorded during life, and has found remarkable agreement between them, especially when shriveling processes are accompanied by progressive changes. The number of bacilli in the sputum does not seem to be a reliable criterion for the prognosis but the Roentgen findings often differentiate between proliferating and exudation processes and show up a cavity more reliably than percussion auscultation. In his service at Tübingen in about one-seventh of all the cases of a tuberculous process in the left lung alone it had started in the hilus. The area of resonance in the third and second interspaces, near the sternum, grows less and slight changes in the respiration murmur are evident; a pathognomonic cavity develops here by preference. The process spreads from this point. Similar changes develop only rarely on the right side. Sometimes the first physical changes are between the shoulder-blades toward the right or at the right margin of the heart or, rather later, in the

right axilla. It is more difficult to obtain characteristic findings on the right side, and they are not evident so early. Roentgenoscopy alone will clear up the diagnosis in these puzzling cases.

Secondary catarrh and inflammation play an important part in the clinical picture. If physicians realized the frequency of these secondary complications and promptly favorable course as a rule—modifying materially the clinical picture—they would not jump at erroneous conclusions so often and ascribe the improvement observed to the medicine the patient happens to have been taking at the time. The literature on tuberculosis and on remedies for tuberculosis is eloquent testimony to the wide-spread ignorance in the profession of the prevalence of these complicating affections.

56. **Sleeplessness.**—Happich cites data to reaffirm anew the importance of directing our measures to the vascular system in treatment of disturbances in sleep. During slumber the tonicity of the vessels of the brain is reduced and the height of the pillows may be a factor in inviting or driving away sleep. Some persons do not sleep soundly because their pillow is too low, while the anemic require a high pillow or the relaxed vessels will not send blood enough into the brain. All measures which actively dilate the peripheral vessels tend to interfere with sleep; besides a hot bath and exhilarating doses of alcoholic drinks, he mentions a certain amount of physical exercise as tending to drive off sleep. He also lays great stress on the breaking up of habits of going to sleep under certain conditions. When sickness in the family, travel or worry has broken up the regular automatism of going to sleep, it has to be learned over again, and here sleep-producing drugs render valuable service, starting the automatic mechanism to work anew. But he does not approve of knocking the patient down, as it were, with a dose of the narcotic at bedtime. He gives a small dose of a sedative after the noon meal, again between 5 and 6, and again at 9. Thus taken, the sedative merely wards off the natural excitement of the close of day; the culmination of the various happenings of the day causes in all of us, he remarks, a kind of excitement or fever in comparison to the morning. By excluding this, sleep comes naturally. The importance of regulating the circulatory system as the main point in treatment of sleeplessness is illustrated by the case of a young wife under the emotion of the sudden death of her husband, who was given morphin and other narcotics but they only increased her excitement until it became almost delirium. Happich then had hydrotherapy applied, packing her entire body, and she quieted at once as the circulation became modified. The narcotics were then able to exert their effect and in half an hour she was asleep.

57. **Discussion of Fatalities after Salvarsan.**—Wechselmann reiterates that a certain proportion of these fatalities are due to the inability of the kidneys to eliminate the poison. The trouble is, in fact, a retention toxicosis with uremic symptoms. For this reason he never gives an intravenous injection of salvarsan to a pregnant woman without first testing the functional capacity of her kidneys with Schlayer's milk sugar technic at least. This reveals that many pregnant women whose kidneys are apparently functioning normally, in reality are suffering from kidney derangement to such a degree that superposing any extra task would bring on an inevitable break-down. The renal vessels often showed impairment while the tubuli were evidently still normally capable. In one case of pregnancy eclampsia, the tests revealed the typical findings of vascular hyposthenuria. In others they showed that the oliguria at the end of pregnancy does not necessarily imply anything wrong in the kidneys. The pregnant organism is already under such strain that it seems wiser to go below the dosage of salvarsan usual under other conditions, and to commence with small tentative doses, starting with 0.15 gm., subcutaneously, up to 0.45. In the fatal case reported by Frühwald recently, the patient was a girl of 18, six months pregnant. He made an intravenous injection of 0.75 gm. neosalvarsan in 2 c.c. fluid and repeated the dose five days later. The next day the girl developed hemorrhagic encephalitis and died in the evening. The kidneys may have suffered from previous infections, mercury or alcohol, so that they are unequal to the task of eliminating salvarsan in the usual dosage. This insufficiency should be detected in time and the dosage planned to conform to it.

60. **Acute Nephritis Following Chilling.**—Gehrmann relates that a man of 28 was revived after having been nearly drowned. He had been under water for five to seven minutes and died the next day of cardiac insufficiency. Necropsy revealed entirely acute hemorrhagic nephritis in a pronounced form. The rapid development of the nephritis after the chilling and the discovery of it so soon at necropsy, makes the case almost a clinical experiment.

62. **Cystography.**—Zuckerkandl gives a number of Roentgen pictures taken with technic similar to that for pyelography, showing different pathologic conditions in the bladder, and compares them with the histories in four cases of infiltrating cancer of the bladder, twelve of a pedunculated tumor in the bladder with no infiltration at the base, and a few cases of hypertrophied prostate. Very instructive findings can thus be obtained by filling the bladder with a weak collargol solution and taking the roentgenogram, then emptying the bladder and taking another, the conditions otherwise the same. Enough of the shadow-casting fluid will cling to a tumor or stone in the bladder to cast a shadow in the second roentgenogram. With a pedunculated tumor, filling the bladder with air after evacuation of the fluid may lift up the tumor. When cystoscopy was impracticable for any reason or gave dubious findings, this cystography proved extremely instructive. The fluid ran up into the ureters sometimes but this never was misleading.

64. **Industrial Poisoning in Manufacture of Fertilizer.**—The artificial fertilizer made out of lime subjected to intense heat contains about 57 per cent. cyanamid, and to this Koelsch ascribes the peculiar intoxication presented by the workers when they take alcohol. At other times the workers feel in usual health, but at the first or second swallow of the beer, wine or whiskey, the face and neck and shoulders turn deep red as if they had been burned, the discoloration on the trunk and arms resembling a scarlatinal eruption. The conjunctiva and mucosa in the mouth and throat are also extremely red. The extremities are cold; the respiration and heart-beat are accelerated. The attack lasts an hour or two, and if the man vomits or the bowels move, improvement follows at once. The more dust in the air of the workroom, the severer the attack if liquor is taken afterward. Since the workmen noticed the connection between liquor and the attacks they mostly refrain from alcohol in any form and the attacks do not return. The company supplies gallons of coffee free to the men and the place is better ventilated now.

65. **Fatality from Chineonal.**—Some chineonal tablets fell into the hands of a child of nearly 3 and it swallowed nine tablets during the day. At 7 the child seemed very sleepy and fell off its seat and vomited. The physician found arms and legs as if paralyzed, reflexes abolished, and stupor and cyanosis followed. The child died at 10 without having responded to lavage of the stomach and stimulants and artificial respiration. Necropsy failed to reveal any chemicals except that from 200 gm. of brain substance a few crystals were obtained which were evidently veronal, chineonal being a combination of veronal and quinin. The child had taken in the tablets 0.648 gm. veronal in six or eight hours. The lack of hyperemia in the brain showed that the fatality could not be ascribed to the quinin, although this probably aided in weakening the resisting powers. The antidotes for veronal poisoning are cited as ether and caffein, and for quinin poisoning, coffee, tea, injection of ether and atropin. Erdt suggests that possibly atropin might be tried for chineonal poisoning. In the case reported the father insisted that the physician was alone to blame for the child's death, declaring that he had suffocated it during the rinsing out of the stomach.

### Zentralblatt für Chirurgie, Leipsic

*September 5, XLI, No. 36, pp. 1433-1464*

72 *Resection of Lobe of Lung with Hermetic Closure of Stump of Bronchus. (Exstirpation von Lungen und Lungenlappen mit Versorgung des Bronchialstumpfes durch frei transplantierte Fascia lata.) K. H. Giertz.

72. **Resection of Lung.**—Giertz says that it is a simple and comparatively harmless matter to remove the entire lung of a rabbit or other small animal, ligating the hilus stump. It is not necessary to ligate separately the stump of the bronchus. None of the rabbits in his experiments died. He found that rhythmic intermittent positive pressure kept up the respiration perfectly. The operation is more difficult the larger the animal, but he succeeded in eight of ten large dogs in a still more complicated operation, closing the stump of the bronchus air-tight, reenforcing the suture with a small flap of fascia lata, sutured to cap the bronchus stump and then buried in living tissue. The day after the operation even the larger dogs were up and at play. There was no primary infection in any case.

### Gazzetta degli Ospedali e delle Cliniche, Milan

*August 30, XXXV, No. 104, pp. 1089-1104*

73 *Operative Treatment of Aneurysms. R. Mosti.

*September 6, No. 106, pp. 1121-1136*

74 Refutation of the Arguments of the Antivaccinationists. (La vaccinazione antivailosa.) C. S. Materazzi.

73. **Operative Treatment of Aneurysms.**—Mosti reviews the long history of operative treatment of aneurysms and emphasizes the advantages of excising the sac, illustrating his remarks with a typical case. The patient was a man of 37 and the aneurysm in the lower third of the femoral artery had developed rapidly and attained a large size in two months causing intense pain and other disturbances. The aneurysm was opened, the clots were cleared out and then the sac was released from the numerous adhesions binding it down and was removed. A small piece of the wall had to be left adherent to the femoral vein. Except for a slight transient rise in temperature, recovery proceeded smoothly for nearly a week when the skin of two toes became gangrenous, but after removal of the gangrenous skin conditions returned to clinically normal and by the end of two months the man was completely cured.

### Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

*July 4, II, No. 1, pp. 1-104*

75 *Treatment of Chronic Intestinal Catarrh in Children. J. C. Schippers.
76 Paraffin Prothesis for the Eyeball. (Insluiting van paraffinekogels in sklera-buiden en kapsel van Tenon.) R. Speleers.
77 Workmen's Compensation Legislation. J. A. Korteweg.

75. **Intestinal Catarrh in Children.**—Schippers reports nine cases of long chronic intestinal catarrh in children from 1½ to 5 years old in which he succeeded in curing them by restriction to concentrated albumin milk, 1 liter a day, for ten to twelve days. Albumin milk has proved effectual in infant feeding, and Schippers explains how the same factors at work in infancy may prove effectual in the disturbances in older children resulting from intolerance for carbohydrates. In certain cases the intolerance for carbohydrates leads to chronic catarrhal irritation in the bowel. The stools are spongy, with gas bubbles, have a sharp acid smell, give the reaction for acid with litmus paper, and Gram-positive bacteria are found on smears. It is in cases of this nature that surprising benefit follows when the diet is modified to contain large proportions of albumin with very little carbohydrates. L. F. Meyer has published a standard diet for such cases, containing albumin, cheese, meat, etc., but very little carbohydrate. Schippers uses a bean soup, which has a high albumin content, instead of the expensive commercial food recommended in Meyer's ration.

But better than all this, for reasons which he describes in detail, is a systematic ten to fourteen days' course of albumin-milk feeding. He gave the children one liter of undiluted, concentrated albumin milk, with nothing else but rice water sweetened with saccharin. In one, two or three days the child appeared normal, and for the first time in months, possibly, the stools were no longer fetid or mucous. This course of albumin milk was followed by a diet according to Meyer's outline. The albumin-milk treatment gives the intestine a chance to rest, the balance between the flora of the small and large intestine becomes restored and the child becomes able to tolerate carbohydrates better. The formula of the albumin milk he used calls for: 3.6 per cent. albumin; 1.5 to 1.6 per cent. milk sugar; 3 per cent. maltose; 2.8 per cent. fat and 0.62 per cent. mineral elements. It represents 572 calories.

### Hospitalstidende, Copenhagen

*September 2, LVII, No. 35, pp. 1081-1112*

78 *Animal-Parasites Cancer. J. Fibiger. Commenced in No. 34.

*September 9, No. 36, pp. 1113-1136*

79 Treatment of Recent Subcutaneous Fracture of the Patella; Fifteen Cases. P. Zachariae.

78. **Animal-Parasite Cancers.**—In this second and last instalment of his report Fibiger gives the microscopic findings in several of the twelve rats which he fed on cockroaches infected with the *Spiroptera*, as described in these columns October 3, p. 1244. The results of this recent research confirm those of his former work in this line, demonstrating the development of malignant disease under these conditions. In one rat there was pluricentric development of the cancer; this rat was killed the sixty-fifth day. The malignant disease developed under the action of the *Spiroptera* even in some quite young rats. The cancer developed in three or four months in the rats and in one case there was metastasis in the lungs when the animal was killed the hundred and fourth day. His total material now includes nineteen cancers developing in the stomach after feeding the rats with roaches infected with *Spiroptera*. This he regards as meaning that under certain conditions one-half or four-fifths of the animals infected develop cancer, and that no individual predisposition is necessary for this.

### Ugeskrift for Læger, Copenhagen

*September 3, LXXVI, No. 36, pp. 1541-1578*

80 *Roentgen Treatment of Superficial Cancer. (Om röntgenbehandling of hudkræft.) J. Nordentoft.
81 *Experiences with Roentgen and Radium Treatment of Cancer. S. Nordentoft.

80-81. **Roentgen Treatment of Cancer.**—J. Nordentoft tabulates the minute details of the twenty-one cases of external cancer in which the patients are apparently cured as the cancer has vanished and there has been no sign of recurrence during the interval since, which ranges from a few months to three years. The tumors were all on the face except one at the mouth of the urethra.

S. Nordentoft was the first physician in Denmark to report a case of deeper cancer with multiple metastases in which a clinical cure was realized with Roentgen exposures. The young woman had had one ovary removed fifteen months before for a supposed benign tumor; the cancer was in the remaining ovary which was then removed. Three weeks afterward the Roentgen treatment was commenced when already there were several metastasic lumps to be felt; one in the pouch of Douglas was a knobby tumor as large as a fist. The Roentgen treatment was applied systematically and the metastasic tumors subsided; others developed at other points again and again and each time they retrogressed under Roentgen exposures. Several times he had expected to present her at a meeting of his medical society but each time new metastases developed in the interval between the sending in of the notice and the meeting. At present no tumors can be palpated and there is nothing apparently abnormal in the pelvis except that the serosa is rough and irregular in the pouch of Douglas. He has not given up hopes of a final cure as the metastases develop now with longer intervals and seem to be more susceptible to the Roentgen rays. There is also a kind of auto-immunization to be counted on, like a vaccine therapy, from absorption of the cancerous tissue. He reports further a number of other cases of cancer given Roentgen treatment with encouraging results. He regards it as superior to operative measures even for superficial cancers, as it does not sacrifice any tissue, even the stroma of the cancer is saved, and he believes that there is less danger of recurrence. Last but not least, patients come for treatment at an earlier stage when they know they do not have to submit to a mutilating operation. His experience with radium, on the contrary, has been unfavorable. Treatment of cancer, he reiterates, requires individualization and skilful application of adjuvants as needed.

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# THE STANDARDIZATION OF THE SURGEON *

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In discussing that phase of this symposium which has been assigned to me, namely, the standardization of the surgeon, there are certain fundamental facts that must be clearly understood. In the first place, it must be determined what one means when one uses the term "surgeon." In the second place, what is to be the basis of the standardization? Elsewhere I have endeavored to define the surgeon as a member of "a profession ennobled by men actuated solely by their desire to devote their time and their talents to the relief of suffering humanity, willing, yes, glad, at any time, if need be, to lay down their own lives for those of their fellow men; whose membership should embrace only men of singleness of purpose, unselfish, high-minded, zealous in their efforts to wrest from Nature the keys to her many mysteries; men who unconsciously, perhaps, in character and conduct, reflect in varying degree the life and spirit of the Great Physician; a profession free from taint of commercialism or graft, in which there shall be no room for the base, the unscrupulous, the ignorant or the unskilled; in which the test for membership has to do only with character and attainment." Are our ideals too high? Are we striving after the unattainable? Is it worth while to make the effort?

It is quite likely that the average man, if called on to define a surgeon, would say something like this: "a man who does surgery," meaning, of course, one who devotes his time and attention exclusively to this branch of medicine. But will that definition of the term be generally accepted by the members of the profession? As a matter of fact, is it not true that a great many doctors without adequate training consider themselves surgeons, qualified to practice surgery, and actually do perform surgical operations in all cases that offer, whether major or minor? Is it not true also, that a great many patients are being operated on who ought not to be operated on? To these questions candor and the facts compel us reluctantly to answer in the affirmative. It is our duty then to try to establish at once certain standards to which a man must conform before he can rightly enjoy the distinction that belongs to the title of Surgeon.

Let us consider the following:

1. The necessary education and training preliminary to the medical course. This is a most important and far-reaching factor, the full consideration of which would of itself take a large portion of the time at our disposal. It cannot, therefore, be more than referred to in passing. What form should it take, the usual collegiate course leading up to the A.B. or B.S. degrees as at present proscribed in our colleges and universities, or a specially arranged course in which the relative proportions of the sciences, languages and the humanities would be better adjusted than at present? How large a part should training in the mechanical arts play in this new scheme? Is it necessary or advisable that the applicant for admission to the medical school should have a college degree at all, as a prerequisite to beginning the study of medicine? These and many other questions press for an answer, but their consideration at this time would lead us too far afield.

2. Medical instruction in the medical school proper, the length of time required and the particular function and form which this should assume.

3. Hospital service and apprenticeship with an older and experienced surgeon, the length of time advisable, and the character of the work to be performed.

4. The special tests to be required before the individual is allowed to practice surgery. What should be the character of this examination? Should it be theoretical or practical or both, and how thorough? Under whose authority should it be held? Who should constitute the examining board, by whom the license to practice is to be granted? How comprehensive should this license be? Should it be limited as to time of graduation and be supplemented by later and more rigid tests, or should it be a liberal and final license to practice without further review?

5. Continued supervision over the work of the individual surgeon, with power to revoke his license in case of undoubted evidence of moral turpitude or professional unfitness to continue the practice of so serious a profession as that of surgery.

All these and more are burning questions at the present time, and one cannot arrive at any sort of satisfactory or final conclusion without a thorough consideration and study of the underlying educational, moral and ethical principles. For looked at from every point of view, one cannot get away from the fact that there is a moral side to this whole question as well as an ethical and professional one. I shall attempt in my discussion of the standardization of the surgeon not to lose sight of the relative importance of these various factors. The discussion of medical education proper, and of the character of the hospital and hospital work required of the prospective surgeon will be left to those to whom these topics have been assigned.

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* Read before the joint meeting of the Section on Surgery, General and Abdominal, and the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, June, 1914.

It will be apparent at once that it is an extremely difficult matter to state any definite standard for the surgeon. What shall be the basis of this standard? Who shall be the judge? What will be the machinery by which these standards shall in the first place be set up, and in the second place enforced? Should it be by the authority of the profession itself backed up by professional public opinion, or shall it be by the authority of the state, or by a combination of the two? It goes without saying that the standards must of necessity be high, for there is no profession that demands such exacting requirements of its members as that of surgery. It can be more truly said of the surgeon than of any one else that he holds the life of his fellows in his hands. An error of judgment in diagnosis, or in execution, lack of familiarity with the latest approved methods of dealing with certain conditions, defects in technic and many other considerations, some of them apparently minor, may decide and frequently do, between a happy restoration to function or to health and a life of invalidism; between life and death. This picture is not overdrawn, as every surgeon within the sound of my voice well knows. It behooves us, therefore, as a profession, at the very beginning of a discussion of this sort, to get firmly fixed in our minds the fact that of the surgeon as of no other man, owing to the exigencies of his profession, the public has a right to demand certain requisites, namely, that he should possess physical, mental and moral qualities of no mean order, and that the ability of the individual to fulfil these requirements should be passed on by competent authority. If I read the signs of the times aright, if the profession does not willingly accede to this demand, indeed, if it does not take the initiative and itself assume control of the machinery of this supervision, the public will rise in its might, take it out of the hands of the profession, where it rightly belongs, and in all probability give another illustration of the all too common experience in our public life of foolish and extreme legislation enacted by those not competent or capable of fully comprehending the real requirements of the situation. In this way the proper abatement of abuses, and the settlement of questions, the advisability and necessity for which have been generally admitted for a long time, is not infrequently indefinitely delayed. Let us consider these questions briefly and in order, for they are fundamental to a proper conception of the subject in hand.

Every surgeon recognizes the fact that the drain that is made on his physical strength and nervous energy in the performance of his professional duties is enormous. His hours are irregular and long, his time is not his own, he must subordinate his own interests to those of his patients. The average lifetime of the surgeon is short. He cannot stand the strain beyond a certain point, and that is the breaking point. The physical aspect of the question is, however, as nothing compared with the responsibilities involved. It is these which kill. It is not necessary to do more than to allude to this fact, which is so well recognized and understood by those present. There are only a comparatively few who are temperamentally so constituted as to stand the inevitable nervous wear and tear incident to the profession. Too little attention has been paid to this fact. However, at the present time, I do not see how this aspect of the question can be dealt with by rules or by legislation or in any other way, except for the conscientious teacher in the medical school to take the time from his busy life to interest himself sufficiently in his students, to study them and know them and their characteristics sufficiently well to advise them for or against surgery as the choice for their life work. But, you say, this is not possible! It probably is not, as medical schools and medical education are constituted at the present time. But the hope for the future development of the profession does not lie entirely outside of considerations such as these. Small classes, personal association and touch with the instructors, that close communion which is so delightful between the devoted teacher and the earnest student, will go a long way toward solving this and many other difficult problems that concern either directly or indirectly the standardization of the surgeon. For it not infrequently happens that the best things that the student receives from his instructor, if he is a real teacher, are not what he gets in the class-room or laboratory, but what he absorbs unconsciously from personal contact, from observation and study of correct methods of thought and work, rather than from precept, or by word of mouth.

Among the requisites necessary for a surgeon is a certain saneness of mind, better understood than described. While now and then some erratic genius will, meteor-like, appear on the surgical horizon, a closer analysis will usually show that like the celestial visitor he shines with great brilliancy for a moment, but leaves behind him little that is tangible or lasting. In general the really constructive, original, scientific work has been contributed by the thoughtful observing surgeon, who has taken the time and given the requisite amount of study to the finding out of the causes of certain phenomena observed by him in the course of his work, or the explanation of certain problems which have hitherto baffled the efforts made toward their solution.

The examination tests, both practical and theoretical, should be prepared with the idea in view of determining the ability of the would-be surgeon in matters of diagnosis as well as treatment, in the science as well as the art of surgery. Information and assistance should be sought from the former instructors and associates of the student in order to determine, as far as possible, his fitness for the performance of the special duties required of the surgeon. As far as it is possible to do so, due weight should be given to the physical and temperamental as well as mental and moral characteristics of the applicant for license to practice surgery. Definite standards along these lines cannot be fixed, from the nature of the case, but certain unwritten ideas and ideals can and should be established and conformed to as far as possible.

What shall we say as regards the moral standards of the surgeon?

How comprehensive shall they be, and how shall they be applied? On a former occasion, I gave expression to my ideas as to the absolute necessity for standards of character, as well as ability and attainment along other lines. It would seem unnecessary on an occasion such as this and before this body of surgeons, composed, as it is, of representatives from all parts of the country, to enter into any extended argument as to the necessity for the requirement of moral tests on the part of those who desire to practice surgery. Unfortunately, the fact remains that for some reason or other there exists in the minds of certain individual members of this Association, and, if reports are true, a not inconsiderable number, ideas and standards of professional morality so low as to permit them to indulge in certain practices which are unethical and immoral, and which tend to degrade not only those who employ them but reflect on the entire profession. I am speaking, of course, of that species of graft and corruption which is commonly known under the term of "fee-splitting," and which is practiced in a variety of forms. I am well aware of the fact that there is a difference of opinion among surgeons in different parts of the country on this question, but I have never yet heard a man excuse the practice on any other grounds than those of expediency. Every honorable man, I feel sure, condemns it as dishonest and wrong, and as tending toward commercialism and demoralization on the part of those who practice it. It is defended solely on the ground that others do it, that its existence is well recognized, that it is well-nigh universal in some localities, that some of the best men in the profession do it, that one must practice it in order to make a living; all or most of which may be, unfortunately, true. But is it right? Is it honorable? Is it honest? Should we as a profession submit quietly to such a condition of affairs even if it has the endorsement, tacit or open, of individual surgeons of otherwise good reputation and standing, or of local or state medical societies. Fraud it certainly is to divide fees with another, unknown to the patient; to take money that does not belong to you, and weakly constituted as human nature is, corruption and graft are as sure to follow such practices as night is to follow day. Not only this, but the man who will trade on the credulity and trust of his patient, when the test comes, will not always hesitate to jeopardize his patients' life and health by calling in the incompetent instead of the competent surgeon, for the sake of the rake-off.

There is another aspect, however, to this question of the moral standard for the surgeon besides the strictly professional. It must include his relationship, in a large and less personal sense, to the public. What do we find to be the actual facts in the case, for we must deal with things as they really are, not as they ought to be, if we hope ever to accomplish anything in the way of improvement? The personal relations between the medical man, whether physician or surgeon, and his patients are of such a close and intimate, we may almost say sacred character, that no breath of suspicion should taint the reputation or blight the professional life of one who would be a surgeon. He must keep his reputation as clean and his character as spotless as his instruments and his hands. If he would avoid becoming a reproach to his profession, if he would attain the fullest development of his great possibilities, the technic of his private life must be as rigorous and as flawless as that of his operating-room. Some there are, unfortunately, who in spite of flagrant and repeated violations of professional and private honor have attained a high degree of eminence. But that they have been able so to do is due solely to a deplorable lack of appreciation on the part of certain communities in particular, and of society in general, of the fitness of things, and to a disinclination to apply appropriate remedies to disordered social conditions.

As to the personal relations that should exist between patient and surgeon, surely there can be no question. As to the professional relationship, there should be room for little more difference of opinion than in case of the personal relationship, but, unfortunately, there is a decided difference of opinion. For here we are face to face with a discussion of the rights of the surgeon as against the rights of the patient. Is there any real antagonism between the two? How shall each be safeguarded? The patient on his part has a right to demand from his surgical attendant service equal at least to the best that is ordinarily rendered by other competent surgeons under similar circumstances. At once the question may be raised, "By what standards is the efficiency of service to be judged, and who shall determine the custom that prevails in any community?" Admitting the force of these questions but waiving them for a moment, observe the fact that there is also a moral side to this question as well as to the personal relation. The surgeon, if he knows anything, must appreciate the fact that he is or is not competent to do surgery. If in his heart he feels that he is not sufficiently well prepared by education or training to grapple with the many complex problems involved, it is his duty (and he cannot get away from it by any form of subterfuge) to discontinue at once its practice, until by further study and observation, under competent instruction, he has overcome the real objections to his practicing. You will say that this entails unnecessary hardship and expense on an ambitious man, and handicaps him in the race for a livelihood. True; but the good of humanity and the honor of the profession demand that only those properly qualified should be allowed to practice surgery. If under these circumstances he still continues to perform surgical operations and receive fees therefor, he is guilty of a misdemeanor in that he is receiving money on false pretenses. We all make mistakes. I am not now referring to this fact, which every one recognizes as a necessary corollary to human frailty. The true significance of what has just been said will not be misunderstood or lost in this audience, for I am sure that everyone recognizes the difference that exists between the one who habitually, from lack of sufficient training and knowledge, is making serious mistakes in both judgment and execution, and those occasional mistakes common to us all, due to the limitations imposed on us as human beings.

The same moral principle is involved in the matter of the size of the fee. The fact that one can charge and collect a fee several times larger than it should be, does not make it right. The operator, if he knows anything, knows whether or not the services rendered could have been just as skilfully and satisfactorily rendered by any one of a half dozen other surgeons in the same community. He must know too, in a general way, what others in that neighborhood charge for similar services; but if this method is unsatisfactory and the surgeon insists that he has a right to charge anything he pleases for his services, regardless of what any one else may charge, a position which within reasonable limits cannot be questioned, what then is to be the basis of his charge and what are reasonable limits? He may say, "I saved your life." But did he? How does he know? How many times can this be truthfully said? Every surgeon can recall cases in which he has thought that the patient would surely die and then has seen him go on to complete recovery. The reverse is equally true. Who can say beyond peradventure of a doubt whether this was because of or in spite of treatment? And even if it were literally true that the surgeon had saved life, can the value of human life, of health and happiness and the other complex factors involved, be expressed in terms of dollars and cents? I think not! But the patient has a large income. True, but owing to the legitimate demands from a dependent family and relatives and other just and sufficient causes that cannot be put aside, some persons are poorer with a large income than others, without any financial obligation, are with a small income. No, fellow surgeons, if we would be true to ourselves and to the best traditions of our noble and unselfish profession, we must apply some other standards than these. We must base our charges fundamentally on more definitely tangible and determinable factors than those mentioned. We must consider such factors as previous training and special skill, and the amount of labor and time expended on our part, and the responsibility involved, and then try to adjust and accommodate these to the patient in straightened circumstances, and to keep within certain firmly established bounds in the case of the rich. This question cannot be so easily settled as by reference to a fee table; it must be based on the broad principles of equity and according to certain established standards.

It is not a pleasant task, nor an attractive sight, to wash one's dirty linen in public. But one thing is sure: if we do not perform this unpleasant duty, someone else will do it for us. Is it not high time then that we seriously undertook this urgently demanded reform? Some one, however, will ask, If this is all true, how did it come about? Who is responsible for the deplorable condition of affairs that exists at the present time? Certain it is that such a condition of affairs could exist only where standards of professional ethics and attainment are low. Is it not true that the pollution of the stream is at its source. Let us not shut our eyes to the facts. The medical schools themselves are among the greatest offenders in this respect, by reason of the failure on their part so early and so thoroughly to imbue their students with a code of ethics so lofty, a standard of honor so inflexible, with ideals so high that they are utterly incapable of becoming a party to such debasing and degrading acts as those which we have been discussing. Unless our principles of morality in its broadest sense are deep rooted and firmly fixed, and that early in our professional careers, we are in constant danger of falling when temptation comes. And who is free from it in some form or other? No, in general, our medical schools and the members of their faculties are singularly negligent of their duty, in not inculcating in the medical students under their care, by both precept and example, standards of high living and high thinking. In such soil as this, noxious weeds such as improprieties of conduct toward one's patient or professional brother, fee-splitting, self-advertising, extortionate fees and the like, do not flourish. Reforms, then, such as have been indicated, are sorely needed in the moral tone of our schools, and in the personal conduct and professional example set by many individual members of the various medical faculties. The same thing has been true, to a greater or less degree, in the hospitals. They have reflected the moral and educational tone of the medical schools. A stream rises no higher than its source. Thanks to the efforts of Codman and others, the standardization of hospitals is no longer regarded as the idle dreaming of a visionary, but in all probability will shortly become an accomplished fact. Make the standards of the medical schools and hospitals what they should be morally, intellectually, scientifically and with regard to efficiency, and the standardization of the surgeon will be rendered a far easier task.

There are certain ways in which these much-to-be-desired reforms can be accomplished. They can be grouped into two main classes, by the state and by the profession itself. It is at once apparent that the average legislature, composed as it is of men of all sorts and conditions, untrained and ignorant of the real needs, is not a fit body to enact laws for the guidance and government of either the profession or the public in matters of surgery, and the proper performance of surgical operations. It is self-evident, therefore, that the only proper body capable of remedying existing evils and providing an adequate and satisfactory solution of the problem involved is the profession itself. There are several agencies within the profession, any one of which might take the initiative. But there are certain obvious reasons why none of these organizations is ideally fitted to do the work. The medical schools which educate and train the future surgeons would seem to be the proper source whence such a movement should originate. But I have just indicated how little is to be expected in this direction. One has but to turn to Flexner's report to the Carnegie Foundation to find the true condition of affairs, so far as the whole country is concerned. Conditions have improved materially since that report was written, and largely because of it. But is any one foolish enough to think that any concerted course of action could or would be agreed on by the medical schools? Does any one seriously think that the necessary legislation effectively to control this deplorable state of affairs could be obtained in anything like a reasonable time? Certainly the past history of these institutions in matters of this sort does not warrant the indulgence of any such hope. No, there is nothing at the present time to be expected from the medical schools as such. Indeed, as has already been stated, they are the chief offenders in that they do not inculcate into their students in such a manner, or to such an extent, standards of morality and ethics, ideals of professional conduct that are so inbred in the student and are so much a part of his very life that after he leaves the medical school he is utterly incapable of anything but the continual practice of the golden rule. This sounds Utopian; but if the medical schools and the individual members of the faculties of those schools did their whole duty by both precept and example, there would be but little need for such a symposium as this, for the standards of professional conduct would be so high for each individual surgeon that instantly its influence would be reflected in both private and hospital practice to such an extent that unconsciously the standardization so much desired by those who have most at heart the welfare of their fellow men and of their beloved profession would be quietly and quickly brought about.

Then there is that great and powerful organization, the American Medical Association, of which this Section is one of the component parts. What of it? One has but to refer to the minutes of its past meetings to be struck with the paucity of the recorded efforts made to bring about these universally admitted and much-needed reforms. Why this strange lack of interest on the part of the profession as exhibited in its accredited representative body? What is the reason for this apparent indifference and inactivity? Is it a spirit of self-complacency? Is it the fear of washing our dirty professional linen in public? Is it a feeling of pessimism that prompts the question "What's the use? You cannot do anything to stop it." Whatever the reason, is it right to sit still and not make at least an earnest effort to right the wrong that every one knows exists? Is it not true that whether we will or no, in this, as in every other respect that concerns his physical or moral welfare, we are "our brother's keeper?" If our professional brother does not know enough to distinguish between a patient who ought to be operated on and one who ought not to be, and if he does not know how to do the operation properly, he ought not to be allowed to operate at all; and if our lay brother does not know enough to distinguish between the properly trained surgeon and the ignoramus, he should be protected from the result of his own ignorance and folly by differentiating for him between the fit and the unfit, and by conferring on the fit some badge of distinction that the public can readily recognize.

There is already in existence an organization formed for the very purpose of accomplishing the reforms of which we have been speaking. It is as yet young, but vigorous, virile, democratic, free from all entangling alliances, willing, ready and eager to perform this all-important and so long neglected task. Indeed, it has already made its influence and power felt in certain communities and along certain lines. This is well shown by the enemies it has made. It can and will accomplish every one of these desired reforms, if only the profession is ready and willing to cooperate with it in its disinterested endeavor to do the work that is so urgently demanded. This is no time for sulking in your tent, just because you feel that the thing is not being done in your way; because the initiative was not taken by this or that organization, or because it was taken by the particular one that did have the courage of its conviction, and did make an effort to correct the evils that every intelligent member of the profession knows to exist.

I hold no brief for the American College of Surgeons. It needs none from me; and if it did, this would perhaps not be the proper place or the proper time to submit it. What it has already accomplished speaks louder than any word of mine. Nevertheless, as a member of both organizations and a disinterested well-wisher of both, it may not be out of place at this time and in this presence, to express the hope that the older society may see its way clear in the near future to modify somewhat its apparently studied policy of ignoring in The Journal and its other publications the existence of the younger organization. Would it not rather be the part of wisdom to aid and encourage by the weight of its influence and authority every effort made by any responsible, intelligent body of men directed toward the good of humanity and the uplift of the profession? This is no time for the exhibition of petty personal or professional jealousy or spite. The stake is too great! Rather let us get together like men and brothers, bound in a common cause against a common enemy to benefit humanity, to put down corruption and graft, to cleanse our professional escutcheon of the foul blots with which it is stained, to elevate the ideals and the whole tone of the profession, to encourage research and study, to increase the efficiency and to raise the standard of every individual surgeon. It would be shameful to delegate these functions to another, to have them usurped by the state, as will surely be the case through failure on the part of the profession, by reason of professional politics or petty jealousies and misunderstandings, to do what it is clearly its own duty to do, namely, to set up certain high standards of character and attainment which must be rigidly conformed to by every one who would practice surgery.

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# THE SURGICAL SERVICE IN HOSPITALS *

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In order properly to treat the subject under consideration, it is necessary for us to understand just what is meant by the "surgical service" in a hospital. Naturally we think first of the operating-room, and too often the impression is left, either by writers on the subject, or by hospital surgeons or administrators, that the terms "surgical service" and "operating-room service" are synonymous. To a certain extent this is justified, for the character of the operating-room service may usually be taken as an index of the standard of the surgical service rendered in the hospital. On the other hand, while it is hardly possible for us to imagine a hospital with good surgical service in the wards, but poor service in the operating-rooms, it is perfectly easy for us to conceive of first-class operating-room service and poor ward service existing in the same institution. I prefer, therefore, to consider the subject in its broader sense as covering all surgical work done, with the operating-room work forming but one division of the service, and to my mind, not by any means the most important division. In order to bring the entire field before our view in its proper sense, let me, therefore, propound the following questions, with the suggestion that you attempt to answer them in your own minds as applied to your respective hospitals:

1. If an accident case is brought to the hospital at an inconvenient hour, the injuries including, perhaps, a compound fracture, will the staff surgeon respond to the call, how long will it take him to get to the hospital, and after he arrives, how much personal attention will he give to the care of the patient and how much will he leave to an intern?

2. Are there any patients with uninteresting fractures leaving the hospital with deformed limbs or stiff joints, and if so, does the fault lie with the surgeons, or is it due to improper nursing, or to the lack of sufficient cooperation on the part of the roentgenographer?

3. In what percentage of cases is the diagnosis clearly made in the ward and in what percentage is it reserved for the operating-table?

4. Does the operating surgeon take as much interest in the after-care of the patient as he did in the operation?

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* Read before the joint meeting of the Section on Surgery, General and Abdominal, and the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, June, 1914.

5. How large a proportion of primarily clean wounds are found to be infected on the first or second dressing, and how much time is spent by both the staff and the administration in finding out how the infection occurred?

6. What is the condition of your patients at the end of six months or a year after their discharge from the hospital, and how much attempt is made to find this out?

The foregoing questions are not asked for the purpose of disparaging the work of hospital surgeons, since their answers have to do, in many cases, with the question of the efficiency of the administration, as well as with the clinical side. Yet, they will help to bring to our minds some of the perplexing questions that affect the surgical service.

In the work of the bedside, many questions arise as to the relative responsibility of the administration and the staff. Certainly we shall all agree that the hospital officers should carefully avoid anything that might even remotely appear in any way meddlesome, or which might interfere with the surgeon's freedom in the handling of his case. Yet, there are many things which, from their nature and because of the time and manner in which they are done, can be left most safely to the administration. This will apply especially to the assignment to the room or bed, the nursing care and the attendance of the interns. If the surgeon has full confidence in the administration of the hospital, he will be glad to be relieved of these details, recognizing the fact that others can follow them up much better than he. And if he has not such a degree of confidence, he should take his patients to another hospital.

When it comes to the choice of dressing material, the kind of bandages, gauze, etc., that are to be used in the hospital, we have a question much more difficult to decide, unless there is that spirit of cooperation which should exist between the administration and staff of every well-regulated hospital. For on the other hand, we all agree that the surgeon, being responsible for the result of treatment and the recovery of the patient should be allowed to use whatever he believes necessary, within proper limits. Nor should we lose sight of the fact that hospital funds are nearly always limited, and surgeons frequently make requests without considering the expense which will result, and when the substitution of something cheaper could be made without injury to the service. Certainly, no fair-minded surgeon should deny the right of the administration to decide whether, in the ordinary routine of the hospital the dresser should use No. 2 or No. 3 gauze; nor should the administration hesitate to supply the more expensive article for a particular case if requested to do so. For here we are dealing with three very important questions, namely, the interests of the hospital from an administration point of view; the reputation of the surgeon, and—let us not forget—the interests of the patient. In order to avoid constant friction in regard to these minor questions, I would suggest that they be settled once and for all at a conference between the surgeons and the administration, at which the surgeons should be taken into the full confidence of the hospital as to the cost of materials and the financial condition of the institution, and a class of supplies selected satisfactory to all. This having been done, no further interference should be made by the staff as far as the routine work is concerned. But the administration should be ready at all times to meet special conditions when asked to do so by the surgeon, always bearing in mind that the life or health of the patient is at stake, and avoiding, as far as possible, any policy that might interfere with his interests.

There are many other questions concerning which there is sometimes a difference of opinion. For illustration, should the surgeon have the privilege of selecting the nurse who is to care for the patient; should he select the person who is to prepare his patient for operation; should a particular nurse be allowed to dress a wound or catheterize a patient at the request of the surgeon? To all such questions I would answer, No. For here we have to deal with matters with which the surgeon cannot expect to be familiar and which I believe to lie outside his province. The nurse whom he might select may be more needed for other duties, or for service in some other part of the house, or she may not be sufficiently trained, if a pupil, properly to perform the duties he would assign to her. And he, very probably, is not familiar with the curriculum of the training-school, and most certainly does not know, as well as others, how far a particular pupil has advanced, what may be her standing in her classes, or with what degree of success she has met similar responsibilities when heretofore placed on her. No one should deny his right to say whether or not the catheter should be passed, or to request that special attention be paid a certain patient, or to decide absolutely and without question what preparations for operation should be made. But with the actual carrying out of these orders or the choice of the one who is to do the work, he should have nothing to do.

The question of the proper sterilization of dressing material, sutures, water and instruments is a very delicate one, and it is somewhat difficult to decide who should dominate in the selection of the methods to be used. There certainly is no question as to the surgeon's interest in the thoroughness of this work, or in having it done in such a way that he need not fear for the results. On the other hand, the hospital is just as keenly interested as the surgeon, for the reputation of the institution and its administration is at stake, and the hospital can no more afford to allow loose methods to prevail than can the surgeon himself. Fortunately, the present-day methods of sterilization of dressing materials and instruments is so perfected that there can be but little difference of opinion as to how it should be accomplished or what methods should be used. It becomes, therefore, simply a question of proper training of those responsible for this important work, and of their conscientious devotion to their duties. And this, again, is something that must of necessity be left to the administration of the hospital, as the surgeon is, more or less, helpless in the matter without such assistance and competent cooperation. In fact, while the asepsis of everything used in the surgical service is a matter concerning which the surgeon is profoundly interested, and on which the success or failure of his work so largely depends, yet he cannot come within sufficiently close relation with the processes on which it depends to control them, nor has he the time to give this work his personal attention. It is all the more important that these matters be left in the hands of the administration when a number of surgeons are operating in the same hospital, for there must be uniformity of methods and definite standards adopted if we are to obtain the best results, and any attempt to allow each surgeon to specify his own methods would lead to a confusion which would be fatal to good work.

In the matter of the preparation of patients for operation, I believe more latitude should be left to the surgeon, for this preparation is so important that it might almost be considered as part of the operation itself, and the personal wishes of the operator should be respected, without question. Yet, a certain hospital standard may well be adopted, if possible, and a regular routine, previously endorsed by the surgeons who are in the habit of operating in the hospital, may be agreed on with advantage, providing it is understood that care is to be taken to prevent the nurses and interns from getting too deeply into a rut, and that the ordinary usage may be changed at any time at the request of the surgeon. In the hospital with which I am connected there is a standard method of preparing patients, adopted some time ago at a conference between the surgeons and the superintendent. This is typewritten and hung in a prominent place on the various surgical stations, where the surgeons can easily refer to it. This is the "house method," and is followed whenever there are no contradictory orders issued. But whenever a surgeon wishes some special method employed, he writes his orders for such changes as he wishes made, without the slightest hesitation. This plan has been in use for about two years, and has saved much confusion and, I believe, has resulted in more thorough work, without the slightest friction.

While all that has gone before is of importance, we must admit that the greatest interest centers in the operating-room. Here we find the finest equipment, the best-trained nurses, and the clock-like precision and semimilitary discipline that appeal so strongly to most of us and leave a lasting impression on the visitor. It is here that the expert operator comes to his own, for he is the unquestioned dictator of his little realm. The tiled floor must be spotlessly white, although a tile of some other color might be just as clean. The walls must be of white marble, although a hard plaster, well enameled, is cheaper and gives a less porous surface and catches less dust. The operating-table must have many movements, and be capable of being placed in a score of positions—at great expense—although only two or three of these positions are ever used. Alcohol, iodin and other expensive drugs must be kept in large, wide-mouthed bottles, in order that they may be freely poured over every one's hands. The surgeon's every movement must be understood, every wish anticipated. Why? I am sure I do not know, unless it is that in our zeal to obtain the most efficient service in this important field, we have made the common mistake of allowing the pendulum to swing too far, and our operating-room service has become top-heavy, both in its organization and in its equipment. And, I believe, hospital administrators are more to be blamed for this than the surgeons. For the surgery is such a fascinating place, and it is such a satisfaction to show it to our visiting friends, that the temptation to magnify the importance of much of the expensive construction and equipment is one to which most of us have yielded at one time or another. Did you ever see a hospital in which thousands of dollars had been spent on marble operating-rooms, resplendently furnished with white enameled and nickeled equipment, while the mattresses in the wards were hard and cheap; or in which expensive drugs were used in the surgery as freely as was water from the taps, while patients were restricted in the quantity of milk and eggs which the institution could afford to furnish; or one in which rubber gloves were used once, then torn from the wearer's hands and thrown away, while the typhoid patients developed bed-sores because there were not enough rubber air-cushions?

I entered an operating-room not long ago and watched its workings. A very competent surgeon, rather above the average in his ability, was performing a simple herniotomy. The construction and equipment of the room had cost thousands of dollars. Assisting the operator were eight trained persons, namely, three advanced pupil nurses, two interns, the anesthetist, the supervisor of surgery and an orderly. This was not the fault of the operator. He had not asked for so many assistants, nor had he planned the operating-room. Yet it was not wholly the fault of the hospital, for there are many surgeons who demand so much attention, and who are so impatient of the slightest delay, that the average hospital is compelled to maintain too large an organization in its surgery because of the fear that some operator will have to wait too long for the threading of a needle, and that the efficiency of the surgical service will be criticized. Yet, if it be true that every unnecessary person admitted to an operating-room during an operation becomes a source of danger, then we would have had better surgery, and the patient's chance for an uninterrupted recovery would have been increased if the number of assistants had been cut in half. And, perhaps, the money invested in Italian marble would have been better spent if used in renovating the mattresses in the wards. I believe that this situation is becoming more and more realized both by surgeons and by hospital administrators, and that the time is fast approaching when much of the fussy, unnecessary and expensive equipment and organization of our operating-rooms will take its place along with the carbolic spray and bichlorid solutions, and simpler methods will be recognized. I am glad to say that the first step toward this has already been taken in our hospital, as well as in many others.

The surgical clinic is a bone of contention in many hospitals, and there is still some division of opinion, at least among the so-called laity, as to whether or not it should be allowed in a public hospital. There are many questions in this connection which will occur to those of you who have had experience with them. Are they good or bad for the hospital as a whole? Are patients often injured by them? Is the asepsis of an operating-room containing a dozen students as perfect as is the case when no one is admitted except the patient and the necessary workers? Should the superintendent of the hospital have the power to forbid the use of an individual patient for a clinic, even though the attending surgeon certifies that the patient's condition warrants it? Is the consent of the patient to his being used at a clinic sufficient, provided the patient be of legal age and rational? Should a surgeon be given the right to hold a bedside clinic in a large public ward, even with the full consent of the patient to be used, if it in any way annoys other patients in the same ward, many of whom may be under the care of other surgeons who who are not interested in the clinics?

It is my honest opinion that properly conducted clinics, given by the right kind of men, and properly supervised, are of immense value to a public hospital. I believe that they attract to the hospital staff the best and most progressive men, and that they are a constant stimulus to all from the operating surgeon to the interns and nurses, to do the very best grade of work—if for no other reason than that they cannot afford to do otherwise. For your severest, and sometimes most intelligent critics, are found among the students of the junior and senior classes.

The important point in connection with all such clinics, however, is that they must necessarily be under the absolute control of the administration of the hospital, in every detail, for the hospital is still responsible for the care of the patients used, and for the general order of the wards, and is usually called on to furnish the necessary nurses, orderlies and interns for the proper conduct of the clinics, and to meet the expenses incurred, which are often not inconsiderable. They should very distinctly be hospital clinics, that is, they should be made a regular part of the hospital work, which the students are invited to attend, and not by any means allowed to become the clinics of any medical school, given in the wards of an independent hospital. This may at first thought seem like a distinction without a difference, but the difference is there, and it is a very important one. The foregoing does not, of course, apply to those hospitals that are under the control of a medical school or which form a part of the school organization. I refer more especially to public hospitals, the chief object of whose existence is the care of the sick, and in which clinics must always remain of secondary importance.

In conclusion, let me suggest a scheme of organization for surgical service of a large public hospital:

The staff should be divided into three ranks, namely, the chief of service, associates, and assistants. The chief should be made responsible for the work of the entire service, and should represent the service in the councils of the staff. Associates should be men competent to do major surgery, and should be required to attend the hospital every day, spending as much time as necessary to take care of the work. Assistants should be younger men, willing to do such work as may be assigned to them. They should stand in a position between the intern and the associate. They should be made responsible for the proper records on the history sheets, for orders for laboratory and roentgenographic examinations, and, in a general way "work up" the case for the associates and chief.

All patients admitted should be assigned to the chief, who should be allowed to take personal charge of the case, or reassign it to one of his associates, or assign such part of the treatment to an associate as he deems best. Operations should be performed either by the chief himself or by an associate, but no associate should be allowed to perform an operation without the knowledge and approval of his chief, except in an emergency when the chief cannot be reached. An assistant should not be allowed to operate unless he be assigned operations of a minor nature by the chief. When a patient is assigned to an associate, the chief still should remain responsible for his proper care and treatment, and should be expected to take personal charge again at any time if it seems best for the patient, as it would still be his patient.

Service in all ranks should preferably be continued. Such a service has been in operation in the Minneapolis City Hospital since last October. The staff is divided into two divisions, known as Division A and Division B, organized alike. Thus we have two chiefs of surgery, and two sets of associates and assistants, with a little friendly and healthy competition between the two divisions. Patients are assigned to the divisions alternately, in the order of their admission. The surgical specialties are in charge of the proper specialists, who rank as associates, and are responsible to the chief of surgery of their respective division. Associates and assistants are appointed by the superintendent of the hospital, on the nomination of the chief under whom they are to serve. The medical, and the obstetric and gynecologic services have a similar organization. So far this organization has been an experiment, but it has been such a success, and has resulted in such an improvement over the old rotating organization, that, with a few changes in minor details, it is to be made permanent.

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## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. FINNEY AND COLLINS

Dr. Robert L. Dickinson, Brooklyn, N. Y.: In the study of efficiency let us note, for example, how men handle their scissors. The German does not take his eye off the operating field. The same assistant or nurse has for years given him the instrument the moment he needs it, in order that he may avoid looking away from the work, distracting his attention and wasting ether moments. Other surgeons lay down the instrument on a particular spot, to be found there, automatically by the trained hand. Unbelievably common is the practice of dropping the scissors on the instrument table, among others. When needed, the eye must leave the field of work, focus on a pile of tools, recognize the thing wanted and return to the work, perhaps hunting for a particular place in the field. At present the visiting surgeon undertakes a number of more or less related activities. Yet he cannot effectively wield these details except the surgical handiwork. Every three or four months in most of our hospitals, a new surgeon picks up a green team, saying "We will change our methods." The new régime provides no typewritten or printed instructions. By the time the group is working well together, a new leader or a different set of nurses and house officers is installed. Organized, continuous, quick, finished work is possible, under such conditions, only to genius. Therefore, the replanning of responsibility and authority must accompany the installation of a method of scoring by which work may be gauged. Who calls down the senior surgeon in a hospital and president of its staff for moderate delinquencies or mediocre results? Who knows exactly, anyway? The fielding average of a baseball player is known, and government officers regularly rate the merit and character of work of their employees. Our hospitals, on the contrary, have no system of detailed records by which to promote or withhold promotion. When once instruction cards are made out for every procedure, it is a relatively simple matter for the inspector to check up agreement with schedule and directions—allowing for emergencies. All processes of ordinary activity being standardized and written down, the instructor can be constantly at work and the teaching is not haphazard. Lapses of all kinds being matters of record, in whatever department of a man's activity they occur, the "disciplinarian" corrects, advises, rather than punishes. That business belongs to the executive committee or its representative. Scientific management involves, first, a planning department, which will have representatives from both the executive and the professional staff, to study the order of work, instruction cards, time and cost; secondly, the performing department, with four chief functionaries—the instructor, the inspector, the disciplinarian, the repair man, and the body of workers, doctors, nurses, clerks, etc., under professional and executive control, according to their several duties. Progress is thus not hindered nor change for better methods hampered.

Dr. John A. Hornsby, Chicago: In my own hospital work I have found that often there is a good deal of incoordination between the surgeon and the administration. I found that the surgeon had not the point of view of the administration of the hospital and that the administrator had even less of the point of view of the surgeon. If hospital men could meet in conference with men whose patients are in the hospital to be cared for, we might do the work a little better. That is why I asked for the benefit of a conference with this Section. Sometimes I have thought that it would be a most excellent thing for many reasons if we could have a great big war. I am quite sure if there were a great war in this country that surgical procedures would be very vastly changed. I know a surgeon who cleans up eight men for an operation; another who cleans up three nurses besides his surgical assistants, and I have sometimes wondered not only whether he is getting the best out of his work in that way, but also whether he ever thought of what these people mean to the administration of the hospital when they are tied up. In my own hospital work with 350 patients we had 24 interns and yet sometimes 16 of these men were cleaned up in the operating-rooms in the morning, and there were from 20 to 50 visiting physicians in the hospital who were entitled to some sort of intern service which it was impossible to give them. That meant four or five times three nurses in the operating-rooms for all the rooms and I have wondered whether that was what the gentlemen of the operating staff really want; whether your technic had not just grown by what it fed on; whether you had not found that it was a good deal easier to add people than it was to make any other changes. It did not appeal to you that these people were costing a lot of money, and that the whole operating force was taxing the other administrative parts of the hospital. It seemed to me that if we could talk about these things we might reach some conclusion. I am quite sure that the surgeons in any good hospital represented here, if they appreciated the fact that they were tying up all the other service of the hospital for a morning, would say, "Why, it is not necessary at all for us to have four or five men each; cut out two or three of them." Therefore I say if we had a war and military surgery had to be done we would get back to some simple principles. If the hospital surgeons could confer with the hospital administrators and appreciate some of the difficulties of administration, we could arrive at more economical methods of procedure.

Dr. H. T. Sutton, Zanesville, Ohio: I have no defense to offer for the incompetent, but I do believe we should be just as much concerned, perhaps more, about the carelessness and indifference of the men who have achieved renown, as we should about the ignorant and inexperienced and those who have not had opportunities to perfect themselves. I do not consider that there is so much difference in the intellect and skill of surgeons as there is in the conscience.

Dr. John M. T. Finney, Baltimore: With regard to the apparent misapprehension of my point of view, I may say that I should be the last one to cast any aspersions on the physician from the small town. It is just that man more than any other whom we wish to help. There are honest and dishonest men among these just as there are among any other class of physicians. The honest man we wish to help. The prime aim of the organization is to help. The dishonest men we want to put out of business if there is any way to do it. As to the degree, there also seems to be a misapprehension. All medical colleges give the degree of M.D. and we are aiming to differentiate between the degree M.D., which entitles him to practice medicine after passing the State Board, and a degree which would permit him to practice surgery. Standardization aims to prevent men from practicing surgery who only know medicine, and to try to create a class of surgeons who are competent.

# TESTING THE EFFICIENCY OF THE COLLATERAL CIRCULATION AS A PRELIMINARY TO THE OCCLUSION OF THE GREAT SURGICAL ARTERIES

## FURTHER OBSERVATIONS, WITH SPECIAL REFERENCE TO THE AUTHOR'S METHODS, INCLUDING A REVIEW OF OTHER TESTS THUS FAR SUGGESTED

(ABRIDGED *)

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The advantages of a preoperative knowledge of the possibilities of the collateral circulation — that is, of the behavior of the peripheral circulation in the dependent regions and organs after the occlusion of the main surgical arteries — is seemingly so obvious to all those who have kept pace with the progress of vascular surgery, that to insist on the great importance and utility of the methods by which such preliminary knowledge can be obtained would seem superfluous.

Nevertheless, the majority of surgeons have up to the present time looked on the testing of the collateral circulation largely as a matter of theoretical interest, and do not attach much practical importance to the principle itself or to the tests by which it is applied. There is excuse for this in the fact that these tests are only of recent development, and have not yet found their way into the popular text-books, nor have they received that recognition by the great surgical teachers that their importance deserves.

Since the advent of the suture as a conservative agency in preserving the continuity of the large vascular trunks, a new technic in the plastics of the blood-vessels has placed a number of procedures at the disposal of the modern surgeon which were unknown to his predecessors. Notable among these resources are:

1. The ease with which a *total* can be transformed into a *partial* or *gradual* occlusion of a blood-vessel, without damage to its walls, by the use of removable metallic (aluminum) bands.
2. The possibility of restoring the lumen of a *partially* injured artery by lateral arteriorrhaphy.
3. The possibility of restoring the continuity of a *completely* divided artery by (*a*) an end-to-end anastomosis, or by (*b*) the interposition of a vascular graft (preferably venous and autogenic).
4. The possibility of utilizing the sac of an aneurysm by which a restorative or a reconstructive operation may be performed with preservation of the artery and without disturbance of the surrounding parts (endo-aneurysmorrhaphy).

The impetus given to the new technic by the success of these vascular plastics in experimental laboratories has prompted many enthusiastic surgeons, in the present generation, to resort to suture methods in practice, without a sufficient discrimination, and has led to the performance of many difficult and uncertain operations (circular suture, venous grafting and the so-called "ideal" operation of Lexer), which could have been easily dispensed with if the resources of the collateral circulation had been previously tested.

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* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints.

On the other hand, the older surgeons have been equally at fault in ignoring the value of the tests of the collateral circulation, thereby incurring serious and fatal errors in operations which could have been avoided or modified by a proper and timely application of these tests and by careful study of the resources of the collateral circulation before attempting an operation.

We have now advanced sufficiently in our methods of testing the efficiency of the collateral circulation before undertaking operations on the blood-vessels, to abandon as obsolete and pernicious the old empiric practice of trusting blindly to the admitted resources of the collateral circulation. The time has now come when every progressive surgeon must regard it as his obligate duty to investigate and ascertain, by actual tests, what the behavior of the peripheral circulation will be whenever an operation is contemplated in which the parent vascular trunk is liable to be involved. This is no longer a matter of academic or theoretical interest, but a subject of practical, vital importance in the treatment of such cases.

Will fatal coma or brain complications follow the ligation or excision of the carotid, when operating for aneurysm or extirpating a tumor of the neck? Will the limb become gangrenous when the subclavian, axillary, brachial, iliac, femoral or popliteal is ligated or excised? If such is likely to be the result, according to the tests, what is the surgeon going to do about it? These are the questions that are put to the surgeon of the present, who, with means of obtaining this information before undertaking the operation, and with new technical resources at his disposal, has to face new and graver responsibilities which did not enter into the calculations of his predecessors.

The experience of modern wars, especially those of the Russo-Japanese conflict, and the latest developments of the Balkan campaigns, have shown the enormous and growing importance of vascular injuries in military surgery. The frequency of vascular injuries, especially of traumatic aneurysms, has given this branch of surgery a claim on the technical training of the military surgeon that has become a new and salient feature in his education. But the exigencies of the battle-field and of the field hospitals will often preclude the possibility of applying such careful tests to the collateral circulation as are applicable in the more conservative and tranquil conditions of civil practice or in the reserve hospitals. Furthermore, the subjects of vascular lesions in warfare are, as a rule, healthy, vigorous, young soldiers or recruits with comparatively normal arteries, free from the ravages of arteriosclerosis or atheroma, and with sound, strong hearts. On the other hand, in civil practice, the vascular lesions which come to the surgeon are largely pathologic—chiefly aneurysms which occur in subjects past middle life, who, in addition to trauma, suffer from cardiovascular diseases, and in whom the occlusion of the main artery is liable to be followed by gangrene or other evidence of an inefficient collateral circulation. Hence the importance that attaches to the methods of testing the collateral circulation in civil is greater than in military practice, though it is interesting to note that it is to the military surgeons, Korotkow, von Oppel, Henle, von Frisch, Coenen and others who have served in the Manchurian and Balkan campaigns, that we owe a renewed interest of late, in Europe at least, to the methods of testing the collateral circulation.

Now what are these methods or tests? They may be briefly summarized as follows:

1. *Quenu and Muret Sign.*—The bleeding of the peripheral parts on puncture or incision while the main trunk of the limb is being compressed. In discussing the treatment of popliteal aneurysm, Quenu and Muret[1] say:

> To verify this sufficiency of the collateral circulation, which is so important, there would be, in our opinion, no objection to expose and cut into the dorsalis pedis artery at the time of the operation, and thus determine if the compression of the popliteal above the sac will be followed by bleeding or a suppression of the circulation in this artery.
>
> [If no bleeding follows the compression of the main artery, it will indicate an insufficiency of the collaterals.]

The fallacy underlying this test is that the pedal pulses (dorsalis pedis and posterior tibial) are often totally suppressed in popliteal and other aneurysms of the lower extremities, and that scant, if any, hemorrhage will occur from the peripheral vessels, and yet the nutrition and circulation of the foot are well preserved, even though weeks and months may have elapsed after the pulses have been lost. In these cases the circulation and nutrition of the peripheral parts are well preserved by impalpable collaterals after the main channels of the circulation have been blocked by pressure, thrombosis, embolism or atheroma. Furthermore, apart from the importance of avoiding open trauma in the peripheral parts, in which the circulation is most likely to suffer, it is desirable that the sufficiency or insufficiency of the collateral circulation should be determined long before an operation on the aneurysm is performed, in order that suitable measures may be applied to develop the insufficient collaterals. Finally, this mode of demonstrating the persistence of the collateral circulation is unnecessary, as there are other means of determining quite clearly the resources of the collateral circulation without injury or sacrifice of the peripheral vessels.

2. *Delbet's Sign.*—The formation of an aneurysm, or a tumor in the course of the main artery of a limb, is often followed by the gradual or sudden obliteration of the peripheral pulses. When this occurs, from any cause (mechanical compression, thrombosis, embolism or atheroma) without apparently affecting the nutrition or vitality of the extremity, it may be concluded that the collateral circulation has been fully established and that the obliteration of the main trunk by operation can be undertaken with safety to the dependent limb.

This observation has been so well confirmed by experience that it deserves special recognition as of decided clinical importance. Pierre Delbet has so frequently and lucidly interpreted the significance of the suppressed peripheral pulses in this condition that the combination — aneurysm or tumor, absent peripheral pulses, living limb — may well be designated as Delbet's sign.[2] Arrou, Ricard, Monod and Vanverts[3] and others likewise insist on the value of this sign, and my experience has been so convincing that I believe it deserves more prominence than has been given it by systematic writers on the subject.

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1. Quenu and Muret: Le traitement moderne des anevrysmes artérielles poplitées, Rév. de Chir., 1910, xli, 282.
2. Delbet, Pierre: Extirpation d'un anevrisme poplite, guerison, Bull. et mém. Soc. de Chir., 1909, xxxv, 13.
3. Monod and Vanverts: Chirurgie des artères (Rapport au xxii Cong. Franç. de Chir.), Paris, 1909; Le traitement conservateur des anevrismes et des hematomes, Rev. de Chir., November, 1911.

In dealing with arterial and arteriovenous aneurysms there are many conditions in the aneurysm itself and in the peripheral arteries which are very suggestive and permit the experienced surgeon to foresee, without the application of any special test, the behavior of the peripheral parts after an obliterative operation on the main artery. While the consideration of these conditions would involve too great a digression from the main object of the present discussion, and while recognizing the fallacies that underlie an *a priori* interpretation, it is nevertheless quite evident that the more active an aneurysm, the more rapid its growth, the more expansile its pulsations, the louder its bruits, the less clot it contains, and the more palpable and vigorous the peripheral pulses beyond it, the more cautious should we be in our preparations for attacking it; the more certain should we also be to apply the tests that will give us additional and more positive information in regard to the status of the collateral circulation after its obliteration.

3. *The Henle-Coenen Sign.*—Henle's sign, originally described by Professor Henle[4] of Dortmund, Germany, and by his assistant, Stoltz,[5] was also independently described by Coenen[6] of Breslau, as the result of his experience in the Balkan campaign. It is applicable only in the field of operation when the injured artery is exposed above and below the lesion, or when the sac of an aneurysm is laid open with its proximal and peripheral openings exposed. If blood flows from the peripheral opening in the aneurysm, while the proximal end is compressed with a clamp, it is presumed that the collateral circulation is sufficient.

4. *Von Frisch's*[7] (Vienna) *Three Signs* are the outcome of his experience in vascular surgery during the recent Balkan campaigns. Von Frisch's test is also applicable only in the field of operation. According to this observer, if the proximal side of an injured or denuded vessel is compressed, the efficiency of the collateral circulation may be demonstrated by the following three signs:

(*a*) Normal, or approximately normal, coloration ("living color") of the periphery. (This sign had been previously insisted on by me.)

(*b*) Arterial hemorrhage from the peripheral opening of the injured vessel. (This is only a repetition of the Henle-Coenen sign.)

(*c*) Venous stasis below (peripheral side) of the clamped main vein (von Frisch).

This third sign is the one on which von Frisch lays particular stress and claims as an original observation.

> If, after clamping the main artery, compression of the satellite vein is followed by dilatation of its peripheral tributaries, and the venous turgescence is repeated clearly and unmistakably every time the experiment is tried, the sign is positive that a sufficient collateral circulation exists. This sign (venous stasis on compression of the parent vein) may prove decisive when the other two fail.

He believes that Sign 1 is distinctly positive, no other proof of a collateral circulation is required, and with this I agree. He regards the Henle-Coenen sign as fallacious and liable to erroneous interpretation, as the distal ends of the wounded artery may spurt in the wound and yet no blood reach the periphery. In this I also thoroughly agree. When all these signs fail, then it is plain that the collateral circulation is inadequate and that circular arteriorrhaphy, with or without venous grafting, is in order. If all three are present, or No. 1 and No. 3 separately, no arteriorrhaphy is required; but a simple obliterative ligation will be sufficient.

The signs and tests described by von Frisch (which include the Henle-Coenen sign) are undoubtedly valuable in emergencies. Practically the same observations have been utilized in my practice, and theoretically by others in a different way; but since they are applicable only in the course of the operation, their preliminary and prophylactic value is lost. They are of value in dealing with wounded bleeding arteries, but, even in the emergencies of the battle-field or field hospitals, an effective application of the technic of circular arteriorrhaphy (which von Frisch has in mind) is almost impossible. When fully established aneurysms exist, whether arterial or arteriovenous, it is evident that the chief benefit of the tests of the collateral circulation is to be obtained before any operation is performed and not during the operation itself, when the operator has no alternative but to proceed with the operation to a finish, whether the collateral circulation is shown to be efficient or not. According to v. Frisch, if the collateral circulation should prove to be insufficient, all that the surgeon could do would be to extirpate the sac (if this exist) and proceed with circular anastomosis, with or without the interposition of venous grafts—a very uncertain and problematic conclusion.

Our aim in testing the collateral circulation is to avoid complicated and uncertain operations by the testing, whenever possible, in anticipation of the operation, by means that will furnish the information without trauma, and that will permit of postponement of the operation in order to apply such prophylactic measures as will develop a sufficient collateral circulation.

5. *Korotkow's Test* (St. Petersburg, 1905-1906) depends on tonometric and sphygmomanometric measurements of the blood-pressure in the peripheral parts. It is the result of this distinguished surgeon's experience in the Manchurian campaigns, and has been adopted by von Oppel, Petrov, Fedoroff and other Russian surgeons, being especially brought into prominence by von Oppel[8] in 1908. If the peripheral blood-pressure, as shown by the manometer (a modified Gaertner's tonometer) is more or less sustained after compression of the main trunk immediately above the aneurysm, then the collateral circulation is adequate and the artery or the aneurysmal sac may be extirpated or obliterated. If, on the other hand, the blood-pressure falls to zero, it is evident that the collateral circulation is inadequate and that no chance should be taken with an obliterative operation, or with any procedure whatever (ligation, extirpation) which will possibly occlude the parent artery. The color reaction in the individual digits, which is the basis of the tonometric test, is of very difficult demonstration in cyanotic or pale extremities, especially in the deformed toes of many subjects—negroes particularly. After repeated trials in the lower extremities I have been compelled to abandon it as impracticable and to substitute for it a color test on a much larger scale and of far easier application, which will be subsequently

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[4] Henle: Zur Indikationsstellung bei der Operation der Aneurysmen und bei den Gefassverletzungen, Centralbl. f. Chir., 1913, No. 3, p. 91; Verhandl. deutsch. Chir. Gesellsch., 1912.

[5] Stoltz, K.: Eine Indikation zur Wahl der Operationsmethode bei Aneurysmen, Beitr. z. klin. Chir., 1914; lxxxviii, 452.

[6] Coenen, H. (Breslau): Zur Indikationsstellung bei der Operation der Aneurysmen und bei den Gefassverletzungen, Zentralbl. f. Chir., 1913, No. 50.

[7] Von Frisch: Zur Indikationsstellung bei der Operation der Aneurysmen und bei den Gefassverletzungen, Zentralbl. f. Chir., 1914, p. 89.

[8] Von Oppel: Arch. f. klin. Chir., 1908, lxxxvi, No. 1.

described. E. Wolff[9] of Lexer's clinic, Kruger[10] of Riedel's clinic and Tcherniachowsky[11] of Kiev all agree on the difficulties and uncertainties of the original Korotkow test.

6. *Pachon Test.*—On the same lines as the Korotkow test is the application of the Pachon oscillometer, which depends on the records of the blood-pressure in the peripheral parts to determine the existence of the circulation in these parts after the temporary occlusion of the main artery. The Pachon oscillometer has been applied to the exploration of the permeability of the arteries in senile and other forms of peripheral gangrene, with the view of determining the proper line of amputation, and has done satisfactory service in the hands of Guyot and Jeannenay,[12] Bordeaux, and has been utilized by Cowadias[13] in the study of aneurysms, and very lately by Gosset,[14] Paris. In a case of traumatic arteriovenous aneurysm of the right subclavian vessels, recently reported by this surgeon, extirpation of the sac, with the quadruple ligation of the artery and vein, was followed by recovery. Gosset utilized the oscillometer of Pachon to test the peripheral circulation in the hand and arm. The arterial tension, on the day before the operation, was 10 on the affected side; 15 on the normal. On the night following the operation, the ligated side registered 9. Thirteen days after the operation the oscillometer registered 12, showing the reestablishment of the collateral circulation, though the peripheral pulses could not be felt.

My experience with the Pachon instrument is too limited and too recent to permit at present of a fair statement of its value; but it is well worthy of consideration and further investigation.

7. *The Tuffier and Hallion*[15] *Test* is based very much on the principle of von Frisch's venous turgescence when an obstruction is placed in the way of the returning venous circulation while the main artery is compressed. Their test is applied as follows:

A circular band, or elastic cord, which may be easily tightened or relaxed, is made to encircle the extremity at the part desired, for instance, at the ankle joint above the malleoli when the foot is under observation. If this band is tightened, it will compress the veins and thereby interfere with the returning circulation, causing a marked venous turgescence and swelling of the foot; the flow through the arteries will not, however, be interfered with. If this maneuver is repeated while the main artery of the limb (femoral) is compressed, the veins of the foot will swell only on condition that sufficient arterial blood is brought to the foot by the collaterals. If this venous turgescence does not occur, it is plain that there is no collateral circulation, and, vice versa, if swelling occurs it is also evident that the arterial collaterals are efficient. This method was applied by the authors in a case of popliteal aneurysm with a voluminous sac. The object of the experiment was to determine whether the limb would survive an extirpation of the sac with the ligation of the main vessel, or if, in default of a collateral circulation, a circular arteriorrhaphy would be required.

The chief fallacy of this method lies in the fact that in any case of aneurysm or injury to the blood-vessels of extremities, there is already a considerable edema and venous stasis of the limb from obstruction to the veins and lymphatics on a level with the lesion, and that the accurate observation of the swelling or venous turgescence, in such cases, is not only difficult but impossible. Its usefulness is, therefore, limited to certain favorable cases; but it will be worth remembering in connection with other tests.

8. *Prof. G. N. Stewart's*[16] (Cleveland) *Calorimetric Method* of estimating the quantity of blood circulating through a part in a given period of time is especially applicable to the extremities (hands and feet). It depends on the fact that the amount of heat produced by a part, like the hand at rest, is negligible in comparison with the heat conveyed to it by the arterial blood. If, then, we determine the amount of heat given off by the hand to a calorimeter, in a given time, and know the temperature of the incoming (arterial) and outgoing (venous) blood, we can calculate how much blood must have passed through the hand in order that it might give off this amount of heat. The quantity of heat given off is estimated by putting the hand or foot into a calorimeter specially constructed for the purpose. The quantity of blood in grams flowing through the extremity in the time of the experiment is given by the formula: $Q = \frac{H}{T - T^1} \cdot \frac{1}{s}$ where Q is the quantity of blood, H the heat given off by the hand, T the temperature of the arterial blood, $T^1$ the temperature of the venous blood and s the specific heat of blood.

The importance of this method in determining the vitality of the peripheral parts after the temporary obstruction of the main artery of the limb, and thereby testing the sufficiency of the collateral circulation in the extreme periphery, is obvious. It is evident that since the amount of blood circulating in the extremity is gaged by the degree of heat registered by the calorimeter, the amount of actual circulation in the part can be very approximately estimated. For instance, in a successful ligation of the innominate for subclavian aneurysm, recently reported by Dr. Carl Hamman of Cleveland, the patient was subjected to the calorimetric test by Stewart himself. Six months after ligation of the innominate it was found that the blood flow on the affected side was equal to over 8 gm. per hundred c.c. of hand per minute, which is as great as that of the normal hand. This was a great improvement over the rate of blood-flow observed two months previously, when the flow in the right hand stood as 1 : 3.5. At the last examination in July, the rate of flow stood at 1 : 1.3, which is practically equal in both hands.

This observation is in itself quite convincing of the value of Stewart's calorimetric method in showing, first, the precise condition of the peripheral circulation before the occlusion of the main trunk, and thereby showing the efficiency or inefficiency of the collateral circulation; second, it also permits the observer to determine the further development of the collateral circulation, and third, it also permits the differentiation between disturbances in the peripheral circulation that are due to vascular or to non-vascular (neural) causes.

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[9] Wolff, E.: Beitr. z. klin. Chir., 1908, lviii, No. 3.

[10] Kruger: Arch. f. klin. Chir., 1910, xci, Nos. 2 and 3.

[11] Tcherniachowsky: Deutsch. Ztschr. f. Chir., 1913, cxxiii, 1.

[12] Guyot and Jeannenay: L'Oscillomètre sphygmomanometrique de Pachon appliqué a l'exploration de la permeabilité artérielle dans la gangrène, Communication à la Société anatomo clinique de Bordeaux, Séance du 5 Juin, 1913, Jour. de Med. de Bordeaux, 1913, lxxxiv, 607; Jour. de chir., 1914, xii, 193.

[13] Cowadias, A.: Etude comparative des tensions artérielles des deux membres superieurs et inferieurs; applications cliniques dans les anevrysmes aortiques et les artérites des membres inferieurs, Soc. de Biol., Séance 7 Dec., 1912; Semaine méd., 1912, No. 51, p. 611.

[14] Gosset: Bull. et mém. Soc. de Chir. de Paris, Dec. 24, 1913, p. 1794.

[15] Tuffier and Hallion: Sur un procédé permettent de prévoir que l'irrigation sanguine persistera dans un membre après ligature de son artère principale, Soc. de Biol., Paris, Séances 7 Dec., 1912; Compt. Rend., Semaine méd., 1912, No. 51, p. 610.

[16] Stewart, G. N.: Studies on the Circulation in Man, Harvey lectures, series 1912-1913, p. 150.

We must therefore regard Stewart's method as a distinct acquisition and a decided progress in the methods of determining the efficiency or inefficiency of the collateral circulation. Its value as a practical test in deciding on the indications for either the obliterative, reconstructive or restorative operations must be accepted as proved. To what extent this typical laboratory method can be utilized clinically in surgical practice cannot be determined at present. It is evidently not applicable to emergencies or to the demands of routine surgical practice; but as an addition to the surgical resources in well-equipped hospitals in large cities, working in connection with physiologic laboratories, such a method may render very effective assistance in practice. In its present form, its use must be exceptional and it must yield to other simpler methods that are immediately available, and that have been found practically reliable in my practice.

9. *The Author's Methods.*—Finally, I would renew attention to the simple methods of testing the collateral circulation which I devised in 1907 and have adopted in my practice since that time with increasing conviction in their reliability, simplicity and general utility. These tests I have found to be of the greatest value in determining the indications for my obliterative, restorative and reconstructive operations for the cure of aneurysm, and no patients are now operated on in my clinics without a preliminary and systematic study of the circulation by means of these tests. These methods involve two procedures, according to the region involved and the artery to be tested:

(*a*) The first is the hyperemia reaction, or living color test, suggested by Moszkowicz'[17] (Vienna, 1907) method of determining the limits of the living tissues in actual or threatened gangrene of the extremities, caused by arterial disease or obstruction, preparatory to amputation. While the purpose and technic of Moszkowicz' and my procedures are entirely different, they are similar in utilizing the hyperemic blush that follows an artificial ischemia in determining the limits of an adequate circulation. This test is reserved for the extremities, and is applicable to the limbs wherever it is possible to compress the main or parent artery of the limb, preferably with a mechanical compressor of the type of my own devising, which exercises pressure on the main vessels with the least possible interference with the collateral circulation. The principle on which this test is applied is based on the fact that if the main trunk is compressed in close proximity to the lesion (wound, aneurysm, tumor) sufficiently to arrest the pedal pulses, or "still an aneurysm," the distal parts can be supplied with blood only through the collaterals. In order to make this test more effective and demonstrative a complete ischemia of the limb is obtained, before the compressor is tightened on the main artery, by applying an elastic bandage (Esmarch) from the digits (and including these) to the level of the lesion, usually an aneurysm. Then the compressor is adjusted until the aneurysm is absolutely stilled by firmly compressing the parent artery, and the elastic bandage is allowed to remain *in situ* for ten minutes in young subjects, and five or six minutes in the aged. The bandage is then removed while the main artery is completely occluded, as shown by the collapse and stillness of the aneurysm. Immediately on the removal of the bandage, a hyperemic blush descends rapidly down the limb, and progresses onward to a variable extent, usually in proportion to the development of the collateral circulation. More often, the hyperemic wave stops, even in healthy adults, at a distance of 5 or 6 inches from the compressor, or about one-fourth the distance down the limb from the level of the compressor. It then continues, in a subdued color and with irregular distribution, to travel toward the periphery; but the extreme end of the limb, foot or hand, and especially the digits, retain a cadaveric, waxy, lifeless pallor for several seconds, which may be prolonged to ten or forty minutes or even longer, according to the development of the collaterals. Then the waxy, bloodless color changes in patches to a pale, but living color, which appears in various preferred areas, and gradually spreads uniformly and more or less intensely over the limb. In cases in which the collateral circulation is unusually developed, the hyperemic wave spreads in a few seconds throughout the whole limb as if the main artery had never been compressed. If the compression is kept up long enough, there may be a temporary congestion, mottling and marbling of the skin, which is due to the simultaneous compression of the main vein. This is an additional sign that an efficient collateral circulation exists, as the veins could not become turgid without blood supplied by the collaterals. Thus far we have applied this test to over twenty-six cases of aneurysm and other lesions in our clinics, exclusive of those observed by other surgeons in the United States and abroad, and the conclusions furnished by this test have been invariably confirmed by the operative demonstrations and results. In several of these cases the reaction has been so long delayed that operative interference has been postponed for days and weeks in order to develop the collateral circulation by systematic compression of the main artery applied conjointly with dry hot air baths and vigorous massage of the extremities, as well as resorting to other measures calculated to increase the blood-pressure. In this way a decided shortening in the period of cadaveric pallor during compression of the main artery has been obtained, sufficient at least to justify confidence in the efficiency of the circulation and in the safety of the operation.

(*b*) The second test is based on the preliminary occlusion of the main artery with the pliable and removable aluminum bands first described in 1911 in a joint communication[18] to THE JOURNAL by Dr. C. W. Allen and myself. It is applicable to all arteries of the neck and trunk which cannot be effectively occluded by mechanical compression. With the valued collaboration of my assistant, Dr. C. W. Allen, and other members of our staff, Drs. Gessner, Maes, Cohn and Landry, we have applied these in our clinics to all the great arteries of the neck and to the iliacs. At present we advocate the preliminary application of these bands in all cases of aneurysms or tumors involving the innominate, carotid, subclavian and iliac arteries. If after total occlusion of the artery the peripheral circulation remains good, nothing further is done, and often the aneurysm is cured by this simple method. The band then remains permanently encysted in the tissues as a ligature. If there are evidences of a defective circulation which makes permanent cerebral disturbances probable, when the common or internal carotid is involved, or when in the limbs permanent ischemia and gangrene are threatened, especially in the lower extremities, the band is relaxed just sufficiently to restore a living color to the periphery, the vessel remaining then only partly occluded. This procedure will diminish the activity of the circulation in the aneurysm and by gradual obliteration often lead to its cure, as originally and very clearly demonstrated by Professor Halsted.

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[17] Moszkowicz: Diagnose der Arterien verschluss bei Gangrena Pedis, Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1907, xvii, Nos. 1 and 2.

[18] Matas, Rudolph, and Allen, C. W.: Occlusion of the Large Surgical Arteries with Removable Metallic (Aluminum) Bands, to Test the Efficiency of the Collateral Circulation, THE JOURNAL A. M. A., Jan. 28, 1911, p. 233.

These aluminum bands as supplied by our local manufacturers[19] are of standard length (6 inches) and of the same thickness (23 Brown and Sharp's metal gage). In width there are three sizes: $\frac{5}{16}$ inch (approximately 8 mm.); $\frac{1}{4}$ inch (about 6 mm.); $\frac{3}{16}$ inch (about $4\frac{1}{2}$ mm.). In practice I have found that the $\frac{5}{16}$ inch band, 23 B. & S. gage (approximately $\frac{1}{2}$ mm., or exactly 0.573 mm.) is most generally applicable and useful. This approximates closely the width and thickness of the normal superficial femoral at its origin, and of the common carotid, as given by Ballance and Edmunds[20] in their accurate scale of measurements. The bands are cut long enough to be used as an aneurysmal needle; they are pliable and easily bent and curved in the shape of a flat hook, which can be readily insinuated between the blood-vessel and its sheath. After the band has been carried around the circumference of the vessel, it is generally compressed by the fingers of the operator until the pulse on the distal side becomes imperceptible. The excess of band which remains is cut off with stout scissors, or preferably with small wire clippers. The bands are now supplied by the dealers, perfectly smooth, polished and rounded at the edges, ready for immediate use after sterilization. Should it become necessary to remove the band, or relax its grip so as to allow a partial circulation, on account of ischemic disturbances in the region supplied by the occluded vessel (as when cerebral disturbances occur after occlusion of the common carotid), the point of a sharp instrument or blade of knife is inserted between the approximated ends of the band, which, when slightly twisted, accomplishes the separation and releases the vessel, allowing the circulation to be restored. When no disturbances occur in the peripheral circulation, the band remains permanently embedded in the tissues, where it is encysted in a fibrous sheath. The bands are always well tolerated by the tissues and primary healing is the rule. Even when suppuration has occurred, the tissues have healed over them permanently and satisfactorily. When cerebral disturbances, or evidences of dangerous ischemia in the peripheral parts, call for a partial or total restoration of the vascular lumen, this may be safely attempted after a total occlusion of fifty-six or seventy-two hours' duration, because no permanent damage will be inflicted on the arterial wall in that time, provided the band has been applied with proper care to avoid a crushing or contusing force.

In a joint contribution with Dr. C. W. Allen, read in this section at the St. Louis session of the American Medical Association (June, 1910), we briefly reported fifteen cases in which these bands had been applied, chiefly to the carotid and subclavian arteries, and mentioned two in detail in which cerebral symptoms developed in one immediately, and in the other several hours after the application of the band. In both instances prompt relief followed after reopening the wounds and releasing the constriction on the vessels. Since then our experience has increased considerably, and recently one case has been under observation, that of a patient suffering from a traumatic pulsating exophthalmos, on whom my associate, Dr. Gessner, had attempted relief by occlusion of the common carotid on the affected side.

In the patient, a man of 45 years, stupor and hemiplegia with loss of vision developed four hours and thirteen minutes after the occlusion of the artery. Nearly two hours after the onset of these symptoms the band was removed by Dr. Gessner without anesthesia. Following an initial convulsion the patient emerged from the stupor and regained consciousness. The next day he was well, but the pulsating exophthalmos returned. Oct. 13, 1913, the same patient returned to our clinic, seeking relief for the exophthalmos, loud intracranial noises, pulsation of facial veins, etc. By adopting a course of systematic digital compression, under our instruction the patient trained himself to tolerate by prolonged sittings an occlusion of the common carotid so successfully that in five weeks his symptoms were completely controlled without ill effects. Accordingly on Nov. 21, 1913, a second occlusive aluminum band was applied, this time with perfect success and without cerebral disturbances.

Nine months have now elapsed since the band was applied, and thus far nothing has occurred to suggest a relapse. This case, therefore, is instructive in again proving the value of a removable aluminum band as a prophylactic against fatal cerebral complications. It is also a most convincing demonstration of the efficiency of systematic compression of the common carotid as a means of developing the collateral circulation in the brain, and thereby establishing the tolerance of the common carotid to permanent occlusion; the same method applied to this patient, without such training and preparation, would have certainly failed, ending in his death if the band had not been promptly removed.

Very recently we have had an opportunity to prove the value of these bands in testing the collateral circulation in the lower extremities. These were two cases of iliofemoral aneurysm which occurred in advanced nephritic patients with marked general arteriosclerosis. The aneurysms encroached too much into the pelvis to permit of any testing by the methods of mechanical compression previously described. The aneurysms were very active and growing to such voluminous size that rupture threatened. The nephritis in both cases made a general anesthesia by any method dangerous. Furthermore, neither of these patients could have survived a radical operation under general anesthesia. In both cases local anesthesia was sufficient to expose entirely the external iliac up to its origin in the bifurcation by stripping the peritoneum. In each case a band was placed on the external iliac about an inch below the bifurcation of the common iliac and a little above the upper pole of the aneurysm. The artery was occluded completely and the effect on the peripheral circulation was carefully watched. In one case, the living color of the foot and digits returned after a marked pallor of twenty minutes duration; the pedal pulses, which were faint before the operation, remaining permanently obliterated.

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[19] McDermott Surgical Instrument Company, 734-738 Poydras Street, New Orleans.

[20] Ballance and Edmunds: Ligation of the Arteries in Continuity, London, 1891. In accordance with this scale of measurements the bands for the common carotids should be 8.5 mm. in width and 0.78 mm. in thickness; for the common femoral, 10 mm. in width and 1.1 in thickness; the superficial femoral, 8 mm. in width and 0.72 in thickness. We have used the bands made for the common carotid on the iliacs, femorals and subclavian with equal success and believe that they will do as well for all the large arteries, including the innominate and common iliacs. We do not recommend metallic bands for the aorta except for purely temporary purposes.

In the other patient the pallor of the extremity continued for an hour, but was finally restored by vigorous massage and hot applications. After this, the recovery in both cases was uneventful. The aneurysms collapsed, hardened and contracted, so that, when these patients were discharged, six and eight weeks, respectively, after the operation, the tumors had been reduced to one-fourth their original size. One of these patients has since died at his home in Alabama, in uremic coma, but the reports received indicate that the aneurysmal tumor had at no time troubled him after he returned home. The other patient is still living, but growing rapidly worse with his nephritis, though the aneurysm has practically disappeared and is giving him no trouble. Reports of these cases will be published in detail in a study of a group of iliac aneurysms that I have in preparation.

The use of aluminum bands as occlusive or constricting agents in the surgery of the blood-vessels, as first suggested and practiced by Prof. William Halsted,[21] marks a distinct period in the history of vascular surgery. Our purpose and technic are different from Dr. Halsted's, but whether the aluminum straps are applied as circular bands with the ingenious band roller that Dr. Halsted devised or as flat bands which we (Matas and Allen) have found advantageous to substitute for it with the very simple technic that is here described, there can be no question that the occlusion of the large surgical arteries, with the possible exception of the aorta, is infinitely superior by the band to any of the methods of temporary occlusion hitherto described and recommended (Jordan, Doberauer, Neff, Crile, Smäler, Bordach).

I have dwelt sufficiently on these methods in previous communications[22] to this section of the American Medical Association, to the American Surgical Association and last year at the International Medical Congress in London, so that it is unnecessary further to discuss the technic of these procedures, which are fully described and illustrated in my several papers, and also in those contributed by Drs. C. W. Allen,[23] H. B. Gessner,[24] Urban Maes[25] of my staff.[26]

In closing this discussion on the methods of testing the collateral circulation, I would briefly state that the chief requirements for the general and successful application of these tests are:

(*a*) Simplicity and ease of application.

(*b*) Reliability in furnishing a fair and dependable information for clinical purposes.

(*c*) That the test may be applied with a minimum of trauma to the blood-vessels and the affected parts.

These requirements are met, I believe, by the two methods which I have suggested and have learned to rely on, after a very considerable experience. I do not hesitate to recommend them to my colleagues and fellow workers. They will also find, in the suggestions from other sources quoted in this paper, excellent material for obtaining a preoperative information on the condition of the peripheral circulation.

It is well understood that in emphasizing the importance of a preliminary knowledge of the condition of the collateral circulation, I do not pretend that it is possible in every case to apply these tests, or that, even after obtaining the desired information, we can always escape from disaster. It should be remembered that every injury of an artery, especially if diseased, no matter how trivial or insignificant it may appear to be, may lead to fatal thrombosis or embolism, though the collateral circulation may appear to be efficient, as shown by the tests. It has been my good fortune to have escaped such an occurrence in my practice; but it is easily conceivable that at any time such an accident may occur, in spite of every precaution.

Finally, all methods of investigation which furnish reliable *preoperative* information on the status of the collateral circulation are valuable.

(*a*) In avoiding unnecessary or possibly disastrous operations.

(*b*) In delaying dubious or dangerous operations, until the patient has been given better opportunities to develop the defective circulation.

(*c*) In shaping the course of an operation, so that a simple and comparatively inoffensive procedure may be substituted for a more complex, risky and uncertain undertaking that the tests have shown to be unnecessary.

(*d*) In preparing the operator himself for contingencies that may arise in the course of the operation, and that the tests may lead him to expect.

(*e*) In furnishing the operator with far better elements of prognosis in vascular lesions than he has ever had before, or that he could ever have without them.

Again, to learn how to gage the condition of the collateral circulation in vascular surgery, is only to emphasize the old saw, "To be warned, is to be forearmed."

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[21] Halsted, W. S.: Partial, Progressive and Complete Occlusion of the Aorta and Other Large Arteries in the Dog, by Means of the Metal Band, Jour. Exper. Med., 1909, xi, 373.

[22] Matas, R.: Some of the Problems Related to the Surgery of the Vascular System; Testing the Efficiency of the Collateral Circulation as a Preliminary to the Occlusion of the Great Surgical Arteries, the president's address, American Surgical Association, May 1910, Tr. Am. Surg. Assn., 1910; Ann. Surg., 1911, liv, 1; Surgery of the Vascular System, in Keen's Surgery, v, 350 (see chapters on Aneurysm and Aneurysms of Special Arteries) Philadelphia, W. B. Saunders Company, 1909; The Suture as Applied to the Surgical Cure of Aneurysm, Tr. Seventeenth Internat. Cong., London, Aug. 6-12, 1913, report, Section of Surgery.

[23] Allen, C. W.: The Matas Band as a Test of the Collateral Circulation in the Circle of Willis, South. Med. Jour., 1912, v, 346.

[24] Gessner, H. B.: The Matas Band as a Test of the Collateral Circulation through the Circle of Willis, South. Med. Jour., 1912, v, 307.

[25] Maes, U.: The Matas Test for the Efficiency of the Collateral Circulation in Aneurysms of the Extremities, South. Med. Jour., 1912, v, 304.

[26] In addition to the references already given, the following will be of interest:

Peck, C. H.: Popliteal Aneurysm (Endo-Aneurysmorrhaphy obliterative) (tests for the collateral circulation applied and described), Ann. Surg., 1911, liii, 861.
Cross, R. S.: Popliteal Aneurysm: Obliterative Endo-Aneurysmorrhaphy (tests for collateral circulation applied and described), Australian Med. Jour., 1912, i, 309.
Gardner, F.: L'Endoanevrismoraphie, Gaz. d. hôp., lxxxiii, 1599.
Delbet, P., and Mocquot, P.: Affections chirurgicales des artères, Nouveau traité de chirurgie (Le Dentu-Delbet) Paris, 1911, xi.
Hamann, Carl A.: Ligation of the Innominate Artery, Ann. Surg., June, 1914, p. 962. (Refers to G. N. Stewart's calorimetric method, Arch. Int. Med., December, 1912, p. 678; also Harvey lecture for 1913).
Lejars: Les applications exploratrices de hyperémie active, Semaine méd., 1914, xxxiv, No. 3.
Smäler: Zur Unterbinding der Carotis Communis, Beitr. z. klin. Chir., 1913; lxxxii, 494
Sandrock, W.: Zur Bestimmung der Ernährungsgrenze bei Gangrena Pedis. Zentralbl. f. Chir., 1913, No. 27, p. 1070.

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**Disease as a Disturbance of Equilibrium.**—When the variation carried out by the organism leaves that organism in a renewed condition of equilibrium with its surroundings, we reckon its state to be normal or physiological; when, however, it fails to adjust itself, the term "disease" may be used. This term has also been applied, though without proper justification, to cases in which, in answer to an unusually sudden or unwonted environmental stimulus, the organism has been called on to put forth greater efforts than usual. Thus, when the body is invaded by micro-organisms to which it has not been accustomed, the result usually is a more or less powerful reaction (inflammation, etc.) on its part.—Arthur J. Brock, *Edinburgh Med. Jour.*

# ANEURYSM OF THE POSTERIOR TIBIAL ARTERY

## WITH REPORT OF TWO CASES*

ALEXIUS McGLANNAN, M.D.
BALTIMORE

The method of direct suture for the repair of wounded vessels was applied to the treatment of aneurysm very soon after its discovery. Later, principally through the work of Carrel on vessel transplantation, another impetus was given to this study. An ideal method, therefore, has been developed for the treatment of aneurysms which has for its object the removal of the defect in the vessel and the provision of a new channel through which the blood may flow over its original course.

The ideal method aims at success without the assistance of a collateral circulation. In cases in which the collaterals are well developed, the ideal operations put a needless burden on both patient and surgeon, because not only are they difficult to perform but also they frequently fail on account of the generally diseased condition of the vessel involved. Such failures, due principally to embolism or hemorrhage, jeopardize the limb, often demanding amputation on account of gangrene. When the collateral circulation has not been established the ideal operation becomes more dangerous for the patient, especially if the vessels are sclerosed. The risk of ligation in such cases is well known, and it is here that the endo-aneurysmorrhaphy of Matas or the bands of Halsted are of greatest value. These methods diminish the flow of blood through the aneurysm, and provide for its gradual occlusion, during which time an adequate collateral circulation may develop. The great superiority of the bands over other forms of occlusion lies in the slight disturbance of the vessel incident to their application.

| Reporter | Place Reported | Age of Patient | Duration | Etiology | Type | Operation | General Vascular Condition | Result |
|---|---|---|---|---|---|---|---|---|
| P. Penquiez | *Gaz. méd. de Picardie,* 1900, xviii, 21. | 62 | — | Spontaneous | Saniform | Excision | Sclerosis | Immediate cure |
| Leuger | *Bull. Acad. de méd. belge,* 1903, xvii, 1006. | 27 | 4 years | Traumatic | Not given | Excision | Healthy | Cure; 3 years' observation |
| Bobbio | *Gior. d. r. Accad. di Med. di Torino,* 1903, lxvi, 545. | 36 | — | Spontaneous | Not given | Excision | Not given | Immediate cure |
| Saigo | *Deutsch. Ztschr. f. Chir.,* 1906, lxxxv, 577. | 33 | 4 months | Traumatic | Not given | Excision | Not given | Immediate cure |
| Ochmann | *Vratch,* 1908, p. 1350 | — | — | Traumatic | Not given | Excision | Not given | Immediate cure |
| Viaunay | *Loire méd.,* 1909, xxviii | 21 | 6 months | Traumatic | Not given | Excision | Not given | Immediate cure |
| Houzel | *Rev. de Chir.,* 1910, xlii, 431 | 60 | 2 years | Spontaneous | Not given | Excision | Atheromatous | Immediate cure |
| Perkins | *New Orleans Med. and Surg. Jour.,* 1909, lxi, 810 | 40 | 4 months | Traumatic | Saniform | Obliterative Aneurysmorrhaphy | Good | Immediate cure |
| Primrose | *Canadian Med. Assn. Jour.,* July, 1913. | 44 | 4 months + | Spontaneous | Fusiform | Obliterative Aneurysmorrhaphy | Marked sclerosis | Cure; death three mos., uremia |
| McGlannan | Present Report | 55 | 14 months | Spontaneous | Fusiform | Obliterative Aneurysmorrhaphy | Sclerosis | Cure, senile gangrene 6 months |
| McGlannan | Present Report | 45 | 1 year | Traumatic | Fusiform | Excision | Healthy | Immediate cure, with edema of foot and leg |

These considerations apply most forcibly to aneurysms of the larger vessels. For smaller vessels the choice of treatment is between ligation, on the one hand, and excision or obliteration, on the other.

Although the probabilities of gangrene are nearly equal in either form of treatment, ligation has a great disadvantage in permitting recurrence through refilling of the sac.

The contributions of Monod and Vanverts[1] summarize in an excellent manner the general results of the various forms of treating aneurysms. Since their publication the best articles relating to the subject have been detailed reports of operations on particular vessels, for example, Halsted[2] on the common iliac artery, and Elliott[3] on the subclavian artery.

Reports of aneurysm of the posterior tibial artery are rare. I have found only nine cases in the literature since 1894, and there are no specimens of this aneurysm mentioned in Lamb's[4] catalog with reference to the Army Museum. For this reason I am reporting the two cases that were admitted to my service at the Mercy Hospital, Baltimore, during the summer of 1913. In the first case I performed the operation of obliterative aneurysmorrhaphy, while in the second, my associate, Dr. E. H. Hutchins, excised the aneurysm. The similarity of position and general character of the aneurysms gave an excellent opportunity for comparing the results in the two forms of treatment.

Case 1 (Surg. 81064).—Aneurysm posterior tibial artery, upper portion, ruptured. Endo-aneurysmorrhaphy obliterative. Cure.

Colored man, aged 55, truck-driver. Referred by Dr. Stiefel, Baltimore. Duration of disease, fourteen months. Symptom of onset, pain in the leg increased by motion of knee. Ten days before admission sudden sharp pain occurred after violent flexion of the knee and patient noticed the development of a large swelling in the right calf.

On admission, the mass in the right leg extended from the lower portion of the popliteal space to about the middle of the calf. There was a prominent bulging just below the head of the fibula (Fig. 1). The swelling was tense and firm, the skin shiny and the superficial veins distended. No pulsation could be felt in the artery at the malleolus, or in the dorsalis pedis. The foot was slightly edematous, but was warm and the circulation in the toes seemed good. There was loss of plantar flexion in the great toe, but no disturbance of sensation. The general cardiovascular condition of the patient was poor. The heart was hypertrophied and the seat of double mitral murmurs, with a general arteriosclerosis. Blood-pressure 185. The urine contained albumin and granular casts. Wassermann reaction negative. Roentgen-ray examination negative.

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Monod and Vanverts: Rev. de chir., 1910, 1911, xli-xliv.
2. Halsted: Bull. Johns Hopkins Hosp., 1912, xxiii, 2.
3. Elliott: Ann. Surg., 1912, lvi, 83.
4. Lamb: Mil. Surgeon, February, 1911.

*Operation.*—June 20, 1913, the patient was given ¼ grain of morphin hypodermically and placed on the table in the prone position. Iodin disinfection was used for the skin and a tourniquet applied in the upper third of the thigh. With novocain infiltration, an incision was made extending from the upper portion of the popliteal space down the middle line of the back of the leg to its lower third. The thinned-out gastrocnemius and soleus muscles were divided, the clots wiped out of the wound and the ruptured aneurysmal sac exposed. The sac was fusiform, about 12 cm. long with a wound extending about 5 cm. in its upper portion. The dilatation began just below the point of divergence of the peroneal artery. The nerve was pushed to the inner side and the tibialis posticus and flexor longus pollicis muscles were almost entirely destroyed by pressure. The rough edge of the tibia with several small exostoses was felt through a thin membrane in the depths of the wound, just anterior to the aneurysm.

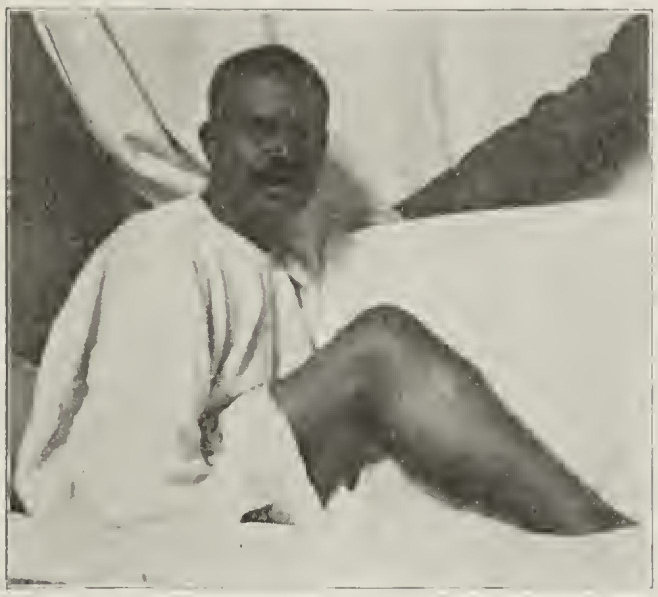

Fig. 1.—Aneurysm of posterior tibial artery (Case 1). Photograph of patient before operation.

The sac was opened throughout its length and the upper and lower openings of the artery sutured with fine silk from within. No other vessels opened into it. The sac was next obliterated by several layers of catgut sutures, the muscles united and the wound closed without drainage.

Convalescence was uneventful, except for a hematoma in the wound which required evacuation on the tenth day. The circulation in the foot was always good and the edema disappeared at once. There were no symptoms of nerve disturbance, but there was loss of power in plantar flexion of the great toe, easily explained by the destruction of muscle observed at the operation.

In December, 1913, six months after the operation, this patient returned for treatment on account of numbness in the great toe. Dry gangrene soon developed and extended until all the toes were involved. These were removed one at a time as the line of demarcation appeared, but later the process extended, especially over the dorsum of the foot. At the present time this patient has a granulating stump, the lower ends of all the metatarsals having been removed. The granulations are healthy, the circulation is good and it is likely that no further extension will occur.

On account of the general arteriosclerosis, I feel that this gangrene, coming on six months after the operation, cannot be charged against the value of the procedure, nor considered a sequel of the aneurysm, but should be looked on as a natural development of his previously existing arterial disease.

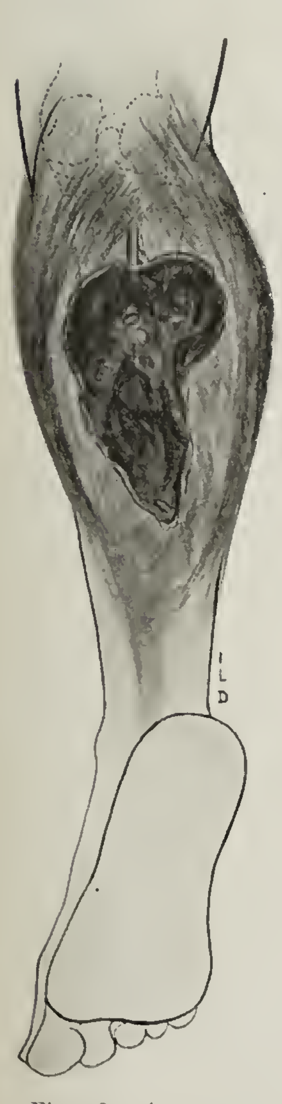

Fig. 2.—Aneurysm of posterior tibial artery (Case 1). Sketch showing appearance of sac after removal of clot.

Case 2 (Surg. 85019).—Aneurysm posterior tibial artery, upper portion, ruptured. Excision. Cure.

Colored man, aged 45, stevedore. Referred by Dr. G. F. Chambers, Lusby, Md. Duration one year. Symptom of onset, pain and swelling after a slight injury, followed later by visible and palpable pulsation of the swelling. A short time previous to admission the patient noticed rapid increase of the swelling and a disappearance of the pulsations. The leg became heavy and painful and interfered with walking.

On admission the leg was so greatly swollen from 4 inches above the knee to the tip of the toes that all anatomic landmarks were obliterated. The skin was shiny and stretched over the firm swelling. No pulsation was felt in the tumor or in the region of the arteries at the ankle. No disturbance of sensation over the foot and leg.

The general condition of the patient was good. No arteriosclerosis, or disease of the heart or kidneys. Roentgen-ray examination negative. Wassermann reaction negative.

*Operation.*—Aug. 26, 1913. Ether anesthesia. Iodin disinfection. Tourniquet placed about middle of thigh. A long incision made over the swelling in the midline of posterior portion of the leg. Calf-muscles divided, opening into a cavity, extending from knee to ankle, filled with blood-clot. After the clot was cleaned out, the fusiform aneurysm was exposed, situated at the uper portion of the posterior artery. The sac had ruptured, and the extravasated blood hollowed out an immense cavity in the leg-muscles, across which the vessel extended like a stretched cable. The aneurysm was excised and after ligation of several vessels the wound closed with drainage.

The convalescence was uneventful, the wound healing without any complications. Edema of the foot and leg was marked and persistent. Eight weeks after the operation, in spite of rest with elevation of the limb, and bandaging, the circumference of the calf of the injured side was 6 cm. and of the foot 5 cm. greater than that of its fellow.

This edema very slowly diminished and finally disappeared. A late report from the patient states that he is able to do his work as before the injury.

These two cases offer an excellent opportunity for comparison between the relative advantages of endo-aneurysmorrhaphy and of excision in the treatment of aneurysms of the peripheral vessels.

1. Ease of execution. The intersaccular suture was done rapidly and comfortably without any disturbance to the surrounding tissues. The ease with which the veins and nerves were avoided was noticeable. The excision, on the other hand, required greater dexterity and much more disturbance of the veins in the control of hemorrhage. Regarded from the point of view of the operator, the Matas operation is, therefore, preferable, because of its easier performance.

2. The immediate result of the operation. The edema of the leg and foot following excision and its entire absence after the Matas operation is the most striking feature

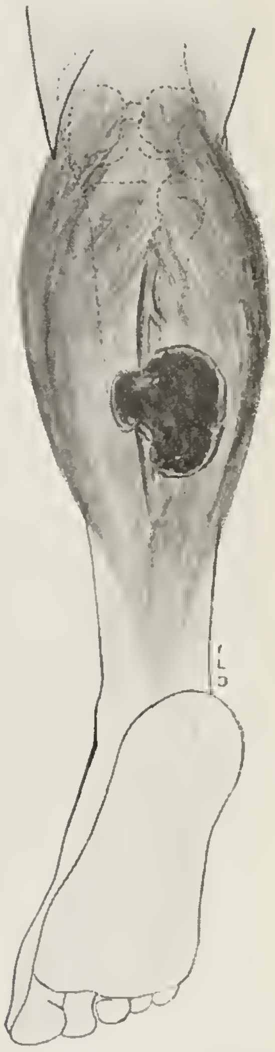

Fig. 3.—Aneurysm of posterior tibial artery (Case 1). Sketch showing sac and vessel extending across the cavity excavated by the clot.

of the immediate result in these cases. The persistent edema interfered to a marked degree with the function of the limb, and gave the patient a good deal of discomfort.

The cause of the edema is not easily explained. It is possible that the preservation of the vessel in the Matas operation also preserves an important portion of the route of lymphatic return from the foot and in this way prevents the development of edema.

3. The ultimate result. I have already given my reasons for concluding that the gangrene of the foot, occurring in the first patient, was not attributable to the aneurysm or its treatment. Disregarding this factor then, the end-result in both cases is the same. The aneurysm is cured without sacrifice of the leg or its function. Therefore, in the ease of execution and in the greater immediate comfort of the patient lie the advantages of endo-aneurysmorrhaphy.

114 West Franklin Street.

## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. MATAS AND MCGLANNAN

**Dr. B. M. Bernheim**, Baltimore: I would emphasize the necessity not only of having a collateral circulation in these vascular conditions, but also of finding out how extensive it is. The reason these tests are not more generally known and practiced is because, for the general surgeon, they are really too involved; they are too difficult to interpret, and, finally, even when used carefully and when a real attempt is made to interpret them properly, they are not entirely conclusive. The great variety and number of the tests, as brought out by Dr. Matas, are an evidence of this. In the abdomen and around the great trunks of the neck I believe it is best to apply the preliminary band according to Dr. Matas' directions and to operate accordingly. That is, if, after the band has been on for a sufficient length of time there is threatened gangrene of the affected extremity, the band had better be removed and some method other than extirpation or ligation had better be attempted. Concerning Matas' method of occluding the vessels of the extremities, I mean occlusion of the femoral artery to determine the condition of the circulation of the leg, Dr. Matas mentioned that he had tried this test a number of times. I did not hear him say whether he thought there was any danger in this test. If he had any bad results I am sure he would have mentioned them. In my vascular work I have always felt it a mistake to put any great pressure on the femoral or axillary artery when there was any considerable vascular disturbance far below it, because it seems possible to injure the sclerotic vessel by dislodging a chance thrombus. I have now operated on a great many patients in these so-called angiosclerotic conditions with threatened gangrene of the leg, and these vessels are very liable to be injured. Therefore I do not make use of any test other than to use digital pressure. To put on pressure with any instrument is a mistake. For practical purposes the pulse-test is the most satisfactory, especially for the surgeon who has a casual blood-vessel case. It is my routine in these cases, for instance in the leg, to start first at the groin, find out whether there is a femoral pulse and if so trace it downward not only digitally, but with the stethoscope, and then examine for the popliteal pulse. To be sure that it is present is rather simple, but it is not so easy to know when it is absent. After finding or not finding a popliteal pulse I then attempt to find the dorsalis pedis artery. If the pulsation can be felt in the foot, in the popliteal space and in the groin, one may be sure that the circulation of the leg is in pretty good shape. If there is no dorsalis pedis pulse, or pulse in the popliteal space, one had better consider carefully what operation to attempt. I believe, as does Dr. McGlannan, that there have been many ill-advised attempts to suture arteries, but I also believe there have been ill-advised attempts to do an endo-aneurysmorrhaphy and that, unless the younger and older generations of surgeons attempt to become proficient in blood-vessel surgery, there is little hope for vascular surgery in the future. I deprecate the practice of vascular surgery on human beings by any man before he attempts this work in the laboratory, but every young surgeon should go into the laboratory and make himself proficient in the handling of the blood-vessel suture. These sutures are now on the market. A manufacturing house is putting up a package with blood-vessel needle and suture already threaded, in a liquid vaseline, so that there can be now no excuse for a man not being prepared to do any blood-vessel operation that might come up. When there is pain in the extremity in circulatory disorders, one had best be careful, because pain, especially in these angiosclerotic conditions, is an indication that the circulation is not what it ought to be; it is due to an ischemia. Therefore, whether or not due to an aneurysm, my advice would be that, when every means at his disposal have been employed to discover the condition of the collateral circulation, if the surgeon is in doubt, he will be favoring his patient most if he will do a blood-vessel suture rather than a ligation or an extirpation. With a developed collateral circulation, Dr. Matas' operation of endo-aneurysmorrhaphy is the method of choice.

**Dr. A. Primrose**, Toronto, Can.: I reported, in conjunction with Dr. T. D. Archibald, a somewhat similar case some time ago. (Primrose and Archibald: Aneurism of the Posterior Tibial Artery: Rupture of the Sac: Operation by the Matas Method, *Canadian Med. Jour.*, July, 1913. The patient was a man aged 43 who first came under treatment in July, 1911, for nephritis and arteriosclerosis with slight cardiac hypertrophy. The urine contained hyaline and granular casts with 2.8 per cent. of albumin. Feb. 8, 1912, rupture of an aneurysm occurred in the calf of the right leg. In April, 1912, he suffered from a peculiar numbness of the left side of the face accompanied by thickness of speech, which persisted. The patient had been an alcoholic. He had marked exophthalmos. The blood-pressure range was from 100 to 220 mm. Hg. The tumor in the calf of the right leg was firm and did not pulsate as a whole. There was a well-marked bruit over it which was systolic, loud, rough and blowing, with a remarkable musical note. June 15, 1912, an operation was performed. An adherent laminated clot was found which was about the size of a hen's egg. Beyond this a large cavity containing a very dark, almost black, blood-clot, lay beneath the soleus and had the deeper muscles of the calf in its floor. The clot was removed and the cavity washed out with hot saline solution. A ruptured aneurysmal sac was found with two openings on its posterior surface. The ruptured sac was closed by Matas' method. No. 1 chromic catgut was used for the purpose, the obliterative form of suture being employed. The blood-pressure during the operation went up to 260 mm. Hg. Subsequent to the operation the blood-pressure remained from 170 to 180 mm. Hg. The albumin in the urine diminished to $\frac{1}{3}$ per cent. The patient's speech was almost normal and he appeared remarkably well. Ten weeks subsequently he contracted pneumonia and died—about three months after operation. Our patient was severely handicapped for operative procedure by reason of the existence of nephritis with the arteriosclerosis and an unusually high blood-pressure. In this respect in the case reported the history is almost identical with that first referred to in Dr. McGlannan's paper, and both of these possess a history in marked contrast with that in Dr. McGlannan's second case in which there was no arteriosclerosis and no kidney disease. In all three cases the aneurysm had ruptured before operation. I can add my testimony to that of Dr. McGlannan concerning the ease and comfort with which the Matas operation can be performed, and to the efficiency of this method of treatment. I think he is hardly justified in instituting a comparison between the results obtained in the two cases he reports, because the factor of serious kidney disease with marked arteriosclerosis in his first patient was a serious handicap which was not present in the second. Had excision of the aneurysm been attempted in the first case (or in my case) the operation would have been rendered the more difficult and dangerous, not only because of the difficulty in controlling hemorrhage which would have been encountered in the presence of such marked sclerosis of vessels, but also the greater amount of interference with veins and other vessels in the operation of excision would have had still greater effect than in dealing with diseased vessels. In all probability, the subsequent edema would have been still more troublesome if, indeed, the vitality of the limb had not been endangered. The Matas operation, therefore, seems the ideal one in such cases. The term "laminated clot" is misleading when used to describe the contents of such an aneurysm. We associate the term "clot" with the formation and deposition of fibrin in which are entangled red cells and some leukocytes, unless the former be washed out to permit of a "colorless clot." On microscopic examination, however, of the so-called "laminated clot," we find, in many places, an almost complete absence of fibrin; there is, instead, a solid mass of blood platelets interspersed with leukocytes. In certain parts, fibrin (usually in strands) may be found interspersed with red and white cells. The fate of all may be "organization" and replacement by fibrous tissue. It is apparent that organization is largely if not solely accomplished by the proliferation of the endothelial cells of the intima-forming fibroblasts, with the ingrowth of capillary loops. This eventually, in favorable cases, proceeds to complete obliteration of the cavity by fibrosis. On the other hand, the ultimate fate of a mass of platelets may in part be to undergo autolysis or absorption. Blood stagnant in a vessel, for example, after ligature, will clot; fibrin forms and this subsequently organizes. In an aneurysm a thrombus occurs, formed, primarily, largely of blood platelets with a variable amount of fibrin, and certain alternation of these elements may occur to produce a laminated effect. These facts are important in considering the result of the Matas method of operating. Here the blood-flow, which is essential for the deposition of platelets, is completely cut off, a small amount of blood-clot may form and fibrin be deposited, but the endothelial surfaces are approximated and by proliferation of the cells of the intima, fibroblasts appear which lead to fibrous-tissue formation and thus complete obliteration occurs by a process of fibrosis. The results thus attained are ideal.

DR. JOHN W. PRICE, JR., Louisville, Ky.: The ideal procedure for operation in cases of aneurysm of the traumatic type, or as a result of arteriosclerosis has been put in bad repute by men of bad judgment, by men who have attempted to make an anastomosis between a venous graft and the end of an artery with such a high grade of endarteritis that the circulation of the artery wall itself was not good, so that there was no hope for the anastomosis to take. By the proper selection of cases, especially those of traumatic aneurysm in young men when the endothelium is in good condition, our hope for doing the ideal operation is very good. The failure in such a case is the fault of the operator and not of the operation. The obliteration which occurs at the site of the anastomosis of the venous graft to the artery is due to the formation of thrombi. The formation of thrombi is the result of the failure accurately to approximate the endothelial surfaces of the graft and of the artery. We have overcome this difficulty by the use of a very simple instrument which we have used in our experimental work, which we call a cannula forceps. It is simply a cannula which has been divided longitudinally into halves, each half soldered to the tip of a blade of a mosquito forceps. When the forceps is closed our cannula is complete and when open we can put it around the artery, turn a cuff of the artery back over our closed cannula, then bring the end of the venous graft over the cuff of the artery so that we have endothelium next to endothelium. The ends of the vessels are held in position by little hooks attached to the shaft of our instrument. We apply a continuous basting-stitch suture around and around, with our cannula as a firm base to work on. When the suture is completed one simply slips the cannula out of this cuff. What is obtained? An approximation of endothelium to endothelium, the basting stitch going from outside to inside of the venous graft, and from inside to outside of the artery. There is a minimum chance for the formation of thrombi. The simplicity of this procedure appealed to me and I have suggested it because many men, who have neither the time nor a laboratory in which to do an immense number of blood-vessel anastomoses, can use this cannula-forceps. With it 99 per cent. of skilful abdominal surgeons will be able to make anastomoses the first time. The first one I performed with a medical student in five minutes. There was no skill on either side. I had no special experience. I had tried the Carrel method and had failed.

DR. J. SHELTON HORSLEY, Richmond, Va.: Dr. Matas' contributions to the therapeutics of aneurysm are important. He shows that there is no single treatment for aneurysm. Differing aneurysms and varying conditions require different treatments. The only genuine "ideal operation" for aneurysm is that which cures the patient with the greatest safety. The so-called ideal of restoring circulation by excising the aneurysm and suturing on a piece of vein to reestablish the circulation may sometimes fulfil this, but not always. According to the tests described by Matas, if the collateral circulation is fairly good in the extremities the operation of endo-aneurysmorrhaphy is the ideal treatment. If, however, the circulation is quite poor, if there is already evidence of defective circulation too great to permit the use even of the constriction band, endo-aneurysmorrhaphy will not be indicated. Therefore, the so-called ideal operation of excision and substituting a piece of saphenous vein would be proper. Those who have had any experience with operation on aneurysms of the high femoral know that it is often difficult and bloody. The only way in which the circulation can be completely controlled is by pressure on the aorta. These cases can be sometimes treated by clamping the artery at both ends of the aneurysm and gradually excising the sac with the substitution of a portion of the saphenous vein. Lexer reports a case in which he did this. The patient was perfectly well six months later. Arterial suturing requires some experimental work before it should be used clinically. In the beginning of intestinal surgery there were numerous bobbins, buttons, etc., used. Now everyone uses needle and thread. In blood-vessel work the same process of evolution will take place. The advantage of everting intima and applying a broad surface of endothelium to endothelium is obvious. Lexer used the running stitch of Carrel and it pulled out and he then used the mattress stitch. Now a single mattress stitch, certainly in experimental work, is sometimes dangerous, for secondary hemorrhage sometimes occurs. It complies with the conditions of approximating broadly by everting endothelium but leaves a weak point between the stitches. In intestinal surgery, endothelial surface is on the outside and one turns a flange in; in blood-vessels, endothelium is on the inside and one turns a flange out. You would not think of doing intestinal surgery by whipping the edges together with an overhand stitch as in suturing skin. I have adopted the double mattress or cobbler's stitch, which fulfils all these conditions and leaves no weak point and I have never had secondary hemorrhage since using it. Experimentally, I have excised a portion of the abdominal aorta and sutured into the defect a rubber tube and the dog made a perfect recovery. I have done it seven times and had only one perfect recovery. In this case the dog was killed six months afterward, and the specimen removed. There had been no paralysis of the hind legs. The tube was occluded, but it had become occluded gradually so that the collateral circulation had time to form, and clinically the result was as good as if the tube were patent. As the mortality of ligation of the aorta is 100 per cent., this method might be considered.

DR. RUDOLPH MATAS, New Orleans: With regard to Dr. Bernheim's comments, it does not follow that because a considerable number of suggestions have been offered for testing the collateral circulation that all these are difficult or fallacious. Some discretion and judgment must be exercised in applying the tests according to circumstances and, especially, the regions involved. We have been testing the circulation in our clinics since 1907 in every case in which the obliteration of the parent artery of the region might be required in the course of an operation on the neck or extremities. Thus far we have not met a case in which the simple methods tnat we have devised have failed to interpret the circulatory conditions. We have been so much encouraged by our results that we cannot understand how any one who is acquainted with these procedures would fail to avail himself of the very valuable information that they furnish, before undertaking an operation involving the great vascular trunks. Dr. Bernheim laid stress on the test by the pulses. So far as my experience is concerned, the absence of the peripheral pulses as an evidence of deficient collateral circulation is most fallacious. There is a general impression that in popliteal aneurysms, for example, when the pedal pulses are absent, the collateral circulation must be insufficient and an operation dangerous to the limb. This is an error which was very clearly pointed out, years ago, by Delbet. As long as the limb is not choked up, edematous, cold and cyanotic, and there is a good living color, the absence of the dorsalis pedis and posterior tibial pulses simply means that the main trunks are obstructed but that there is an adequate collateral supply. Were it not so, the foot would not be living, sensitive and otherwise normal. Furthermore, the loss of the peripheral pulses is a matter of very frequent occurrence in aneurysms of the extremities, and may exist for months and years, without any appreciable effect on the nutrition of the distal parts. In such cases one should not hesitate to operate, as the collateral circulation is assured. Concerning the fear expressed by Dr. Bernheim with regard to the dangers of arterial compression, I fully appreciate his caution, but do not believe he has obviated the risks by substituting digital for well-padded instrumental compression. The history of the old and supposedly most innocent method of curing aneurysm by digital compression is too well stocked with lamentable failures in which gangrene followed thrombosis or the displacement of emboli to warrant any statement of security by this procedure. As a matter of fact, an old atheromatous and calcareous artery can be subjected to no manipulation which does not involve some risk. In dealing with the surgical diseases of the blood-vessels this risk is always present. Even in dealing with normal arteries it is never absolutely avoidable. Embolism and thrombosis are the bane of vascular surgery. In the cure of aneurysm the methods which only temporarily or partially arrest the circulation in the sac, are especially to be feared from this cause. The intrasaccular method, by avoiding the direct manipulation of the blood-vessels and by getting rid of the clot, undoubtedly diminishes the risk of emboli displaced from the sac. The results of our methods must always be comparative. Any one who quotes the statistics of any method of treating aneurysm without mortality or without accidents of any sort, only proves that his experience is very small indeed. What we are trying to do is to cure the greatest number with a minimum risk of life or limb. In accomplishing this, we believe that a great measure of our success has been due to the care and attention that we have given to the study of the circulation, and especially the collateral circulation, as a prerequisite to operation, in each case.

Dr. Alexius McGlannan, Baltimore: The rule of Delbet cheered us in both of our cases. In both we had a well-nourished foot although the ordinary points of pulsation were absent. We excised the second aneurysm, although we hoped to do an endo-aneurysmorrhaphy. The excision was done because, as was stated in reporting the case, the vessel reached across a cavity as a cable would across an open space in the air, and the obliterative operation would have interfered with healing and therefore the excision was done. The result of the Matas operation was as nearly perfect as one could hope for in dealing with a damaged circulatory apparatus.

# MYOSITIS OSSIFICANS FOLLOWING A SINGLE TRAUMA *

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The occurrence of true bone in muscle has always held something of mystery, and even at the present time there is no generally accepted belief as to its method of origin.

Although comparatively rare, more than five hundred cases, each the result of a single trauma, have been reported in the literature. Up to 1907, Strauss[1] was able to collect reports of only 150 cases.

The malady results from a severe traumatism such as the kick of a horse, a blow from a sharp-cornered object, or dislocation of the elbow, without break in the skin or subsequent suppuration. Nearly all cases occur in the brachialis anticus or the quadriceps extensor, rarely in other muscles. It is found most commonly in vigorous middle-aged men. Porter and Quinby[2] state that it is most commonly a result of posterior dislocation of the elbow. Machol[3] records sixteen cases following immediate reposition of uncomplicated posterior elbow dislocation and says that more than one-half of the cases at the elbow follow this injury. Frangenheim[4] states that aside from this variety of dislocation, it has been known to occur but once in the subclavius following clavicle dislocation, and once in the subscapularis following humerus dislocation. Schultz[5] collected 233 cases from records in the German army during ten years, and in all but three the new bone was in either the quadriceps extensor or brachialis anticus muscles.

The essential character of the process is the formation of typical spongy bone intimately incorporated in the muscle. At an early stage it is cartilaginous, varying greatly in extent and shape. In the arm it may involve the origin, middle or entire brachialis anticus muscle and often the periarticular structures. The most typical growth is a somewhat tapering piece of bone in the brachialis anticus attached by a narrow stem to the tip of the coronoid process of the ulna. But as a rule, the new bone is not firmly attached to the humerus or ulna. Of fifty-six cases at the elbow collected by Cahier,[6] in twenty-six it was entirely movable, four pedicled, sixteen attached to the capsule, and one at first movable but later fixed.

In the thigh the formation is, as a rule, attached to the femur and has to be chiseled off. All cases are said to have attachment to the bone at some time during development, in the nature of a small pedicle, the remainder of the shaft having a smooth outline. The mass may be rounded, elongated, with irregular tongue-like projections, fan-like or coral-like, as in a case reported by Gruber.[7] At times there is a shell of bone containing old blood-clot, and in other cases cysts with bony walls. The size varies greatly, Gruber recording a mass in the vastus externus measuring 17 by 7 by 4 cm.

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* Read before the Chicago Medical Society, June 10, 1914.

1. Strauss: Beitr. z. klin. Chir., 1913, lxxxviii, 740.
2. Porter and Quinby, in Bryant and Buck: System of Surgery, vii, 38.
3. Machol: Beitr. z. klin. Chir., lvi, No. 3, p. 581.
4. Frangenheim: Arch. f. klin. Chir., 1906, lxxx, 445.
5. Schultz: Deutsch. mil.-ärztl. Ztschr., 1910, No. 4.
6. Cahier: Rev. de chir., 1904, xxix, 356; 602; 768; 827.
7. Gruber: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1914, xxvii, No. 4.

Microscopically, at an early stage, there is present at the outer margin of the growth, degenerated muscle with some blood-pigment and red cells, and young connective tissue with new blood-vessels. Adjoining this is the osteoid tissue with newly formed bony trabeculae and marrow, and scattered here and there areas of cartilage. Careful histologic examination has in several cases shown a break in the outer periosteal layers, allowing the growth of bone to extend through into the soft tissues. At a late stage of the process, sections show typical cancellous bone with fibrous tissue and muscle about the outer margins.

Following a severe trauma to the anterior surface of the arm or thigh there is pain, marked swelling and discoloration, and complete disability for a few days. A roentgenogram at this time shows no fracture. Usually after a few days' rest, the patient resorts to massage and motion and in ten to fourteen days an increasing stiffness and disability is noted. A firm lump may then be felt at the seat of injury without the usual signs of inflammatory reaction. The lump continues to increase in size, and in three to four weeks the disability becomes complete. Examination shows a firm mass in the muscle, usually somewhat movable on the bone. Roentgenoscopy reveals a distinct shadow in the muscle attached at one part, as a rule, to the shaft of the bone.

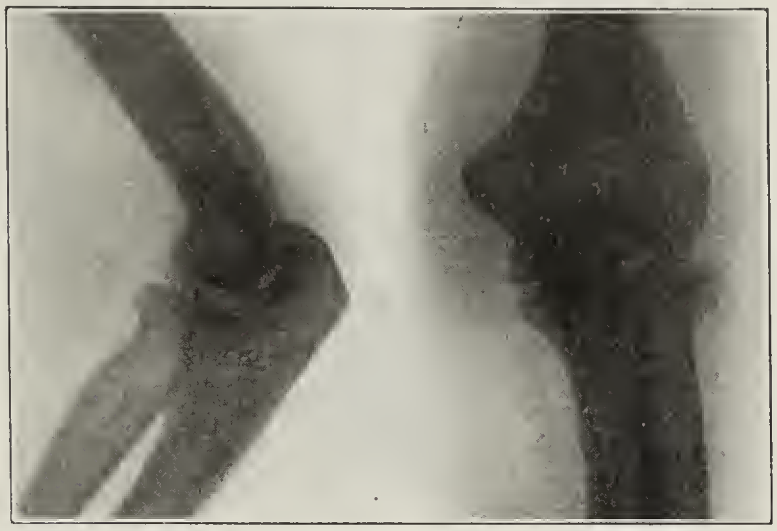

Fig. 1.—Two weeks after injury (Case 1, July 22, 1913).

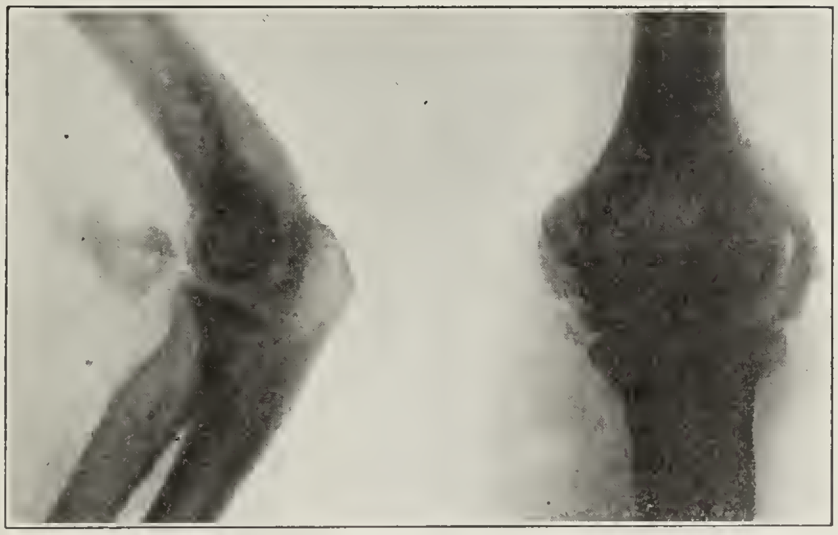

Fig. 2.—Four months after injury (Case 1, Nov. 10, 1913).

During the next three or four months the mass remains stationary in size, slowly becoming harder. A gradual decrease then ensues, but the growth, as a rule, persists for several years. Makins[8] recorded two cases which, six years after the onset, showed almost complete resorption of the new bone. Machol[3] studied sixteen cases with the Roentgen ray and was able to show a period of growth terminating in mature cancellous bone, followed by a stage of gradual decrease in size and increase in density. Usually the restoration of function is complete or nearly so after four months. The only complication noted has been the limitation of motion—never any disturbance from pressure on nerves or blood-vessels.

A diagnosis is made on the finding of a firm mass at the seat of a severe trauma received about three or four weeks previously, which on Roentgen-ray examination shows a shadow in the muscle without fracture of the bone. It must be differentiated from sarcoma, for which it has been most frequently mistaken, as instanced by numerous cases in the literature. Coley[9] called attention to the difficulty of differentiation at times. Rapid initial growth followed by quiescence and decrease, loss of function, outline of shaft sharp, early pain and hardness, all speak against sarcoma. Incision and microscopic section readily decide the question.

The prognosis is intimately related to treatment. A majority of writers on the subject state that a favorable outcome is to be expected if let alone, and that disability is more marked in those cases near a joint in which the periarticular tissues are involved in the ossifying process. Many believe that prophylaxis is important and advise immobilization for three weeks following an elbow dislocation or a severe blow on the thigh, with later gentle massage and passive motion. After the onset, therapy has no influence.

The opinion is unanimous that no operative procedure should be undertaken during the active stage, that is, before three or four months have elapsed. Removal before this regularly results in recurrence. The growth should be removed only when an indication, such as marked disability, is present. König[10] declares against operation and quotes Donnahl, who concluded from analysis of a series of operated cases that operation does more harm than good. Machol,[3] who reported the largest number of personally studied cases, never found it necessary to operate. Lapointe,[11] on the other hand, thinks that excision in from six to eight weeks is the method of choice in cases not complicated by formation of bone in the periarticular structures. Coley and Lapointe believe that cases situated near a joint for this reason give worse results than those along the diaphysis. Chabrol[12] collected the end-results in ninety-five operated cases, seventy-seven of which showed complete restoration of function, improvement in fifteen, and no improvement in three.

If operation becomes necessary, the entire mass with covering of fibrous tissue, periosteum and superficial layer of bone should be removed. Morley[13] advocates excision with restoration of the periosteal defect with a fascial graft.

The principal interest in so-called myositis ossificans following a single trauma attaches to its genesis. The numerous theories formerly brought forth have been largely discarded by more recent workers, and at present the belief is unanimous that the essential process is not a myositis at all, but that the bone formation is brought about in one of two ways: either through the agency of the periosteum or by a metaplasia of the intermuscular connective tissue.

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[8] Makins, G. H.: Traumatic Myositis Ossificans, Proc. Roy. Soc. Med., Surg. Sec., 1910-11, iv, 134.

[9] Coley: Myositis Ossificans Traumatica, Ann. Surg., lvii, No. 3, p. 305.

[10] König: Arch. f. klin. Chir., 1906, lxxx, 64.

[11] Lapointe: Rev. de chir., 1912, xlvi, 657.

[12] Chabrol: These de Paris, July, 1912; cited by Coley.

[13] Morley: Brit. Med. Jour., 1913, ii, 1475.

So far as is at present known, there are but two agencies, aside from embryonal rests, which may lead to heterotopic bone formation: first the skeletal osteoblasts, and second, the presence of young granulation tissue in contact with calcified areas. Wells[14] states that without the preliminary calcification of necrotic tissue there is no subsequent ossification. Calcium is necessary to ossification. In the first the osteoblasts have the power of causing its deposition; in the second it is absorbed from the calcified areas by the young granulation tissue and utilized in the upbuilding of new bone. That connective tissue can undergo metamorphosis directly into bone without calcification has not been shown.

Heterotopic bone has been found in all parts of the body in conjunction with a preceding calcification. Liek,[15] experimenting on kidneys of rabbits, was able to show clearly the various stages in this method of bone formation: first the calcification of necrotic or degenerated tissue, followed by young connective tissue in contact with the calcified areas—the latter then being absorbed with the formation of osteoid tissue — rapidly changing directly to bone. He concludes that in calcified kidneys of rabbits following closure of the larger blood vessels, bone regularly forms, beginning in about forty-one days and complete in three months.

Gruber[7] reports a case of bone formation in a drainage wound years after a suprapubic cystotomy. Stevens[16] records a case of bone formation in the calf muscles years following a suppurating wound. He speaks of removing a piece of "calcified fibrous tissue." These are both undoubtedly examples of this mode of new bone formation.

It seems quite evident that the subject of this paper is an entirely different process from that just described. The numerous carefully made microscopic studies have never shown calcified areas. Suppuration has never been recorded. The findings have been uniformly callus formation. In all cases when sectioned sufficiently early, there has been found evidence of endochondral bone formation, whereas by the other method, cartilage is never present.

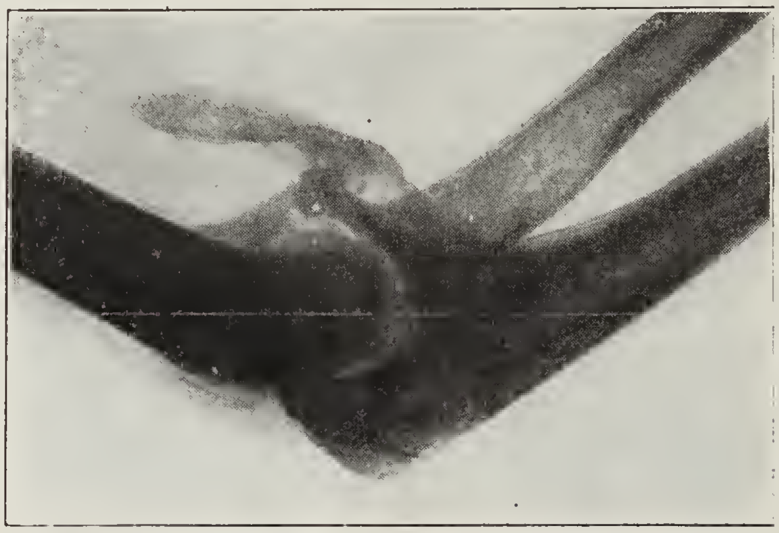

Fig. 3.—About three months after injury (Case 2). Anterior internal incision over the growth; removal; no recurrence two months later; function very much improved.

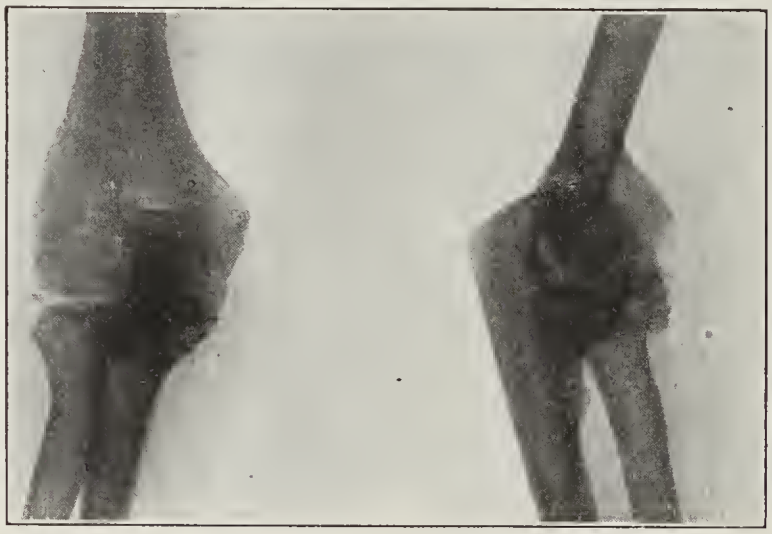

Fig. 4.—Four years after operation (Case 2).

So, I believe, we have to look to the osteoblasts, whether they come from the cambium layer of the periosteum, as believed by most authors, or from the interior of the bone, as held by Macewen[17] and lately by Morley.[13] Binnie[18] believes the periosteum to be responsible in many cases, either by osteoblasts escaping into the pulpified tissue and there developing, or by bits of periosteum being pulled into the muscle and growing, or by a large flap of periosteum which is stripped up and displaced into the muscle. That free and attached strips of periosteum transplanted into muscle may grow and produce bone has been shown experimentally by numerous workers. Such experiments, however, have failed often to develop bone or at best only small pieces, out of all proportion to the size of the flaps transplanted. Sudeck[19] advocates this method of formation in the elbow cases and attempted to prove it by experiments on cadavers. He performed twenty-three posterior elbow dislocations by hyperextension and found quite regularly, at one or all of four areas, raised or torn-off pieces of periosteum. In only three instances was there uncovering of the anterior surface of the humerus to a large extent. That small bits of periosteum may be pulled off by the fibrous capsule and give rise to small pieces of bone, or that stripped-up periosteum may form a layer of bone beneath, is evident. From the evidence presented, however, it seems apparent that the principal feature of this process, namely, the large masses of bone incorporated in the muscles, cannot be thus explained. Berndt,[20] König and others are emphatic in saying that it is an impossibility.

The explanation advanced by König[10] is that the trauma crushes all structures down to the bone, at the same time crushing periosteum and superficial bone surface. Blood and exudate collect in the separated tissue-spaces. In the process of repair the osteoblasts grow out with the newly formed granulation tissue into the traumatized parosteal structures. That early massage and movement may aid the dissemination of the osteoblasts is believed by some.

A specimen obtained by König at necropsy from the thigh of a woman injured four months previously, showed clearly the new growth of bone under the periosteum passing through the superficial layers to form the large mass of bone in the muscle. Berndt demonstrated microscopically a similar condition. König attempted to simulate the conditions in rabbits but was unable to produce new bone. Morley[13] in a recent preliminary report states that he has been successful.

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[14] Wells, H. Gideon: Calcification and Ossification, Arch. Int. Med., June, 1911, p. 721.

[15] Liek: Arch. f. klin. Chir., 1906, lxxx, 279.

[16] Stevens, William E.: Myositis Ossificans Traumatica, The Journal A. M. A., Jan. 18, 1913, p. 203.

[17] Macewen: The Growth of Bone, 1912.

[18] Binnie: Myositis Ossificans Traumatica, Ann. Surg., September, 1903, p. 423.

[19] Sudeck: Deutsch. Ztschr. f. Chir., Jan. 4, 1911.

[20] Berndt: Arch. f. klin. Chir., 1902, lxv, No. 2, p. 235.

The conditions necessary to this form of new bone growth seem to be a destruction of parosteal tissues, often with the formation of a hematoma, connected with a break in the periosteum. In the repair of the damaged tissues granulation tissue forms and the osteoblasts, stimulated to growth by the trauma, grow along the newly formed vessels and produce bone. This view is supported by the finding in some cases of bone-walled cysts and bone cylinders containing lymph or old blood. On account of the rarity of the process, König believes that an individual predisposition must be added to this explanation.

Macewen's[17] experiments with bone growing in glass tubes show the process well. The osteoblasts spread along the embryonic connective tissue which penetrates the blood-clot and forms bone directly. He records a case of an ossified wall of a false aneurysm resulting from piercing of the brachial artery by a spicule bone in fracture of the humerus. Many authors believe that this process is similar to exuberant callus and so-called parosteal callus formation. Frangenheim[21] especially has called attention to the marked similarity clinically and histologically. That there may be an individual predisposition to increased bone formation is possible, but that there is a low-grade hematogenous infection present, as suggested by Berndt, is not at all probable.

That the affection has an anatomic basis is indicated by the fact that it is practically limited to the thigh and elbow. These have in common a thick covering of soft tissues about the bone, the deep layer of muscle being intimately adherent to the underlying periosteum over a broad extent. This lends itself well to the conditions believed necessary to the initiation of the process.

There can be little doubt that so-called parosteal callus, exuberant callus and so-called myositis ossificans following a single trauma are genetically the same. The pathologic and clinical findings bear this out. The process is not a myositis. The involvement of the muscle is incidental, the essential feature being the participation and development of the osteoblast in repair of the parosteal structures.

## REPORT OF CASES

Case 1.—P. P., aged 35, a fireman, came to the Central Free dispensary, July 21, 1913, complaining of a painful swollen elbow. Two weeks previously, while tusseling with a fellow-workman, he was thrown with the right arm twisted under him. He suffered extreme pain, and swelling developed immediately, resulting in complete disability. Two weeks after injury there was marked swelling about the right elbow with obliteration of bony landmarks, ecchymosis and entire loss of function. There was great tenderness, most marked at the external epicondyle. Roentgen examination showed no fracture. The joint was immobilized in a sling for ten days and then massage and passive motion begun. The patient reported no improvement and manipulation continued very painful. Aug. 7, 1913, about four weeks from the time of the accident, a mass of about the hardness of cartilage was felt just internal to the biceps tendon. It seemed somewhat fixed to the ulna. A roentgenogram taken Aug. 26, 1913, showed a shadow attached to the tip of the coronoid process below, extending upward 2 inches into the muscles anterior to the humerus. It was very irregular in shape, with small sharp projections, and of variable density. There was also marked ossification of the periarticular structures, a continuous mass of bone extending from the external epicondyle to the head of the radius.

Improvement was gradual and after four months patient was able to do light work. Nov. 10, 1913, four months after the injury, examination showed the same mass, more easily palpable, pointed and somewhat moveable. The forearm could be flexed to 100 degrees, extension being nearly complete. Roentgenoscopy at this time demonstrated some decrease in size of the main growth which had the appearance of a hollow piece of bone.

Eight months after the injury, patient was doing heavy work without discomfort. The bony mass was about the same size and flexion was still limited to 90 degrees. Operation was refused.

Case 2.—M. H., girl, aged 12, came to the Central Free Dispensary in February, 1910, complaining of pain and disability of the left elbow. Six weeks previously she had fallen, striking on the forearm. A competent surgeon diagnosed and reduced a posterior dislocation of both bones of the forearm. Rest for a week was followed by massage and motion. After a few weeks, disability became more marked.

On examination, a hard mass in the flexure of the left elbow was felt. The forearm could be flexed to 100 degrees and extension also showed some limitation. The Roentgen ray revealed a shadow extending into the musculature of the arm, attached at its lower end to the tip of the coronoid process. It consisted of two distinct parts, the lower about the size of the radial head and the same density. The upper part was pointed, irregular and attached to the lower by a narrow stem. There was also noted ossification in the periarticular structures and beneath the raised periosteum on the outer side of the humerus, and also an incomplete fracture of the external epicondyle.

April 4, 1910, about four months after the injury, Dr. Lawrence Ryan removed a piece of cancellous bone from the coronoid process and with it a part of the brachialis anticus muscle. The growth involved the tendon and body of the muscle.

May 4, 1914, patient complained of no disability, being able to work as a stenographer. Flexion was limited to 95 degrees and extension only slightly. Just internal to the biceps tendon was felt a knob of bone firmly attached to the coronoid process. A corresponding mass was heaped up on the anterior surface of the humerus. Thickening about the condyles and a slight elevation at ulnar tubercle, besides a separate piece in the capsular structures were apparent in the roentgenogram.

(I am indebted to Dr. Ryan for allowing me to report this case.)

Having in mind the large percentage of cases reported by Machol which developed following carefully watched cases of posterior elbow dislocation, I have followed four such dislocations at the Cook County Hospital. Three were in children, and the fourth, in a man, was complicated by a fracture of the coronoid process. In none did this condition appear, probably on account of the laxity of the joint structures in the children and the fracture in the adult which minimized the traumatism of production and reposition of the dislocation.

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**Etiology.**—The way in which morbid causes act is in general very far from clear. The connection between extrinsic action and the cerebral lesion is almost always a very indirect one. Whole chapters in physiology and general pathology had to be written before certain distant relationships between disturbance of brain function and lesions of other viscera were discovered. — Lugaro, Problems in Psychiatry.

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[21] Frangenheim: Deutsch. med. Wchnschr., 1908, xxxiv, 497.

# THE TREATMENT OF HEART INVOLVEMENT IN SYPHILIS

## BASED ON A STUDY OF THREE HUNDRED CASES *

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We have already written concerning the great frequency of heart involvement in syphilis.[1] Here and elsewhere,[2] we have discussed the character of the changes in the organ, pointing out that the most frequent and important lesion in all stages of the disease is one of the heart-muscle which is dependent on a periarteritis of the coronary vessels. This lesion was apparently first described by Isaac Adler,[3] and its frequency of occurrence, since noted by many, has been recently verified by Warthin,[4] who has demonstrated with considerable constancy the presence of spirochetes in these characteristic foci.

In another paper,[5] presented as a continuation of our study of this subject we have discussed the symptoms and diagnosis of the complication.

Some of these cases have now remained sufficiently long under observation to permit us to discuss with some authority the question of treatment and its results, covering cases in the secondary and tertiary stages of the disease. It is our purpose to present in this paper certain aspects of this important side of the subject in so far as our rather brief though active experience now goes.

We have found it very difficult to discuss treatment in an analytical way inasmuch as so many cases have come under our observation on our hospital services, where definite data could not be elicited as to the precise methods of specific treatment previously employed, nor of its extent.

Obviously in a large percentage of the cases the time at which the heart-lesion developed could not be ascertained; in fact, this point could be surely fixed only in some of the secondary cases. The character and extent of previous treatment for circulatory discrepancies can also not be definitely determined.

We have included in our list for analysis a number of cases which have been treated in various hospitals or by private physicians with entire disregard of the luetic origin of the cardiac fault. Such instances have been included because we have found that comparison of these with those treated on the assumption of a definitely syphilitic change affords a basis for conclusions of value. Only four instances are found, however, in this series in which improvement without specific treatment took place.

Since a considerable number of cases have only been conclusively recognized by lesions discovered post mortem, it must be understood that it is highly probable that the percentage of fatal results in this group of three hundred cases is overestimated, and it is therefore not mentioned, as having no accurate bearing on the treatment of this complication. The apparent recovery or signal benefit of equally desperate cases, when treated on the basis of the luetic origin of the heart defect, certainly indicates the necessity of such a therapeutic basis. We are keenly aware that so crude an analysis as is possible on material of this character does not establish a certain scientific fact, but we feel that our study, covering, as it does, over three hundred cases, has led us to conclusions of very real applicable value from the clinical point of view.

It will be noted throughout that our methods of treatment vary greatly, and that no one routine type of drug or procedure has been adhered to. This may be in part due to the fact that our therapeutic studies have been, and still are, in an experimental stage, but chiefly because we have been driven to the conclusion that in the treatment of patients suffering from this complication each instance must be definitely individualized, and that no one routine method will be found to apply with equal benefit in all cases. Unscientific as this conclusion may appear to some, to those long actively concerned in the treatment of disease in routine patients, it needs no defense, and the absolute necessity of such a basis for the best therapeutic results will be apparent.

We again wish to emphasize the fact that the essential lesion, in so far as the heart in syphilis is concerned, is a periarterial granulomatous or inflammatory change affecting the heart-muscle. From the standpoint of treatment, we believe that this assumption is most important, for our studies have shown the final or immediately lethal lesion in most cases to be a giving way of the muscle. Furthermore, we are convinced that in most cases where improvement has followed treatment it has been accomplished by a clearing up of these rather than of other lesions, though we recognize with Sachs, Collins and many others after them that a true endocarditis, even of considerable standing, may be absolutely removed by specific treatment.

We also wish to state that in our opinion some of the most brilliant results attributed to specific treatment in cases of syphilitic aortitis have in reality been achieved from improvement of the universal heart-muscle lesions, for many of the symptoms commonly attributed to this lesion are really due to muscle disease. This assumption is apparently supported by the recent pessimistic but undoubtedly accurate studies of Warthin.

Case 1 (231).—M. F., woman, aged 50. Negative history as to lues. Five years ago, epigastric and precordial pain with vomiting, dizziness, headache and weakness. Shortly after, dyspnea on least exertion. One year later edema, precordial pain reflected down left arm into hand. All symptoms recently greatly increased. Physical examination showed poor muscle tone with systolic at mitral and at aortic rings. Broad area of retrosternal dulness, tenderness over manubrium. Roentgenoscopy shows dilated arch. Under circulatory treatment in hospital for three months, constantly losing ground, all symptoms progressing. Wassermann reaction negative. One grain mercuric salicylate given intramuscularly with idea of activating Wassermann. Marked improvement in pain within twenty-four hours. Circulatory drugs discontinued and mercuric salicylate continued in vigorous dosage. Patient now up and about ward, apparently free from all symptoms except on exertion. Wassermann reaction positive. Roentgenoscopy shows no apparent change in aortic shadow.

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* From the Second Medical Service of the City Hospital.

* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Brooks, Harlow: A Study of the Heart in Syphilis, Med. Rec., New York, 1912, lxxxi, 351.

[2] Brooks, Harlow: Clinical Observations Concerning the Heart in Syphilis, Inter-State Med. Jour., 1913, xx, No. 6; The Heart in Syphilis, Am. Jour. Med. Sc., 1913, cxlvi, 513.

[3] Adler, Isaac: Observations on Cardiac Syphilis, Tr. Assn. Am. Phys., May 3, 1898.

[4] Warthin, A. S.: Tr. Assn. Am. Phys., May 13, 1914.

[5] Brooks, Harlow, and Carroll, John: The Symptoms and Diagnosis of Involvement of the Heart in Syphilis, Based on a Study of Two Hundred Cases, New York State Jour. Med., 1913, xiii, 328.

### TREATMENT IN SECONDARY CASES

The early cases treated have mostly occurred either in the private practice of one of us (Carroll), or in the service of our colleague, Dr. J. A. Fordyce, who has greatly encouraged our studies of this subject. Twenty-four such instances have been observed. Two fatalities occurred among them (previously reported) but in both the nature of the disease and its complication had not been recognized in sufficient time to admit of proper treatment. Confirmatory necropsies were secured in both. Apparently complete recovery without any subsequent heart defect took place in all the other cases, save one to be mentioned later. We wish in this regard to point out the care which should be exercised by those in charge of early syphilis that cardiac strain be avoided until treatment has been established, and that the same necessity for consideration of the circulatory apparatus be recognized as in the other infections, diphtheria, rheumatism, septicemia and the like.

Case 2 (199).—Man, aged 34. Service of Dr. J. A. Fordyce. In secondary stage of the disease. Complains of shortness of breath, sudden attacks of precordial pain. Chills, fever, leukocytosis and the physical signs of pericarditis. Complete disappearance of signs and symptoms within three days after two doses of neosalvarsan (intravenously). The cardiac signs appeared within four weeks after initial lesion, which in this case was on nose. Apparent cure followed. Subsequent combined treatment.

Although practically all the early cases under our observation have been treated by the more modern methods, that is, with salvarsan, we are convinced that vigorous treatment with mercury in this stage would probably also result in almost as brilliant results. We wish to assert that, aside from general prophylactic measures, the treatment of cardiac invasion in early syphilis should be directed only to the specific infection and that circulatory treatment *per se* is at this time unnecessary and probably unwise.

Although we are convinced that in by far the greater majority of cases of early lues cure of a cardiac complication may be confidently expected, certain exceptions exist. This has been well illustrated by a case referred to one of us by Dr. Alphonse Wren.

Case 3.—Patient, woman of 25. Came under observation in the aggressive secondary stage of the disease. She had been treated, apparently mostly with mercury and the iodids in various dispensaries and by private physicians. In spite of treatment exhibits mucous patches, marked skin rash, periosteal tenderness, fever, falling hair and other evidences of active secondary lues. While still under vigorous treatment with mercuric chlorid internal, mercurial inunctions, and after three doses of salvarsan carefully administered in an excellent clinic, developed cardiac muscle insufficiency, dilatation, active aortitis (without aneurysm) endocarditis and edema and cyanosis with severe dyspnea. Salvarsan intravenous again repeated in maximum dose. Mercuric salicylate injected intramuscularly until marked salivation and other evidence of mercurial poisoning appeared. Digitalis, strophanthus, camphor and the usual cardiac regimen apparently produced no effect whatever. The case was progressing rapidly and absolutely unchecked by either specific or circulatory measures when she passed out of our observation. Though her subsequent history cannot be ascertained, it is impossible to assume other than that early death followed.

In so far as could be judged by study and observation of this case, treatment of all kinds was entirely without avail in so far as checking the course of the infection or relieving the heart complication was concerned. This has been the only case in our observation in which treatment in the secondary stage has been apparently useless. Inquiry among syphilographers of wide experience has brought to light other and probably similar cases. They would, however, appear to be quite unusual.

### TREATMENT IN LATE CASES

Most of the cases comprised in this series are those occurring, or at least presenting themselves, on an internal service for treatment in the tertiary or late stages of the disease; 277 instances of this type are included.

A few patients appeared for treatment for the first time because of their cardiac condition; but in most instances, and in practically all cases which came to our hospital service, they had been for a greater or lesser time under treatment either by private physicians or in institutions for their circulatory discrepancies. While in some of these cases a certain amount of benefit had been derived from such measures, mostly applied entirely without recognition of the cause of the circulatory defect, the very fact that they appeared for treatment shows that these measures in themselves had been found inadequate, probably even at the very outset of the complication. As illustrative of this point we wish to present briefly the case of a fire captain 52 years of age.

Case 4.—He came to one of us suffering severe precordial pain and so marked a grade of dyspnea that he was hardly able to get about. He had been ordered before the retiring board because of physical disability. On examination he showed loud, double aortic murmurs, and irregular and considerably dilated heart, together with the symptoms of a probable aortitis. The man gave a history of a probable rheumatic fever but denied that of syphilis. He was placed on digitalis, but without good effect. Because of the failure to respond, and also because of the evidence of an old tibial periostitis, although a Wassermann had been refused, he was taken off the cardiac medication though, of course, circulatory precautions were still insisted on. He was tentatively placed on protiodid of mercury by mouth. Within a few days such marked improvement had taken place that when the patient was confronted with the facts of the case he admitted a syphilis twenty years ago, which had been at that time briefly treated. A continuation of the same line of treatment with the protiodid of mercury, assisted by potassium iodid, has resulted in complete disappearance of the dyspnea and other evidences of cardiac incompetence. The double aortic murmurs have practically disappeared and he has been doing full duty for some twelve months and is to-day in comparatively complete health, although still under treatment with the mercury.

These two facts stand out in this illustrative case: circulatory medication was entirely without avail, complete circulatory relief was afforded by the simple administration of mercury.

Notwithstanding frequent brilliant results of this kind, in tertiary instances we have found it by all odds most advisable to also place the patient under the usual hygienic and therapeutic regimen indicated by the circulatory condition. Those cases which, independent of the cause, should be put at rest or in bed, should be, of course, so managed. Furthermore, when digitalis, strophanthus, camphor, strychnin or epinephrin seem to be indicated, they should be given. We have found, however, that in most instances these measures do not give the expected amount of improvement, except for that directly due to rest, in whichever form it may be decided, unless and until the patient has been under the effects of specific medication of one or another variety. Not at all infrequently, as in the instance cited above, such a measure is at once followed by so marked benefit that the drug measures designed for circulatory compensation may be advantageously discontinued. In long-standing cases, however, particularly those in which it may be fairly assumed that fibrosis has taken place in the heart-muscle, the use of digitalis and its adjuvants or substitutes is absolutely necessary. A fact most vividly shown, however, is that these drugs used alone fail in most instances to give good results unless combined with the specific methods.

Although immediate improvement may follow the introduction of specific medication, it has been amply demonstrated in this, as in all other types of luetic disease, that for permanent results or even for steady progress, the specific medication must be persistently carried out. With a discontinuation, such as has taken place frequently when patients insist that they are sufficiently well to leave the hospital, and probably rarely then continue to carry on the treatment in anything like an adequate manner, relapses are apparently almost certain to occur. We have noted that when the treatment has been thus interrupted when it is resumed rarely indeed does a prompt response to it occur comparable to that first manifested. In other words, a tolerance of the lesion against the drug seems to have become established in some cases.

Case 5 (67).—Man, aged 51. Chancre at 30 years. Local treatment only. Present illness began in 1908. Chief complaint, dull, boring pain in left chest associated with dyspnea. For two years a constant increase in distress. Has been under almost constant circulatory treatment without relief. Wassermann positive. Given 1 grain mercuric salicylate hypodermically every 5 days. Pain, dyspnea and edema began promptly to subside. Treatment continued for nine months (sixty-six injections); three doses of salvarsan also given intravenously together with various symptomatic measures. Patient able to be discharged and to resume work as cook after three years of total invalidism. Two months later, treatment having been discontinued, symptoms reappeared, to disappear promptly under resumption of the mercury. The subsequent history has been a return of symptoms whenever specific treatment has been discontinued. Circulatory measures are now necessary to reach the results previously easily obtained by purely specific drugs.

Where the patient can be closely followed and treatment persistently enforced, progress seems to be steady to the point of apparent cure in no inconsiderable number of cases, as indicated by the fact that of the series of 300 cases so treated 116 have shown apparently permanent benefit if not actual cure. The most impressive fact of all is that a large number of cases which appear apparently hopeless go on to clinical cure.

### TREATMENT WITH MERCURY

As to the precise method of specific treatment which meets with best success in these complications of syphilis, no conclusion appears as yet possible to us except that, at least in most instances, it is a matter of individualization. In not a few cases best results seem to follow an initial vigorous administration of mercuric salicylate given intramuscularly, and in general this would appear to us to be on the whole the most desirable method at the outset. The drug should be pushed to its full point of toleration, but may be subsequently replaced by mercury in the form of the protoiodid or bichlorid introduced by mouth. In some cases, as in an instance already cited, the protiodid appears to be very desirable. It seems to us that such instances are those which do not manifest the most aggressive and active symptoms and, though we are well aware that this form of mercury does not enjoy a good repute with syphilographers in general, it has given us excellent results in many of these heart cases.

Mercuric chlorid has also given us good effects in some instances, either given by mouth or by hypodermic administration.

Case 6.—J. D. Seen seven years ago with Dr. C. J. Imperatori. Patient a powerful, rather obese man, aged 26. Patient unconscious, complete anuria, heart enormously enlarged. History of long standing, apparently progressive double aortic lesion with very unsatisfactory response to digitalis, etc. Apparently *in extremis.* He had denied lues, but because of social evidence to the contrary he was given vigorous dosage with mercuric chlorid by mouth and inunctions over precordium of blue ointment. Within a few hours return of renal activity and consciousness, with subsequent cessation of precordial pain and reappearance of regular, full pulse with marked double aortic murmurs and strong, vigorous muscle contractions. Mercury continued with occasional digitalis, which now acted in a proper manner. Given potassium iodid with continued benefit. He largely disappeared from observation up to last year, when he returned with a history and condition of relapse which had developed apparently from discontinuance of treatment and from moderate dissipation. He had meanwhile carried on his work and lived an ordinary life. Relief again followed resumption of treatment but he suddenly died some four months later, apparently from acute dilatation after intercourse.

Inunctions of mercury ointment given in the usual courses also seem to act very well in many cases. In one notable instance we found little result and a very poor toleration of mercury until the old-fashioned, and to our mind usually uncertain, treatment with vapors of calomel was instituted. In practically all instances we have received best results when the form of treatment or of the drug was from time to time altered but, on the other hand, actual interruption of treatment inside of two years for no more than a few months has been followed frequently by relapse and a subsequent unsatisfactory response to this drug. We are anxious none the less not to give the impression that we believe that every case of late syphilis with heart complications will respond to mercurial treatment, and to emphasize this point we cite the following case:

Case 7.—V. H., man, aged 51. An irregular, though shrewd, practitioner in venereal diseases. Lues contracted twenty years ago. Was very aggressively treated at that time with inunctions and by "mixed treatment." Apparent cure. Subsequent life often dissipated. Late in 1913 began to be troubled by anginal attacks, dyspnea, cyanosis and spontaneous attacks of dizziness. Wassermann reaction found to be positive. Diagnosis of luetic myocarditis, adhesive pericarditis, aortitis. Varied mercurial treatment promptly and vigorously resumed, associated with occasional use of iodids. After this some, though unsatisfactory, response to digitalis, strophanthus and epinephrin, all of which had been previously found inert. Wassermann became negative. Patient absolutely refused to permit the use of salvarsan, saying that he preferred to die rather than to submit to it. Soon died, with the ultimate typical picture of a myocardial degeneration.

### TREATMENT WITH SALVARSAN

Salvarsan has been employed in the treatment of seventy-five of this series. In the acute or secondary stage, used independently of mercury, it has in nearly every instance been followed by immediate improvement of the compromised circulatory mechanism, even in patients in whom the circulatory defect appeared to be serious. In such cases it may be that complete cure *might* follow the use of this drug alone. In all, however, a follow-up course of mercury has been prescribed; some instances observed by us, but not included in this analysis in which salvarsan alone has been employed have not yet remained a sufficient time under observation to allow us to judge as to the permanence of such apparent cures. These brilliant results are much less frequently apparent in later cases, however, and such is our confidence in and reliance on mercury that in no cases have we ourselves continued the use of salvarsan alone.

Our experience has indicated to us that, while no doubt salvarsan gives a most prompt response, its permanency in tertiary complications, referring entirely now to those of the heart, does not appear to be established unless the treatment is followed up by the protracted use of mercury. Where very prompt response to treatment seems to be necessary salvarsan is given, but in cardiac even more than in other complications of this infection a very serious degree of reaction may follow the giving of salvarsan and more than seldom we have been greatly alarmed by circulatory collapse which has followed the administration of salvarsan in those cases especially in which symptoms and signs indicated particularly aggressive invasion of the heart-muscle.

We have been impressed with the observation that those cases which showed disturbances of rhythm as a result of the myocardial invasion are most likely to exhibit serious reaction after the use of salvarsan. We have therefore esteemed it to be good practice to begin the use of arsenic in these cases of heart complication by small doses, allowing the subsequent ones to be larger if no serious grade of reaction is excited. Of all the cases treated by us there were none in which any grave circulatory disturbance threatened as an apparent result of a maximum initial dose of mercury.

As a natural result of these observations we have in questionable cases, and when time did not seem to be of paramount importance, usually first placed the patient on mercury, giving the salvarsan later. We are of the impression that best results are often reached when the salvarsan injections are widely spaced in the course of routine mercury administration. The later injections of salvarsan are much less likely to give serious disturbance than the earlier, especially the first one. Of course it goes without saying that salvarsan is administered only as intravenous injections. It is a very difficult matter to judge, nor do we feel that our cases have been sufficiently numerous to permit of definite conclusions, but we are of the opinion that the old salvarsan is more efficacious in the relief of heart complications in syphilis than neosalvarsan. We have not been able to see that the newer form of the drug produces any less serious collapse than the old in these cases in which this incident arises.

### THE IODIDS

We have extensively employed the iodids, mostly potassium iodid, in the treatment of these cases of heart invasion. In no instance, however, have we been able to convince ourselves that it acts in any way as a specific. Nor does it, according to our observation, check the progress in an aggressive case. For illustration, we have not found in cases of circulatory deficiency when drugs of the digitalis group failed to act, that results were obtained by combining the administration of the iodid. This, as we have already stated, is to be fully expected, especially in previously untreated cases both with mercury and salvarsan. We have not, however, tried out the iodids alone in cases of secondary syphilis in which heart involvement was present; hence, perhaps, we are not justified in definite conclusions, but we do not believe that this drug is to be considered as a specific in the treatment of active lues.

In tertiary cases, however, there is no doubt whatever in our mind but that the iodids materially assist in the clearing up of the infiltration and exudates, and their effect on gummatous tissue is too well established to admit of question. The point which we wish to make is that, while it is most useful in the absorptive stages of treatment, it does not act as a true specific. Iodin should be used after the case has been thoroughly mercurialized, or after salvarsan has been liberally given, and not before or during the early exhibition of these drugs.

### THE EFFECT OF TREATMENT

That great clinical improvement takes place in most cases and a certain degree of benefit, though perhaps temporary, in practically all, is the most gratifying fact shown by this study. We are entirely convinced that as definite and brilliant results follow proper treatment in cardiac syphilis as in gumma of the brain, in syphilis of the bones or even in the local lesions of the skin and mucous membranes in the same stages of the disease. As to the question of permanence, we are not so certain, comparatively. This is quite as must be expected from the crucial nature of the organ and the very limited degree of restitution and compensatory hyperplasia of a functional type which may take place in lesions of the heart-muscle.

In regard to the manner in which the curative drugs act, we have but little absolute anatomic evidence, for in but two patients who died after what we have considered adequate treatment have necropsies been secured. Sections of the heart-tissue in these two cases (one reported[6]) showed a total absence of the characteristic perivascular cell hyperplasia and infiltration, or of active arteritis in the walls of the coronary vessels. In both instances, however, insulae of fibrosis were found isolated and perivascular in position which still showed evidence of fibrous hyperplasia, just as in simple fibrosis, but in neither were any lesions present which could be justly spoken of as luetic. In neither instance were we able to demonstrate spirochetae. In view of the report of Warthin already mentioned, however, we are not prepared to say that they might not have been present and our failure to demonstrate them may have been due to technical deficiencies; we can only say that anatomically, as clinically, all evidences of active syphilitic disease was wanting, although the scars or results of course remained.

In incompletely treated cases which came to necropsy we have without exception been able to demonstrate active lesions of a quite characteristic and unmistakable type.

In common with most who have recently studied large groups of any type of syphilitic disease we have not infrequently seen cases in which apparent clinical cure had taken place and yet in which a positive Wassermann reaction could be secured after a sufficient period of interruption of treatment had elapsed. We have looked on these instances as examples of probably cured syphilis in which a persistent Wassermann still remained. This opinion has been already expressed by us in a former paper.[7]

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[6] Brooks, Harlow: Am. Jour. Med. Sc., 1913, cxlvi, 513.

[7] Brooks, Harlow: Clinical Observations Concerning the Heart in Syphilis, Interstate Med. Jour., 1913, xx, No. 6.

We have had abundant evidence of the fact that the fibrosis which follows on or occurs with the hyperplastic and degenerative alterations of the heart in syphilis are not removed by treatment; further, we are of the opinion, difficult to entirely prove, that this fibrosis may continue to progress even after the primary etiologic factor may have been entirely eliminated. Such is the general trend in fibrosis of nonspecific nature, and we are inclined to account on this basis for those cases which, while greatly improved or arrested by the treatment, still, in so far as cardiac fibrosis is concerned, continue to progress just as in those cases in which the lesion may have been excited by a rheumatism, a nephritis or the like. There is then a large group of cases in which definite limitation of actual cure is present.

### THE LIMITATIONS OF TREATMENT

We are of the opinion that the limit of benefit for specific treatment in these conditions is commonly reached in tertiary or late cases, when the activity of the actual syphilitic process has been checked or cured and when thereafter by the use of the iodids a maximum degree of absorption and tissue restitution has followed, and when on top of this a maximum effect has been produced by the various drugs and methods designed for circulatory improvement.

Some such cases probably demand the occasional administration of mercury or arsenic. We have been unable in several such instances, however, to go beyond a certain point in beneficial treatment, and when in these the circulatory drugs begin to fail us, the downward progress is, in our observation, rapid, nor is it to be checked by any form of medication, specific or otherwise. The patients then assume precisely the same position as late cases of myocardial degeneration or fibrous substitution, such as may develop in the course of many other diseases. At post mortem these instances commonly show extensive patches of myofibrosis, or advanced disease of the coronary arteries with consequent muscle ischemia.

From our somewhat limited experience with cases of acute secondary syphilitic involvement of the heart, we are of the opinion that no limitation of result exists short of true cure except in those rare cases, similar to the one cited, in which specific drugs are entirely powerless. We are of the idea, it is true from a clinical basis only, that complete and absolute cure is to be expected in this stage of the complication.

### WHEN SHOULD SPECIFIC TREATMENT BE ENTIRELY DISCONTINUED?

The answer to this question is most difficult. Obviously in some instances it must be continued after a negative Wassermann has been obtained; for we frequently find patients in whom activity is evident and yet who give a negative Wassermann. We have also noted above that we occasionally find patients still presenting a positive reaction who otherwise appear to be cured.

From our experience in the treatment of syphilis in other departments of medicine, as well as in circulatory involvement, it is obvious that medication of a specific character must be continued for a considerable time, at least one year, after all signs of activity have subsided. We believe, however, that better results are obtained by periodic rather than continuous medication in the final stages and also by variation of the type of the drug or in its form of administration.

We think that treatment should be continued just so long or longer as it is apparent that benefit is being reached either by the specific drug or by the adjuvant employment of a circulatory stimulant. We further believe from our clinical observation, and from our own as well as the recent anatomic studies of the heart-muscle in syphilis by Warthin, that antispecifics should be from time to time given throughout lifetime in certain cases. It is obvious that just so long as any evidence whatever of luetic activity in any part of the body is manifest, treatment should be vigorously pushed, though periods of interruption may be elected so that disease resistance toward the drugs falls off.

### THE SUBSEQUENT MANAGEMENT OF THE CASE

We have just pointed out that, except in acute secondary involvement, we feel that antiluetic drugs may be occasionally beneficially exhibited throughout life even though they may not perhaps be directly indicated by the immediate appearance of the case itself. Aside from this, the subsequent management of the case should be essentially along circulatory lines and it should be carried out with the fact well borne in mind that practically certainly there are foci of fibrosis in the heart-walls, changes in the endocardium and in the walls of the coronary vessels which are in all probability irremediable and permanent.

This recognition appears particularly important in the determination of the proper hygienic management of the case, especially in regard to selection of occupation or sports and in the limitation of such habits as that of smoking. In late cases it can certainly never be assumed that we are dealing with a perfectly normal heart no matter how complete the cure may seem to be. While we make this statement, based on our considerable necropsy experience with these cases, from clinical observation alone one might well assume that complete cure even in some late and advanced cases had taken place. We do not feel, however, that any of these apparent cures have yet remained a sufficient number of years under observation to overthrow the lessons of pathologic anatomy.

### THE PROGNOSIS

In acute cases, and in the secondary stage particularly, we believe that except in those instances in which resistance to the specific drugs is shown, a good prognosis as to cure may be given.

In cases in which incomplete or brief specific treatment only has been given, we believe that almost without exception great improvement may confidently be promised even in many instances in which circulatory measures alone show little benefit. When, after the patient has been thoroughly placed under the effects of the specific medication, the circulatory drugs still fail to act, the prognosis as to cure or further improvement is definitely bad.

Nevertheless, a bad prognosis as to relief or a considerable period of reasonable comfort and usefulness is never justified until the combined treatment has been thoroughly tried out. No more gratifying results are reached in chronic cases of any disease than are often shown in cases of this type, apparently at first thought altogether hopeless.

The prognosis in cases which have relapsed after marked or reasonable improvement is not good. Disturbances of rhythm particularly which have failed to show early and definite improvement under treatment rarely justify a good prognosis.

### CONCLUSIONS

1. Cases of heart involvement in early syphilis may be fully cured irrespective of the character of the lesion by vigorous specific treatment alone and independent of circulatory measures.
2. Even well-established and late cases usually respond to treatment with cure, or marked though perhaps temporary benefit.
3. In most tertiary instances purely circulatory measures produce but slight benefit unless preceded by or combined with specific medication.
4. Interrupted or inefficient treatment establishes an immunity or resistance on the part of the lesions against the specific drugs employed. Hence the importance of vigorous and carefully systematized treatment.
5. The most satisfactory treatment is one which combines the use of salvarsan with mercury and the iodids. Combined treatment *may be* unnecessary in early cases but it is essential in late ones.
6. Salvarsan, preferably old salvarsan, produces in most instances the quicker results. It is capable, however, of inducing serious symptoms and in untried cases of heart involvement it should be administered in small doses until its action has been ascertained, particularly in those lesions characterized by disturbances of rhythm.
7. Mercury alone may produce apparent cure. Best effects are secured with this drug when its form is from time to time changed. Its use appears to be indispensable in all well-established cases.
8. The iodids are valuable adjuvants in the treatment of these cases, especially in their late stages, but they are apparently without specific action.
9. Permanent injury to the heart must be assumed to have taken place in late cases, even though prompt response to treatment and apparent cure occurs.
10. Successful treatment rests primarily on the recognition of the *cause of the disease* and on its specific treatment.

44 West Ninth Street—50 West Ninth Street.

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# THE FOUR COMMON TYPES OF HEART-DISEASE

## AN ANALYSIS OF SIX HUNDRED CASES[*]

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To classify cases of disease according to their pathogenic agent or process, and not solely by naming the region affected or the function disturbed, is the ideal of scientific progress in medicine.

But until the last decade we have made little advance in this direction as regards the diseases which gravely disturb heart function. Thus we still find in standard text-books a section devoted to "mitral regurgitation," its diagnosis, prognosis and treatment, although mitral regurgitation is almost as vague a phrase as "spinal paralysis" or "brain fever." Just as a "spinal paralysis" may be due to trauma, to the tubercle bacillus, to the *Spirochæta pallida,* to the organism of poliomyelitis or to cancer, so "mitral regurgitation" is only a symptom caused by the action of streptococci, by the degenerative lesions of arteriosclerosis, by the muscle-tiring resistance of nephritic hypertension and probably by many other causes. It probably contributes its mite to the downfall of cases of pernicious anemia, typhoid fever and puerperal sepsis. Hence there can be no rational prognosis or treatment of mitral regurgitation but only of the various underlying diseases in which this leak is a symptom.

A similar criticism applies to all diagnoses of "myocarditis." The micro-organism of rheumatism and of syphilis, the ravages of arterial disease and perhaps many other causes may produce the lesions of chronic fibrous myocarditis, with or without recognizable symptoms. A diagnosis of myocarditis is like a diagnosis of "ulcer"; it calls for an etiologic qualification, such as syphilitic or tuberculous.

The matter has many practical aspects. A sane prognosis and treatment of "aortic regurgitation," for example, depends on knowing or guessing what disease has produced it. Even physical diagnosis may have to await an intelligent interpretation of its results until we make up our minds what micro-organism is at work, in the heart, as well as elsewhere in the body. When we hear a low, rumbling presystolic murmur at the heart's apex and an early high-pitched diastolic along the left sternal margin, our conclusions about the mitral valve depend on our answer to the question, "Is syphilis or 'rheumatism' at work here?" If the former, then the mitral valve is probably sound; if the latter, probably diseased.

Four relatively new tests have now made it possible —as I think—to reclassify cardiac lesions more satisfactorily: the Wassermann reaction, the "red test"[1] of renal function, the measurement of blood-pressure and the roentgenography of the chest. When auscultation, percussion and the older methods of urinary examination leave us in the lurch, the four diagnostic methods just mentioned can often guide us aright.

With the help of these methods I have attempted a classification of 600 recent hospital cases in which a failing heart was the most notable feature. The results are shown in the accompanying table.

CLASSIFICATION OF CASES WITH FAILING HEART

| | Male | Female | Total |
|---|---|---|---|
| 1. Rheumatic | 108 | 170 | 278 |
| 2. Syphilitic | 52 | 22 | 74 |
| 3. Arteriosclerotic | 53 | 40 | 93 |
| 4. Nephritic | 59 | 58 | 117 |
| | 272 | 290 | 562 (93% of all) |
| Goiter heart | 3 | 5 | 8 |
| Doubtful cases | 19 | 11 | 30 |
| | 294 | 306 | 38 (7% of all) |
| Total | | | 600 |

### THE RHEUMATIC TYPE

Under "rheumatic" are grouped the cases of weakened heart, adherent pericardium and valvular disease associated with (*a*) acute non-gonorrheal polyarthritis ("rheumatic fever"); (*b*) chorea (of Sydenham's type); (*c*) acute tonsillitis, and (*d*) "primary endocarditis" with negative Wassermann reaction, especially when the cardiac symptoms followed these diseases during the patient's youth. In my opinion it has been demonstrated by the converging results of English, German and American work as the best working hypothesis that a streptococcus is the exciting agent of acute "rheumatism," chorea, endocarditis and tonsillitis.[2] This streptococcus in the joints produces acute rheumatism, in the brain chorea, in the heart endocarditis, myocarditis and pericarditis. It may attack the heart first and later the joints. Then our old terminology would make it appear that endocarditis is the "cause" of rheumatism. It may attack first the brain and heart, appearing later in the tonsillar or peritonsillar tissue. It may attack the heart and kidney simultaneously, so that we find true cardiac and renal disease from an identical organism, as Libman and others have maintained.

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[*] Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Phenolsulphonephthalein.

This form of streptococcosis is essentially a disease of youth, both in man and in the animal experiments of Rosenow. In 60 per cent. of the cases here analyzed the disease began (usually in the joints) before the twenty-second year. The patient rarely dies a mechanical or heart-death, usually an infectious death, by terminal, progressive or relapsing infection. Women are affected more often than men—nearly twice as often in these statistics.

The mitral valve, the pericardium and the myocardium are the favorite seats of bacterial invasion, the other valves much less often. In the valves this form of streptococcosis produces usually stenosis with more or less leakage—but almost never leakage alone. In other words, mitral stenosis is *the* rheumatic (or streptococcic) valve lesion, although it is combined with aortic stenosis in a relatively small percentage of cases. It rarely produces aortic stenosis without a severer stenotic lesion of the mitral. It seldom if ever produces severe symptoms or death by leakage (mitral, aortic or both) alone, though it often produces systolic apical murmurs alone.

On the other hand, it seems probable that stenosis at the mitral or aortic valves involves regurgitation as well in practically every case.

When a cardiac streptococcosis occurs in its most virulent and intractable forms, we call it "malignant," "ulcerative," "septic" or "slow" (endocarditis lenta) and we find in the blood (according to Rosenow) a streptococcus culturally distinguishable from the organism of the milder cases. Nevertheless, I have here included all such cases in the "rheumatic" group of my table.

If the patient survives the second decade of life his smouldering, often recrudescent, cardiac infection may die out, leaving a serviceable heart, despite some narrowing at mitral or even at the mitral and aortic valves. Such cases carry a good prognosis and are often compatible with twenty, thirty or forty years of hard work.

### SYPHILITIC HEART-DISEASE

Most cases of "causeless" aortic regurgitation appearing in men between 20 and 40 without "rheumatic" history have a positive Wassermann reaction and may be considered due to syphilitic aortitis with or without aneurysm. In negroes and south Italians we find a great deal of this type of heart-disease because of the prevalence of syphilis among them.

I have included twenty-four such cases, together with the eighteen aneurysms, among the syphilitic group in my table. To these I have added a group of thirty-two failing hearts, with or without evidence of valve lesions, without rheumatic history, without evidence of nephritis or arteriosclerosis, but with a positive Wassermann reaction. The permeation of the congenital syphilitic's myocardium with spirochetes (as shown by Warthin and others) makes it probable that in adults as well, many cases of myocarditis are due to syphilis. Probably a more searching study would result in transferring some cases from the arteriosclerotic to the syphilitic column in my table.

### ARTERIOSCLEROTIC HEART-DISEASE

Under "arteriosclerotic" are included the cases of weakened heart in elderly persons with sclerotic peripheral arteries and hypertension, often with angina pectoris, occasionally with cerebral or peripheral symptoms of the arteriosclerotic type, and always with negative Wassermann reactions. I do not attempt to decide the question whether any of the hearts of this group are weakened solely as a result of renal arteriosclerosis or whether generalized arteriosclerosis works part or all the mischief. In either case arterial disease is the cause. If anemia is present these cases more often belong in the next group.

With further knowledge this arteriosclerotic group could probably be subdivided into the plumbic cases, those of infectious origin, etc. The heart itself shows enlargement, weakness, often arhythmia or gallop-rhythm. Angina pectoris and the cerebral and peripheral evidences of arteriosclerosis are often present. Such patients often live many years in comparative comfort. On the other hand, they may die suddenly of coronary stenosis or cerebral hemorrhage.

### NEPHRITIC (OR NEPHROGENIC) HEART-DISEASE

Volhard and some other modern authors would designate many of my "arteriosclerotic" cases as "benign chronic nephritis." But it seems to me more convenient to confine the term "nephritic or nephrogenic heart-disease" to the cases of weakened and enlarged heart apparently resulting from the hypertension of glomerulonephritis.

Such cases are associated with urinary anomalies more marked than those seen in the arteriosclerotic group. The hyposthenuria, the nocturia, albuminuria, cylindruria and especially the functional weakness with the "red test" are very marked. The response to cardiac stimulants and to drugs like theobromin sodium salicylate is feeble. Demonstrable arteriosclerosis of the peripheral vessels is slight or absent. Uremic manifestations, retinitis and anemia are relatively common. The patients of this group average 36 years of age, those of the arteriosclerotic group 59 years of age.

Cases with positive Wassermann reaction or marked history of rheumatism are excluded. The heart itself shows enlargement, an accentuated aortic second sound, sometimes a systolic murmur at the apex or base, often gallop-rhythm and valvular first sound, occasionally an absolute arhythmia. The usual prognosis is for not more than one or two years of life.

Most of the cases of "senile heart," "cardiorenal" disease, "myocarditis" and myocardial weakness have been grouped with the arteriosclerotic cases, some with the nephritic, a few with the syphilitic.

The table shows that 93 per cent. of 600 successive and unselected cases of failing heart can be pushed into one of these four groups. How much violence was used in the grouping process I shall try to suggest later on.

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[2] As well as certain cases of pleuritis, pericarditis, peritonitis, iritis, meningitis, pneumonia and nephritis.

### THE EXCLUSIONS

Outside these four groups fall: (*a*) the "goiter hearts," that is, those showing no cause for weakness except a thyreogenic intoxication (exophthalmic goiter); (*b*) the "obese hearts," manifesting decompensation in very fat persons without streptococcic (rheumatic) or syphilitic infection, or arteriosclerosis, nephritis or thyreotoxicosis; (*c*) certain cases of myocardial weakness without any known cause. Had any of these occurred in athletes or ex-athletes they might have been called "athletes' heart." But they did not.

### LIMITATIONS OF THIS CLASSIFICATION

One patient had a history of syphilis, a positive Wassermann and an aortic regurgitation; also a "rheumatic history," a continued fever, murmurs suggesting a mitral lesion and a pure culture of atypical streptococci in the urine. He seems to belong in two classes at once (Classes 1 and 2).

Three patients (two with necropsy) had a "rheumatic" heart and type of history; also a glomerulonephritis. There is good reason to believe that the same organism caused the two lesions. I have, therefore, classed these cases in the "rheumatic" (streptococcic) group despite the presence of a glomerulonephritis.

There are good grounds for holding that arteriosclerosis and glomerulonephritis may act conjointly and simultaneously to weaken the patient's heart. In my table the few cases which seemed to me of this type were grouped among the "doubtful cases."

Many believe that syphilis may cause arteriosclerosis. If so, Groups 2 and 3 of my table would in part coalesce. The "syphilitics" of this table are the relatively active cases with positive Wassermann.

### SUMMARY AND CONCLUSIONS

1. Ninety-three per cent. of 600 recent hospital cases of failing heart have been found to group themselves without much resistance into four classes: rheumatic (streptococcic), syphilitic, arteriosclerotic and nephritic.
2. About 5 per cent. cannot easily be thus classified. The remaining 2 per cent. are "goiter" hearts.
3. In the 278 rheumatic cases females predominate: 170, or 61 per cent., to 108 males, or 39 per cent.
4. Sixty per cent. of these rheumatic cases began before the twenty-second year. The typical rheumatic heart patient is therefore a young girl.
5. Of the seventy-four syphilitic cases 70 per cent. were in men; only 30 per cent. in women. The typical syphilitic heart patient is a middle-aged man (average age 47), with aortic regurgitation and no rheumatic history.
6. The ninety-three arteriosclerotic patients averaged 59 years of age. The 117 glomerulonephritic patients averaged 36 years. The arteriosclerotics are therefore twenty-three years older than the nephritic. The sexes are about equally represented in the two groups.
7. Diagnosis, prognosis and treatment are put on a more rational basis if we give up the terms "myocarditis," "cardiorenal" disease, "aortic regurgitation," "mitral regurgitation" or qualify them with an adjective like "syphilitic," "rheumatic" or "arteriosclerotic."
8. Practically all the stenoses belong in the rheumatic group.

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# CARDIORENAL DISEASE

## THE CLINICAL DETERMINATION OF CARDIOVASCULAR AND RENAL RESPONSIBILITY, RESPECTIVELY, IN ITS DISTURBANCES*

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### DEFINITION OF THE TERM "CARDIORENAL DISEASE"

The clinician encounters many cases, mainly in persons of middle age or older, in which evidences of cardiac weakness and other circulatory disturbances, such as high pressure, are associated with signs of failure of renal function or urinary indications of renal disease. When this combination of symptoms is of such character that the observer cannot readily assign to either the cardiovascular system or to the kidneys the preponderance of responsiblity, the term "cardiorenal disease" is often employed. The term, therefore, comprises cases of combined cardiovascular and renal disease without such manifest predominance of either as to justify a prompt determination of the one element as primary and important and the other as secondary and unimportant.

Among the pathologic conditions included in the term are three important groups: (1) primary valvular or myocardial disease with secondary renal disease; (2) primary arterial or arteriolar disease with secondary renal and myocardial disease, and (3) primary renal disease with secondary myocardial and vascular disease. It has long been an interesting and puzzling problem of the pathologists to determine the onset and initial stages of certain types of combined vascular and renal disease, and discussion of conflicting possibilities continues; but the clinician is called on to act at once in directing treatment in many of these cases when the clinical picture may lack clear indications to guide him.

A few examples of his difficulties will suffice to indicate the nature of his problems. A case of cardiorenal disease is mainly characterized by dyspnea, and in view of the evidences of cardiac and renal trouble, the determination of the responsible cause is difficult. Shall the physician rely on cardiac stimulation and hope for improvement from acceleration of pulmonary circulation, or shall he bleed or purge or sweat to remove the accumulated results of renal inadequacy?

A second case is one of stuporousness or actual coma in an aged person with evident arteriosclerosis, myocardial and renal disease. Shall the physician stimulate circulation with the thought that cerebral arteriosclerosis and possibly beginning thrombosis are responsible or shall he direct his treatment toward combating a uremic condition?

A third case is one in which attacks of acute pulmonary edema have occurred in a person with high arterial pressure, myocardial disease and manifest nephritis. Shall treatment be used to strengthen cardiac power without regard to pressure, or shall the renal element be adjudged the serious fault and active elimination employed?

In still another case in which a general failure of health and nutritional disturbance occur in a person suffering from cardiac weakness, arterial disease and nephritis, the physician must decide whether cardiovascular stimulation or eliminative methods are requisite.

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In any one of these instances, it might be suggested that the best way to treat the case would be to take into consideration all of its elements and employ such treatment as might reasonably seem effective against each of these. Such a course would perhaps appeal to one who has a merely theoretical knowledge of the difficulties involved, but never to a practical clinician whose whole training and experience would remind him that in complicated conditions successful treatment is always that which takes hold of the one important functional defect and corrects it. As well might one employ a combination of remedial measures to combat a case of generalized and complicated syphilis in which a recognition of the central cause and salvarsan or mercury were required!

As in other matters of treatment, the important underlying principle here is that the essential fault must be determined and if possible corrected. Any complicated combination of measures directed toward this and that is an indication merely of indecision and inefficiency. Effective remedial measures are almost always simple and direct. Let us take lessons from our surgical colleagues: A protracted medical treatment of vague gastro-intestinal troubles fails and the disease yields to the removal of a damaged appendix; an obscure case of illness, with occasional fever, emaciation and a variety of symptoms terminates when a calculous pyelitis is recognized and the stone is removed; a long-standing "rheumatism" of the ankles and knees subsides when fallen arches are supported. None of these ought especially to be heralded as triumphs of surgery, but should rather be regarded as instances of previous failure of medical diagnosis.

Treatment directed toward symptoms or even functional disturbances without recognition of the real source or cause of trouble is almost sure to fail. Nowhere in my opinion is this more frequent than in the domain of cardiorenal troubles. One uses intensive treatment to modify blood-pressure, another attacks a supposed uremic trouble with active eliminative measures, a third believes the cardiac symptoms significant of the fundamental fault, and a fourth eases his conscience by a combined treatment of a variety of possibilities without subjecting himself to the test of determining what he really thinks is the fundamental defect.

### THE CLINICAL INDICATIONS OF CARDIORENAL DISEASE

The group of cases included under this term presents a varied systomatic picture. Dyspnea, continuous or paroxysmal, high arterial tension, a pallid (arteriosclerotic or nephritic) appearance, palpitations and sometimes substernal or precordial pain, sometimes edema of the extremities and effusions in the serous cavities, headaches, neuralgias and various cerebral disturbances, polyuria or reduction in the amount of urine, disturbances of vision, gastro-intestinal disorders and heaviness, stupor or even coma are among the prominent symptoms encountered. Physical examination discloses enlargement of the heart and evidences of cardiac weakness, sclerosis of the vessels, albuminuria and casts, in varying degrees of prominence. As the disease advances, increasing evidences of circulatory embarrassment on the one hand or of renal inadequacy on the other hand manifest themselves, and the terminal end may be quite clearly a circulatory or a renal death; but even up to the last there may be difficulty in determining the major fault. Particularly true is this in patients dying in coma when the possibilities of cerebral hemorrhage and uremia seem equally balanced, and in cases of severe paroxysmal dyspnea. From the very beginning, however, the physician finds it necessary to make a decision and direct treatment accordingly.

In reaching this decision he will find value in considerations that may be classified under the following heads: the history; the cardiac physical signs taken in conjunction with the blood-pressure and urinary examinations; the functional renal tests; the nutritional condition of the patient; ophthalmic findings, and therapeutic tests.

### THE HISTORY

Of the three groups of pathologic conditions comprised under the general heading of cardiorenal disease, that which most frequently presents a clinical history of value is the combination of valvular or myocardial disease with secondary nephritis. Here a long-standing cardiac weakness is indicated by the history of onset after some severe infection, by the early dyspnea, edema, palpitations, arhythmia, etc., and by the discovery of marked physical signs of cardiac deficiency. Only in cases coming under observation late in the disease, in which marked evidences of nephritis have developed and in which the earlier clinical course is unknown, are the difficulties particularly great. Even such cases, however, present a sufficient predominance of indications of cardiac failure to emphasize the cardiac rôle in the clinical complex.

The difficulty is more decided in purely myocardial cases than in valvular disease. In the second and third groups of cases—those in which primary arterial disease has occasioned renal trouble or in which primary renal disease has initiated the whole series of lesions—the history is less significant. Sometimes, it is true, a history of renal trouble following an acute infection like scarlet fever, septicemia, pneumonia, or the like may stand out prominently; but much more often the beginning stages of nephritis are inconspicuous, and the history is entirely obscure. In the cases of primary arterial or arteriolar disease the onset and early course are so insidious that the history furnishes little clue to the nature of the disease. Formerly this group of cases was regarded as common and the picture drawn by Gull and Sutton of arteriocapillary fibrosis was accepted as adequate to explain many of the cases of cardiorenal disease which we are now considering. In more recent years the importance of renal disease as the initial cause of high arterial tension and of arteriosclerosis has been exaggerated to the practical exclusion of the older view. As usual the pendulum of opinion has swung too far, and there are abundant evidences that it is returning toward the older position.

If the pathologists and experimentalists have found it difficult to determine whether the renal or the vascular trouble is primary, how much more difficult is the clinician's task in forming an opinion of the relative significance of the two elements at a given time? The history of the cases can give only meager clues: sometimes the mode of life of the patient, his general appearance and the state of his blood-vessels taken in relation with the cardiac or renal conditions, a history of syphilis (especially in young cardiorenal patients) and other items of history, may furnish a certain amount of aid; but surer ground is reached when a study of the whole circulatory system is considered in relation with direct determinations of the renal function, with the urinary findings and with chemical examinations of the blood. These data will be discussed in succeeding paragraphs.

### THE CARDIAC PHYSICAL SIGNS CONSIDERED IN CONJUNCTION WITH THE BLOOD-PRESSURE AND URINARY EXAMINATION

In Group 1, especially in valvular cases, cardiac enlargement and particularly enlargement toward the right is significant. The importance of this may be appreciated by contrasting a case of primary valvular disease marked by intense dyspnea with one of chronic interstitial nephritis attended by dyspnea. In the former right-sided enlargement, cyanosis, hepatic congestion and other indications of venous stasis direct attention to the heart; in the latter dyspnea is practically independent of weakness of the right heart, and right-sided enlargement is usually absent. Confusion is especially apt to occur when, as a result of renal hypertension, progressive enlargement of the left heart has finally occasioned mitral incompetency and a systolic murmur at the apex. Such cases are frequently regarded as purely valvular disease by those who overemphasize the significance of murmurs. In these cases the dyspnea (often quite paroxysmal), though primarily renal, may be in part cardiac. It is largely due to weakness of the left ventricle and to the sudden disproportion in the amount of blood thrown into the lungs by the right heart and that removed from the lesser circulation through the left side. Intense dyspnea of this type may be unaccompanied by any evidence of enlargement of the heart to the right.

A second point of importance in the physical examination is the character of the murmur heard over the heart. I am leaving out of consideration diastolic murmurs which are only rarely secondary to high arterial tension and renal disease, and wish to direct attention to the systolic apex-murmur that may be significant either of primary mitral regurgitation or of mitral incompetency secondary to high tension and left ventricular dilatation. In the latter case, I have quite commonly observed that the time and character of the systolic murmur differs greatly from that found in the former case. In primary mitral regurgitation, the systolic murmur always occurs in the early part of the systole, sometimes so early that it quite overshadows the first heart sound; while in the mitral leakage following continued high tension, the murmur is so late in systole that the first sound is heard an appreciable interval before the murmur and the second heart sound follows immediately after the murmur. Figure 1 will indicate the distinction. Not rarely in slow-acting hearts the lateness of the systolic murmur is at first confusing and suggests a diastolic murmur, but the second sound following immediately after it disproves this supposition. A late systolic murmur of this type is almost always significant of beginning cardiac failure in cases of hypertension. In a few instances I have found it in mitral valve disease. Perhaps it was this murmur to which Austin Flint called attention under the name of prediastolic murmur and which he regarded as due to the back flow of blood in an atheromatous aorta just preceding the closure of the aortic valve. In view of present knowledge this explanation is, of course, inadmissible, and I do not wish now to discuss the cause of the time relations of the murmur. The reference to Flint is made only to indicate that he had doubtless observed the same murmur under the circumstances now under discussion. It should be added that the systolic murmur heard when the heart begins to fail in cases of hypertension is not always of this late character. In many instances it is precisely the same in time and quality as the murmur of primary mitral regurgitation.

Comparing blood-pressure with cardiac findings, the striking fact is the usual low tension in primary cardiac cases even when considerable renal disease has been superadded, and the reverse conditions in arteriolar and renal disease. In the latter conditions, even when terminal cardiac failure has advanced considerably, arterial tension is likely to remain high. It has often been said that the arterial pressure may be low in arteriosclerosis and renal disease, and without doubt there are many cases in which it falls as cardiac weakness increases. The reduction in tension, however, is often less real than apparent because too frequently the systolic pressure alone is considered. The clinician may be deceived by reductions of systolic pressure from 180 to 140, 130 or even lower figures, when he has not noted that the diastolic figure has remained quite constantly at 110 or 115. Such values of the diastolic pressure in cardiorenal cases are practically always significant of arteriolar or renal disease rather than of primary cardiac disorders.

The urinary findings in cases of primary cardiac disease contrast with those of primary renal disease mainly in their variability. When frequent examinations are made, the amount of albumin and the number of casts, red blood-cells or other cellular elements vary far more in the former than the latter, though without doubt considerable variations may occur in certain renal cases. However, no safe conclusion as to the relative importance of the cardiac or renal participation in the manifestations of cardiorenal disease can be drawn from the ordinary examinations of the urine. Just as the discovery of a systolic mitral murmur frequently leads to the erroneous impression that a case of nephritic hypertension with failing cardiac power is one of primary mitral disease, so the early discovery of albumin and casts may occasion the faulty diagnosis of primary nephritis in cases of valvular disease.

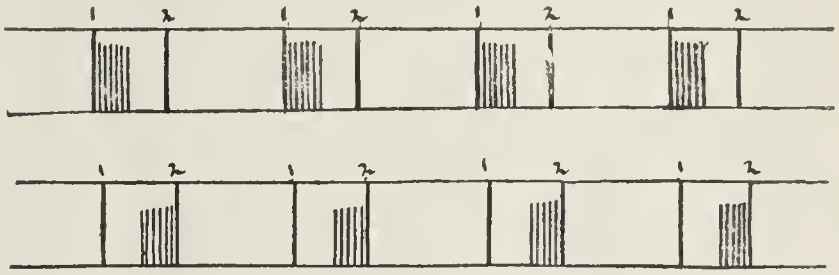

Fig. 1.—The upper figure represents the time relation of the systolic murmur of mitral regurgitation in disease of the mitral valve; the lower shows the time of the murmur (late-systolic) in cases of hypertension without valvular disease. The numbers 1 and 2 indicate the first and second heart sounds.

### FUNCTIONAL RENAL TESTS

Among the functional tests in use at the present day are the following: the phlorizin test, the determination of the time relations and quantity of excretion of potassium iodid, sodium chlorid, milk-sugar, indigo-carmin and phenolsulphonephthalein. Each of these has certain advantages but I shall speak only of the last as my data regarding this are most abundant. The results obtained in cardiorenal disease are sometimes highly valuable, when due allowance is made for possible errors and for temporary variations in the degree of elimination. Among the causes of error one must consider especially the possibility of slow absorption in cases of edema and marked circulatory weakness, but with proper injection into the lumbar muscles this error is only occasionally considerable. If the normal elimination in two hours is placed at from 50 to 60 per cent. of the total coloring matter injected, the figures for primary cardiac disease with secondary nephritis are only moderately reduced, the findings varying from 30 to 40 or 50 per cent.; in primary renal disease, especially in certain advanced types, the figures fall to 20, 15 and even to 10, 5 and finally in some cases for a considerable period before the fatal termination to 0. I find the test of less value in distinguishing primary nephritis from that secondary to cardiac weakness than in differentiating certain arteriolar cases from cases of primary chronic nephritis.

In making this statement, I must first of all admit that to a certain extent the claim to recognize primary arteriolar cases is an assumption; but clinicians will recall cases of continuous hypertension with excessive pressures varying from 200 to 300 systolic and from 120 to 150 diastolic, in which the physical signs indicate considerable diffuse arterial thickening (hard vessel-walls, increased substernal dulness, ophthalmic findings) and the symptoms are almost wholly those of hypertensive cardiac embarrassment. These cases may continue for years (six or eight under my observation in several) without any evidence of renal inadequacy.

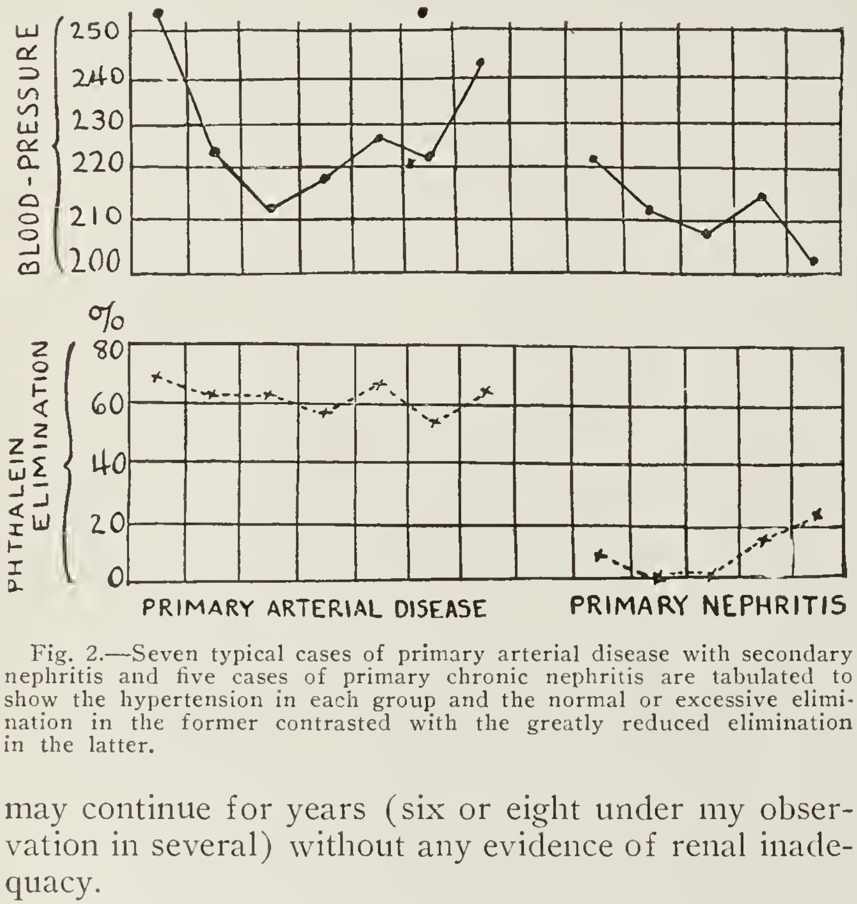

Fig. 2.—Seven typical cases of primary arterial disease with secondary nephritis and five cases of primary chronic nephritis are tabulated to show the hypertension in each group and the normal or excessive elimination in the former contrasted with the greatly reduced elimination in the latter.

Cases of this type occur in persons from 40 to 50 years old more frequently than in younger or older persons, and are more common in women than in men. The appearance of the patients contrasts sharply with that of cases of primary interstitial (or advanced types of parenchymatous) nephritis. They are frequently well nourished; often (especially women) somewhat fat; of fair color; the blood is usually normal in its hemoglobin content and the number of red corpuscles; there is little in the appearance of the patient to suggest grave illness. The non-coagulable nitrogen of the blood is within normal limits in these cases and not influenced by forced feeding with protein foods otherwise than in normal persons. The urinary examinations usually show mere traces of albumin and a few hyaline casts. The impressive facts are the continuous high arterial tension and the evidences of cardiovascular embarrassment and disease. Practically all of the cases which I have seen have been in the consulting room; there is little in the symptoms that I have recited to occasion such patients to seek hospital treatment. In other days one would have with little hesitation described such cases as instances of the earlier stage of arteriosclerosis, but in recent times the tendency to ally continuous hypertension with renal disease has caused many to overemphasize the renal element which undoubtedly exists. In view of the appearance of such patients, their subsequent history (ending in cardiovascular death) and among the clinical findings the ophthalmoscopic picture and the results of study of elimination through the kidneys, one may, I feel, with reasonable certainty separate these cases from primary renal disease. The elimination as is shown in the chart is practically normal or above normal. This is so strikingly in contrast with the condition in primary nephritis that I have placed the findings in the two groups side by side (Fig. 2).

A contrast picture is furnished by primary nephritis not only in the matter of phenolsulphonephthalein elimination but also in the appearance of the patient and the entire clinical course. I have in mind here only cases of primary chronic interstitial nephritis and certain late forms of parenchymatous nephritis which cannot be differentiated during life. In these cases the patient is usually much younger, between 20 and 50 years; his color is sallow, pallid, often almost icteroid; he is apt to be emaciated, the tense and tortuous temporal and brachial vessels stand out strikingly (partly as a result of emaciation), the blood is distinctly (often excessively) anemic; gastro-intestinal disturbances are frequent and a heavy coating of tongue and heavy or even fetid breath are noticed; a somewhat urinous or uremic odor may be present for long periods before actual uremia occurs. The blood-pressure is as high as in the average of the other group but less frequently attains the highest figures obtained in such cases. The ophthalmic findings are in distinct contrast. While hemorrhages may occur in both, the picture of so-called albuminuric retinitis is not seen in the arteriolar cases. The dictum of ophthalmologists that nephritic patients with hemorrhagic retinitis rarely survive for more than two years is doubtless correct for cases of primary nephritis, but must not be extended to the other group. I have frequently found, in the latter, survival for several years and in one at least have known recurring attacks with improvements by absorption of the blood in the intervals, running over a period of thirty-one years. The patient eventually developed increasing evidences of the nephritic side of his malady, but nevertheless finally died a cardiovascular death. The phenolsulphonephthalein elimination in the primary nephritic cases is always markedly reduced and may be as low as 5 per cent. for long periods and sometimes may be nil for weeks before death. There is less frequently substernal dulness. Non-coagulable nitrogen in the blood customarily reaches high figures—from 70 to 80 and even 110 or 120 mg. per hundred cubic centimeters.

The terminal symptoms of these cases (Group 3) are very different from those in the arteriolar cases. Increasing headaches and disturbances of vision, recurring attacks of vomiting and finally pronounced uremia terminate the condition, commonly before the age when the other form of disease becomes manifest.

### OBSERVATIONS OF THE QUANTITY OF THE URINE AND OF ITS PHYSICAL CHARACTER

These are important aids in the recognition of the type of cardiorenal disease. In the primary cardiac group the urine is almost always scanty and, in consequence, of higher color and specific gravity than normal.

The variability of the chemical and microscopic findings has been mentioned, but it may be added that the urinary output and the character of the urine are closely dependent on the condition of the circulation from time to time. The renal element in these cases manifestly influences the condition of the urine far less than the cardiac and circulatory. In arteriolar cases considerable polyuria is a frequent but by no means constant condition—even when blood-pressure is enormous. The urinary findings are variable from time to time. Traces of albumin may occur at times and vanish at other examinations, tube casts are scanty as a rule and may frequently be absent. In other cases, constant albuminuria and cylindruria may be noted. One distinction in the urinary output and findings of this type of cases that has impressed itself on me is the variability in the urine of the day and night. More frequently than in primary nephritis the quantity of the night urine is greatly in excess of that passed during the day, and the specific gravity is considerably lower. This contrast in the night and morning specimen of urine may be a clue to the condition present. Somewhat the same observation, but rarely so striking, may be made in cases of the primary cardiac group.

### OPHTHALMIC FINDINGS

Sufficient has perhaps been said regarding the distinctions in the findings of the ophthalmoscope in primary arteriosclerotic versus nephritic cases. It may be added here that one feature common to both, hemorrhage, has been overemphasized. Too commonly this is regarded as synonymous with albuminuric retinitis and false deductions drawn. The discovery of marked arterial changes in the retinal vessels with or without hemorrhages should suggest a careful scrutiny of all the clinical features of the case to determine whether the nephritis is primary or secondary. Probably no single test applied to such cases exceeds a careful ophthalmoscopic examination in the reliability of the diagnostic and prognostic indications afforded by it.

### THERAPEUTIC TESTS

Only the barest suggestions of the sort of information derivable from therapeutic tests need be made here; and it should be added that not too great a reliance should be placed on such data. In typical cases, however, of the three groups one may observe quite striking differences in the response to certain plans of treatment. The marked response of primary cardiac cases to digitalis and other cardiac tonics is sometimes fairly diagnostic in significance. Rarely ever does one see anything approaching this response in the other groups, even when second cardiac failure has become a marked feature. In the second group one finds the most satisfactory results from the diuretics of the caffein group. Rarely in other cases does one see the same enormous diuretic effect from caffein or theobromin salts. In the third group far more striking than in the other two diaphoresis—baths, pilocarpin, etc., sometimes yields satisfactory results. There are, of course, many intermediary cases in which therapeutic tests are confusing just as the clinical findings are of uncertain significance.

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## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. BROOKS AND CARROLL, CABOT, AND STENGEL

Dr. E. Libman, New York: For some time past I have been classifying the more common cardiac lesions as follows: Two main groups of cases may occur alone or in combination. The first group is that of valvular disease, or valvular defect, and the second, endocarditis. The valvular defect may be due to the virus of rheumatism or of syphilis, or to atherosclerosis. The endocarditis may be acute, subacute, or chronic, and may occur in a previously normal valve or in a previously diseased valve. It may be due to the organism of rheumatism or it may be due to the various forms of streptococci, staphylococci, or other organisms. The subacute and chronic forms are practically always due either to the endocarditis coccus (so-called *Streptococcus viridans*) or rarely to the influenza bacillus. I have seen three cases of infection of a syphilitic valve by the endocarditis coccus (*Streptococcus viridans*). Taking Dr. Cabot's classification the prognosis in the various groups is, in general, as follows: In the group of valvular diseases due to rheumatism the outlook is governed by the degree of the lesion present, the condition of the heart-muscle, the mode of life of the patient, and the occurrence of various forms of endocarditis. In the syphilitic group the result will depend to a great extent on how much damage has been done before the patient comes under treatment, how much the coronary arteries are involved by the disease and what other lesions are present in the system. In the atherosclerotic group the prognosis depends to a great extent on the degree of loss of elasticity of the vessels and on the involvement of the coronary arteries, especially their orifices. In the nephritic group with hypertension, the prognosis again depends on the changes in the aorta and in the coronary arteries, the degree of the nephritis and the mode of life of the patient.

Dr. S. Solis Cohen, Philadelphia: No subject was more neglected in the teachings of twenty-five years ago than etiologic diagnosis; nothing needs greater emphasis to-day. In my own classes I go a little further than Dr. Cabot has, not only with regard to the heart, but also with regard to the whole organism, to every form of disease and injury. I shall discuss, however, only the heart. Although we use the term diagnosis, this classification is important also in prognosis and in treatment. First we have the clinical diagnosis, let us say "cardiac decompensation." Then the anatomic diagnosis, let us say "mitral obstruction with insufficiency"—or "muscular disease," or "aortic" that is, "arterial disease." Here the distribution of the lesion is of great importance—as, for example, in Dr. Libman's illustration of involvement of the openings of the coronary arteries. Then comes the pathologic diagnosis. Have we a morbid process—intoxication or tissue change—in progress, or are we dealing only with its results? We must discriminate infection with its intoxication and affection with its progressive tissue changes from the resultant infirmity—the impairment, the deformity, the interference with function produced by the scar-tissue and adhesion and muscular degeneration which remain when toxemia, inflammation and all active processes are past. The etiologic diagnosis comes next—syphilis, rheumatism, typhoid, whatever it may be. Only when infection or affection still persists does the etiologic diagnosis affect treatment. If they have ceased, we have to remedy, if possible, structural and functional results, but we cannot do this by treatment which concerns the infecting agent only. It seems to be a fact that in syphilis, the infection does persist, and the affection—the progressive tissue change—does continue, almost indefinitely.

Dr. Brooks' paper on the syphilitic heart is thus highly important, in that it directs close attention to this often insidious and obscure form of cardiac disease. I would ask Dr. Cabot if, in continuing his valuable statistical studies, he will tell us something about the anatomic distribution in the syphilitic cases. I have been in the habit of teaching that the large majority of cases of "myopathic heart"—I don't like the term myocarditis, which means both too much and too little—are syphilitic in origin. Aortitis, too, is most frequently syphilitic; and neither luetic myopathy nor luetic aortitis is recognized as frequently as it should be. I have seen cases of both called asthma, and cases of aortitis frequently mistaken for aortic stenosis or aortic insufficiency, or, when anginoid or true anginal symptoms were produced, termed angina pectoris, but without recognition of the syphilitic origin. And other mistakes, too, are common. I have not, however, met many cases of pure mitral insufficiency that I could call syphilitic.

I agree with Dr. Brooks that mercurialization is the most efficacious treatment. Salvarsan helps; but if I had to choose between salvarsan and mercury, I would choose mercury. Fortunately, we can use both. My preference is to begin with inunction and push it to the point of mild ptyalism—to "touch the gums." Then the patient should be given a sweat-bath of some kind and put on iodids for a week or two. After this, salvarsan, preferably by intravenous injection, can be used. After a week or so, however, mercury is to be resumed, alone or in conjunction or alternation with iodid. The oral or hypodermatic method is now indicated. Salvarsan, too, may be repeated later. It is always important to follow or accompany the mercurial or mercurioiodic course with repeated sweat-baths. Bartholow advised pilocarpin, but heat usually answers. By persistence in this course, great amelioration, or as Dr. Brooks says "clinical cure" can be produced.

Dr. Charles Spencer Williamson, Chicago: Our success in these cases depends largely on the recognition of the underlying etiologic factors. There are three classes of cases which one finds in general hospital and dispensary practice for which Dr. Cabot has no place in his scheme of classification. 1. In a large number of cases of myocardial failure the right heart is exclusively or largely involved. These cases rise from pulmonary conditions such as emphysema, chronic bronchitis, occasionally long-continued asthmas, obliterative pleurisy and some other pulmonary conditions. The mechanism of these is essentially the same, that is, an interference with the flow of blood through the pulmonary capillaries, and hence an increased amount of work for the right ventricle. It is a sort of multiple pulmonary capillary stenosis, and in time leads to the well-known picture of failure of the right heart. 2. The group of hypertrophies of the right heart due to kyphoscoliosis. These are not so commonly seen here as in some European clinics, as in Saxony, for instance, yet they are far from rare. I do not think it is sufficiently appreciated that the "normal" ending of the kyphoscoliotic is, in most instances, due to failure of the right heart. The deformity, by obliteration of large parts of the lung with its contained capillary systems, leads to hypertrophy and, in time, stasis dilatation of the right ventricle, which marks the beginning of the end for the patient. 3. The group of the primary cardiac overstrains. I hesitate to mention this group because in many, possibly most of them, other factors coexist. Many show a positive Wassermann reaction.

Dr. Louis Faugeres Bishop, New York: The trend of medical thought is away from organic disease to a belief in general cellular disorder of all cells, but showing more in one part of the body than another. We are under the leadership of Vaughan and others, who are developing a glorified cellular pathology in continuation of the work of Virchow, which he began fifty years ago.

Dr. Robert N. Willson, Philadelphia: I hesitate to question the accuracy of Dr. Cabot's closing assertion that mitral stenosis has no other etiology than rheumatism, because I am reluctant to believe that I heard him correctly. From my own collection I could show him a number of specimens presenting high-grade stenosis of the mitral valve in the entire absence of rheumatism, tonsillitis, chorea, throughout the history of the case. Sclerotic involvements of the mitral valve are by no means rare in which neither syphilis nor rheumatism can be determined as a causative factor. I have seen more than one young adult of tuberculous parentage with all the classical signs of mitral stenosis; and in several instances have confirmed the diagnosis at necropsy. I refer only to cases in which rheumatism, chorea and tonsillar infection could be excluded from the history. With respect to Dr. Cabot's classification of heart affections, I confess I hear a new one proposed with considerable regret. It is tempting and in some features attractive. But it is neither accurate nor comprehensive. It encouraged the very slovenliness of diagnosis which he aims to prevent. One should be sure that there is a distinct advantage in new classifications before they are foisted on a long-suffering medical public. Thus Dr. Cabot insists on etiologic terms, and straightway himself uses three main divisions, not one of which is finally "etiologic." For example, who can at this day say just what the term "rheumatic" implies. Surely there could be no more vague term. Why not substitute the specific cause of the "arteriosclerosis" in Dr. Cabot's second division, if we are to accomplish his primary aim? What less definitive term could be used from the point of view of etiology than "nephritic?" How and why does nephritis cause heart-disease? If through mechanical causes, why not say so; if through a toxin, why not indicate the form of toxemia? Who knows after all that such a toxin finds its origin in the kidney, and not in the intestine or the liver? "Nephritis," therefore, would also seem to be an indiscriminate term for classification. "Syphilitic" alone is truly etiologic, and even this heading must include many cases that are "arteriosclerotic" and perhaps "nephritic" in origin. No room is provided for the congenital lesions, for the many mechanical cardiac cripplings secondary to such pulmonary involvements as emphysema and chronic tuberculosis. Few lung diseases leave a normal heart in their trail. Finally, the toxemias, such as tuberculosis, the cardiopathies of which have been so well described by Anders; of typhoid fever, the heart degenerations of which have been recognized for decades; of the pneumonias, the very definite cardiac muscular changes which I had the privilege of demonstrating at some length. Dr. Cabot provides no classification that will properly include these and other cardiac involvements, perhaps the most striking of which are the heart paralyses of diphtheria. Perhaps it were better not to venture at all at this time of unrest and constant shifting from etiologic base to etiologic base. At least, if we do, the venture should be in the direction of a real etiology and not of vague names. For a time we can well afford to adhere strictly to (*a*) valvular and (*b*) muscular subdivisions, with a specific statement in each case as to the causal factor.

Dr. Graham E. Henson, Jacksonville, Fla.: I am glad to hear mercury and salvarsan spoken of as the treatment for lues rather than salvarsan and mercury. For so many years salvarsan and other agents have been trying to steal the laurels which rightly belong to mercury that it is gratifying to see the drug now come back into its own. While salvarsan is a valuable agent in the treatment of various syphilitic lesions, it should not be considered a substitute for mercury. I was glad to hear Dr. Brooks advocate the treatment of these syphilitic lesions with mercury in addition to salvarsan.

Dr. Richard C. Cabot, Boston: I have never seen mitral stenosis proved to be due to any cause except rheumatism. I believe it is due to rheumatism and to nothing else. Tuberculous heart affections are so rare that they may be disregarded. The terms "arteriosclerotic" and "nephritic" are local classifications, not etiologic. This is a pity, but till we know more of etiology we must use partly local terms. Among the causes of these affections we have lead, but we cannot make a separate division for it. Dilatation of the right heart secondary to lung conditions has, in my experience, always something else in the background, usually arteriosclerosis. Only a few cases of emphysema give a failing heart without arteriosclerosis. I doubt whether a sound heart can be broken down by muscular work alone. I heartily agree that treatment cannot always be based on these etiologic classifications, but must often rest on a symptomatic basis. What Dr. Libman calls "bacterial endocarditis" used to be called "ulcerative endocarditis." If there were any sharp and clear difference between this and the rest of the rheumatic group we should know it. So far I do not think satisfactory differentiations have been given. Most cases of the "cardiorenal" group should be classed either as arteriosclerotic or as renal. Cardiorenal is a bad term and only to be used when we cannot find another.

Dr. Harlow Brooks, New York: One of the most important prognostic factors is the early recognition of the involvement of the heart, because early treatment unquestionably spells cure. If not seen early, prognosis may be bad owing to the fact that the late lesions are largely fibrotic and therefore not capable of total eradication. Dr. Cabot's classification is a most valuable one, although it cannot as yet be very widely applied. Most of us now believe that a considerable percentage of hitherto unclassified myopathies of the heart are of syphilitic origin.

Dr. Alfred Stengel, Philadelphia: Dr. Cabot has denied stating that the etiologic treatment may be the only treatment to be applied. Improve the etiologic classification and it will lead to an etiologic treatment based on it. The kernel in the nut is that syphilis is an important cause of heart-disease and it should not be forgotten. Etiologic treatment is out of the question. Later on, however, it might lead to something else.

# DISCUSSION OF THE SURGICAL THEORIES OF INTESTINAL STASIS

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NEW YORK

The time is now at hand to take account of results brought about by the various surgical procedures of short-circuiting the intestine. The end-results are of chief importance. During the enthusiasm of the past propaganda, it was almost impossible to draw clear and wise conclusions. I hope that I can add a little to the meager knowledge of the subject as it seems to be understood at present.

The question arises, Has Mr. Lane proved his procedure to be wise? To the surgeon calmly observing the results there is but one answer—No.

In our own country many enthusiastic surgeons have performed these operations and many of these cases are now coming under medical observation again for relief of symptoms, as a rule, the same as were present before operation. These results remind us of the unnecessary ovariotomies, nephropexy, indiscriminate appendectomies, anchoring mobile cecums, and operations for splanchnoptosia. In all of these, practice and time have softened early enthusiasm, for finally the cases in which such surgical procedures proved useful were found to be much fewer than was believed in the beginning. This knowledge was obtained through surgery alone, in reviewing not the operation or the operator, but the shortages of results that could be accomplished. What now is the status of affairs regarding short-circuiting operations for intestinal stasis? When do results show that they are worth the while? And what are the limitations?

### THEORY OF LANE AND JORDAN

This, together with Kellogg's and Case's theory, cannot be disassociated from the Roentgen ray, because the determination of cases on which surgery is done, so far as their work is concerned, is made or proven by the Roentgen ray mostly. The Kellogg and Case portion will be taken up in connection with their own theory.

The diagnosis of chronic intestinal stasis is made by Lane on the basis of certain clinical phenomena and Roentgen-ray examination. The clinical picture that Lane describes is well known to all and has been known for many years. Laparotomy is performed on the patient who presents a "toxic" condition and in whom Roentgen-ray examination indicates imperfect drainage. Lane emphasizes a long series of affections brought about by enfeebled resistance which the tissues offer to the invasion of microbes. The definition of stasis which Lane has given leaves only a matter of body-drainage to deal with—obstruction or retention in one part of the gastro-intestinal canal which sooner or later contaminates the entire area drained by the system. In his view, abnormal retention in one part of the intestinal tract eventually contaminates the entire system. Certain bands holding portions of the intestines in fixed positions and causing angulation, are mentioned as the important factors in bringing about local delay. These bands are found at the junction of the duodenum with the spine, the duodenojejunal junction, the lower ileum within a few inches of its termination, and in the vicinity of the appendix. These, in the upright position, permit the movable intestine, proximal and distal to them, to drop, and as this continues, these bands thicken, shorten, causing more delay and even obstruction. The stasis of food is supposed to begin from the kink at the lower ileum, and toxemia developing above it, the kink at the duodenojejunal flexure is caused. Then follows dilatation of the duodenum with a possibility of ulceration and obstruction of the stomach with dilatation of that organ. These "evolutionary" bands in connection with toxemia, have only a mechanical aspect and are supposed to be caused by a postural strain from the upright position.

Anyone can show that at least 18 per cent. of all people have a Lane or ileal kink, and that in the vast majority of these cases some delay exists, but no toxemia. It can also be shown that in by far the largest number of those who come under medical observation, a Lane's kink exists that is not responsible primarily for the symptoms. In 167 cases of definite Lane kinks noted by me by Roentgen-ray examination, in only five instances did this kink cause definite delay and I am now strongly of the opinion that unless the ileum is dilated proximal to the kink, the kink is not significant. The same is true of the other kinks.

It is decidedly more reasonable to believe that these bands have been developed in the course of human evolution in a prominent way to hold the movable intestine at fixed points for proper function. I have observed several cases in which operation has been made for Lane's kink, in which, after six months or a year, the bands have reformed and I believe them to be more a factor of physiologic importance than of surgical significance. When at these band areas a definite kink takes place, causing stasis, it is because the intestine has elongated and sagged primarily; not because the kink is obstructive, causing a secondary elongation and sagging. What the cause of this primary elongation and sagging is, is susceptible of proof and will be presented in my own theory.

In instances of ileal kinks, which are supposed to cause stasis at that point, further study made it most logical to believe that if the kink was a significant factor, after an ileac-implantation had been done, no delay in the upper small intestine or stomach should be met with (providing there had been no kinks left above it), and yet, to my knowledge, in five cases in which this operation was done, a rapid transit through the lower part of the small intestine could be proved, but no benefit to the exit from the stomach and the passage through the first 15 inches of the small intestine. The delay shown by the Roentgen ray at these upper levels continued just the same after the implantation in every case but one, and in this but little benefit could be noticed.

Regarding the responsibility of intestinal stasis for ulceration of the duodenum and stomach, experience has proved that in most of the cases of ulcer met with there is no intestinal stasis, and that surgical procedures for the intestinal stasis do not cure the ulceration of the duodenum or stomach, or prevent the ulcer from returning if the case is of that type. If the ulceration was due to stasis, implantation would be needed in addition to the gastro-enterostomy or the ulcer would not heal or would return if a gastro-enterostomy only was performed. Yet we know that simple gastro-enterostomy answers for the vast majority of cases of these ulcers, no further surgery being necessary, showing that stasis is not an important factor in their etiology.

It has been my experience within the last year to meet people who have been "short-circuited," and who have been benefited thereby for a space of a few months, but who now present the identical symptoms of toxemia they had before they were operated on, although the connection between the ileum and lower sigmoid or rectum is perfectly patent. In two particularly interesting cases a colectomy was done in addition, and still they were toxic. There were three cases, one operated on by Mr. Lane himself, of ileac-implantation wherein the colon not only did not atrophy but was practically a dead space, or a large appendix to the sigmoid, as is the regular appendix a small one to the cecum. Cases were also met with in which cecosigmoidostomy had been performed for toxemia or stasis (not true obstruction) wherein the individuals were even more toxic than they had been before the operation, because of a vicious circle established in the colon.

There is also a question in my mind whether dilatation of the duodenum can always be taken as an indication of intestinal stasis, because while this may be common in cases of bands of the intestine, there are a number of cases in which dilatation of the duodenum exists without bands being present, or even of dilatation of the stomach. I have seen definite cases of dilatation of the duodenum in which the stomach was apparently normal, and I am convinced that by Roentgen-ray method of diagnosis a stomach may be dilated, but when the bismuth meal is given it looks normal in size, while the duodenum, through which the food rushes very quickly, and does not have much peristalsis to speak of, may still remain loose and flaccid.

The ordinary duodenum is 3 inches long, and according to Jordan, when it is 4 or 5 or 6 inches, it is significant of stasis due to kinks distal to it. This is difficult to believe, because in instances people who are not toxic and have no stasis, still have duodenums 4 and 5 inches in length. Jordan, as well as most others, takes the time standard of emptying the stomach and small and large intestine as significant for a diagnosis of surgical cases. I have already alluded to the inadvisability of diagnosing gastric stasis by this means.[1] Of course here I refer to the gastric cases of moderate degree, not those due to definite pyloric obstruction with marked retention. I have noticed normal individuals in whom the function of the stomach and upper small intestine is slow while that below to the hepatic flexure is rapid, and perhaps slow again distal to this point. I have noticed others in whom the transit to the ascending colon in the usual six to eight hours was perfectly normal, and there being no obstruction in the colon, still it was a matter of seventy hours before the bismuth was gone. The stand that Jordan has taken that a sagged transverse colon, by causing a sharp angulation at the splenic flexure, is a cause of stasis is not borne out generally in practice. I have seen persons who have this sharp angulation who are not toxic and who do not have stasis.

The Roentgen-ray method of diagnosing intestinal stasis, while valuable and the best we have, is liable to fallacious conclusions. The misfortune was that when the medical men utilized the Roentgen ray in connection with diagnosis in the abdomen, as well as elsewhere in the body, they did not engage, as their first work, in examining normal individuals. They immediately began with abnormal subjects, and so it is that an unwarranted degree of enthusiasm developed conclusions which only time can modify on the part of all who utilize this means. If Jordan, as well as others, would examine a normal individual every third or fourth time, they would be surprised to find the number of people who have all the Roentgen-ray signs that have been held so important for these diagnoses. Of course, the proportion would not be so great as in ill people, but the number would be so considerable that many definite views held at present would be modified, as must inevitably happen with the proper application of this valuable means of diagnosis. Only a clinician who is engaged in all sides of the work, with the Roentgen ray as well as the laboratory, can appreciate the value and limitations of any one method of abdominal diagnosis. I again reiterate what I have said so many times in the last four years, namely, that we must go slow and be conservative in drawing definite conclusions from Roentgen-ray examination alone. It is the man behind the gun with a Roentgen-ray apparatus who is a far more important factor than energizers, tubes, screens, etc. It is its practical value for diagnosis that counts in the important way, and this is now mostly a matter of personal equation, learned in experience born of failures, both of omission as well as commission. A standardization of this means of diagnosis is absolutely necessary before it can be generally good for the patient and medical men.

The Roentgen-ray method is at present as fallacious in diagnosing intestinal stasis as it is useful when true obstruction exists. I am taking here its consideration from a surgical aspect. Gastric stasis is more often due to other conditions besides kinks than Lane would have us believe. It is surprising in my own Roentgen-ray work how often retention of barium in the stomach for six hours is met with. As my experience multiplies, I am paying less and less attention to this means of diagnosing gastric stasis, so that now, with Mayo, I believe in the test-meal method mostly. Almost every case of abdominal disturbance has this Roentgen-ray finding of gastric stagnation, and a diagnosis of gastric stasis or dilatation by means of the Roentgen ray simply should not be made, because however atonic or dilated a stomach might be, provided there is no actual obstruction at the pylorus, it usually contracts on the Roentgen-ray meal and appears to be a much smaller organ than when empty. More than that, I have seen individual cases in which at one time the stomach was dilated, at the next time normal, then dilated (possibly because of some indiscretion in eating), and perhaps normal again after a few days' time.

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[1] Bassler, A.: Some Recent Conclusions On Abdominal Roentgen-Ray Work, The Journal A. M. A., Dec. 20, 1913, p. 2217.

Mr. Lane does not take into consideration the bacteriology of the intestinal canal, its secretions from the gastric portions down, the motility of the tract that is an ever-changing matter, the habits and age of the individual, diet, condition of the abdominal walls, and many other factors which bring on the condition in a secondary or markedly influencing way. To him and his followers it is only a mechanical matter in cause, diagnosis and treatment. For years and quite generally in its application to the body, drainage has been a real and true standard of surgery. The second and other great one is extirpation of diseased tissue. For the subject on hand, he advances drainage as a cure, and lately extirpation (colectomy following ileac-implantation) because the first was not enough to prevent failures. But the subject is mostly a biologic matter, and to that standard surgery has not advanced as yet. The two time honored methods not being enough to sustain Lane and his followers in all of their contentions, when the patient who has been operated on does not do well they resort to medical measures and prescribe paraffin, belts, diets, marriage, and rest in the country. The employment of these means is fair neither to the advance of the surgery on the subject, nor to the old and better known medical side. The majority of these patients are debilitated, neurotic and low in health. These he puts to bed and purges for the operation, there is the low diet for several days that must follow all laparotomies, then comes the three or more weeks bed rest of the body and building up generally because of no expenditures in physical or nervous energies. Added then is the moral effect of the operation in these more or less psychic sufferers. Every surgeon makes use of these remedial measures for any laparotomy case, but they are especially effective when one deals in large numbers with patients of the kind Lane and his followers are operating on, and due credit for their relief must be given to these really medical means. This Lane does not do. No one has involved the subject more than Lane and his followers themselves. To state "Many forms of medical treatment had been tried in the case but she grew gradually worse, operated on and she is cured," means little. What treatments, and by whom, and for how long a time? This information is not given. The truth is that there are very few medical men who properly diagnose and treat the marked cases. The subject is so little understood generally in medicine, and there is so much for medicine still to find out in the biology of the subject, that such phrases are uttered for personal reasons or because of lack of knowledge. Particularly does this come home irritatingly to us when "cured cases" come under medical attention again after having passed through the route of dangerous surgery and contributed to flattering surgical statistics.

Mr. Lane reports that cancer of the pancreas and stomach is due to intestinal stasis, and yet he fails to account for those cases of cancer at these points that do not have and never have had intestinal stasis. What is still more difficult to understand is his repeated statement that the ileum is normally sterile of bacteria, when the fact is that bacteria are more numerous and active in the lower part of the ileum than in the colon. And further, if he would make bacteriologic observations to prove it, he would find that in the newly-born the duodenum is sterile of bacteria, but as age advances bacteria creep up to it, although the complete intestinal flora is never found here or in the stomach in any individual.

Finally, the following important observation and experience of mine should be recorded. Of several hundred patients who have had intestinal stasis, the kinks Lane has described, and whose symptoms are due to the complexity of forms of these conditions, none has been operated on for functional stasis and all show results as good as Lane has reported. Some have been operated on who had definite obstruction; not the slight form with toxemia and stasis such as the average case displays. These had chronic appendicitis, binding adhesions in some area, gall-bladder pathology, etc. They are well or improved—everyone. Often there were cases of true obstruction from binding pericolonic adhesions, who got well or were much improved whatever the form of operation by which they were short-circuited, providing it was practical. Everyone has agreed that for years surgery was indicated in them, and they always will be cases for which surgery is definitely called for. But when surgery of the intestines is engaged in to do away with food-bacterial poisons, without considering carefully the many factors that influence them, or even the kinds of organisms, then the cases that come back into medical hands several months after the operation as bad as before, prove the fallacy of bands being important and the inaccuracy of many of Lane's contentions. Lane and his followers have confused the terms toxemia and stasis so badly that it is difficult to understand the difference between them. The future will prove that mechanical stasis from a surgical point of view will mean obstruction real and *bona fide*, not just toxemia and moderate degrees of retardation of transit. Many surgeons attribute stasis even to hypertrophy of the Houston valves, mobility of the cecum, redundant sigmoids, Jackson's membrane, etc., but the reasons given are not any more convincing, and my experience and beliefs are that these are also cast in the quicksand of short-sighted surgery. Remember, please, that the bowel may be matted into one mass by chronic peritonitis so that great interference with peristalsis must exist, and still intestinal toxemia may not be present and even intestinal obstruction may be absent. Although it is well known that some of the cases of true intestinal obstruction in a chronic way lead to toxemia, the matter is still not proved when one notes non-toxic cases with the same kinds of obstruction. The coexistence of two phenomena does not always prove that they stand in the relation of cause and effect. The point I would definitely make is this: for toxemia alone, non-mechanical in origin or complication, operation is not indicated; but when distinct retardation to transit exists (and by this I do not mean bands whose influence is negative on simple prone position, but real, true obstruction in any position), operation may be indicated if wise, energetic and long enough treatment does not satisfy the patient. Lane reports that 5 per cent. of cases seen by him are operated on. My belief is that they should be fewer than this, since only true mechanical reasons warrant surgery being performed. A considerable number of toxemia cases are relieved by operations (those having only kinks), but we do not cure them permanently of the toxemia in by far the largest percentage of instances. Then again, great harm is often done by these operations, seriously interfering with the physiology and biology of digestion, which cases are multiplying. The only true, safe standard in this whole affair is to operate when obstruction from whatever reason exists, and for surgeons to pay no attention to the toxemia or what may be called Lane's type of stasis. In this way the surgeon will be doing what is necessary in the case, the solution of many obscure points will be quickly cleared up on a practical basis, he will make no mistake in the selection of his cases, and his statistics and results will be uniformly good. There is so much variety in these cases that unless he operates on a kink case only when proximal dilatation of the viscera exists, and this patient has been handled carefully and capably for a while without benefit, he will meet with failures. It is best for him to operate only for intestinal obstruction pure and simple, and to pay no attention to stasis, toxemia, Jackson's membrane, Lane's kinks, etc. These may be the factors of cause, but obstruction, whatever the cause, should be his guiding star for activity, and pardon is asked for recapitulating this point.

### THEORY OF KELLOGG AND CASE

Included in the work of Lane, these authors add torsions of the cecum and colon and particularly insufficiency of the ileocecal valve, permitting ileal stasis to occur by reflux from the colon. Mention is made of ileums noted that were so dilated that the ileum practically helped in adding a length to the colon. Reports are given of a large number of cases of ileal stasis in which this incompetence of the valve or spasm of the ileocecal sphincteric mechanism, or a combination of the two, was the cause. Substantiation of the theory is given in cases improved by operation on the valve, benefit in its mechanism noted after operation, and the fact that Rieder, Groedel and Diellen have reported instances of this condition.

No one can question that incompetence of the ileocecal valve is a clinical finding in some of these cases, and that apparently it is plausible that it has its significance in connection with the subject, but what must also be remembered is that in most every case of incompetence we are only dealing with a resulting condition, and while operation will help for the time being, the end results will not be as bright as Kellogg and Case have presented them.

Persons are met with in whom the ileocecal valve is not constantly relaxed as Case has stated. Even without treatment of any kind, I have observed four cases in which influx from the colon was noted at one time and not at another. A careful study of this valve has strongly suggested to me that distinctly more knowledge of its function than is at present in our possession is necessary before we can accept Kellogg's and Case's beliefs in connection with this subject. My observations regarding it have been made entirely with the Roentgen-ray method of examination and this being the same as Case's (although perhaps not so extensive or intensive in interest as his) has led me to the belief that it is not of so much significance in each instance. Much depends on the general condition of relaxation of the hollow viscera of the abdomen, for when this is present the incompetence is liable to be present also, and I fail to understand how operation on the valve will afford permanent benefit. A careful study of the function of this valve shows that at times its relaxation, permitting influx from the colon, is a normal phenomenon. In almost every individual in whom the general status of nutrition is very low, enemas sufficient in bulk will reach the ileum, the valve relaxing for the passage of liquids upward from the colon. Following an operation, or for whatever reason, if food by mouth has been withheld for days, influx through the valve is common, it being an effort on the part of nature to obtain better nutrition.

By the clysma method of Roentgen-ray examination of the colon it is most important what bulk of suspension is given. If this is considerable in quantity, influx through the valve is liable to occur. Judging from the picture that Case shows, he fills the colon almost to its capacity. Another thing, and this is very important, in a considerable number of people who have been habitually constipated for years, constant relaxation of this valve is due to the gas pressure more or less resident on the distal side of the cecum. It may be supposed that this pressure would serve to keep the valve closed, and probably it does in the early days of disorder, but eventually the valve is dilated by it, and then it is more or less relaxed constantly (constipation here is the main cause). But here it is often difficult to state definitely, when toxemia is also present, whether it is the constipation or the toxemia that acts mainly. Careful post-mortem work in these cases will far too often show a degeneration in the sympathetic nerves coming from the valve and the centers that preside over them for the general acceptance of the Kellogg and Case theory.

### AUTHOR'S THEORY OF THESE DISORDERS

Whatever Adami has said to the contrary, it is nevertheless true that infections of the intestinal contents are the primary factors of greatest importance in connection with toxemia of the alimentary tract. If one would examine bacteriologically a number of stools of these patients and compare them with normal individuals, significance would at once be noted. This is far too large a subject to present in detail here and Herter and Kendall's published works will supply enough to guide one in the beginning. The primary cause of these conditions is mostly a bacterial matter, and it is the food-bacterial products that eventually bring about the status which surgeons are endeavoring to remove by drainage, but which cannot be done successfully enough because the infections commonly continue after the operations.

The course of these cases is about as follows: Early in life the intestinal canal is infected from food and drink. The infecting organism acquires the power of symbiosis so that it becomes more or less permanently established in greater or less abundance. As middle life comes on, the vicissitudes of the individual, his habits and dietetic indiscretions, his artificial existence in the cities and even elsewhere, bring their train of added factors which influence the bacterial development unfavorably to him. The constant resorption of bacterial products affects the tissues nearest to them, namely the walls of the gut. Errors in the secretions of the pancreas, the intestine (succus entericus), the liver (bile), the stomach, etc., are first to take place, and following this the musculature is weakened by a protoplasmic and nuclearplasmic degeneration in the fibers, both coats being involved. Gradually, a degeneration of the sympathetic fibers takes place, and as this extends, the ganglia are involved, showing a granular degeneration and shrinking of this highly specialized tissue. When this is established completely enough, the hollow viscus dilates and elongates, for the inhibitory power of the sympathetic system is assailed. Then usually, all the hollow viscera of the abdomen show this change, although certain parts like the stomach, small intestine, cecum, colon, sigmoid or rectum may show it to a greater degree. After this, the less immunized tissues of the body (those distant from the abdomen) show its influence on them and we have the picture of an individual we so often see in practice. As local resistance of the gut wall is assailed, the bacteria may gain entrance into the general blood-stream, and, filtering out in remote tissue, proliferate there with the production of local pathologic change.

To me, then, the subject is a medical matter all the way through. Surgical procedures for conditions that come on as complications may be necessary in individual cases, but never the major surgical operations of Lane for simple stasis or toxemia, or his form of abdominal operation for disease in tissues remote from the abdomen, or operations on the ileocecal valve itself.

# SUBSCAPULAR EXOSTOSIS WITH ADVENTITIOUS BURSA

Clarence A. McWilliams, M.D., New York

A girl, aged 18, came to my office in the early part of last August complaining of dull, aching pains in the left shoulder, increased by wet weather and by use. The pain seemed to run down irregularly through the deltoid muscle and varied much in intensity, duration and frequency. It was never a completely disabling pain. It had been present for about a year and was getting worse. Twelve years ago, following a fall, the left scapula began to become prominent. For this she wore a brace for a year but without any benefit. The projection of the scapula backward is increasing. Just inside the posterior edge of the left scapula a swelling has appeared, varying in size from time to time, but never larger than a lemon. No redness appears over the swelling, which is very slightly tender. Motions of the shoulder itself are painless and unrestricted. The drawing of the scapula backward and forward is slightly painful and for a year the patient has noticed on attempting this motion a grating or creaking sound.

A few months ago the patient went to one of our best hospitals where they inserted aspirating needles into the swelling on the inside of the scapula in several places, with negative findings. She was sent away without any roentgenograms being taken. This was a mistake, for if it had been done, a diagnosis would at once have been made.

*Examination.*—When the patient was examined, it was at once seen that the posterior edge of the left scapula was very prominent. There was no depression on its inner side as would be the case were the muscles atrophied from paralysis. Instead there was a fulness at the lower part of the posterior edge of the scapula. The color of the skin in this location was normal. Palpation revealed an indefinite, soft, doughy swelling of about the size of a lemon, the edges of which could not be mapped out. There seemed to be a sense of fluctuation in it. It appeared as though it ran forward beneath the scapula. The feeling was as though a cyst was present beneath the scapula. A roentgenogram was taken, which at once explained the condition. An exostosis (Fig. 1) on the inner side of the lower part of the left scapula was surrounded by an adventitious bursa.

*Operation.*—Aug. 12, 1914, a transverse incision was made about 1½ inches above the inferior spine of the scapula. It was made transverse so as to afford as little deformity as possible when a low-cut dress was worn. The trapezius fibers were separated in their direction and the rhomboid was divided. Under its surface a thin-walled cyst was found. In the attempt to enucleate this it was ruptured. It contained serous fluid. The finger inserted came on an exostosis which began about 1 inch from the posterior border and ran obliquely forward and inward. With a chisel it was an easy matter to divide the narrow pedicle at its base. This pedicle was much narrower at its base than at its distal extremity, as shown in Figure 2. The end of the exostosis was irregularly rough. The chest-wall on which the exostosis impinged was very rough and covered with thickened, hard, connective tissue. The bursal wall was dissected out as far as possible, and, in order to obliterate any of the wall which might have been accidentally left, the space was packed with dry, sterile gauze. Separate suture of the muscular layers was made about the gauze.

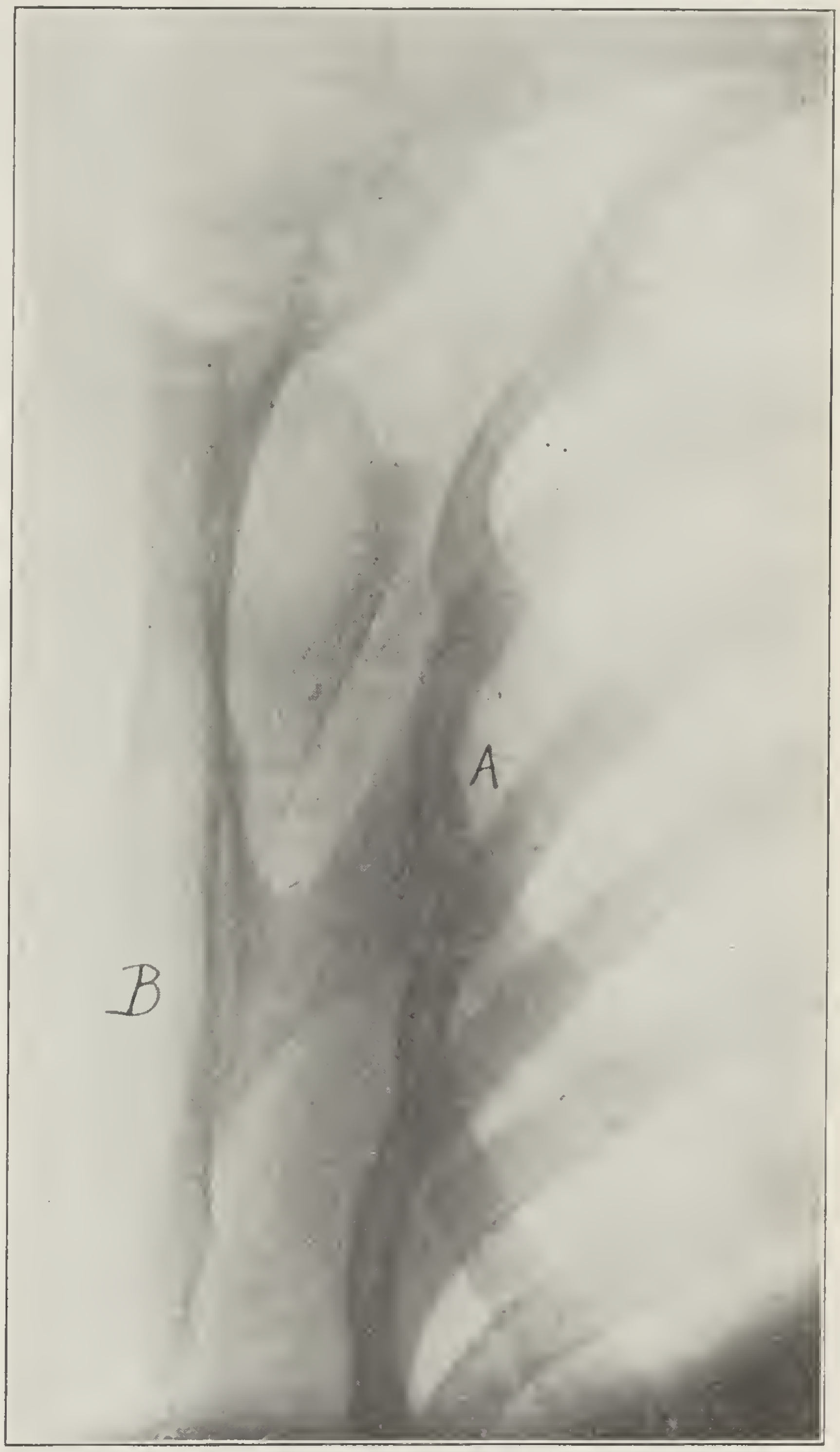

Fig. 1.—Roentgenogram of inner surface of scapula. *A*, *B*, exostosis. *A* is free end of exostosis covered by shadow of rib.

*Pathologic Examination* (by Dr. Whipple).—Gross examination: There are two specimens. The first is an oval-shaped piece of bone, measuring 2.05 cm. in one diameter by 2 cm. in the other, and about 1.05 cm. in thickness. Covering it is an irregular patchy area of cartilage which is fairly smooth, with irregular edges. Considerable resistance is encountered on section. The second specimen appears to be the remains of a cyst, covering the exostosis. The cyst-wall is markedly thickened and the inner edges show a considerable amount of infiltrated blood.

Microscopic examination: The sections taken through the exuberant growth of the scapula show that the tissue is made up partly of cartilage and partly of bone. The interesting feature of the section is the picture of metaplasia occurring from cartilage to bone. Covering the cartilage in places is, apparently, a thin layer of fibrous tissue. The sections from the cyst which covered the exostosis show an unusual picture of adventitious bursa, in which the cyst-wall is made up of fairly dense fibrous tissue and the lining of modified connective-tissue cells, the innermost cells being fairly parallel to the surface of the cyst. Diagnosis: exostosis of the scapula with adventitious bursa.

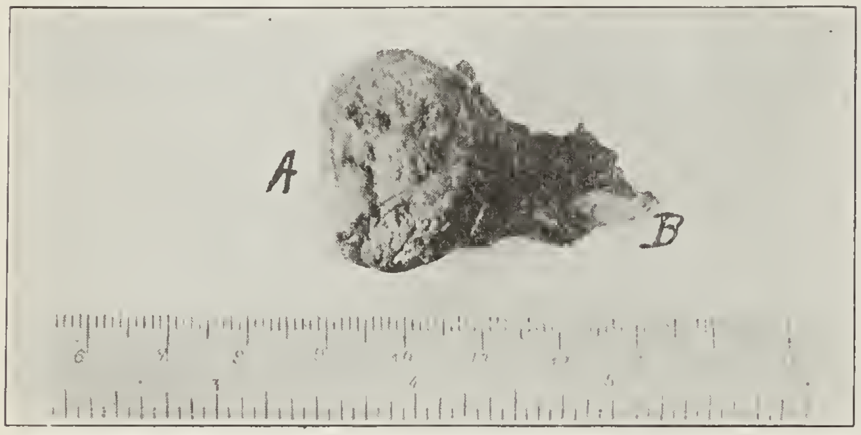

Fig. 2.—Appearance of exostosis after removal. *A*, free end; *B*, pedicle.

The wound healed by primary union. Two weeks elapsed before the gauze was loose enough to remove. Two months after the operation the appearance of the shoulder is perfectly normal, the scapula having resumed its normal position. The grating sound has disappeared and all motions are painless. This case illustrates the great debt we owe to the Roentgen ray in assisting us with our diagnoses.

32 East Fifty-Third Street.

**Harness Rivets Removed from Nasal Cavity.**—While we frequently remove from the nasal cavity foreign bodies which have been retained a short time, yet it is rare to find them retained so long without the patient knowing it. A boy, aged 7, had always been healthy until two years ago when he had an attack of "influenza" lasting several days, at which time there was quite a profuse nasal secretion of a thin, watery nature; the general disorder which had been diagnosed influenza subsided, but the nasal discharge gradually got worse until it became purulent and very foul; nasal douching had little effect; "even the skill of the magnetic healer failed to effect a cure." I first saw the child September 20. He was moderately well nourished, was somewhat anemic and presented the appearance of a child with adenoids. A purulent discharge from the nose was very foul. Careful examination revealed a metallic body in each nasal cavity. These were removed with some difficulty and proved to be quarter-inch harness rivets. They were considerably corroded, showing that they had been in place a long time. A few subsequent treatments cleared up the trouble nicely and the boy is now able to breath through the natural route. This simply emphasizes the necessity of a careful examination of the nasal cavity and all accessory sinuses in every case presenting with a foul nasal discharge.—A. J. Dalton, M.D., St. Joseph, Ill.

# New Instruments and Suggestions

## NITROUS OXID-OXYGEN ANESTHESIA

### A NEW APPARATUS*

Albert H. Miller, M.D., Providence, R. I.

*Requirements.*—The nitrous oxid-oxygen apparatus used for surgical anesthesia should be simple, portable and readily sterilized.

*Simplicity.*—Although simple, it must conform to the requirements set by Boothby[1] as follows: (*a*) an absolutely regular flow of each gas at any rate desired, without the necessity of frequent manipulation of valves; (*b*) the flow of gases rendered visible; (*c*) an efficient means of adding ether vapor to any amount; (*d*) a face-piece air-tight and practically self-retaining.

*Portability.*—Its portability should be such that it may readily be moved from room to room, or taken in an automobile or railway carriage.

*Sterilization.*—The sterilization of apparatus for administering anesthetics has been generally neglected. It is evidently wrong to continue to use an apparatus which has been contaminated by use in a case of scarlet fever or tuberculosis. Syphilis could undoubtedly be transmitted by an unclean gas inhaler. No apparatus previously described can be readily sterilized and in most, sterilization would be impossible without destroying the instrument.

*Apparatus.*—The apparatus here described comprises three units: (1) the reducing valves; (2) the controlling valves; (3) the inhaler.

*Reducing Valves.*—To secure a steady flow of gas and oxygen, reducing valves are essential. These valves reduce the pressure of 900 to 1,500 pounds per square inch as the gases issue from the cylinders, to a readily controlled working pressure of 10 to 20 pounds. Without reducing valves, constant attention is required to maintain even an approximately regular flow of gas. The reducing valves, one for nitrous oxid and one for oxygen, are mounted on double yokes fitted with fiber washers. Two cylinders of gas and two of oxygen, clamped into their yokes, set on the floor, not requiring any other support. By providing two cylinders of each gas, one is able not only to insure a sufficient supply of the gases for a long operation, but to allow each cylinder to be emptied before a fresh one is opened.

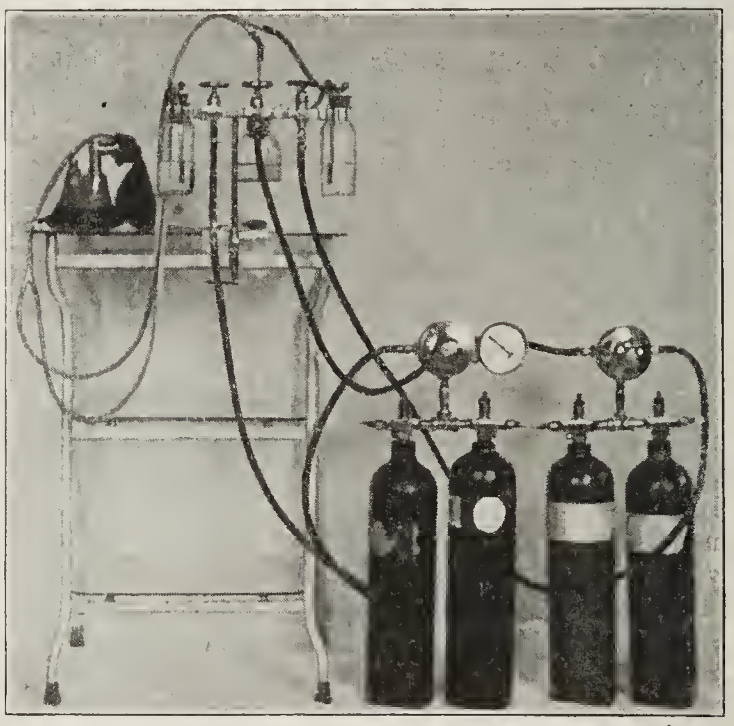

Fig. 1.—Complete apparatus. From left to right: Inhaler, air valve closed. Indicator for oxygen. Oxygen valve. Ether valve and ether vaporizer. Gas valve. Indicator for gas. Oxygen cylinders and reducing valve. Nitrous oxid cylinders and reducing valve.

*Controlling Valves.*—The aluminum frame holding the controlling valves and the indicators is provided with a clamp which attaches this part of the apparatus to a table or chair, again doing away with the need of a stand. On the frame are mounted three valves, two wash bottles and a vaporizer of special construction. Oxygen passes through the valve and wash bottle on the left and nitrous oxid through the valve and wash bottle on the right. The wash bottles, besides moistening the gas, serve as indicators of the rate of flow. The middle valve transmits a stream of nitrous oxid to the vaporizer which provides a constant percentage of ether vapor varied by changing the rate of flow of the gas. In other apparatus, ether has been added by an automatic dropper or by passing the mixture of gases over ether in a jar. In neither of these ways can be obtained the constant, yet instantly variable, percentage of ether vapor which this instrument furnishes.

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* Abstract of a paper read before the Rhode Island Medical Society, Surgical Section, April 8, 1914.

[1] Cotton and Boothby: Perfected Apparatus for Administration of Nitrous Oxid-Oxygen-Ether Anesthesia, Surg., Gynec. and Obst., September, 1912.

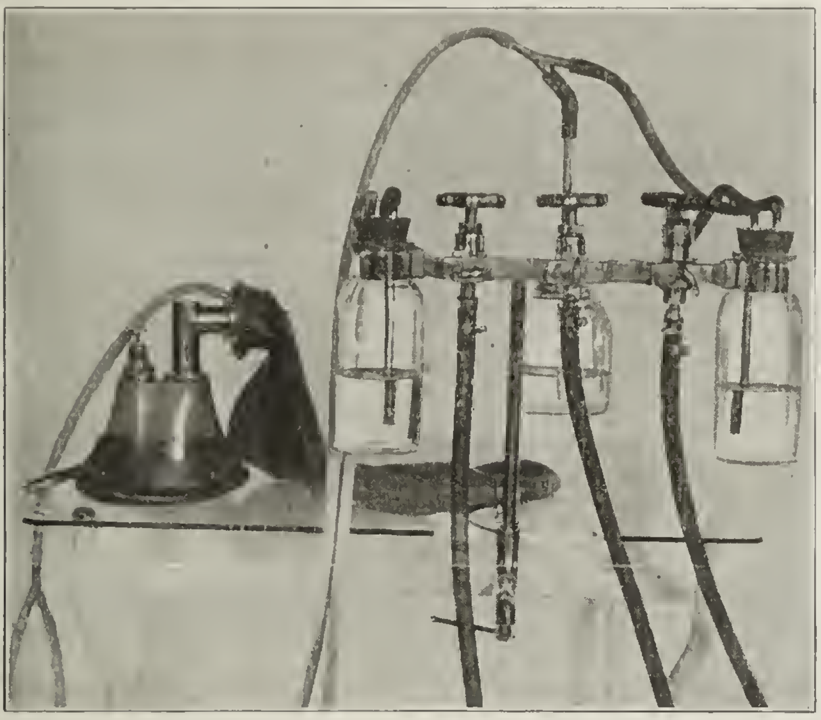

Fig. 2.—Inhaler and valve frame. From left to right: Inhaler, air valve closed. Indicator for oxygen. Oxygen valve. Ether valve and ether vaporizer. Gas valve. Indicator for gas. Wide mouth of bag allows ready sterilization. Aluminum valve frame clamped to table.

*Inhaler.*—The face mask is of celluloid, which is light in weight, readily sterilized and allows one to see the color of the face and lips or to note the presence of mucus or vomitus. The rubber cushion is inflated, fits any face, and is readily sterilized in boiling water. An air-valve on the inhaler allows the face-piece to be adjusted to the face and the patient to become accustomed to breathing through it before the anesthetic is introduced. When the air-valve is open, the gas is shut off.

The expiratory valve is mounted on the inhaler in plain sight. It is controlled by a spring which is adjustable in tension. There are no concealed valves in any part of the inhaler.

The supply-bag, which also serves for the rebreathing-bag, is mounted on the inhaler. The wide mouth of this bag allows it to be turned inside out and dried after sterilization in boiling water.

*Rebreathing.*—Only that part of the inspired air which penetrates deep into the lungs is changed during respiration. Without rebreathing, a large part of the gas which is used serves only to fill the inhaler and the upper respiratory passages and is then passed out into the room to be entirely wasted, so far as serving as an anesthetic is concerned. A small proportion of rebreathing serves only to warm the mixture and to prevent the waste of gas and oxygen. A larger proportion of rebreathing stimulates the pulse and respiration and raises the blood-pressure.

In this apparatus, the first part of each expiration passes into the supply-bag. The latter part escapes into the room through the expiratory valve. The proportion of each expiration which enters the supply-bag to be rebreathed is controlled by the rate of flow of the mixture into the inhaler. The proportion of rebreathing can be closely estimated by noting the point of the expiration at which the expiratory valve opens.

If the rebreathing bag were connected with the inhaler by 4 feet of ⅞-inch tubing, as is usually done, the expiration would fill only the tube and would never reach the rebreathing-bag. The patient would breathe over and over the gas in the tube and all calculation of the proportion of rebreathing would be destroyed.

*Connection of the Units.*—The three units of the apparatus are connected together in the order named by rubber tubing. Each unit may be moved independently of the others. The nitrous oxid or nitrous oxid with ether vapor and the oxygen are led to the inhaler by separate tubes. The mixture takes place close to the face-piece. This allows an instantaneous change in the percentage of oxygen. Otherwise the patient would have to inspire all the gas in a 4-foot tube, an 8-gallon bag, a cumbersome heater and an ether-chamber before a change in the oxygen percentage could be appreciated. In some apparatus, it takes more than two minutes to effect a change in the percentage.

*Administration.*—The supply bag is partly filled with nitrous oxid. The face-piece, with the air-valve open, is adjusted to the patient's face. Bearded faces have the beard smeared with vaselin to secure an air-tight apposition of the face-piece. As soon as the patient is breathing easily through the inhaler, the air-valve is closed and the nitrous oxid controlling valve is opened, allowing a steady stream of gas to enter the supply-bag. The patient breathes pure nitrous oxid until anesthesia is established. A small proportion of oxygen is then added and this is increased until it reaches from 5 to 50 per cent. of the amount of nitrous oxid. A large proportion of oxygen is necessary in some cases of anemia. The depth of anesthesia is controlled by the proportion of oxygen in the mixture, a small amount of oxygen producing deeper anesthesia. At all times a sufficient amount of oxygen to prevent cyanosis must be used.

The proportion of rebreathing is controlled by the rate of flow of the mixture of gases, a more rapid flow corresponding to a smaller proportion of rebreathing. When the controlling valves are closed, rebreathing is complete, or 100 per cent.

When ether is not contra-indicated, a small amount may be used to secure relaxation. The flow of ether vapor is perfectly controlled by the middle controlling valve. When ether is used, the proportion of oxygen to nitrous oxid must be increased.

*Result.*—Recovery from nitrous oxid-oxygen anesthesia is immediate. The immediate recovery and freedom from after effects leave patient and friends, surgeon and anesthetist in a happy mental condition, in marked contrast to the protracted worry which follows the administration of other anesthetics.

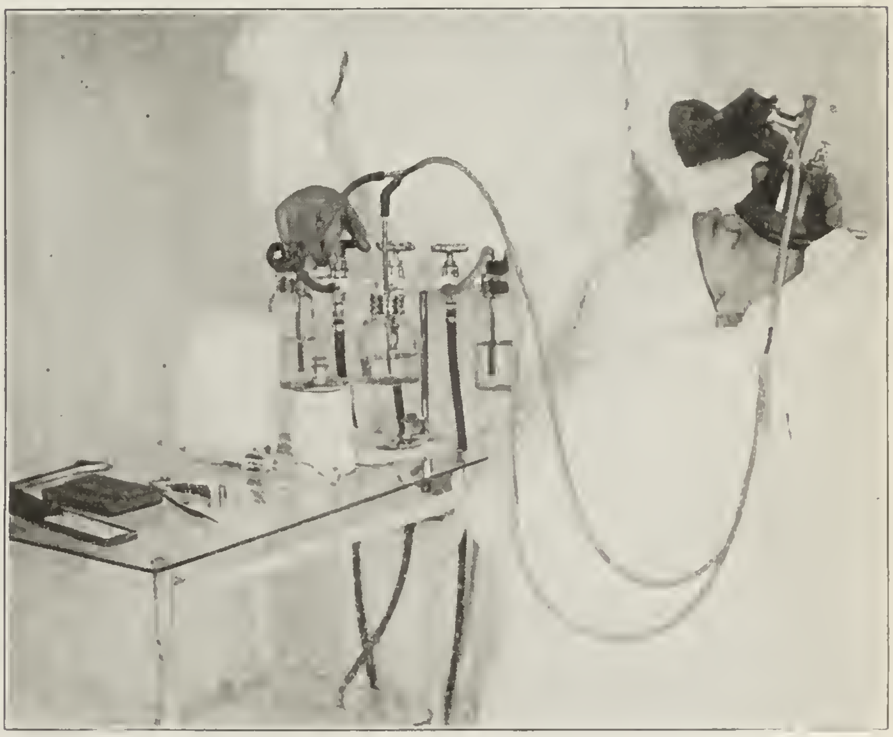

Fig. 3.—Administration. Inhaler applied to face. Air valve open. Hand of administrator opening gas valve. Note gas, ether, and oxygen valves close to administrator's hand.

279 Benefit Street.

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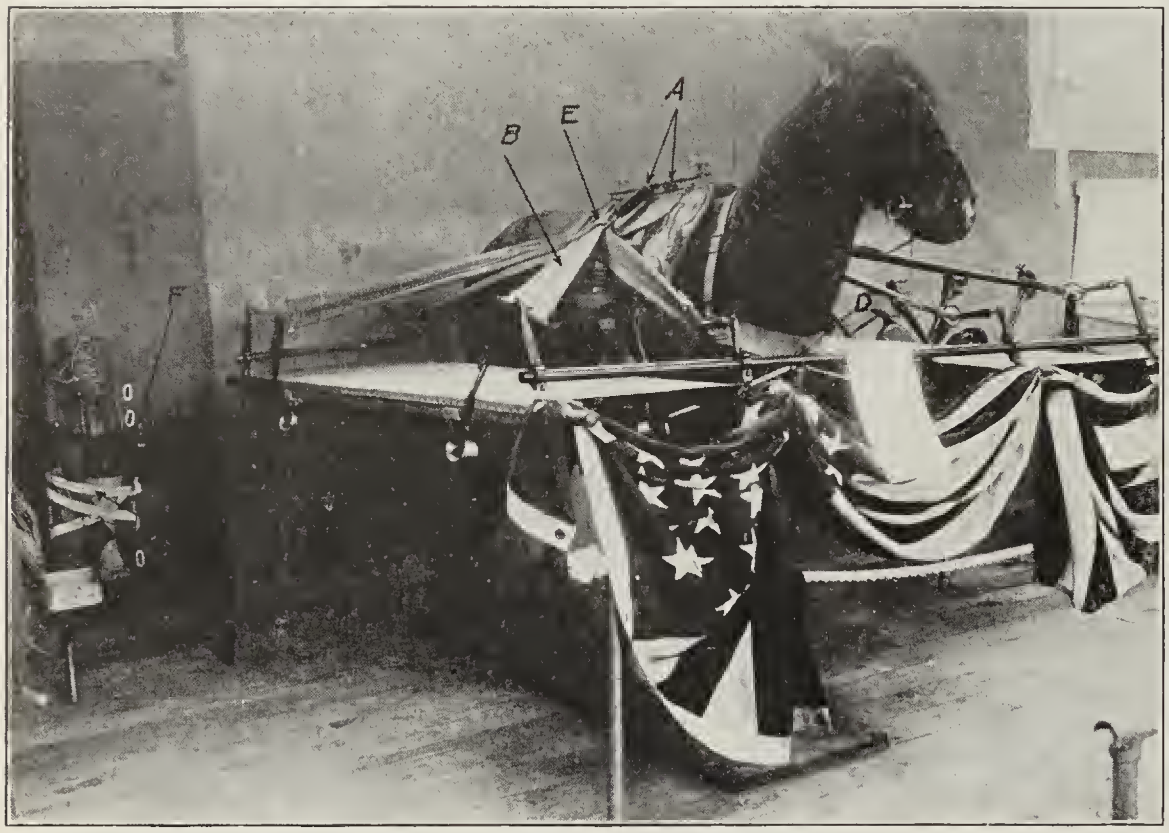
**Cancer as a Preventable Disease.**—Cancer may almost be classed as a preventable disease; cure is always possible if the disease is arrested before it begins. Procrastination has killed more patients than the surgeon's knife.—Raymond C. Turck, in *Jour. Florida Med. Assn.*

## A SHOCKLESS HORSE-LITTER FOR TRANSPORTATION OF THE WOUNDED

William J. Manning, M.D., Washington, D. C.
Medical Officer, Government Printing Office

The horse-litter shown in the illustration is intended to be utilized in case of war and in territory in which it is not possible to use an ambulance on account of rocky or uneven ground. It was designed and built by me for the Red Cross. Advantage has been taken of the old method of overcoming gravity, utilized largely in country districts, in carrying two pails of water on a hoop, the stretchers in the present instance being conveyed in a similar manner.



Shockless horse-litter, and ready-made splint.

The contrivance can be made very readily by the regimental farrier from equipment carried for other purposes with the army, and may be attached to any pack-saddle. The salient points in connection with the invention are:

1. Relief from shock and jar ordinarily experienced by wounded persons placed on horseback.
2. Economy in construction and in the use of animals for transportation of the wounded and disabled.

DESCRIPTION

*A*. Heavy iron springs resilient at pressure-weight of 175 pounds placed on each side of the back of animal, and attached to top of framework of saddle by a steel bar.

*B*. Canvas straps attached to iron triangle, and ends of stretcher handles.

*C*. Brace-straps running at right angles from outside stirrup or iron leg of each stretcher to its inner distal mate on other side of horse, and secured by a half hitch to cinch under belly of animal to prevent abnormal movement, or swing.

*D*. Carter's pin that releases or breaks sectional half of frame iron rod to permit easy loading and unloading of stretchers from sides of horse, the stretcher bearers on reaching camp simply placing themselves at the head and foot of litter, and with an upward movement the stretcher with contained body is unhooked from strap hook on triangle (*E*).

At side of model shown is a ready-made splint for utilization when limbs are fractured, or need immobilization, and the carrier is without splints. The wounded soldier's coat is removed, folded and placed beneath his leg, and lateral rolls (*FF*) made to come in contact with outer and inner aspect of leg. The soldiers' bayonet-knife (*G*) and sheath (*G*) are then placed on each side of coat-roll, and his belt or suspenders (*H*) are finally removed and made to serve as laces over side of stretcher, and through slits made in canvas cover of stretcher with a knife; or eyelets can be previously placed in position in the stretchers for utilization in such emergencies.

## A NEW PERINEAL BOARD FOR USE IN PERINEAL PROSTATECTOMIES AND GENITO-URINARY AND RECTAL SURGERY

Caryl Potter, M.D., St. Joseph, Mo.

An exaggerated dorsal position to obtain correct exposure of the perineal structures is insisted on by Young, who is the chief exponent of perineal prostatectomy in this country; but it is the one factor which has seemed to me to have been neglected by many men attempting the perineal operation. Usually the elevation of the hips has been effected by means of a sand bag and flexion of the thighs on the trunk produced by the uprights and foot-stirrups of the ordinary operating table.

Such makeshift exposure complicates the operation to such an extent that very few of the structures can be seen, many operators depending on their fingers and not on their eyes to locate the structures in the perineum. In one clinic I saw a prostate removed with the patient in the usual lithotomy position with little or no elevation of the hips, the legs supported by the ordinary uprights and stirrups of the operating table. With poor exposure damage is done to perineal tissues, the rectum is poorly retracted and often torn and the bladder seriously damaged. The popularity of the suprapubic operation with many man is probably due to inability to obtain proper exposure. Without it the perineal operation is often a bunglesome one; but with the exaggerated dorsal position, the Young operation is the ideal one, except in selected cases, provided the Young technic is closely followed.

Young uses the Halsted perineal board which consists of a flat board carrying shoulder pieces and wooden uprights for supporting the legs. A block underneath the board elevates the hips. With the idea of gaining an ideal exposure, comfort for the patient and simplicity of use it seemed to me that a board could be constructed differing materially from the Halsted board.

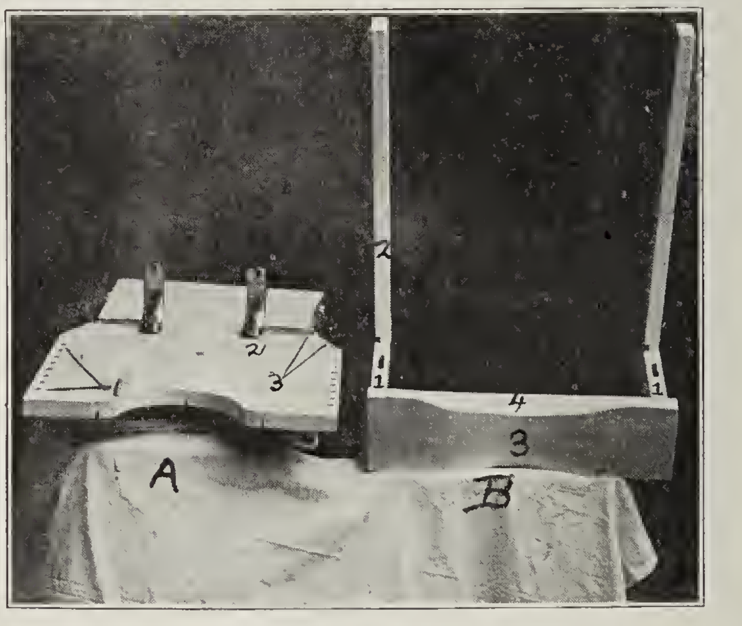


Fig. 1.—*A*, board, which may be placed on any table; 1, holes for receiving pegs on *B*; 2, shoulder supports; 3, curving of board to accommodate the fit of shoulder pieces. *B*, hip support for elevating perineum; 1, holes for receiving leg support; 2, leg support; 3, 4, grooves to fit curves in back and buttocks and to allow instruments, etc., to hang without coming into contact with table.

The device consists of two separate pieces, *A* and *B*, the parts of which are explained in the legend to Figure 1. Board A is 3 feet 8 inches long, the length from the head to the knee-break of an ordinary operating table. The patient is anesthetized. Then the hip support (*B*) is shoved underneath the back and fixed by underlying pegs to holes in the board 1, *A*. As soon as the buttocks are brought to the edge of the hip support and the legs wrapped around the leg supports the shoulder pieces are locked so that the patient is held in the position desired. The uprights for the legs can be moved backward and forward according to the length of the patient's legs. Flexion at the knees under anesthesia is enough to keep the legs supported by the leg supports. Rarely is it necessary to wrap anything around the legs to hold them. With this device the perineum can be elevated to any position and an exaggerated dorsal position easily obtained.

In the cases in which this device has been used the advantages which have been noted are, (1) convenience of use with any table; (2) ease of manipulation, and (3) perfect exposure.

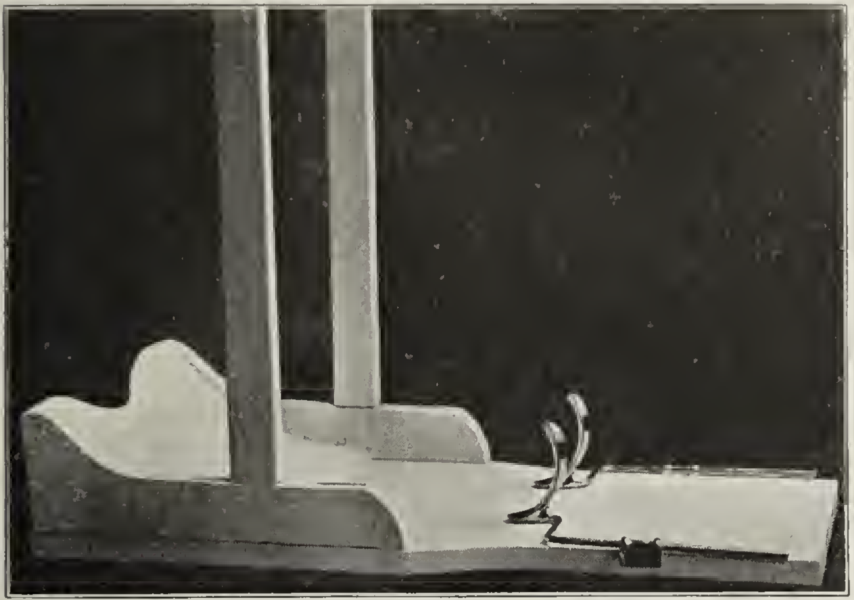


Fig. 2.—Lateral view with leg supports.

Proper exposure and strict adherence to the technic as advocated by Young make prostatectomy through the perineal route an ideal operation for enucleating enlarged prostates and for attacking malignancy in the prostatic gland. The feasibility of using the same device for other operations around the perineum and rectum is self-evident.

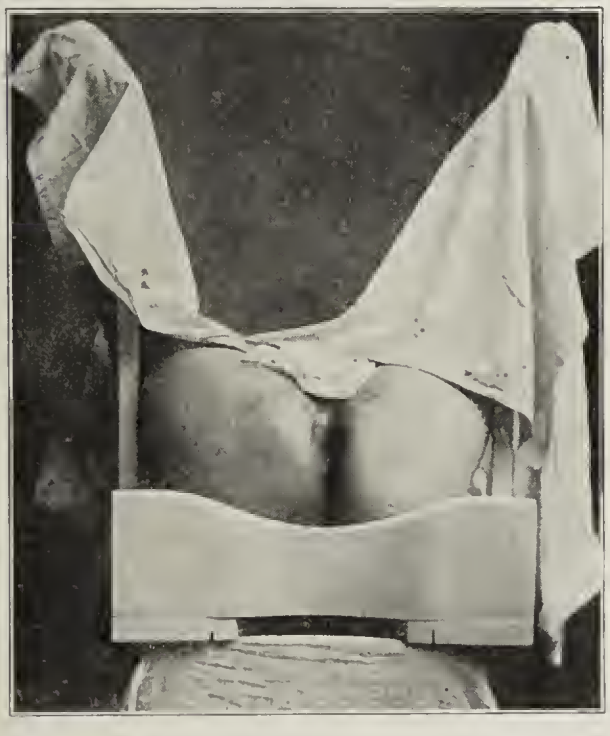


Fig. 3.—The hips are elevated, the back is bowed, the perineum is exposed and the patient fixed in this position.

120 South Seventh Street.

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**Gun-Deafness.**—During the Russo-Japanese war, among the 1,791 men who were wounded in the naval engagements there were 116 cases of concussion of the labyrinth and rupture and congestion of the tympanic membrane. The injuries are due to the sudden condensation or rarefaction of the error in the external auditory meatus.—Horne, *Lancet*.

# Therapeutics

## PREVENTION IS GREATER THAN CURE

(*Continued from page 1393*)

### V

### PREVENTION OF CONTAGION

Before disease can be prevented its source and its method of transmission must be known. This is too large a subject to treat here, but a brief summary of our present knowledge and of the objects aimed at will be of interest.

To the greater part of the United States, cholera, yellow fever, bubonic plague, some so-called malarial fevers, some dysenteries, and some other diseases, are practically foreign. The cholera bacillus reaches us in ships, and quarantine and governmental control takes this dread disease out of the hands of the individual practitioner. Suffice it to say that stool and urine disinfection, screening against flies, and boiling and using superheated plates and eating utensils, a supply of clean drinking-water and eating with clean hands are the key notes to the prevention of the infection of others. The prevention of dysentery and typhoid fever, both due to known germs, is not dissimilar. Yellow fever infects us by means of contaminated mosquitoes; hence, every case is a menace unless absolutely screened from these insects. The same is true of malarial fever. Bubonic plague is dispersed by the bite of fleas from infected rats. Governmental control of this disease when it entered San Francisco rapidly eradicated it by destroying the infected rats.

Typhus fever is spread by infected body-lice and at times by head-lice. Brill's disease is a form of typhus. The necessity of scrubbing and absolutely cleaning all places of close confinement and all individuals who are confined or about to be confined therein is self-evident.

It has long been known that certain diseases are contagious and transmitted from person to person, but it is only within recent years that the actual germs of disease have been discovered, and still more recently that in some instances the exact method of infection has been discovered. Formerly the contagious element was supposed to be carried in clothing, baggage, money, rags, etc., and to cause the disease when the innocent individual came in contact with such infected materials. In the case of scarlet fever it has until recently been believed that the desquamating skin, the epidermal scales, carried the infection. It has now been pretty thoroughly demonstrated that such is not the fact, that the infection of scarlet fever comes from discharges and secretions of the mucous membranes of the nose and throat and from ears that are suppurating from this disease.

It has been long known that the eruption of measles does not carry the contagion, but that the contagion is transmitted by means of the nose and throat secretions.

Theoretically, dirty money, especially paper currency, handled by all kinds of people and by people suffering from or in close contact with contagious diseases, should transmit disease; but it has not been found to do so. Bank men and treasury department men who handle large amounts of gold and dirty money do not contract disease. This does not excuse the disgusting practice of putting coins in the mouth, or of wetting the fingers with the tongue in counting bills. Certainly, every individual who handles money should frequently wash his hands, especially before eating, and before handling food for the use of others.

Many kinds of bacteria have been found on stairways, balustrades, car straps and on money, but generally such bacteria have been found to be nonpathogenic. Such negative findings, however, and the lack of demonstration that disease is frequently transmitted by such methods, do not controvert the possibility that occasionally infection may be transmitted from one infected person directly to another by immediate contamination of some article. This possibility only emphasizes the necessity for the more or less strict isolation of infections, and the strict observance by an infected individual of the rules and regulations for the prevention of infection of others which are prescribed for the particular disease that he has.

The greatest factor in the spread of infection in any community or in any associated group is the germ carrier; and the more innocent the individual is of the fact that he is a carrier of pathogenic organisms, the greater the danger to the people who surround him. Therefore, in every epidemic, carriers should be sought for and when discovered should be isolated and treated. Also, a patient recovering from a contagious disease should be proved not to be a carrier before he is dismissed from quarantine or isolation. Another great source of the infection of others is by mild cases of infection in which the individual is not sufficiently ill to remain in the house. Also, some of the children's infections are transmitted in such early stages that the child is not supposed to be ill, or at least is not supposed to have a contagious disease. This is notably true of measles.

Since it has been determined that direct contagion is almost a universal method of transmission of many of the contagious diseases, and that clothing and baggage are rarely, if ever, agents of such transmission, it is evident that some of the measures which have hitherto been employed to diminish the danger of contagion have been of little or no value. Fumigation of rooms, apartments, houses and buildings by various chemicals, is, in most cases, a waste of time, energy and money. It having been determined that most of the contagious diseases are transmitted by secretions from the nose and throat or mucous membranes, or are eliminated with the excretions, cleansing, and perhaps in some instances antiseptic nose and mouth sprays and gargles, and the immediate destruction, either by chemicals or by heat, of all germs that leave the body either by the urine, feces or mucous discharges, and the cleansing with antiseptics of all objects in contact with or in the immediate region of the infected patient, are all sufficient to prevent contagion. All discharges from the noses and throats of patients who are ill from almost any cause should be received into cheesecloth or paper napkins, and these should be immediately placed in a paper bag which should be burned.

Many antiseptic or disinfectant solutions used for the stools and urine are not satisfactory. Bed-pans or other vessels used for receiving the excretions should be cleansed with boiling water or steam. The urine should be received into a vessel which contains a strong antiseptic, as a chlorinated-lime solution 5 per cent., or mercuric chlorid solution 1 : 500. The urine should then stand in this covered vessel for an hour or more before it is thrown down the closet. The same solution may be used to receive the fecal matters, at least in all diseases in which the feces carry infection; but it is here necessary for the fecal deposits to be broken up, that the germicidal fluid may act on all parts. Chlorinated lime may well be added to the mixture, an equal volume of a 25 per cent. mixture, and the whole tightly closed and allowed to stand for two hours or more before it is permitted to pass into the sewer. While boiling these excretions is the surest and most complete way of killing all germs and spores, in private families this would be a disagreeable and inconvenient method. In hospitals efficient steam or boiling measures for sterilizing all excreta should be installed. All possibly contaminated articles of clothing, bedding, rugs, carpets, etc., should be subjected to heat or steam, if such cannot be actually boiled. All other objects in the room may be well cleansed by washing or scrubbing with formaldehyd or mercuric chlorid solutions. Fumigation of the rooms with sulphur and formaldehyd, if not useless, is not sufficient.

### VACCINE PREVENTION AND VACCINE THERAPY

A brief survey of what has already been accomplished shows that small-pox may be prevented, and that typhoid fever and paratyphoid fever may be prevented by vaccines. Streptococcic and staphylococcic infections may be prevented by vaccines, and perhaps pneumonia and erysipelas may soon be aborted, if not prevented, by vaccination.

Vaccines will often aid in the cure of chronic tuberculosis, of gonorrheal complications, of septic infections, of erysipelas, and some cases of rheumatism, and will delay some tumor growths. Vaccine therapy, at times, seems to aid in curing typhoid fever, paratyphoid fever, and pneumonia.

Antiserum cures diphtheria and cerebrospinal fever, and we trust some serum will soon be found for the cure of anterior poliomyelitis. Serum developed from the blood of syphilitics who have received injections of arsenic seems to be therapeutically valuable when introduced into the spinal canal of syphilitics suffering from central nervous-system complications.

It is a well-known pathologic fact that properly to combat a local infection by the blood-serum and in order that the necessary amount of detoxicating antibodies may form, the region about the infection must become congested, that is, the blood-flow, though perhaps decreased in rapidity must be increased in amount. Hence, it has been suggested that before the administration of vaccines in chronic localized infections or suppurations, means should be taken, physically or by drugs, to cause hyperemia of the part or parts affected. For instance, if the infection is in the skin or near the surface of the body, arsenic or thyroid may be given, or body heat, body-baking, hot baths, or hot applications may be used. If the circulation is sluggish in an inflamed mucous membrane in the nose, throat, or bronchial tubes, ammonium chlorid or digitalis might greatly benefit the action of the vaccines.

### SMALL-POX

Vaccination as a protection against this serious disease has been long confirmed by history. Germany, the most effectively protected country in the world against small-pox, compels vaccination at the age of

1 year, and again at the age of 12. With a population of sixty-five millions in 1913 there were only seven cases of small-pox and no deaths.

Some careful observations on vaccinations against small-pox have been made by Force[1] which it is well to review.

One good method is to cleanse the arm or leg with ether or alcohol, then to remove the epidermis in three small spots, by some such scarifier as a dental scaling chisel, by rotary motion, as recommended by Force. He scarifies each spot about 2 mm. in diameter, then applies a drop of glycerinated virus thinly spread. The amount carried on the broad tip of a sterilized wooden tooth-pick is sufficient for the three spots. When this glycerinated virus has dried he covers it with a layer of gauze held by narrow strips of adhesive plaster, not allowing the adhesive plaster to pass over the treated areas. The patient is told to return in five days, and the areas involved being small, no bad arm should develop. No ointments or antiseptic dressings are allowed. If soreness develops, an alcoholic wet dressing is used, one part of alcohol to two parts of water (or even half and half), and soon the inflammation will subside. On the tenth day antibodies should arrest the growth of the vaccine organisms and immunity should be established.

Cross scarification is said to be prohibited in Germany, as it is said "to favor the growth of anaerobic bacteria," and deep, unsightly scars are the result (Force).

A good take is shown in five days by "a yellowish vesicle surrounded by a narrow red areola." This is vaccinia, or a primary take, while a vaccinoid or secondary take shows in five days "a smaller vesicle surrounded by a wider areola." "When no vesicle develops and the areola appears and subsides early, it is an immediate reaction, first described by Jenner as 'sudden efflorescence.' "

If a revaccination is made in a person with a seven-year-old, or older, scar, he may be vaccinated in two spots with a control spot inoculated with glycerin *only*. "If either of the two vaccinated spots showed an areola of 5 mm. or over (with or without a papule) at the end of twenty-four hours, which areola (or papule) had decreased after seventy-two hours following vaccination (observations after each twenty-four hours) it was considered a *reaction of immunity*. . . . If either of the vaccinated spots showed an areola at the end of twenty-four hours which developed into a small vesicle, maturing on the fifth or sixth day and then rapidly subsiding, the reaction was considered a *vaccinoid*. If there was no change until the third day and then a small areola began to form, the case would be *vaccinia*." A small number of unvaccinated persons with no history of small-pox showed the reaction of immunity in this investigation by Force. Force and his co-workers believe that in these cases of apparent immunity without scar, previous vaccinations had been unsuccessful so far as typical sore and subsequent scar is concerned, but sufficiently successful to cause subsequent immunity. If there is no reaction of any kind, Force thinks that the vaccine used is inert.

The caution is given to observe daily the vaccinated area in all doubtful cases, as immunity reactions are soon over, and revaccination may be done unnecessarily.

The question of the vaccination pustule is worthy of careful consideration. Dyer[2] states that the vaccine vesicle is just as much an indication of vaccinia as the hard chancre is that a patient has syphilis. He also states that the vaccination injury should stop at the vesicle, that the pustule is only a sign of a local infection, and hence should be prevented. Therefore, he advises breaking the vesicle and treating the vesicular lesion antiseptically, and suppuration will thus be prevented. Such a method prevents glandular enlargements, erythemas and other eruptions.

Dyer also urges, as soon as the vaccine vesicle has healed, revaccination to ascertain if the patient is thoroughly protected, and he would revaccinate as long as a vesicle will form, and would not wait a number of years before such a trial. He believes a patient thus treated is positively protected against small-pox.

*(To be continued)*

## New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

The following preparation has been accepted for inclusion with the appendix to New and Nonofficial Remedies:

Maltine Co., Brooklyn, N. Y.

*Maltine Malt Soup Extract.*—Maltine containing potassium carbonate, 1.1 Gm. to each 100 Gm. according to the formula of Dr. Keller, Universitäts-Kinderklinik, Breslau, and alcohol, 3.88 per cent.

The following dosage forms of accepted articles have been accepted for inclusion with New and Nonofficial Remedies:

**ACNE VACCINE** (See N. N. R., 1914, p. 246).

Greeley Laboratories, Inc., Boston.

*Acne Vaccine.*—Marketed in packages of six syringes each containing 12 million bacteria.

Lederle Antitoxin Laboratories, New York City (Schieffelin & Co., New York).

*Acne Vaccine.*—Marketed in packages of four syringes containing respectively 5, 10, 20 and 40 million killed acne bacilli.

**BACILLUS COLI VACCINE** (See N. N. R., 1914, p. 247).

Greeley Laboratories, Inc., Boston.

*Colon Vaccine.*—Marketed in packages of six syringes each containing 1,000 million bacteria.

Lederle Antitoxin Laboratories, New York City (Schieffelin & Co., New York).

*Colon Vaccine.*—Marketed in packages of two vials each containing respectively 50, 100, 200 and 400 million killed bacteria.

**BACILLUS PYOCYANEUS VACCINE** (See N. N. R., 1914, p. 249).

Greeley Laboratories, Inc., Boston.

*Pyocyaneus Vaccine.*—Marketed in packages of six syringes each containing 1,000 million bacteria.

H. K. Mulford Co., Philadelphia.

*Pyocyano-Bacterin.*—Marketed in packages of four syringes containing respectively 50, 100, 200 and 400 million killed bacteria.

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[1] Force, John Nivison: An Investigation of the Causes of Failure in Cow-Pox Vaccination, THE JOURNAL A. M. A., May 9, 1914, p. 1466.

[2] Dyer: Am. Jour. Trop. Dis. and Prev. Med., 1913, 1, 447.

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SATURDAY, OCTOBER 24, 1914

## INFLUENCE OF HEREDITY ON THE OCCURRENCE OF CANCER

As long as our chief source of information concerning cancer biology lay in observations on human material, with such unreliable information concerning ancestry as can be furnished by clinical histories, there was little prospect of learning much concerning the influence of heredity. The data obtainable were confusing and the conclusions contradictory. Perhaps as reliable and well-controlled an investigation as we have on this subject was that of the English statistician, Karl Pearson, who found no evidence whatever that persons with a history of cancer in relatives were predisposed to cancer. With the development of the study of tumors in lower animals, in which pedigree can be accurately controlled, the possibility of ascertaining the influence of heredity became more encouraging, and there are now recorded many observations, mostly fragmentary, although some systematic investigations have been made. Mice, because of their rapid breeding and known tendency to neoplasm formation, offer by far the best material for such studies, but even with these favorable subjects the accumulation of sufficient material for reliable conclusions is difficult. Mice are not hardy animals, and epidemics sweep through even the most carefully kept collections, while at the best, spontaneous tumors have not been common among the laboratory stocks. Hence most of the evidence hitherto presented has been small and incomplete, especially if we exclude the studies of the influence of heredity on susceptibility to inoculated tumors, which is quite a different matter from its influence on their natural, spontaneous occurrence. It is satisfying to mention that much of the best evidence on this subject has come from Americans, notably Leo Loeb and Tyzzer.

Such reports as have appeared almost without exception indicate that heredity does influence the incidence of spontaneous cancer in mice. Recently an extensive and carefully controlled investigation of this subject has been reported by Miss Maud Slye[1] of the Sprague Memorial Institute, who exhibited some of her material at the last session of the American Medical Association in Atlantic City. Utilizing a large stock of mice, bred at first for the purpose of studying certain features of heredity, and in which spontaneous cancers were observed at intervals, Miss Slye undertook a systematic study of the influence of heredity on the occurrence of tumors in these animals, using the same methods which would be used in the testing of any stock Mendelian character, and judging the results by the same criteria that would be used in determining the inheritability of any character, such as coat color, or ear shape, for example. From this very large and thoroughly studied material she has obtained evidence that cancer is a mode of growth which is profoundly influenced by the ancestry of the mice. The power to resist cancer is, in Mendelian terms, a dominant character, and it can be bred into and bred out of different strains of mice as certainly, according to these results, as a coat color can be. By using the recognized principles of breeding it was found possible to produce strains of mice in which the most usual cause of death was cancer in those animals that reached cancer age; equally well, strains were obtained in which practically no cancer ever occurs, and the transition of cancerous strains into non-cancerous, or the reverse, by processes of hybridization, was found quite as feasible as the breeding in and out of coat colors or other "unit characters." In such hybrid strains the cancer element was found to crop out exactly as any other character would; for example, if the cancer strain were introduced in an albino stock the cancer would be found to appear with the albinism in subsequent generations. The conclusion seems warranted that heredity influences cancer by determining the character of reaction which follows non-specific injuries to tissues. This is well shown by a series of 155 cases of spontaneous primary tumors of the lungs, which are common in mice and arise apparently as a sequel of chronic inflammation in the lungs. Of this series all the definitely malignant tumors occurred in mice derived from cancer-bearing strains, while only nine of the entire number were found in non-cancerous strains, and these nine were simple papillary growths not far removed from simple inflammatory proliferations. That is, the universally prevalent lung inflammations are much more likely to lead to tumor formation in mice predisposed by a cancerous ancestry than in mice of cancer-free ancestry. Almost any individual probably can develop a tumor if subjected to just the proper sort and amount of injury at a suitable time, as shown by the experience with Roentgen-ray cancer, but the range of injury which may cause cancer will be profoundly modified by the inherited character of proliferative capacity of the individual. A striking analogy is known by breeders, in the deformities of the feet of chickens which may be produced by improper heating of incubating eggs. Such abnormalities are found especially frequent in particular strains of birds, and may be observed in these strains when eggs from other strains exposed to the same conditions give perfectly normal results. The liability is the thing transmitted, but without appropriate conditions the effect is not produced; that is, heredity modifies the character or degree of the effect produced by a common injury.

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[1] Slye, Maud: The Incidence and Inheritability of Spontaneous Tumors in Mice, Ztschr. f. Krebsforsch, 1913, xiii, 500; Jour. Med. Research, 1914, xxx, 281. Slye, Maud; Holmes, Harriet F., and Wells, H. Gideon: The Primary Spontaneous Tumors of the Lungs in Mice, ibid., 1914, xxx, 417.

These results probably have a more important bearing on the problem of specific tumor etiology than on the influence of ancestry on the occurrence of cancer in man, for it is always to be borne in mind that the mouse cancer strains were produced by carefully planned inbreeding, with conditions which would probably rarely if ever be duplicated in human careers. They seem to fit poorly with the hypothesis of a specific infectious agent, for many and extensive control experiments have failed to yield a single instance of contagion or transmission of cancer from one mouse to another, while the tendency to cancer appears entirely according to the laws of heredity as manifested in other characters of the animals. It is, of course, possible that a specific lack of resistance to a specific cancer parasite may be transmitted by breeding, but, if so, the hypothetic parasite is capable of entering the host in most diverse ways, and of stimulating growths in organs and tissues not directly accessible to infection, as the ovaries, testicles or lymph-glands. To quote Miss Slye on this point:

> All of my observations seem to indicate that cancer is a mode of growth. Let me compare briefly the results of these experiments with the results of one infection somewhat frequent among mice, viz., sarcosporidiosis. Where mice are allowed to stay in the same cage, every mouse at autopsy shows some degree of sarcosporidiosis, whereas members of the family kept elsewhere are no more liable to it than any other strain of mice. But among members of cancer strains, cancer crops out no matter where the mice are kept. A daughter frequently develops cancer before the mother does, and months after they have been separated. A granddaughter will develop cancer who was not born until after the death of the tumorous grandparent.

Furthermore, cancer is a disease of mature and old age, when infections are much less common than early in life, and again, reproduction and nursing may check the rate of growth of cancer while favoring the progress of infectious diseases.

## THE ORIGIN OF BENCE-JONES PROTEIN IN THE URINE

The name of Bence-Jones protein has long been associated with an albuminous substance found excreted, in comparative rarity, in the urine and resembling some of the proteoses occurring among the digestion products of protein. It is discovered by the phenomenon of precipitation of the protein when the urine is warmed to about 45 or 55 C. and further complete solution of the precipitate when heated to boiling. The Bence-Jones proteinuria has usually been detected in cases of multiple myeloma, and this symptom has served to differentiate the disease from other bone lesions, as carcinoma, sarcoma and osteomalacia.

The knowledge of the origin of the Bence-Jones protein has remained very incomplete despite the long time that its clinical occurrence has been known. At one period the substance was assumed to be produced in the diseased areas of bone-marrow and subsequently excreted as is any "foreign" protein finding its way parenterally into the body. To this the valid objection has been offered that it is inconceivable that the relatively small areas of diseased bone-marrow should be able to produce the large amounts of Bence-Jones protein found in the urine in some cases. Magnus-Levy,[1] therefore, proposed the theory that this protein is formed in the intestine as the result of as yet unknown abnormal conditions existing in the bowel in certain cases. Folin and Denis[2] have remarked that this hypothesis seems far less plausible to-day than when it was propounded, because of the changed views concerning the character of protein digestion and absorption which now prevail. If Magnus-Levy's contention were correct, then the output of Bence-Jones protein might be expected to show some direct relation to the amount and possibly the kind of protein in the diet. The alternative would put the Bence-Jones proteose into the category of a product of pathologic internal digestion which has nothing to do with the proteolytic processes centered in the gastro-intestinal tract.

The careful study of the metabolism in a case of Bence-Jones proteinuria associated with multiple myeloma of the ribs, at the Massachusetts General Hospital in Boston,[2] is likely to furnish a more convincing clue to the origin of the protein. Folin and Denis have investigated the effects of different levels of protein intake on the proteose excretion. The latter varied from 1.7 to 2.8 gm. in urines containing 5 to 8.5 gm. of total nitrogen, while with a diet richer in protein the proteose output rose to 6.5 gm. and the total nitrogen to 16 gm. A detailed examination of the metabolic end-products failed, however, to disclose any definite or constant relationship between the proteose and the total output of nitrogen. Indeed, the elimination of the Bence-Jones proteose was almost as high during starvation as during the liberal feeding of protein. Aside from an occasional small creatin elimination when the subjective symptoms became severe, the protein metabolism in multiple myeloma appears to be normal so far as the ordinary nitrogenous metabolism products are concerned.

Although it now seems unlikely that the amount of protein taken with the food has any direct influence on the amount of excreted proteose—although the gen-

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1. Magnus-Levy, A.: Ztschr. f. physiol. Chem., 1900, xxx, 257.
2. Folin, O., and Denis, W.: Metabolism in Bence-Jones Proteinuria, Jour. Biol. Chem., 1914, xviii, 277.

eral level of the metabolism has been assumed to have some bearing[3]—there is as yet too little evidence to enable one to formulate any tenable theory of "internal" origin of the Bence-Jones protein. To have excluded the food intake as the decisive causal factor is in itself a step in advance.

## THE LIVER AND UREA-FORMATION

It will come as a startling surprise to many to learn that the liver has been asked to surrender the traditional privilege of responsibility for the production of urea in the body. Have we not been told by physiologists for a generation or more that this organ is the chief, if not the sole seat of urea-formation? But science is no respecter of theories, although she jealously guards her well-established facts.

One of the extensive inroads into the conventional hypothesis was made by the conclusive demonstrations that the amino-acid products of intestinal digestion are absorbed and travel as such to distant parts of the organism.[4] It is true that the liver forms urea from the ammonia reaching this organ with the portal blood. Ammonia is, however, not a product of the metabolic cleavage of the amino-acids as they start their way into the organism proper, but rather a bacterial product reaching the portal circulation from the putrefying contents of the large intestine and then converted into urea merely as one of the numerous protective devices of the organism.[5] Only a very small fraction of the day's output of urea can be accounted for in this way. As Fiske and Sumner,[6] who have attacked the claim that the liver represents the chief seat of urea-formation, remark, many of the writers on the subject have taken it for granted that urea-formation from amino-acids, in its final steps, is identical with and must, therefore, occur at the same site as that from ammonia. This assumption has no firm foundation on fact; for it cannot be stated that ammonia is an obligatory intermediate product in the cleavage of amino-acids in the mammalian organism.[7]

If we turn to the sort of evidence which has served to assign the leading rôle to the liver, it will be found to rest on experiments in which this organ has been excluded as far as possible from the circulation. Granted that the urinary urea output is depressed under such conditions, it must not be overlooked that after such heroic treatment the liver is not the only organ affected. Renal function is also markedly disturbed, as the attendant oliguria and albuminuria testify.

The Boston investigators, Fiske and Sumner,[6] working in the Biochemical Laboratory of the Harvard Medical School, have substituted the analysis of blood and tissues for the urine analysis adopted by their predecessors in dealing with the problem. By injecting amino-acids into the circulation, after the exclusion of all of the important abdominal viscera from connection with it, they have demonstrated that urea can be formed from the protein derivative, even in animals so treated that the participation of the liver is excluded. The accumulation of urea per unit mass of blood and tissues after intravenous administration of amino-acids is reported to be as great (when the trials are suitably carried out) after the liver and other abdominal viscera are withdrawn from the possibility of participation as when they are in their normal relations. The logic of the situation compels the conclusion that the liver is neither essential nor the chief site of urea-formation. This need not, however, controvert the possibility that the process can take place in the liver as well as in other tissues.

If, as these newer studies suggest, direct, unassailable evidence that the liver is the predominant organ for the formation of urea from amino-acids does not exist, students of clinical diagnosis will at once inquire as to the status of some of the tests employed in the so-called functional diagnosis of liver lesions. Obviously this chapter cannot be regarded as a closed one. With the new points of view the amino-acid tests must be investigated anew.

## PLUMBISM IN THE SMELTING AND REFINING INDUSTRY

The fourth number of the series on industrial accidents and hygiene has been issued by the Bureau of Labor Statistics. It deals with lead poisoning in the smelting and refining of lead. This important industry employs in twenty plants visited by an investigator about 7,500 men, all of whom are exposed to the fumes or dust of lead. The report considers the dangers inherent in the various metallurgic processes, the precautions available to lessen these dangers, the actual sanitary conditions in the different plants, the extent of lead poisoning during the year 1913 among these 7,500 men, and the medical care furnished them. Of late years there has been a notable improvement in smelting and refining plants, due largely to the concentration of operations in a few large establishments and the consequent abandonment of old, crowded buildings. There is now probably no plant in the United States in which some effort is not made to lessen the danger of lead poisoning as well as to prevent accidents. These efforts, however, are perfunctory in some, and in none are they sufficient. There is not one plant in which no fumes are allowed to escape, not one which is as free from dust as it might be. The result of this neglect is found in the records of lead poisoning among the men. While Great Britain had a rate of only 1.8 per hundred men employed in a single year in this industry, the rate in this country was something over 22 per hundred.

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[3] Allard and Weber: Deutsch. med. Wchnschr., 1906, p. 1251. Hopkins and Savori: Jour. Physiol., 1911, xlii, 189. Voit, F., and Salvendi: München. med. Wchnschr., 1904, p. 1281.

[4] In What Form Are the Protein Digestion Products Absorbed? editorial, The Journal A. M. A., Dec. 20, 1913, p. 2245.

[5] Compare Folin, O., and Denis, W.: Jour. Biol. Chem., 1912, xi, 161.

[6] Fiske, C. H., and Sumner, J. B.: The Importance of the Liver in Urea-Formation from Amino-Acids, Jour. Biol. Chem., 1914, xviii, 285.

[7] Compare Dakin, H. D.: Jour. Biol. Chem., 1909. vi, 235.

It was found absolutely impossible to obtain a complete list of the cases of lead poisoning in this industry, as can be done in Great Britain, because of the difficulties offered by physicians. To begin with, no uniformity exists as to what constitutes a reportable case of lead poisoning. One physician following British usage includes cases of anemia with the lead line, another employed by the same company recognizes nothing milder than severe colic, with nausea, constipation and vomiting. There are some physicians who act only as medical attendants and know nothing at all about conditions in the plant, who lecture the men about washing their hands without ever asking if it is possible for them to do so, and who do not know enough about the work to be able to say from which department most of the lead poisoning comes. On the other hand, there are physicians who act as consulting sanitary experts, who go over the plant frequently, keep track of the men, and notify the superintendent when any department is sending in an unusual number of cases.

The investigator takes issue with those physicians who believe that the men themselves are responsible for their own ill health, who maintain that it is lack of personal cleanliness that causes lead poisoning in smelters. It is dust that is the dangerous element, and under dust is included the excessively fine suspension of lead salts that make up the fumes from heated lead and lead ores.

An original observation in this report records experiments in the solubility of the supposedly insoluble galena-lead sulphid ores, made by A. J. Carlson and A. Woelfel of the Physiological Department of the University of Chicago. Contrary to the assertions of Blum and of Rambousek, these observers found the pure sulphid to be soluble in human gastric juice to the extent of 4 per cent., the sulphid ores averaging 2.5 per cent.

A certain seasonal variation was observed in the occurrence of plumbism in this industry. Thirty-three hospital years with a record of 2,847 cases were analyzed, and a curve resulted the two highest points of which were reached in January and June. The first one is explained on the ground that the onset of cold weather increases the dangers of dust and fumes, for the men close windows and remain indoors around the furnaces and eat their lunch inside instead of outside. The second rise is harder to explain. The most probable explanation seems to be that these June cases are the acute cases of poisoning which occur among newly hired employees. It seems that there is a regular exodus from the smelters in the spring to the farms and beet fields, and newly arrived immigrants are taken to fill the vacant places. As the records show that most of the cases of lead poisoning in smelters occur after from one to three months' exposure, men entering in April or May would come down with acute poisoning along in June.

To comment on the extreme importance of practical research of this character is superfluous. Since its establishment, this bureau has often displayed its efficiency in meeting the need which created it. Further developments may be awaited with the confident hope that conditions will continue to improve.

## THE RELATION OF DIFFERENT FOODS TO THE FLOW OF THE DIGESTIVE SECRETIONS

One by no means negligible reason for the very wide-spread interest which has been aroused for Pawlow's work on the digestive glands lies in its immediate application to the daily problems of diet. It disclosed unexpected interrelations between various functions of the body; it presented the influence of psychic factors and the nervous system on a physiologic process in a tangible way, and, furthermore, it unfolded the evidence for a very specific rôle of certain foods on secretion in a degree unexpected, even if not entirely unknown.

The original publications of the Russian physiologist contain such a wealth of suggestive observations that the subsequent additions to the literature of this field of inquiry seem comparatively insignificant. In some respects the more recent investigations in the physiology of the alimentary secretions are somewhat corrective in character. Thus it has become more and more apparent that the psychic secretion initiated at the beginning of a meal is at best transitory and unimportant in comparison with the later flow of digestive juices that is referable to the foodstuffs themselves. Without denying or minimizing the value of the early secretion we may nevertheless admit that from the point of view of gastric pathology or digestive therapy it is *par excellence* the regulation or control of the non-psychic provocatives of the activity of the digestive glands which claims foremost attention. Modern research has established the fact that this phase is essentially chemical in origin; hence the suggested import of variations in the composition of the ingested food products.

The comparison of the secretory efficiency of different foods remains unsatisfactory so long as quantitative measurements are not applied to the experimental observations. In Professor Cohnheim's new physiologic laboratory in the Allgemeines Krankenhaus Eppendorf at Hamburg, Wolfsberg[1] has carried out a rather extensive research on the dependence of the volume of the digestive secretions on the character of the diet. He reasoned that if the stimulus which plays the predominant part is a chemical agent, the product of its action — secretion — ought to be roughly proportional to the amount of stimulus, that is, food employed. The same rations were therefore administered to the same animal in successive portions representing multiples of some earlier feeding; for example, bread in quantities of 50, 100 or 200 gm. As a result, two distinct groups of foods could easily be classified. One of these, which includes bread, butter, sugar and potatoes, is characterized by inducing secretion that is quite independent, in amount, of the quantity ingested. To the second group belong milk, meat and bouillon, each of which incites a flow of the secretions directly proportional to the quantity of food material in the intake. Evidently the increased secretion which the foods of this second group bring about is attributable to chemical products which release the secretory hormones of the gastric mucosa.[2] A definite stimulus in these cases is responsible for a quantitatively corresponding response.

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[1] Wolfsberg, O.: Ueber die Einwirkung einer Reihe von Nahrungsmitteln auf die Sekretion der Verdauungsdrüsen, Ztschr. f. physiol. Chem., 1914, xci, 344.

Incidentally, it has been observed by Wolfsberg,[1] as well as by others, that a large increase in the volume of secretion does not greatly delay the discharge of the contents from the stomach. Evidently an augmented volume in this organ, acting to increase its distention therein, actually provokes a more rapid contraction and emptying.

Those who apply teleological reasoning to physiologic phenomena might conclude that potatoes and bread, which make less physiologic demand on the digestive organs for their digestion, are physiologically more economical as food. Meat stands at the other extreme of the expenditure of secretory energy per calorie of food value received. Most readers will readily agree that the criterion here suggested is little likely to prove acceptable. At any rate, we have no desire to enter into the controversy to the extent of raising the question of vegetarianism versus animal foods on the basis of this evidence.

## Current Comment

### THE WAR AND THE ECONOMICS OF PRESCRIBING IN ENGLAND

One effect of the present war in Europe has been to cause the British to urge that medicinal products heretofore purchased from Germany should now be made in England. The campaign for British-made pharmaceuticals is both natural and, so far as the idea can be carried out without violating economic principles, rational. The basic principle behind the movement is that it is the patriotic duty of every inhabitant of the British Isles to do business whenever possible with British firms rather than German firms, and thus not only keep the money "at home," but also prevent it going to their adversaries. Numerous substitutes for German products are being advertised in the different British medical journals. In the current issue of the *Lancet* is a short note from an English physician who writes to the editor as follows:

> "I am pleased to see the advertisement of 'Helicon' in your issue of last week. *I find that helicon and aspirin are identically the same.* [*Italics ours.*—Ed.]
>
> "Now is the time. Prescribe helicon and put money into English pockets and not aspirin and money in German pockets. This is to be a war of endurance, and the length of the purse will settle it."

Proprietary prescribing is evidently a "state of mind." If it were not, the intelligent physician would urge that instead of prescribing a definite chemical substance under a fancy name — whether German or British — the economical and rational thing to do would be to prescribe it under its own name. It is doubtless true that whether British physicians prescribe acetyl-salicylic acid under the name of "Aspirin" or "Helicon," the British public will have to pay a fancy price for a staple product. If the conservation of the financial resources of the people is the thing to be sought, why in the name of common sense make the public pay a high price for acetyl-salicylic acid for no other purpose than that of perpetuating an unscientific habit — that of prescribing things under a proprietary rather than a common name? This habit, fortunately on the decrease in this country, seems to be increasing in the British Isles. Turning to the same issue of the *Lancet* that contains the letter quoted above, the question is driven home even more strongly. Our British contemporary carries a half-page advertisement of that hoary and impudent fraud, Antikamnia. Is there any good reason why the British people should be made to pay a fancy price for their acetanilid or acetphenetidin tablets — and Heaven knows which they get at present under the name Antikamnia—simply for the sake of putting money into the pocket of its St. Louis manufacturer? Another half page is given over to an advertisement of "Hayden's Viburnum Compound." Is there any economic reason for prescribing this unscientific and widely puffed preparation and making the British public pay a fancy price for it, the proceeds of which go finally into the pockets of a Massachusetts concern? Still another half page is sold by the *Lancet* to the exploiters of "Hagee's Cordial of the Extract of Cod Liver Compound," another St. Louis nostrum, which cannot be defended on the score of either economy or scientific prescribing. A full page is sold to "Glyco-Thymoline," a New York product. Can the British profession defend the prescribing of this simple mixture sold at a fancy price when exactly the same results can be obtained from pharmaceuticals to be found in the British Pharmacopeia? As a matter of fact, the prescribing of proprietary remedies by British physicians has always been against the interest of the British public as well as opposed to the practice of scientific medicine. Under present conditions it is more than this; it is an economic wrong. There may possibly be a few proprietary medicines that have no exact counterpart in the British Pharmacopeia or the Codex, but their number is so small as to be negligible. Certain it is, the vast majority of proprietary remedies at present sold in Great Britain are unscientific, high-priced mixtures whose use benefits none but a few manufacturers and whose sale constitutes an unnecessary drain on the resources of the British public. When a British physician prescribes a proprietary made in the British Isles he imposes a burden on the many for the benefit of a few; when he prescribes a proprietary made in some other country he not only puts an unnecessary tax on the British public, but also sends money out of the country in doing it. From the point of view both of scientific medicine and of public policy, there is no better time than the present for British physicians to discard the majority of proprietary remedies.

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[2] Compare Edkins, J. S.: Jour. physiol., 1906, xxxiv, 133; Gross, W.: Arch. f. Verdauungskr., 1906, xii, 507, and Editorial, The Induction of Gastric Secretion, The Journal A. M. A., March 21, 1914, p. 934.

## AN IMPORTANT EPOCH IN MEDICAL EDUCATION

The opening of the session of 1914-1915 in the medical schools marks an important epoch in medical education in this country. It is noteworthy that this fall thirty-seven medical colleges, for the first time, are requiring for admission one year of collegiate work in addition to a four-year high school education. This standard, which in 1904 was considered as "ideal," has now become the essential minimum and has been adopted by eighty-four of the 101 medical colleges, and by twenty-two of the forty-nine state licensing boards. In addition to this, thirty-four of these colleges and seven of the state licensing boards have gone further and adopted the requirement of two years of collegiate work as the minimum preliminary standard. This is indeed a marvelous improvement over conditions which existed only a brief ten years ago, when of the 166 medical colleges only four were requiring any collegiate work for admission, and comparatively few were requiring even a completed four-year high school education. Entrance requirements, meanwhile, may be taken as an index of the other remarkable improvements made in medical education during the last decade. The general adoption of the higher entrance standard has resulted in a remarkably increased attendance in colleges of arts and sciences. In fact, some of these institutions which formerly had small enrolments now find their classes so increased that provision for a larger equipment and additional teachers has been necessary. Again, the general adoption of this higher standard makes the entrance requirements of all medical colleges more uniform. As a consequence, students are exercising a larger freedom in selecting the institution they are to attend and will usually select the better one. This is shown to be a fact, since colleges which have for several years had small enrolments on account of their higher entrance standards this year report marked increases in the numbers admitted. More important, however, is the fact that the great majority of students from now on will be better qualified to enter on the study of medicine, and to master the greater complexities of the modern medical curriculum. Finally, in the success of the campaign for higher entrance standards the public has the assurance that the medical schools hereafter will turn out a larger proportion of thoroughly qualified physicians.

## WHY NOT AN EXCHANGE OF MEDICAL TEACHERS?

For several years some of our universities have been exchanging professors for certain periods with universities abroad. Students in such universities have the opportunity not only of meeting and getting acquainted with foreign university teachers, but also of obtaining instruction under the methods and with the interpretations used abroad. Not only the student but the university also is undoubtedly benefited by this interchange of teachers. Would it not be worth while for medical schools to consider the adoption of a similar procedure? Medical teachers and investigators from Europe are frequent visitors in this country. Since 1896, when the Lane Medical Lectures were founded by Dr. Levi Cooper Lane at the Cooper Medical College, San Francisco, now the School of Medicine of Leland Stanford University, most of the biennial lectures provided for have been given by prominent medical teachers from abroad. In 1902, the Christian A. Herter Foundation was established at the Medical Department of Johns Hopkins University "for the formation of a memorial lectureship designed to promote a more intimate knowledge of the researches of foreign investigators in the realm of medical science." Since this foundation was established a course of lectures has been given each year by some prominent foreign investigator or clinician. As announced last week,[1] the lectures this year were given by Dr. Thomas Lewis of London, the editor of *Heart* and the leader in the newer methods of studying cardiac function. Dr. Lewis is also to spend a week at the Medical School of Harvard University, where he will be placed temporarily in charge of certain wards at the Peter Bent Brigham Hospital. Considering the extent, therefore, to which prominent medical men from abroad are already lecturing in this country, it would not seem difficult to arrange for an enlargement of the courses now being given, into an exchange of medical teachers. It could not be said that the benefits would be one-sided — no such assertion has ever been made in the exchange of teachers of the colleges of arts and sciences. On the contrary, as shown in a comment above, medical colleges in the United States have been greatly improved in the last ten years and there is now much that European medicine might learn from American teachers. Chiefly, however, the arrangement would result in closer relationships between the medical teachers of this and other countries that would undoubtedly be mutually beneficial. Considering what is now going on in Europe, these suggestions may seem inopportune; the principle is correct, nevertheless. Meanwhile, even more benefit would result from a similar exchange system between the high grade medical schools at home; and such an exchange could be easily arranged.

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[1] General News, The Journal A. M. A., Oct. 17, 1914, p. 1404.

This would bring teachers of the different medical schools into closer sympathy, and improved methods of teaching would be more widely adopted and faulty methods corrected. Incidentally, but perhaps of most importance, the students of all medical schools participating in such an exchange would obtain a more uniformly thorough training in the latest and most improved methods of investigation, of diagnosis and of treatment.

### CHILD MORTALITY FROM BURNS

Some months ago[1] we commented on the dangers of fire from the use of certain materials for children's clothing, especially mentioning a kind of light cotton material known as flannelet. The condemnation has been about equally shared by this and other similarly combustible dress materials and the practice of warming apartments with open unprotected grates, which are apparently more depended on for heating in Great Britain than in our severer winter climate. The subject has not at any time aroused the attention in this country that it has in Great Britain; nevertheless there cannot be very many physicians who have not had to treat serious burns, generally in children, that may have been caused in some such ways. A recent report by the coroner's physician of Brooklyn suggests that the prevention of such accidents deserves more consideration from the medical profession here. He gives as the record for sixteen days in that borough, September 4-20, eighteen fatalities from burns in children, beside three of adults. The average age of the children killed by fire is given by him as between 2 and 5 years. How many not fatal but still serious burns of children occurred can only be conjectured.

### A "CURE-ALL" APHRODISIAC

In an article on modern Korea, R. Malcolm Keir[2] of the Department of Geography and Industry at the University of Pennsylvania calls attention to the important source of income to Korea which accrues from ginseng. In spite of the fact that the peculiar man-shaped root has no medicinal value so far as Western science can determine, though it acts with wonderful efficacy on the minds of the Chinese, the Koreans for decades paid their tribute to China in ginseng. Some of the wild ginseng roots which grow in the Northern Mountains and resemble human beings more closely than the cultivated roots, and which take on a curiously human pink color after being steamed in a special manner, sell for $150 a pound. The finding of one root in three years gives enough return to supply the entire livelihood for the whole of that period to the family of the finder. This speculative element in the industry has its special attraction for many Orientals whose gambling instincts are well developed. The cultivated variety of the plant is valued at about two dollars a pound, but roots selected for their particular human resemblance have a much enhanced price. Although barely 275 acres are planted in ginseng, yet the annual value of the crop is $130,000. For the Chinese, ginseng is a universal panacea, a "cure" literally for all the ills that flesh is heir to. It has a special reputation as an aphrodisiac, and probably nothing can better help the physician to judge critically of the value of aphrodisiacs generally than the fact that the Chinese are quite sure of its marvelous efficacy for amorous excitation, though no evidence can be obtained in the West of its power to produce any such effect. The Chinese are shrewd, but are quite as amenable as other people to the influence of the mind over the body while they think that the remedies they employ are rather affecting their bodies directly and their minds only by the betterment in their physical well being. Most of us have thought of the ginseng legend as a thing of the past, as it seemed destined to become in our student days, but here it is a prominent factor still in a nation's industry and geography. And who shall say that the rest of the world is a whit better than the Chinese when it comes to paying liberally for an absurd "cure-all" whose chief alleged virtue is to give manly vigor back to senile or presenile neurasthenics?

### OUR FOREIGN EXCHANGES

At the first onset of the war there seemed likely to develop a sudden dearth of foreign medical literature, and our translators and abstractors were wondering if they should not prepare for an enforced vacation. But aside from those of France, our principal exchanges are still coming. The French publications, however, appeared to have been suspended from the start, none having been received until October 20, when the issues of the *Presse Médicale* from August 12 to September 23 were delivered in one bundle. This journal is appearing now as a four-page bulletin of medico-military information. Those of Belgium continued for a time, but they have now ceased to appear. The journals which we are receiving are, in every instance, greatly reduced in size. The German periodicals seem to be considerably delayed in arriving: The *Berliner klinische Wochenschrift* for September 28, the *Zentralblatt für Gynäkologie* for September 26, the *Deutsche medizinische Wochenschrift* for September 24, were received October 19; the *Münchener medizinische Wochenschrift* for September 15—the last one received—came October 10; and the last number of the *Wiener klinische Wochenschrift*—that for August 20—was received September 15. On the other hand, there seems to be increased speed in the delivery of English publications, all of which are continuing: e. g., on October 12 we received the London *Lancet* and the *British Medical Journal* of October 3; and on October 19, the same journals for October 10. Heretofore these journals were not delivered for ten days after the date of issue. The explanation, we believe, is the fact that the fast Atlantic steamers now sail to Halifax and Quebec, rather than to New York, which makes a much shorter ocean trip. Our Scandinavian exchanges and one Italian the Milan *Gazzetta,* have been received regularly, with only slight delays, but the *Policlinico* of Rome and the *Riforma* of Naples have not been seen since the war began, and no Russian mail of any kind has come through. Our Paris and Berlin letters have not appeared as regularly as in the past. In the case of the former this may be attributed to the fact that our correspondent at first seemed to be at the front, but later resumed his correspondence; and our German correspondent has written with such hot invective and burning satire that The Journal could not have published the first three letters and still maintained absolute neutrality. Our Paris correspondent has also allowed himself to deviate from medical matters, and of course we have had to eliminate such statements, making his letters shorter than usual. The same also applies, but to much less extent, to our London correspondent. The matter eliminated, however, was absolutely non-medical. Our Vienna and Budapest correspondents seem to have been lost from the very start of the war.

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[1] Deaths of Children by Burning, Current Comment, The Journal A. M. A., Jan. 3, 1914, p. 46.

[2] Keir, R. Malcolm: Bull. Am. Geograph. Soc., 1914, xlvi, No. 10.

### CHOLERA AND THE WAR

Epidemics of cholera are reported to be threatening the various armies, especially those engaged on the Russo-Austrian frontier. But it will be remembered that even in the normal state of affairs cases of Asiatic cholera in this neighborhood are not unusual. Cholera is a disease whose spread is dependent largely on infected drinking water and carriers, apparently healthy. So far as is known infection occurs only through the alimentary tract; this is to say, the germ must be swallowed. It seems probable that in addition to water as a source of infection, food when exposed may become contaminated with the organism—as for instance through the agency of flies. The germ is passed with the feces, and unless there are efficient sanitary precautions water-supplies are likely to become infected. Therefore in the passage of large bodies of troops, when sanitation cannot be perfect, an outbreak of this disease may be expected. The cholera organism, the comma bacillus, is especially sensitive to drying and there seems to be a doubt whether or not it is able to multiply outside of the body in impure water. In the recent Balkan war cholera was reported in many places and many cases occurred, but the disease never became epidemic. With the assistance of the highly efficient sanitary services of modern armies, wide-spread epidemics of such diseases may be prevented. Soldiers are observed carefully and in efficient camps a soldier who has frequent stools is reported to medical officers, isolated and his symptoms watched. It has been suggested that the coming of winter may lend aid in preventing the spread of cholera. However, the increased moisture and seepage of surface water carrying contaminating material as well as the closer contact of human beings engendered by the winter season make infection still more likely. As an aid to protection, active immunization of men with the Haffkine vaccine may be practiced. Possibly conditions in this war will be the means of determining still more exactly the status of this protective measure.

## Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

### CALIFORNIA

**Personal.**—Dr. Harry E. Kirschner, medical director of the Pottenger Sanatorium, Monrovia, has resigned and opened an office in Monrovia.——Dr. Donald P. Webster, San Francisco, has returned from Alaska.——Dr. Lorne B. Graham, Pacific Grove, has started for Europe.

**Municipal Hospital Ready.**—After more than five years of steady construction work, the new City and County Hospital, San Francisco, erected at a cost of $2,000,000 is now completed and will be turned over to the city, November 1. The hospital is constructed of vitrified brick and really consists of eight separate buildings connected by a large corridor, from which the ward buildings branch out at right angles. At one end of the corridor is the Receiving Building and at the other end, the Nurses' Home and Training School. In the center of the building is the Administration building with two ward buildings on either side.

**Faculty Appointments.**—Dr. George H. Whipple, a member of the faculty of the Johns Hopkins Medical School, has been appointed director of the George Williams Hooper Memorial Foundation for Medical Research in the University of California.——Dr. Carl Friedrich Meyer and Ernest Linwood Walker, have been appointed associate professors of tropical medicine, and Dr. Charles W. Hooper, fellow in research medicine in the same foundation. The headquarters of the foundation are to be in special laboratories in the Medical School Building of the University of California, San Francisco.——Dr. Wilbur A. Sawyer, Berkeley, director of the California State Hygienic Laboratory, has been appointed lecturer on hygiene and preventive medicine in the University of California Medical School.

### CONNECTICUT

**Personal.**—Dr. Albert C. Thomas, New Haven, has been confirmed by the executive council as superintendent of the Foxboro, Mass., State Hospital.

**State Society Semi-Annual Meeting.**—The Connecticut Medical Society at its semi-annual meeting, October 1, was the guest of the New London County Medical Society. Luncheon was served at the Norwich State Hospital and in the afternoon Drs. Rush W. Kimball and Patrick J. Cassidy, Norwich, reported their experiences in Europe, and after a literary program, a clinic was held on the common types of mental diseases.

**Small-Pox Costs One Town Over $1,000.**—The annual reports for the town of Montville show that the town paid $1,077.75 for the luxury of a small-pox outbreak during October, 1913, which also caused great inconvenience to the town and which, according to the health officer, Dr. Morton E. Fox, Uncasville, was largely due to failure to report the original cases. One member of the affected families escaped, having been vaccinated.

### DELAWARE

**State Society Election.**—The one hundred and twenty-fifth annual meeting of the Delaware State Medical Society was held in Wilmington, October 12 and 13. Dr. George Frank Jones, Georgetown, presided in the absence of the president, Dr. William P. Orr, Jr., Lewes. The following officers were elected: president, Dr. Henry W. Briggs, Wilmington; vice-presidents, Drs. James T. Massey, Viola; Roland G. Paynter, Georgetown; secretary, Dr. George W. K. Forrest, Wilmington (reelected); treasurer, Samuel Mumford, Wilmington (reelected), and delegate to the American Medical Association, Dr. William Marshall, Jr., Milford.

### GEORGIA

**Medical Research Club Formed.**—The Medical Research Club of Atlanta has been organized with the following charter membership: Drs. Asa G. DeLoach, Elmore C. Thrash, Archibald B. Elkin, James D. Manget, Allen H. Bunce, Thomas R. Beech, Herbert L. Reynolds, Worth E. Yankey and Hansell Grenshaw.

**Personal.**—Dr. John Peebles Proctor, Athens, has returned from abroad.——Dr. Clarence M. Paine, Atlanta, has been reappointed a member of the State Board of Medical Examiners, representing the homeopathic school.

### IDAHO

**Personal.**—Dr. Frederick W. Didier has been appointed examining surgeon for the United States Pension Office with headquarters at Priest River.——Dr. Charles B. Shirley was recently presented with a silver loving cup by a number of his women patients at Weiser.

**New State Society Officers.**—The twenty-second annual meeting of the Idaho State Medical Association was held at the Owyhee Hotel, Boise, October 8 and 9 under the presidency of Dr. Frank W. Mitchell, Blackfoot, who delivered an address on "Medical Jurisprudence." Lewiston was selected as the place of meeting for next year, when the Society will meet in connection with the state associations of Oregon and Washington. The following officers were elected: president, Dr. John N. Alley, Lapwai; vice-president, Dr. Fern M. Cole, Caldwell; secretary-treasurer, Dr. Edward E. Maxey, Boise (reelected); Dr. Lucien P. McCalla, Boise, delegate to the American Medical Association, and Dr. Maurice H. Tallman, Boise, alternate.

### ILLINOIS

**Addition to Beverly Farm.**—Dr. William H. C. Smith, superintendent of Beverly Farm, private home and school for nervous and backward children, Godfrey, has recently added twenty rooms to his institution, which is now able to accommodate seventy-five children.

**Personal.**—Dr. John T. Montgomery of Charleston has received the endorsement of the Republican party as candidate for the position of trustee of the state university. As the university has a medical department it seems most important that there should be a medical man on the board.

**Hospital Notes.**—Contracts have been awarded for the construction of the Lutheran Hospital, Moline. The institution when completed will cost about $40,000, and work is to be started on the building by April 1, 1915.——The Contagious Disease Hospital, given at a cost of nearly $100,000 to the Evanston Hospital by James A. Patten, was opened for inspection October 24 and 25. The building is four stories in height, 121 by 42 feet; of brick, fireproof and will accommodate fifty patients.

**Health Poster Competition.**—The City Club of Chicago has started a health poster competition and will award three prizes of $50, $30 and $20, respectively, for the three best designs submitted. Each drawing must be 23 by 29 inches, with a 2-inch margin and executed in two colors for zinc etching reproduction. The drawings are to be delivered not later than October 30 to Charles Yeomans, secretary, Committee on Public Health, City Club, 315 Plymouth Court, from whom full details of the contest may be obtained.

#### Chicago

**Personal.**—Dr. John Steele Sweeney and Dr. Alfred N. Moore have returned from abroad.——Dr. Ernest A. Loewinger is doing volunteer work and is one of the surgeons in the Imperial and Royal Military Hospital, Budapest.——Dr. Robert T. Gillmore has been elected president of the Chicago Gynecological Society.——Dr. and Mrs. Harry B. Bailey, Chicago, have returned from Europe.

**War Surgery.**—A meeting of the Chicago Medical Society, October 21, was devoted to army surgery. The speakers and their subjects were: Colonel William Stephenson, M. C., U. S. A., chief surgeon of the Central Division, on "War from the Standpoint of the Military Surgeon"; Lieutenant Colonel Jacob Frank, surgeon general of Illinois, on "Perforating Wounds of the Abdomen"; Colonel Patrick J. H. Farrell, formerly commander-in-chief of the order of the Army of the Philippines, on "The Military Surgeon on the Firing Line."

### INDIANA

**No Typhoid in Columbus.**—Since the new filtration plant was established in Columbus a year ago there has not been a single case of typhoid fever where city water was used; nor has there been a single case of contagious disease in the quarter ended September 30.

**Personal.**—Dr. Charles S. Goar, Indianapolis, who was injured by being struck by a train a year ago, has been awarded $8,000 damages.——Physicians of Fort Wayne gave a banquet, October 2, in honor of Dr. Allen Hamilton who has just returned from abroad.

**Arrangements Made for District Nurses.**—The city board of health, Indianapolis, has organized a new department of nursing which will be in connection with the medical inspection of the public schools. Student nurses from the hospitals of the city will be employed to follow up those cases of children excluded from public schools on account of disease.

### NEW MEXICO

**State Tuberculosis Foes Meet.**—The annual meeting of the New Mexico Society for the Study and Prevention of Tuberculosis was held in Albuquerque, October 7, and the following officers were elected: president, Dr. Abraham G. Shortle, Albuquerque (reelected); vice-presidents, Drs. Frank E. Mera, Santa Fe; James W. Laws, Lincoln; and William T. Brown, Watrous; secretary, Dr. LeRoy S. Peters, Albuquerque; treasurer, Dr. Robert E. McBride, Las Cruces.

**State Association Meeting.**—The thirty-third annual meeting of the New Mexico Medical Society was held in Albuquerque, October 5 to 7, under the presidency of Dr. Henry B. Kauffman, Albuquerque, who delivered an address on "Eugenics." Las Vegas was selected as the meeting place for 1915. The following officers were elected: president, Dr. William T. Joyner, Roswell; vice-president, Dr. Evelyn F. Frisbie, Albuquerque; Dr. Clifford S. Losey, East Las Vegas and Dr. Charles A. Frank, Albuquerque; secretary, Dr. Robert E. McBride, Las Cruces (reelected); treasurer, Dr. Frank E. Tull, Albuquerque; delegate to the American Medical Association, Dr. W. R. Tipton, East Las Vegas; alternate, Dr. Samuel D. Swope, Deming.

### NEW YORK

**Clubhouse Nearly Ready.**—The Rochester Medical Society expects to move into its new clubhouse, recently purchased for $35,000, about November 1.

**Personal.**—Dr. Robert Reid, Schenectady, has resigned to accept a position on the house staff of the Albany City Hospital.——Dr. Raymond Sanderson, Canandaigua, bacteriologist of Ontario County, has been appointed to a similar position for Ulster County, with headquarters at Kingston, and has been succeeded by Dr. Wm. A. Bing, Albany.

#### New York City

**Doctors Visit Quarantine.**—At the opening of the new quarantine laboratory, recently, five hundred physicians were the guests of Dr. Joseph H. O'Connell. The laboratory is located on Staten Island and is perfect in its equipment for bacteriological and research work.

**Personal.**—Dr. Mary M. Crawford, Brooklyn, sailed for Europe, October 17.——Dr. Ebba A. Dederer has been appointed physician for the Brooklyn Society for the Prevention of Cruelty to Children.——Dr. and Mrs. William Morris Butler, Brooklyn, have returned from the orient.

**Millions for Health.**—The health commissioner, Dr. Sigismund S. Goldwater, has submitted to the budget committee of the estimate board, his estimate of the amount required for the conduct of his department during the ensuing year. He will require $3,621,738.58, which is $87,498.08 more than the allowance for last year.

**St. Luke's Day Celebrated.**—A service was held in Calvary Church on the evening of October 18, St. Luke's Day, the "Feast of the Beloved Physician," at which time addresses were made by Dr. Howard A. Kelly of Baltimore and Dr. William H. Jeffries, St. Luke's Hospital, Shanghai. The physicians and nurses of the city were especially invited.

**Columbia Faculty Changes.**—Assistant professor, A. M. Muller of the department of anatomy, has resigned to accept the professorship of anatomy in the College of Physicians and Surgeons, New York City.——Dr. James W. Jobling has resigned as assistant professor of pathology to accept the professorship of pathology in the Vanderbilt University, Nashville, Tenn.——Dr. Cornelius Copley has been appointed professor of laryngology to succeed the late Dr. William K. Simpson.——Dr. Alwin M. Pappenheimer has been appointed assistant professor of pathology, vice Dr. James W. Jobling, resigned.——Dr. Homer F. Swift has been appointed associate professor of the practice of medicine, succeeding Dr. Warfield T. Longcope, promoted.

### NORTH CAROLINA

**Fire at Sanatorium.**—On October 1, fire partially destroyed the Winyah Sanatorium, Asheville. The patients were removed without casualty and the burned building will be at once replaced with a new and larger structure.

**Obstructor of Vaccinator Imprisoned.**—Peter Jeffries, a colored man of Raleigh, was convicted and sentenced to thirty days on the county chain gang for obstructing Dr. Albert S. Root, city physician, who was vaccinating the sister of the prisoner, a pupil in the city schools.

**Personal.**—Dr. Stephen J. Hawes, Dover, has returned after several months spent in New York City and Rochester, Minn., and has moved to Lumberton.——Dr. Lewis B. McBrayer, superintendent of the State Sanatorium for Tuberculosis, has accepted the office of executive secretary of the State Red Cross Seal committee.

**State Board of Health Meeting.**—The North Carolina State Board of Health, on October 6, held its first meeting in the new offices of the Board, on the fourth floor of the Supreme Court Building, Raleigh. It was decided to ask the legislature for funds for the erection of an additional building at Sanatorium to provide more room for tuberculosis patients.

## OHIO

**Personal.**—Dr. Wilbert A. Hobbs, East Liverpool, is seriously ill with septicemia in St. Vincent's Hospital, Cleveland.——Dr. William R. Kelly, McConnelsville, the oldest practitioner in Morgan County, was made a life honorary member of the Morgan County Medical Society at its meeting October 2.——Dr. Rufus C. Pennywitt, Dayton, is ill at his home with appendicitis.——Dr. Charles Betts, Toledo, has returned from Europe.

**Health Officers Confer.**—Health officers from the southern part of the state met with the State Board of Health at Cincinnati October 22 and 23. This conference is provided for by the laws of Ohio, and all local health organizations are required to send a representative. Various subjects relating to rural sanitation were discussed, but especial interest attached to the conference on account of the proposed change in the health laws. The proposed bill providing for whole-time district health officers was discussed before the conference by the secretary and executive officer, Dr. Eugene F. McCampbell, Columbus. Two illustrated lectures were given on the evening of October 23, one on tuberculosis and occupational diseases, and the other on communicable diseases and their control by local health officers.

**Milk-Borne Typhoid.**—Two outbreaks of typhoid fever, one clearly traceable to the milk-supply and the other suspected of being transmitted by milk, have occurred recently in Ohio. The first occurred in Lima, where five deaths among the customers of a dairy where a case of typhoid fever was present, were shown to have been infected by the milk. The outbreak occurred in Bucyrus and comprised eighteen cases. This outbreak was investigated by Dr. Walter E. Obetz, assistant epidemiologist of the State Board of Health. Dr. Obetz found that this outbreak possessed many of the characteristics of a milk outbreak, but final proof was lacking. The suspected dairy used the commercial method of pasteurization and this was changed to the "holding" method when the milk was suspected.

### Cincinnati

**Want Board of Medical Directors Reestablished.**—Seven physicians called on Mayor Speigel October 5, to discuss the appointment of an advisory board of three for the new city hospitals. Of the deputation Dr. Simon P. Kramer urged the reestablishment of the board. Dr. Charles A. L. Reed and Dr. Allen B. Thrasher expressed dissatisfaction with the present manner of handling affairs, but did not definitely recommend the reestablishment of the board. Drs. Frank B. Cross, Benjamin K. Rachford, John C. Oliver and Christian R. Holmes were opposed to the reappointment of the supervising board.

**Personal.**—After many years of service Dr. Robert Sattler has resigned as senior ophthalmologist to the Cincinnati Hospital, and Dr. Victor Ray has been promoted to fill the vacancy. Dr. Frederick W. Lamb has been appointed junior ophthalmologist.——Dr. Louis Stricker has been appointed by the commissioners of Hamilton County as special clerk in charge of the relief for the indigent blind. The position pays $1,200 a year.——Dr. Charles P. Kennedy has resigned as assistant superintendent of the Tuberculosis Hospital.——Dr. Archibald I. Carson has resigned as librarian to the Academy of Medicine, a position he has held for many years.——Dr. Rufus A. Van Voast has been accepted as a volunteer surgeon at the front region in the French army.——Drs. Henry Kennon Dunham and Julien F Benjamin have returned from abroad.——Dr. John M. Withrow has resigned as a member of the board of hospital commissioners.——Dr. Georges Rasetti is at present attached to an army hospital in France.

## PENNSYLVANIA

**Portrait of Old Member Presented.**—At a meeting of the Berks County Medical Society in Reading, October 12, a portrait of Dr. Liggett, who was a practitioner of Birdsboro half a century ago, was presented to the society.

**Diphtheria Closes Schools, Churches and Motion-Picture Theaters.**—Diphtheria has broken out in Seward, Chester, Hazleton, Greensburg, Ridgway, Wilkes-Barre and Philadelphia. Schools, churches and theaters have been closed in Seward and Ridgway. Elsewhere cases appear to be scattering.

**Personal.**—Dr. James M. Knowlton and family, Tarentum, has been obliged to go to the Southwest on account of his health, and will locate in Premont.——Dr. Charles R. Holshue, Shamokin, who has been seriously ill with septicema due to a wound in the thumb during a surgical operation, is reported to be convalescent.——Dr. Gaily B. Dunkle, Washington, fractured his right arm near the wrist, while cranking his automobile, October 7.——Dr. William J. Condon has been appointed medical inspector of the public schools of Susquehanna and surrounding districts.——Dr. John B. McAneny, Johnstown, and Dr. and Mrs. Patrick H. Kearney, Scranton, have returned from abroad.

### Philadelphia

**Personal.**—Dr. Henry K. Gaskill has been appointed assistant professor of dermatology in Jefferson Medical College.——Dr. Rufus Cole of the Rockefeller Institute will deliver the Frederick A. Packard lecture of the Philadelphia Pediatric Society in the College of Physicians, November 10.——Dr. Frederick P. Gay of the University of California will deliver the Samuel D. Gross lecture before the pathological society at the College of Physicians, October 22.

**Tuberculosis Conference.**—The North Atlantic Tuberculosis Conference held its session at the Bellevue Stratford, October 16, under the auspices of the National Association for the Study and Prevention of Tuberculosis. Dr. Charles William White of Pittsburgh presided, and the speakers at the morning session were Charles M. DeForest, the salesmanager of the Red Cross seals; State Charities Aid Association of New York; Frank H. Mann, of the New York Committee on the Prevention of Tuberculosis; Mrs. Theodore N. McLaughlin, secretary of the Red Cross Chapter, District of Columbia. At the conclusion of the morning session the first annual meeting of the New Jersey Anti-Tuberculosis League was held at the Hotel Walton in the form of a luncheon. At the afternoon session Dr. George M. Kober of Washington, was the chief speaker. At 5 o'clock the delegates attended a reception at the Phipps Institute and later a dinner at Kuglers. At the evening session Miss Ellen M. La Motte of Baltimore, A. W. MacDougall, secretary of the Newark Bureau of Associated Charities, and Bailey B. Burritt, chief director of the New York Association for improving the condition of the poor, were speakers.

## VERMONT

**State Physicians Meet.**—The Vermont State Medical Society held its one hundred and first annual meeting in Rutland, October 8 and 9, under the presidency of Dr. A. Lawrence Miner, Bellows Falls, who delivered an address on "Malignant Disease." Dr. John George Adami, professor of pathology in McGill University, Montreal, delivered an address on "The Evolution of Infection." The following officers were elected: president, Dr. William W. Townsend, Rutland; vice-president, Dr. William G. Ricker, St. Johnsbury; secretary, Dr. James M. Hamilton, Rutland (reelected); treasurer, Dr. Charles F. Dalton, Burlington (reelected). The Society, by a vote of 73 to 1, passed a resolution to use all honorable means to obtain legislation to provide for the maintenance of the Vermont Medical College, Burlington, its discontinuance being characterized as a state calamity. At the meeting of the House of Delegates, a committee on health and public instruction was chosen, consisting of Dr. Edward H. Ross, St. Johnsbury; Dr. George G. Marshall, Rutland; Dr. Grace W. Sherwood, St. Albans; Dr. John H. Blodgett, Bellows Falls, and Dr. George I. Forbes, Burlington. The House of Delegates also elected Dr. Stanton S. Eddy, Middlebury, as councilor for the first district; Dr. Clayton W. Bartlett, Bennington, for the second district; Dr. Robert M. Wells, Orleans, for the third district, and Dr. George L. Bates, Morrisville for the fourth district.

## VIRGINIA

**Free Literature on Scarlet Fever and Diphtheria.**—The State Board of Health announces for the benefit of physicians and parents that bulletins giving bedside directions for the care of scarlet fever and diphtheria are avilable for free distribution.

**Measures Against Diphtheria.**—The State Board of Health October 3 issued a bulletin requesting the cooperation of the school officials and teachers in the attempt to reduce the time the public schools are closed in various parts of the state on account of diphtheria among the pupils. Stress is laid on the importance of examining the children presenting suspicious symptoms and excluding them from the schools until they are pronounced free from danger. The state has made arrangements for distributing diphtheria antitoxin at a very low cost and without delay.

**Personal.**—Dr. Samuel Childs Mitchell, formerly head of the Medical College of Virginia, Richmond, was installed as president of the Delaware College, Newark, October 10.——Mr. William Schenck, the eldest son of Dr. Powhatan S. Schenck, health commissioner of Norfolk, has been elected president of the student body of the Medical College of Virginia and University Medical College, Richmond.——Dr. Frank H. Hancock has been appointed assistant health commissioner of Norfolk, vice Dr. Claude D. J. MacDonald.——Drs. C. J. Andrews, George T. Myers and J. C. Fleet have also been appointed assistants in the department of health of Norfolk.——Dr. Cullin S. Pitt has been designated as physician of the Richmond and Westhampton colleges.

**New Society Meets.**—The Dinwiddie County Medical Society recently organized held a meeting in Petersburg, October 9, with Dr. William C. Powell presiding and Dr. George S. Fultz, Butterworth, secretary and treasurer. A committee on health and legislation was appointed consisting of Dr. W. Preston Hoy and Dr. Hampden A. Burke, Petersburg, as secretary. A committee was also appointed to consider the advisability of establishing a medical library in Petersburg. This committee consists of Dr. William F. Drewry, Robert A. Martin, Elisha L. McGill, Dibrel C. Mayes, Church Road, and Julian R. Beckwith.

## CANADA

**Personals.**—Dr. Harry Morell, Regina, editor of the *Western Medical News,* is a member of the Canadian Expeditionary troops which recently arrived in England.——Dr. Andrew Macphail, Montreal, editor of the *Canadian Medical Association Journal,* is a member of a class of physicians taking instruction in Toronto in field ambulance work.

**Professor of Anatomy Called to the Colors.**—Dr. Robert W. Geddes, professor of anatomy in McGill University, has been called by the British war office to take command in one of the home regiments—senior major in the Northumberland Fusiliers. Dr. Geddes was in charge of the McGill University provisional regiment. He was a reservist of the British army, having served with distinction in the South African War. He became professor of anatomy in McGill in 1912.

**Typhoid Inoculation of the Canadian Troops.**—Dr. Chas. A. Hodgetts, Ottawa, medical advisor to the Canadian Conservation Commission, had charge of the inoculations of the Canadian troops while in camp at Valcartier. Among his assistants were Dr. Theodore A. Lomer, medical officer of health, Ottawa; Dr. Harry Morell, pathologist to the Regina General Hospital, and Dr. Robert E. Wodehouse, district medical officer of health, Port Arthur, Ont. There were required about forty-five thousand injections and in this large number there were reported no cases of serious or severe constitutional reactions, nor any infected arms.

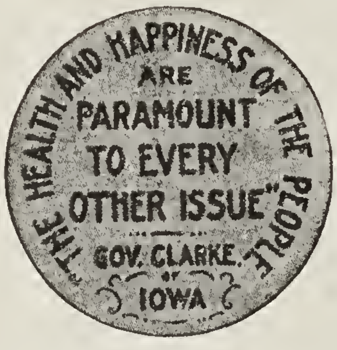
**Hospital News.**—Plans for a new $200,000 hospital at Hamilton, Ont., have been prepared. The building will be three stories high and will accommodate 500 patients. The citizens recently refused to vote $125,000 for the purposes of improving the present city hospital.——A new hospital was recently opened at Grassy Lake, Alberta. It is to provide accommodation for homesteaders in the district. The medical superintendent is Dr. L. K. Poyntz.——In the province of Saskatchewan there are twenty-six hospitals having a total bed capacity of 1,100 to 1,200 beds. A movement is on foot to have rural municipalities join together in establishing hospitals. To the hospitals the provincial government gives 50 cents a day for each patient and $1.50 is allowed for patients who are unable to pay anything.——Plans have been prepared for an addition to the Hospital for the Insane at Battleford, Sask. More accommodation is required for male patients as there has been a rapid increase in the number of these admissions. There are to be three additional units.——The Vancouver General Hospital recently opened a new surgical ward containing twenty-five beds.

## GENERAL

**Tri-State Association Meeting Place.**—The executive council of the Tri-State Medical Association of the Carolinas and Virginia, announces that it has accepted the invitation of the Medical Society of the State of South Carolina and of Charleston County, to hold its seventeenth annual meeting in Charleston, S. C., Feb. 17 and 18, 1915.

**Tri-State Society Meeting.**—The Tri-State Society of Iowa, Illinois and Missouri held its twenty-second annual session at Des Moines, October 13 and 14 and the following officers were elected: president, Dr. Lewis Schooler, Des Moines; vice-president, Dr. Clarence L. Wheaton, Chicago; and secretary, Dr. Charles H. Parkes, Chicago. The next meeting will be held in Chicago in September, 1915.

**The Clark Epigram.**—The Department of Health of Iowa is immortalizing the name of Governor Clark by spreading broadcast an epigrammatic expression recently made by him at a meeting of the State Board, of which he is ex-officio a member. The accompanying illustration shows a button embodying the epigram—"The health and happiness of the people are paramount to every other issue." The button, which is being freely distributed through Iowa, is lettered in black on an orange background, and measures 1¼ inches in diameter. Governor Clark's epigram reminds us of a similar expression of Benjamin Franklin, "Public health is public wealth"; of Disraeli's, "The care of the public is the first duty of the statesman"; and of Gladstone's, "In the health of the people lies the strength of the nation." The distribution of this button is one of the efforts of the Iowa board to arouse the public to a realization of the importance of health.



## WAR NOTES

**Spain Will Receive Wounded.**—Spain has sent offers to France to receive 30,000 wounded in her hospitals. Of these, the hospitals of Madrid will accommodate 6,000.

**Guarding Against Cholera.**—The Swiss Government on October 16 officially declared quarantine against Russia, Austria, Servia and Galicia, on account of cholera.

**Cholera Immunization.**—It is reported that 120,000 packages of cholera serum have been received at the front from Vienna and that the troops are being inoculated by regiments.

**Dogs Wanted to Aid in Recovering the Wounded and Sick in the Field.**—Our German exchanges contain appeals to owners of dogs that could serve in this way to donate them to the cause.

**Physician Receives War Decoration.**—The iron cross has been bestowed on Dr. Max Kirschner of Munich serving at the German front with the third Bavarian *Feldpionier* company.

**Scarcity of Physicians in Eastern Prussia.**—The medical chamber of east Prussia calls for medical aid as the smaller towns have been drained of physicians, and expert medical skill is particularly needed to ward off epidemic diseases liable from the east.

**Transport of the Wounded.**—On September 28, the first trainload of wounded soldiers, mostly from the battlefield of the Aisne, were brought from the South to Scotland and conveyed to Number 2 Hospital at Grayleith. Stobhill Hospital, Glasgow, has received 300 wounded soldiers.

**Tetanus Antitoxin for Allied Troops.**—Philadelphia newspapers announce that an order for six thousand packages of tetanus antitoxin has been placed by the British government, with a local firm of chemists. The antitoxin is to be used especially for the French and English troops, who are especially exposed in the trenches.

**Drugs Wanted.**—Due to the embargo placed on drugs by continental countries, South American and English firms are having difficulty in securing supplies. In *Daily Consular and Trade Reports* for October 13, four English, two Russian and one Spanish firm request American companies to quote prices on various drugs and chemicals.

**Exclusion of Alien Students Henceforth from German Universities.**—The *Deutsche med. Wchnschr.* states that hitherto no discrimination has been made against foreign students at German universities except a comparatively small number of Russian students without due credentials. But this exclusion will now be extended to British, French, Belgians and Japanese.

**British Physicians Join Expeditionary Force.**—The Secretary of State has appointed Sir John Rose Bradford, Sir Wilmot Herringham and Sir Almroth Wright, consulting physicians with the British Expeditionary Force in France, with the rank of colonel. He has also decided to appoint a special sanitary committee to advise the council on any questions pertaining to the health of the troops.

**Transport of Wounded in France.**—Arrangements are being made by the Red Cross Society for the equipment of a mobile unit consisting of a field hospital, ten ambulances, subsidiary motor cars and motor trucks, with a staff of four physicians and a complement of nurses and orderlies. The purpose of this unit will be to provide an intermediate halting place between the fighting line and the base hospitals and a means of transport in either direction.

**The Red Cross Ship.**—After landing units at Bordeaux for the French army, the American National Red Cross Ship *Red Cross*, sailed for Rotterdam and there landed units for Germany, Austria and Russia. Two units arrived in Vienna, October 14, one of which proceeded immediately to Hungary and the other was assigned to duty in the suburbs of Vienna.——The hospital ship which sailed from New York via the Mediterranean for Servia, reached Nish safely on October 15. Dr. Edward W. Ryan is in charge of the Servian unit.

**More Medals Sent to the Melting Pot.**—Kobert of Rostock has repudiated not only the British but the Russian medals that have been presented to him. Neisser of Breslau has donated his Cavendish medal to the Red Cross. The family of Emil du Bois Reymond has donated the Helmholtz gold medal, of an intrinsic value of $423, to the relief fund, saying that this medal, representing the highest appreciation in his own land of the scientific achievements of du Bois Reymond, is honored more by devoting it to the service of the country than by preserving it.

**Prevention of Disease in Active Service.**—Sir William Osler, who has recently been called to the colors in addressing officers and men in the military camp, recently remarked that the army did not march on its belly, but on its brain. The cilia are a more important enemy than bullets. Typhus, malaria and cholera were not likely to be encountered, but dysentery, pneumonia and typhoid were the scourges to be feared. Of these, dysentery could be prevented by boiling the water and typhoid fever by antityphoid inoculation, but pneumonia was more difficult to prevent on account of coughs, colds, exhaustion and exposure, all of which lower vital resistance.

## LONDON LETTER

London, Oct. 9, 1914.

### The War

Preparations of all kinds for this great war, to which we are about to send a large force instead of the present one of about 200,000 men, are being made "without haste, and without pause." The call to arms has quickly been responded to and the half million of men required for the new army have been obtained without difficulty. A further army of a second half million has begun to be organized. Almost the whole of the young men of the country are coming forward with enthusiasm. The physique of the new army is excellent, though some of its members are very youthful and require seasoning. Their housing in a country which maintains only a small standing army presents some difficulties. Huts accommodating from twenty to fifty men are being erected on an extensive scale, which will be much warmer in winter than tents. Timber hospitals are also being erected. The vaccination and inoculation against typhoid fever of men going to the front have been performed on a large scale.

The effects of the war on the life of the country are widespread. In the medical profession they are noticeable in many ways. The staffs of hospitals are depleted, and visiting surgeons and physicians have undertaken duties usually performed by residents. Many of the students have gone to the front, some as dressers, but the greater number have enlisted in the fighting ranks. The output of medical literature is much diminished as shown in the contraction of all the medical journals. The program of the Royal Society of Medicine shows a great reduction in the number of meetings for the forthcoming session. An unfortunate result of the war is the closure of the Polyclinic. This unique and useful institution was founded fifteen years ago mainly by the efforts of the late Sir Jonathan Hutchinson. Its object was to provide postgraduate instruction for physicians in the form of lectures and demonstrations. The annual subscription was $5, and about 1,000 members were obtained. This was not sufficient to pay the expenses; appeals for donations were made on more than one occasion and generously responded to by a limited number of physicians. A scheme, which appeared to be successful, was in process of being carried out for the abolition of the debt of the institution. When the war broke out financial losses, actual and prospective, rendered many unable to carry out promises of help. Moreover, the support of American and colonial visitors fell to the vanishing point.

At the front the supply of surgeons, dressers and nurses is ample, indeed more than sufficient. Two well-known surgeons, Sir Anthony Bowlby and Mr. Makins, have been appointed consultants attached to General French's staff as colonels. Both have experience of military surgery in the South African War. Their duties will be to visit any part of the line where a second opinion on a case may seem desirable. Some difficulties are being experienced in bringing down a large number of wounded from the rail heads or clearing hospitals to the base. The journeys are often long and interrupted. This is due to the limited number of lines, which have also to be used for the dispatch of reinforcements, ammunition and food. Some improvements are about to be made in French railway rolling stock, and by the arrival of a complete ambulance train which is being fitted in England. A heavy list of casualties has occurred among the men of the Army Medical Corps.

## PARIS LETTER

Paris, Oct. 1, 1914.

### Extraction of Bullets by Means of Electromagnets

During a recent session of the Académie des sciences, Professor Dastre reported the results of his attempts at the Desgenettes Hospital in Lyons to facilitate the extraction of bullets by the use of high power electromagnets. The German bullets have a nickel-steel jacket which can be attracted by a powerful magnet, causing a swelling under the skin which thus makes it easy to cut down on the ball. If the bullet is engaged in the muscles, under the influence of the electromagnet, it moves toward the surface, revealing its presence, first by a characteristic pain and then by a swelling of the skin.

### The Costume of the Voluntary Nurses

Complaints with regard to the conduct of certain volunteer nurses of the Red Cross, who, for the sake of attracting attention, wore their nurses' costumes in the streets, have been laid before the minister of war. He has consequently forbidden the wearing of nurses' costumes outside of the institution to which the wearer belongs, giving as his reason the necessity of protecting from undeserved criticism the real nurses, who shun publicity and who by their devoted services have won the respect and gratitude of the medical profession, the sick and wounded soldiers and the public.

### Hospital Ship for the Convalescent Wounded

One of our great transatlantic liners, the *Gascogne*, has just been transformed into a hospital ship for the convalescent wounded. It has been completely disinfected and painted. More than 450 convalescents removed from auxiliary or temporary hospitals can be made comfortable in it. The criticism has been made that the convalescents might not have sufficient air space in their cabins. This is not so. The great saloons, smoking-rooms, music rooms and reading-rooms have been made over into dormitories, in which new wooden beds have been placed, separated by considerable intervals. The saloons, which are near the upper bridges, are reserved for the wounded who walk with greater difficulty. The first cabins are for convalescent underofficers. The second cabins and saloons have been made into dormitories and likewise the immense steerage space from which the upper bunks have been removed, making ample air-space. Dining-rooms have been installed on the bridge of the first deck, which in a few days will be glazed. A physician major and an auxiliary physician will remain permanently on the *Gascogne* to watch over the condition of the wounded convalescents. If, as seems probable, the experiment with the *Gascogne* is successful, another liner, the *Bretagne*, may likewise be transformed into a hospital ship.

### Appointment of Adjunct Directors of the Health Service

The increasingly heavy task imposed on the directors of the regional services of health by the numbers of the wounded French and German soldiers, would be too great for them if they did not have assistance. The minister of war is convinced of the necessity of the directors keeping track of the execution of their orders and of the organization and functioning of the sanitary establishments so as to be assured that all needs are satisfied everywhere and that the wounded are receiving necessary attention and are surrounded by the care to which they are entitled. As soon as the administrative demands of the service became so pressing as not to leave the directors free to move about it became urgent to appoint adjunct directors who are to be especially charged with such oversight and control. They are to be in particular, intermediaries between the directors of the regional services of health and the various societies of the Red Cross and of private philanthropy, whose efforts they will coordinate.

### Society Formed to Care for the Wounded in Transit

There has just been organized under the patronage of the French press an Oeuvre des trains de blessés intended to give the numerous wounded passing through the stations of Paris and the vicinity, the care, food and clothing of which they are in need.

### Present-Day Modifications of Military Surgery

September 28, Professor Delorme, medical inspector-general of the service of military health, read before the Académie des Sciences a report of the inspection of army hospitals and ambulances which he had made by order of the minister of war. Delorme emphasized particularly the modifications of military surgery necessitated by the character of modern battles which are distinctly siege operations. While in ordinary battles the first line of medical assistance is sufficient, thanks to the soldiers' individual packets of dressings, to assure sufficient asepsis of wounds to permit the transportation of the wounded to distant hospitals. At present in the sanitary formations of the front, one finds patients who have lain in the trenches without care, sometimes for four or five days. The original asepsis no longer exists. The wounds are infected and purulent and transportation to a distance would be dangerous. Surgery must be performed at the front. While bullet wounds, thanks to the swiftness of the projectile and the small area of the wounds, heal quickly without special care, the case is otherwise with artillery wounds, which are large and in which foreign matter, such as earth and fragments of clothing introduced by the projectile, too often cause diffuse phlegmons, gangrene and tetanus. It is necessary to operate rapidly, to extract the balls and the fragments of shells and to disinfect the wounds carefully. The rôle of the ambulances and hospitals of the firing-line has been greatly increased.

The greater number of the deaths among the wounded at present are attributed to gaseous gangrene and to tetanus, which are almost unknown to ordinary surgery and were very rare at the beginning of the war. Against gaseous gangrene, injection of hydrogen peroxid may be used successfully. After having determined the limits of the gangrenous tissue, there is a chance of arresting the progress of the trouble by making a circle of injections of from 40 to 100 c.c. of hydrogen peroxid about a centimeter apart around the limb. A few centimeters above this circle of punctures and in the intervals of the first, another circle may be made and a third still higher. These injections are to be renewed as often as necessary. In cases of fulminating gangrene the injections should be made in the aponeuroses of the affected parts after removing the necessary tissue.

As for tetanus, reliance must be placed on prevention rather than cure. As Dr. Roux, director of the Pasteur Institute, says, the antitetanus serum, of which 160,000 doses have been delivered to the army since the beginning of the war, ought to be placed specially in the first-line ambulances and not in those of the rear. This serum is only preventive, it is not curative. It acts on the tetanus toxin only while it is still in suspension in the blood; it is powerless when the toxin has reached the nerves. One should not wait, therefore, until nervous complications have manifested themselves, for then either the intoxication is violent and death is inevitable, or it is slight and cure may be effected without the sacrifice of any of the precious serum which can be usefully employed in saving other lives. In cases of declared tetanus, one may use intraspinal injections of magnesium sulphate, which arrest the contraction of the jaws and make it possible to feed the patient.

Dr. Delorme showed some simple apparatus which he had had made to replace the old metal splints used in the treatment of fractures. These are pliable sheets of metal cut in suitable lengths for use on the arm or leg, thickly padded with cotton on one side and furnished with straps. The splint is placed on the wounded limb with tampons of wadding have been so placed as to assure a pressure capable of replacing the fragments of bone. The splint is then bent so as to fit the wounded limb and the straps are fastened. This apparatus is light, occupies a minimum amount of space and is consequently easy to transport and permits considerable economy of time while reducing the chance of infection.

## Marriages

Passed Assistant Surgeon Thomas Wrightson Raison, U. S. N., to Miss Margarita L. Higgins of Denver, Colo., in New York City, September 18.

Surgeon George Rothganger, U. S. N. (retired), San Francisco, Cal., to Mrs. Elizabeth Chamberlain Bull of Oakland, Cal., September 5.

Carl Joseph Geiger, M.D., Syracuse, N.Y., to Miss Catherine Reid of River John, N. S., in Providence, R. I., October 7.

Thomas Lamar Williams, M.D., Mt. Carmel, Pa., to Miss Ellen MacFayden of Newark, N. J., in New York City, October 6.

Judd Hariss Kirkham, M.D., to Miss Ora Edyth Burrell, both of Anamoose, N. Dak., in Minot, N. Dak., September 14.

William J. Shenberger, M.D., New Bridgeville, Pa., to Miss Ida Bell Smith of Windsor, Pa., in Baltimore, October 1.

Thomas James Glenn, M.D., Covington, Ky., to Miss Margaret Downs of Cincinnati, in Ludlow, Ky., October 7.

John Henry Cunningham, M.D., Boston, to Miss Theresa van der Hueber Ingersoll of New York City, October 8.

Milton Eben Blanchard, M.D., Los Angeles, Cal., to Mrs. Jennie DeMott of Colorado Springs, Colo., September 27.

Henry John Conner, M.D., Duluth, Minn., to Mrs. Margaret Deary of Spokane, Wash., in Chicago, October 8.

Carl Hayes Lund, M.D., Douglas, Ariz., to Miss Marjory Lawrence Gilson of Arlington, Mass., September 25.

Eliot Sanborn Cogswell, M.D., Hartford, Conn., to Miss Ruth B. Merriam of Kingston, Mass., September 22.

William Shuler Judy, M.D., to Miss Margaret Eulalie Wiggins, both of St. George, S. C., September 10.

Theodore Chapin Beebe, M.D., Boston, to Mrs. Ethel H. Rust of Boston, in London, England, August 22.

Cyrus F. Newcomb, M.D., Champaign, Ill., to Miss Geraldine Bullard of Mechanicsburg, Ill., October 7.

William Frederic Moore, M.D., Llanerch, Pa., to Miss Marjory Thornton of Philadelphia, October 21.

Henry James Graham, M.D., to Mrs. Theresa Tromp Jernegan, both of South Bend, Ind., October 8.

Charles Everett Oates, M.D., Little Rock, Ark., to Miss Ilse Frischmeyer of Austin, Texas, recently.

Edward Martin Colie, Jr., M.D., to Miss Elinor Newman Tidden, both of New York City, October 5.

Edmund William Butler, M.D., San Francisco, to Miss Wilma Jacobs of Alameda, Cal., October 19.

William C. Bridge, M.D., to Katherine Pleavin, M.D., both of Elgin, Ill., in Chicago, October 7.

Henning Theodore Mostrom, M.D., Geneva, Ill., to Miss Mildred Hinds of Lena, Ill., September 30.

John MacLachlan, M.D., Cleveland, Ohio, to Miss Edna Milliken Sloan of Pittsburgh, October 3.

George Romeo Fugina, M.D., Madison Lake, Minn., to Miss Thro of Mankato, Minn., recently.

Leo Sebastian Schumacher, M.D., to Miss Gertrude O'Reilly, both of Cleveland, October 7.

Ransom Smith Robertson, M.D., to Miss Mary P. Doing, both of Brooklyn, N. Y., October 6.

Joseph W. Hutchinson, M.D., to Miss Vera Surface, both of Marquette, Neb., October 7.

Lucas Smith Henry, M.D., to Miss Marguerite Allewel both of Syracuse, N. Y., October 6.

# Deaths

**James Gregory Mumford, M.D.** Harvard Medical School, 1890; eminent as a surgeon and writer of surgical text-books and monographs; died at his home in Clifton Springs, N. Y., October 19, from heart disease, aged 50. He was born in Rochester, N. Y., Dec. 2, 1863, and took his academic course at Harvard University from which he received the degree of A.B. in 1885. For twelve years after his graduation Dr. Mumford practiced in Boston and served on the surgical staff of Carney and the Massachusetts General hospitals. In 1895 he was made assistant in surgery, and in 1902 instructor in surgery in his Alma Mater. In 1912 he moved to Clifton Springs, N. Y., where he became physician-in-chief of the Clifton Springs Sanatorium and Hospital.

He was a Fellow of the American Medical Association, American Surgical Association and American College of Surgeons, and a member of many surgical and medical societies, both of this country and abroad. In 1892 and 1893, Dr. Mumford served as surgeon to the Naval Brigade, Massachusetts Volunteer Militia and was later commissioned as a first lieutenant in the Medical Reserve Corps, U. S. A. Among his chief contributions to the literature are his Practice of Surgery, which appeared in 1910; Surgical Memoirs in 1908; One Hundred Surgical Problems in 1911; A Doctor's Table Talk in 1912, and many articles and essays in medical journals; Dr. Mumford also was the author of the introductory article on History of Surgery in Keen's System of Surgery and the editor of Harrington's History of the Harvard Medical School.

**Jerome Keating Bauduy, M.D.** Jefferson Medical College, 1863; a member of the Missouri State Medical Association; formerly president of the St. Louis Medical Society; a veteran of the Civil War; for twenty-four years physician and chief to St. Vincent's Asylum, St. Louis, and at one time consulting physician to the St. Louis Hospital for the Insane; professor of nervous and mental diseases and medical jurisprudence in Missouri Medical College and Washington University for nearly thirty years; professor emeritus of psychological medicine and diseases of the nervous system in Washington University; author of a number of books on nervous diseases; died in the East about October 11, aged 74.

**George Brown Reynolds, M.D.** Washington University, Baltimore Md., 1872; a Fellow of the American Medical Association; formerly chief surgeon of the Police Department of Baltimore; a member of the board of managers of the Consumptive Hospital of Maryland and physician to the Boys' Home and Children's Aid Society of Baltimore; a Confederate veteran; while answering an emergency call at the University Club, Baltimore, October 2, died suddenly from heart disease, aged 68.

**Thomas Opie, M.D.** University of Pennsylvania, Philadelphia, 1861; surgeon in the Confederate service during the Civil War; one of the founders, professor of obstetrics and gynecology and for thirty-three years dean of the College of Physicians and Surgeons, Baltimore; formerly surgeon to the Baltimore City and Bayview hospitals and consulting gynecologist to the Hebrew Hospital, Baltimore; died at the home of his daughter in Washington, D. C., October 5, aged 74.

**Matthew Rippey Carson, M.D.** Albany, N. Y. Medical College, 1857; director of the Canandaigua, N. Y. Hospital of Physicians and Surgeons and a member of the staff of the Thompson Memorial Hospital, Canandaigua; whose fiftieth anniversary as a member of the Ontario County Medical Society was celebrated in October, 1909; a charter member of the Canandaigua Society of Physicians and Surgeons; died at his home in Canandaigua, October 6, aged 78.

**Frank Melvin Thoms, M.D.** University of Michigan, Ann Arbor, 1891; formerly a member of the American Medical Association; for twenty-three years a practitioner of Lansing, Mich.; physician to the State School for the Blind in that city; died at his home in Lansing, October 6, from disease of the liver, aged 44.

**Oscar Weston Hulin, M.D.** Columbus (Ohio) Medical College, 1892; a Fellow of the American Medical Association: for twenty-one years a beloved and respected practitioner of Greenford, Ohio; died at his home in that place, October 6, from typhoid fever complicated by pneumonia, aged 48.

**Charles Henry Lewis, M.D.** University of Michigan, Ann Arbor, 1866; a member of the medical staff of the Jackson City Hospital; died at his home in Jackson, Mich., October 7, from heart disease, aged 74.

**Charles Reuel Gibson, M.D.** Medical School of Maine, Brunswick, 1875; a Fellow of the American Medical Association; a member of the Surgical Staff of the Cottage Hospital, Woodsville, N. H.; physician to the Grafton County Hospital and local surgeon to the Boston and Maine Railroad; president of the Woodsville Guaranty Savings Bank; died at his home in Woodsville, about October 4, aged 61.

**Luther Walker Jenkins, M.D.** Rush Medical College, 1911; assistant surgeon U.S.P.H.S. and assigned to duty on the U. S. Revenue Cutter *Manning;* a Fellow of the American Medical Association; aged 33, was drowned with five other men when a boat from the *Manning* was swamped in Unalga Pass off Cape Sariches, Alaska, while bringing off to the cutter a light-house employee who was ill.

**David Thomas Smith, M.D.** University of Louisville, Ky., 1870; lecturer on medical jurisprudence in his Alma Mater; for several terms a member of the school board of Louisville; died at his home in that city, October 1, from uremia, aged 73. At a meeting of the Louisville Society of Medicine, October 6, resolutions of sympathy and regret of the death of Dr. Smith were adopted.

**Philip Mooney, M.D.** University of Vermont, Burlington, 1882; a member of the Massachusetts Medical Society; and once vice-president of the Essex North District Medical Society; a member of the visiting staff until 1903 and later consulting physician to the Addison Gilbert Hospital, Gloucester; died at his home in Gloucester, Mass., September 27, from heart disease, aged 58.

**Frederick B. Read, M.D.** Jefferson Medical College, 1867; a member of the Medical Society of the State of Pennsylvania and local surgeon of the Pennsylvania System at Osceola Mills, Pa.; while on his way to Pittsburgh to attend the meeting of the State Medical Society was seized with pneumonia at the home of his sister in Ebensburg, Pa., and died there, September 30, aged 68.

**Thomas B. McKown, M.D.** Atlanta, Ga., Medical College, 1885; a Fellow of the American Medical Association; surgeon to the Durham Coal and Coke Company; Lookout Mountain Coal and Coke Company and Georgia Penitentiary; and a practitioner of Pittsburg, Ga.; died at the home of his mother in Jonesboro, Ga., September 24, aged 54.

**Jefferson Davis Robertson, M.D.** University of Louisville, Ky., 1891; a member of the Kentucky State Medical Association; formerly city physician and one of the founders of the City Hospital of Paducah, Ky.; was found dead in his office in Paducah, Ky., October 4, from heart disease, aged 52.

**Frithiof N. H. Gyllenhammar, M.D.** St. Louis College of Physicians and Surgeons, 1891; a member of the South Dakota State Medical Association; for twenty-four years a practitioner of Gayville, S. Dak.; died in a hospital in Sioux City, Ia., September 28, from diabetes, aged 57.

**James Fry Armour, M.D.** New York University, New York City, 1867; a member of the Medical Society of the State of Pennsylvania; for nearly half a century a practitioner of Williamsburg, Pa.; died at his home, September 29, from acute dilatation of the heart, aged 71.

**Harry Newmayer, M.D.** University of Pennsylvania, Philadelphia, 1911; a member of the Medical Society of the State of Pennsylvania, and formerly physician to the Jewish Hospital and Children's Hospital, Philadelphia; died at his home in that city, September 28, aged 25.

**Samuel S. Shively, M.D.** Eclectic Medical Institute, Cincinnati, 1881; twice coroner of Wyandotte County, Kan.; died at his home in Kansas City, Kan., October 7, aged 75.

**Robert Burns, M.D.** Rush Medical College, 1881; formerly of Wichita, Kan.; died in Riverside, Cal., July 12, from tuberculosis, aged 62.

**Pompey Davis, M.D.** Memphis Hospital Medical College, Memphis, Tenn., 1906; died at his home in Hickory Valley, Tenn., recently.

**Henry W. Granel, M.D.** Eclectic Medical Institute, Cincinnati, 1875; died at his home in Linden Beach, Ohio, July 3, aged 66.

**Hiram W. Lindsey, M.D.** Eclectic Medical Institute, Cincinnati, 1885; died at his home in Moorefield, Ohio, August 7, aged 60.

**Horatio Craig, M.D.** Albany, N. Y. Medical College, 1878; died at his home in Ballston Spa, N. Y., July 13, aged 60.

**Oscar S. Pratt, M.D.** University of Buffalo, N. Y., 1871; died at his home in Canaseraga, N. Y., August 8, aged 78.

**Dwight Gustavus Hubbard, M.D.** University of Buffalo, N. Y., 1869; died at his home in Buffalo, July 25.

# The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

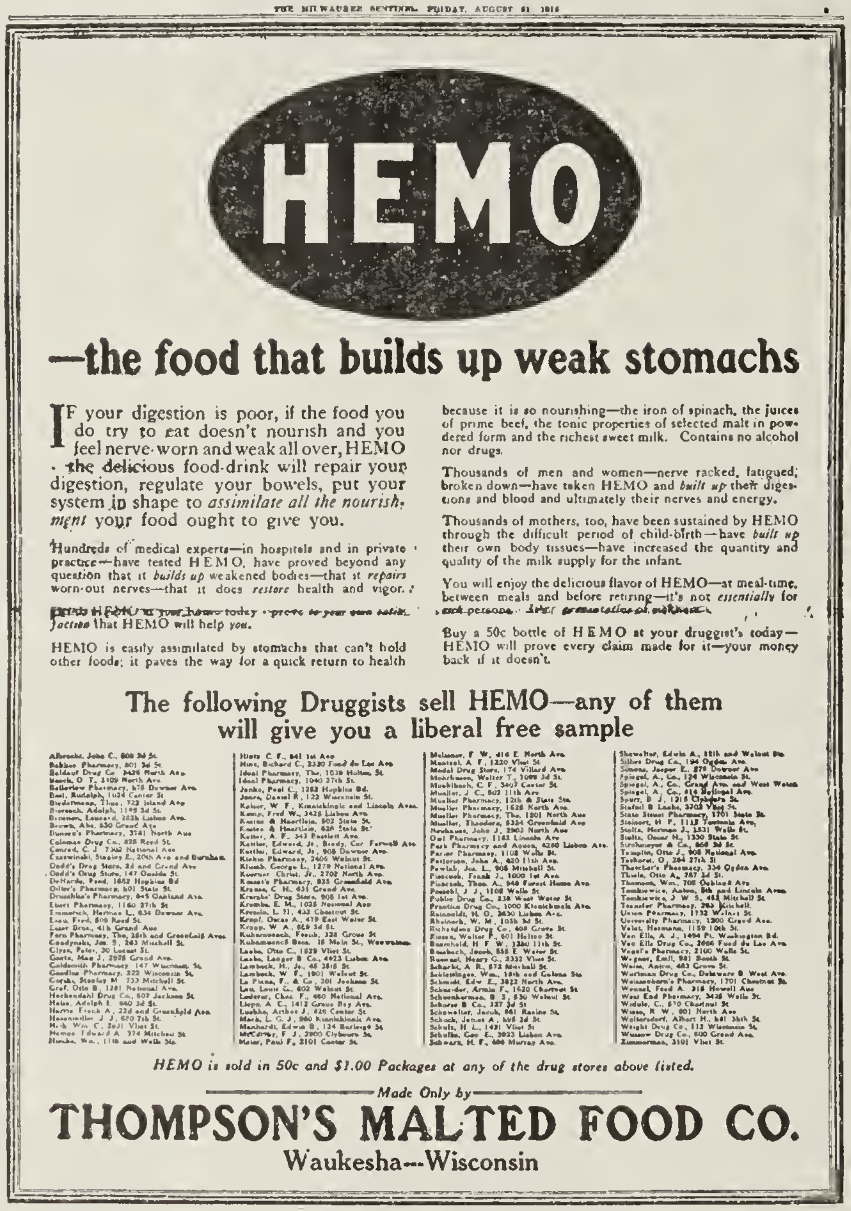
## THOMPSON'S MALTED FOOD COMPANY

### And Its Blood, Nerve and Tissue Builder, "Hemo"

During the past eighteen months The Journal has received inquiries from physicians in various parts of the country asking for information regarding "Thompson's Malted Food Company" of Waukesha, Wis., which for sometime has been selling and trying to sell its stock to physicians and others. In reply The Journal called attention to the fallacy of any concern trying to induce people to purchase its stock on the ground that the Bromo-Seltzer company, the Postum Cereal company and others, had been successful.

The earlier name for the Thompson concern was "American Malted Food Company" and originally it had its office and factory in Milwaukee. Its products are "Malted Milk," "Malted Beef-Peptone" and "Hemo." As long ago as 1911 the company was sending out glowing descriptions of the money that might be expected to be made by investing in the concern, which was then known as the American Malted Food Company. According to the company's booklet it was estimated that in the United States and Canada alone $20,000,000 worth of dry malt food products were consumed annually. Further:

> "On the most conservative estimate the American Malted Food Company will supply 5 per cent. of the demand or $1,000,000 of the consumption from the very outset. . . ."



THE MILWAUKEE SENTINEL, FRIDAY, AUGUST 21, 1914

HEMO

—the food that builds up weak stomachs

IF your digestion is poor, if the food you do try to eat doesn't nourish and you feel nerve-worn and weak all over, HEMO - the delicious food-drink will repair your digestion, regulate your bowels, put your system in shape to *assimilate all the nourishment* your food ought to give you.

Hundreds of medical experts—in hospitals and in private practice—have tested HEMO, have proved beyond any question that it *builds up* weakened bodies—that it *repairs* worn-out nerves—that it does *restore* health and vigor.

~~Drink HEMO at your home today—prove to your own satis-~~ *faction* that HEMO will help *you*.

HEMO is easily assimilated by stomachs that can't hold other foods; it paves the way for a quick return to health because it is so nourishing—the iron of spinach, the juices of prime beef, the tonic properties of selected malt in powdered form and the richest sweet milk. Contains no alcohol nor drugs.

Thousands of men and women—nerve racked, fatigued; broken down—have taken HEMO and *built up* their digestions and blood and ultimately their nerves and energy.

Thousands of mothers, too, have been sustained by HEMO through the difficult period of child-birth—have *built up* their own body tissues—have increased the quantity and quality of the milk supply for the infant.

You will enjoy the delicious flavor of HEMO—at meal-time, between meals and before retiring—it's not *essentially* for ~~sick persons.~~ [illegible]

Buy a 50c bottle of HEMO at your druggist's today—HEMO will prove every claim made for it—your money back if it doesn't.

The following Druggists sell HEMO—any of them will give you a liberal free sample

*HEMO is sold in 50c and $1.00 Packages at any of the drug stores above listed.*

—*Made Only by*—

THOMPSON'S MALTED FOOD CO.

Waukesha—Wisconsin

A miniature reproduction of a full-page advertisement of "Hemo" appearing in a Milwaukee paper. The original covered 341 square inches.

At the time this was written (1911) the company claimed that its stock had "been advanced over 100 per cent. in one year's time" and that even then it had "found it advisable to curtail the sale of stock so as not to exceed the prescribed number of shares to any one person." In 1914, however, the company still had its representatives in the field offering stock for sale.

In November, 1913, one physician wrote that three years previously he had purchased stock in the company and *at that time* (1910) was given to understand that dividends would be paid in at least a year! He has received no dividends to date. Other physicians have written that the company's agents in attempting to sell stock have given the impression that the concern either is paying dividends or is about to pay dividends. Still other physicians say that the agents made no claim to them that the concern was paying dividends. To quote from a few of many letters together with the date of the communications:

> "Alluring promises of big profits in the near future have been held out by the canvassers. . . ." (September, 1913).
>
> "No actual promise was made but it was 'estimated' that dividends would be declared 'about the first of the year'" (November, 1913).
>
> "After I said I wouldn't buy any stock was told the company was already paying dividends and I was turning down a good thing." (March, 1914).
>
> "The agent gave me to understand that the profits of the company were enormous and that large dividends would be paid in the near future." (March, 1914).
>
> "Mr. ——— [the agent] told me the company expected to pay dividends as soon as all the stock had been sold. (May, 1914).
>
> "The agent gave me to understand that they were about to pay very generous dividends and that it was a chance to get in on the ground floor on a good thing." (May, 1914).

The price asked for stock during the past year or more has been $1.50 a share, the par value of the stock being held at $1.00. At various times, however, the stock seems to have been purchasable from other sources at a much lower figure. A physician writing September, 1913, stated that he had just been solicited to purchase stock in the Thompson Malted Food Company at $1.50 a share, and that immediately he wrote to two firms, one in Chicago and one in Milwaukee, that sell unlisted securities, asking the price of Thompson's Malted Food Company stock. Both brokers expressed the opinion, according to the physician, that at 90 cents a share the stock would be a "good buy," and both offered to undertake to secure stock at that price. One of the concerns sent a circular to the physician offering the stock at 80 cents. The physician thereon cancelled his order for stock which he had made at $1.50 and declared, that if he bought at all, he would buy from other sources.

### HEMO

At the present time the product that Thompson's Malted Food Company seems to be "pushing" is a product it calls "Hemo." According to advertisements, Hemo is "the food that builds up weak stomachs." Hemo, we are told, contains "the iron of spinach, the juices of prime beef, the tonic properties of selected malt in powdered form and the richest sweet milk." Furthermore, "Hemo contains the active principle of selected barley malt . . ." —whatever the "active principle" of barley malt may be.

According to the Thompson Malted Food Company "80 per cent. of the American citizens" are "troubled with anemia" and it is for them that "Hemo has been especially prepared." In a sentence:

> "It is a well-known fact that organic iron can be obtained from animal life as well as from vegetable life, and as the digestive organs of a majority of the people are not equal to the task of supplying their bodies with a sufficient amount of organic iron to maintain a supply of a good quality blood, the lack of which results in numerous nervous ailments—insomnia, diabetes, rheumatism, anemia, tuberculosis, etc., it has been found necessary to secure for mankind organic iron in a form that will be concentrated, palatable and most easily assimilated."

This is a sample of the farrago of pseudo-scientific nonsense sent out by this concern in its attempt to sell "Hemo." To continue the quotation:

> "With this object in view, the laboratories of Thompson's Malted Food Company have successfully produced and successfully tried out Hemo on the most desperate cases."

In a letter addressed to a physician-stockholder, the statement is made: "Our Hemo-Malted Milk has never had and never will have an equal as a builder of blood, nerve and tissue . . . it will build tissue, nerve and blood in less time than any other food heretofore known."

Disregarding the question whether or not this is a stock jobbing scheme or whether the purchase of the stock is a good investment, there is another side to the matter. It must be evident that the public is not getting a square deal when physicians are financially interested in the products they prescribe for, or recommend to, the sick. Whatever the value of the Thompson products, the method of exploitation and the attempts on the part of the company to get physicians financially interested in its ventures, are to be deprecated. If laymen of a speculative turn of mind wish to invest in the stock of companies putting out "bottled energy," "blood builders" and "nerve repairers" that is their business, but it is certainly neither conducive to the scientific practice of medicine nor to the interest of the public for physicians to be financially interested in products of this sort.

## *Queries and Minor Notes*

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

### WHERE IS THIS JOURNAL?

*To the Editor:*—I am desirous of subscribing to a medical journal, weekly or monthly preferably monthly, which will give in brief concise, accurate form whatever is new and worth knowing in the lines of advance in medicine, surgery and therapeutics; whatever would be of interest to a general practitioner.

I am anxious to subscribe to a medical journal which will cover the field in medicine and surgery somewhat like the *Literary Digest* covers the field in what is going on in the world of secular news.

In brief what I want is a journal coming not too frequent so that a busy physician will have time to go thru it carefully and that will keep you up to date in advance in medicine and surgery, something that a careful study of without unnecessary wrinkles and details and not too voluminous will keep a general practitioner in a way up to date. This journal should record and explain epoch making advances in the entire field of medicine and surgery but should not tire a man to death by going into minute details in laboratory technique, etc. etc. etc. of reactions and tests that the general practitioner is not interested in, just so he knows that there is such a test or reaction and knows the purpose thereof and is satisfied to leave the details to the specialists in that line.

Can and will you oblige me by giving me the name or names of one or more journals published for just this purpose also address of the publishers. Also whether weekly or monthly and annual price thereof if you can.

George H. Pflueger, M.D., North Crystal Lake, Ill.

### TREATMENT OF MYDRIASIS

*To the Editor:*—Your column of Queries and Minor Notes has not been the least interesting of the different departments of The Journal. I want to ask a question about a case that has been bothering me a little. The patient was hit in the right eye about two months ago with a baseball. After all the inflammation had cleared up it left the iris in a condition of constant dilation (evidently a paralysis of the third nerve supplying the circular fibers). It will contract under the influence of physostigmin. Now I would like to know what the chances are for regeneration of that nerve, and what line of treatment would be the most advisable. I have been giving the patient applications of the faradic current, but see no improvement yet. I might say there is no evidence of any other involvement of the ocular nerves.

W. L. Robinson, M.D., Naramata, B. C.

Answer.—Dilatation of the pupil may be caused either by irritation of the pupil-dilating center, which might occur early in an inflammation, or by paralysis of the pupil-contracting center from pressure on the third nerve at the base of the brain or in the orbit. Mydriasis also occurs as the result of interruption in the transmission of light impulses from the retina, as for example, in optic-nerve atrophy. From our correspondent's statement there is no evidence of any other involvement of the ocular nerves; it is understood that both vision and accommodation in this eye are normal. The causes of paralytic mydriasis are numerous, but in this particular case in which one eye alone is affected, and the cause known to be a direct blow on the eye, it would seem quite evident that the lesion is in the orbit, and probably some direct pressure on the branch of the third nerve in this region. Local daily applications of about five minutes' duration, with the galvanic current, of ten milliamperes' strength (the negative pole applied around the orbit), in conjunction with ascending doses of nux vomica, will be the most efficacious method of bringing about a regeneration of the nerve.

### ARTICLES ON TUBERCULOUS PERITONITIS

*To the Editor:*—Please cite for me some literature on tuberculous peritonitis, with special reference to unusual manifestations of the disease, and differential diagnosis.

X. Y. Z., Fort Dodge, Iowa.

Answer.—The following is a list of references to work on this subject:

Mangiagalli, L.: Tuberculous Peritonitis with Effusion in Pregnant Women, Monatschr. f. Geburtsh. u. Gynec., 1912, xxxvi, Internat. Cong. Festschr.; abstr., The Journal, Oct. 26, 1912, p. 1584.
Falk, E.: Experimental Roentgenotherapy of Tuberculous Peritonitis, Berl. klin. Wchnschr., Nov. 11, 1912; abstr., The Journal, Dec. 14, 1912, p. 2192.
Brückner, G.: Cure of Tuberculous Peritonitis by Injection of Nitrogen into Peritoneal Cavity, Berl. klin. Wchnschr., Jan. 19, 1914; abstr., The Journal, Feb. 28, 1914, p. 736.
Tuberculous Peritonitis, Therapeutics, The Journal, April 25, 1914, p. 1328.
Sheffield, H. B.: Clinical Interpretation of Chronic Abdominal Enlargement in Children with Special Reference to New Differential Sign Between Rachitis and Tuberculous Peritonitis, Med. Rec., New York, Aug. 30, 1913.
Kaspar, F.: Foreign Body Tuberculous Peritonitis, Deutsch. med. Wchnschr., September, 1913, Nos. 5 and 6.
Spencer, W. C.: Four Cases of Tuberculous Peritonitis and Salpingitis with Menstrual Complications, Brit. Med. Jour., Jan. 10, 1914.
Tweedy, E. H.: Female Sterility as Salient Feature of General Tuberculosis of Peritoneum, Med. Press and Circ., Jan. 15, 1913.
Pantzer, H. O.: How Does Laparotomy Cure Tuberculous Peritonitis? Am. Jour. Obst., February, 1913.
Mouisset, F., and Gaté, J.: Chronic Jaundice from Old Tuberculous Peritonitis, Lyon méd., March 2, 1913; abstr., The Journal, April 19, 1913, p. 1266.

### PRACTICAL TEST FOR LEAD

*To the Editor:*—Please give the most practical test for the finding of lead in the urine and oblige. C. S. J.

Answer.—According to F. C. Wood, *Chemical and Microscopical Diagnosis,* p. 582, the electrolytic test is the most reliable. He says:

"Two hundred and fifty c.c. of the urine to be tested are placed in a porcelain dish and 2 c.c. of chemically pure sulphuric acid are added. The mixture is heated gently, and about 5 grams of potassium persulphate are added in small portions with occasional stirring. The fluid is gradually brought to the boiling point, and in about half an hour the contents of the dish will be almost colorless from the destruction of the organic matter. If the fluid blackens, it is necessary to continue the heating, with the addition of more acid in a Kjeldahl flask until the color is discharged. The heating is continued until the liquid is concentrated to about 50 c.c., and it is then placed in a platinum dish at the negative pole of a galvanic circuit, and a current passed through it for about eight hours. The current may be obtained either from the street mains or from a storage battery, or from a couple of primary cells. After the current has been passed a sufficient time, the platinum dish is washed in distilled water, nitric acid is added, and after removing the excess of acid by heating, a stream of hydrogen sulphid is passed through the liquid." If lead is present the stream of hydrogen sulphid gas will produce a black coloration or precipitate.

### STATES LICENSING RETIRED MEDICAL OFFICERS

*To the Editor:*—A medical officer resigned or retired from the Army, the Navy, or the Public Health Service—does any state recognize such a one as exempted from passing the State Medical Board in order to practice medicine? If so, what states? The foregoing are questions I should like to have answered in The Journal if of sufficient merit to you to do so, with my initials only. W. E. K.

Answer.—The five states in which the licensing boards are empowered to license without further examination retired medical officers of the U. S. Army, Navy and Public Health Service are Alabama, California, Colorado, Illinois and North Dakota.

## Medical Education and State Boards of Registration

### COMING EXAMINATIONS

Arkansas: Little Rock, November 10-11. Sec., Dr. W. S. Stewart, 404 Citizens Bank Bldg., Pine Bluff. Homeopathic, Little Rock, November 12. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic, Little Rock, November 10-11. Sec., Dr. C. E. Laws, Ft. Smith.

Connecticut: New Haven, November 10-11. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, New Haven, November 10. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Florida: Palatka, December 2-3. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Louisiana: New Orleans, October 29-31. Sec., Dr. E. L. Leckert, New Orleans.

Maine: Portland, November 10-11. Sec. Dr. Frank W. Searle, 776 Congress St., Portland.

Mississippi: Jackson, October 27-28. Sec., Dr. E. H. Galloway, Jackson.

Nebraska: Lincoln, November 11-12. Sec., Dr. H. B. Cummins, Seward.

Nevada: Carson City, November 2. Sec., Dr. S. L. Lee, Carson City.

Pennsylvania: Philadelphia, December 1-3. Sec., Dr. N. C. Schaeffer, Harrisburg.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Waco, November 10-12. Sec., Dr. W. L. Crosthwait, Amicable Bldg., Waco.

### Massachusetts May Report

Dr. Walter P. Bowers, secretary of the Massachusetts State Board of Registration in Medicine, reports the oral, practical and written examination held at Boston, May 12-14, 1914. The total number of subjects examined in was 13; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 45, of whom 24 passed, including 4 non-graduates, and 21 failed, including 3 osteopaths and 6 non-graduates. The name of one of the colleges was not recorded. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| George Washington University | (1909) | 77.8 |
| Hahnemann Medical Coll. and Hosp., Chicago | (1910) | 80.2 |
| College of Phys. and Surg., Boston (1905) 82.4; | (1913) | 75, 75.5 |
| Harvard University (1911) 78.6; | (1913) | 77.5 |
| Tufts College Medical School | (1913) | 79.6, 78.2 |
| John A. Creighton Medical College | (1912) | 76.2 |
| Dartmouth Medical School | (1897) | 75.5 |
| Albany Medical College | (1913) | 75 |
| Jefferson Medical College | (1891) | 75 |
| University of Vermont (1902) 82; (1906) 75; | (1908) | 76.1 |
| University of Toronto | (1912) | 78.3 |
| Montreal School of Med. and Surg | (1913) | 75.6 |
| University of Camerino, Italy | (1908) | 79 |
| University of Geneva | (1913) | 76.2 |
| Non-graduates | | 75.6, 76.9, 77.2, 77.2 |

FAILED

| College | Year Grad. | Per Cent. |
|---|---|---|
| Chicago College of Medicine and Surgery | (1913) | 71.4 |
| University of Louisville | (1912) | 70.7, 68 |
| Eastern University, Baltimore | (1913) | 61.2* |
| Maryland Medical College | (1913)† | |
| College of Phys. and Surgs., Boston (1908) 70.9; (1911) 70.6; | (1913) | 60.1, 73.9 |
| Royal University of Naples | (1911) | 59.9 |
| Syrian Protestant College, Beirut | (1890) | 44.6 |
| Non-graduates | | 41.8, 52.6, 56.7, 65.7, 67, 71.5 |

* Reported as not recognized by the Maryland State Board of Medical Examiners.

† Examination not completed.

### Montana July Report

Dr. William C. Riddell, secretary of the Board of Medical Examiners of Montana, reports the written examination held at Helena, June 30-July 2, 1914. Total number of subjects examined in was 10; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 20, of whom 17 passed and 3 failed. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| College of Phys. and Surgs., Chicago (1894) 86.8; | (1908) | 75.5 |
| Rush Medical College (1894) 88.2; (1899) 81.5; | (1913) | 75.7, 82.6 |
| State University of Iowa, College of Medicine | (1909) | 75.2 |
| College of Physicians and Surgeons, Baltimore | (1911) | 75.9 |
| Kansas City Medical College | (1905) | 78.1 |
| St. Louis University | (1913) | 80.8 |
| Washington University | (1913) | 83.1 |
| University of Minnesota | (1911) | 83 |
| John A. Creighton Medical College | (1914) | 77.5 |
| Willamette University | (1912) | 79 |
| Jefferson Medical College | (1914) | 82.7 |
| Medico-Chirurgical College of Philadelphia | (1908) | 79.4 |
| University of Toronto | (1914) | 78.8 |

FAILED

| College | Year Grad. | Per Cent. |
|---|---|---|
| Cleveland Homeopathic Medical College | (1905) | 69.3 |
| Medico-Chirurgical College of Philadelphia | (1900) | 68.6 |
| Marquette University | (1913) | 73.1 |

### Maryland Homeopathic June Report

Dr. O. N. Duvall, secretary of the Maryland Homeopathic Board of Medical Examiners, reports the written examination held at Baltimore, June 15, 1914. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 70. The total number of candidates examined was 3, all of whom passed. Two candidates were licensed through reciprocity. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| University of Michigan, Homeo. Med. Coll. | (1913) | 80.4 |
| Hahnemann Med. Coll. and Hosp., Phila. (1913) 75.1; | (1914) | 84.1 |

LICENSED THROUGH RECIPROCITY

| College | Year Grad. | Reciprocity with |
|---|---|---|
| Eclectic Medical College, Cincinnati | (1913) | Penna. |
| Eclectic Medical Institute, Cincinnati | (1909) | Penna. |

### Minnesota June Report

Dr. Thomas S. McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examination held at Minneapolis, June 2-5, 1914. The total number of subjects examined in was 13; total number of written questions asked, 80; percentage required to pass. 75. The total number of candidates examined was 31, all of whom passed. Twelve candidates were licensed through reciprocity. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| Northwestern University | (1914) | 83, 84, 91 |
| University of Illinois | (1914) | 83 |
| University of Minnesota (1913) 75; (1914) 81, 83, 83, 84, 84, 84, 84, 84, 84, 85, 85, 85, 86, 87, 87, 88, 88, 88, 88, 88, 89, 89, 90, 90, 91, 91. | | |

LICENSED THROUGH RECIPROCITY

| College | Year Grad. | Reciprocity with |
|---|---|---|
| Bennett Medical College | (1913) | Illinois |
| Northwestern University | (1913) | Illinois |
| Rush Medical School (1886) Maryland; | (1913) | Illinois |
| Keokuk Medical College, Coll. of Phys. and Surgs. | (1903) | Iowa |
| Johns Hopkins University | (1906) | New Jersey |
| Univ. of Michigan, Dept. of Med. and Surg. (1904) | (1911) | Michigan |
| John A. Creighton Medical College | (1910) | Nebraska |
| Eclectic Medical College, Cincinnati | (1910) | Ohio |
| Memphis Hospital Medical College | (1911) | Iowa |
| Marquette University | (1913) | Wisconsin |

### New Hampshire July Report

Mr. Henry C. Morrison, superintendent of Public Instruction of the New Hampshire State Board of Medical Examiners, reports the written and practical examination held at Concord, July 1-2, 1914. The total number of subjects examined was 21, of whom 18 passed and 3 failed. The following required to pass, 75. The total number of candidates examined 21, of whom 18 passed and 3 failed. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| Medical School of Maine (1913) 75; (1914) 75, 75, 79. | | |
| Harvard University (1894) 75; (1909) 86; (1914) 75, 79, 80. | | |
| Tufts College Medical School | (1914) | 75, 75 |
| Dartmouth Medical School (1913) 88; | (1914) | 76, 82 |
| University and Bellevue Hosp. Med. School | (1912) | 78 |
| Jefferson Medical College | (1914) | 84, 90 |
| University of Vermont | (1913) | 76 |

FAILED

| College | Year Grad. | Per Cent. |
|---|---|---|
| College of Physicians and Surgeons, Baltimore | (1908) | 62 |
| National University, Athens (1898) 43; | (1906) | 41 |

# Book Notices

The Philosophy of Radio-Activity, or Selective Involution. By Eugene Coleman Savidge, M.D. Cloth. Price, $1.50 net. Pp. 151, with illustrations. New York: William R. Jenkins Company, 1914.

This book will tax the mentality of those who read it, for there seems to be no solution of the author's system. Some of the philosophic statements are certainly novel. The author speaks of the compression of space into matter, but by what process he does not indicate. "For our purpose ether is space. Compressed ether is compressed space. An atom of radium is a compression of an equivalent of 226 atoms of hydrogen. Hydrogen, our lightest atom known, is itself a compression of ether, or space in its ultimate extension. Matter is therefore made from ether (or space)." In the same way he tells us that velocity is compressed duration. Such ideas are expressed in language the meaning of which proves difficult for the average reader to grasp. Of this the following may serve as an example:

"Thus behind the electron of the atom of the nebular gas, glowing millionfold over the firmament, is the Great Elusive Something That Changes, which is being coiled into denser and denser atoms, until—in million millions of years the celestial becomes terrestrial, and the densest of all atoms, uranium, stands as sire to the whole unrolling progeny of radio-activity.

"The mystery of the coiling and the mystery of the uncoiling are finite when compared with the infinite mystery of the Great Elusive which is being coiled and uncoiled continually."

Or in other words, as Lewis Carroll would say,

'Twas brillig and the slithy toves,
Did gyre and gimble in the wabe.

A Clinical Study of the Serous and Purulent Diseases of the Labyrinth. By Dr. Erich Ruttin, Privatdocent in the Otological Clinic, University of Vienna. With a Foreword by Professor Dr. Victor Urbantschitsch. Authorized Translation by Horace Newhart, A.B., M.D., Instructor in Otology, University of Minnesota. Cloth. Price, $2 net. Pp., 232, with 25 illustrations. New York: Rebman Company, 1914.

The translation of Ruttin's monograph on diseases of the labyrinth should be well received by otologists. The subject matter embraces a detailed description of the diseases, the functional manifestations of the normal and diseased labyrinth, the various clinical aspects, and therapeutic considerations. Appended are over a hundred case histories. The illustrations are good.

Modern Medicine: Its Theory and Practice. In Original Contributions by American and Foreign Authors. Edited by Sir William Osler, Bart., M.D., F.R.S., Regius Professor of Medicine in Oxford University, England, and Thomas McCrae, Professor of Medicine in the Jefferson Medical College, Philadelphia. Second Edition. Volumes 2 and 3. Price, $5 each. Philadelphia: Lea & Febiger, 1914.

These volumes sustain the high standard of the first volume in this revision. The topics considered are among the most important in the whole field of medicine. Attention may be called especially to the exposition of diseases of metabolism in Volume 2 and the work on diseases of the stomach in Volume 3 In this volume the discussion on the existence and character of the functional diseases of the stomach is very valuable. The tendency to ignore the functional affections of the stomach has been increased by the brilliant work of the surgeon, but it should not be forgotten that much of this surgical work becomes necessary because disturbances of function have been neglected or misinterpreted. Volume 2 describes the diseases caused by protozoa, including syphilis. A large part is devoted to the consideration of metabolic affections, with an exhaustive review of metabolism in general. Among other topics is considered the question of vegetarianism and it concludes, quoting Taylor, that the land at present under cultivation could not produce enough vegetable albumin to sustain the human race. This argument seems highly fallacious since flesh albumin must also be derived from the land. Gout is discussed by Futcher in an interesting article, and the consideration of diseases of the lungs is important.

Gunshot Injuries: How they are Inflicted. Their Complications and Treatment. By Col. Louis A. Lagarde, U. S. Army Medical Corps (Retired). Prepared under the Direction of the Surgeon-General, United States Army, and Published by Authority of the Secretary of War. Cloth. Price, $4. Pp., 398, with 157 illustrations. New York: William Wood & Co., 1914.

At this particular time a work on gunshot injuries is of special interest. The author takes up not only bullet wounds made by the ordinary rifle but also wounds made by all kinds of modern firearms. The firearms themselves are first described, then the character of the projectiles, and this is followed by a chapter on the theory of ballistics. Characteristic lesions caused by projectiles with their symptoms and complications are considered in a general way, followed by a detailed treatment of the subject of wounds of special organs and regions. Careful discrimination is made when possible between the conditions which prevail during military service and those of civil life when the same might affect in any way the treatment which should be instituted. The experiences of the leading surgeons of the latest wars are drawn on freely to illustrate the points brought out. The author has done considerable original experimental work which contributes not a little to the elucidation of many mooted points. An interesting chapter on the medicolegal phases of gunshot wounds is added, which might have been better had it been a little more complete. Bullet wounds are sufficiently common in civil life to lend much value to the work to the surgeon in times of peace as well as of war.

A Handbook for the Post-Mortem Room. By Alexander G. Gibson, M.D., F.R.C.P., University Demonstrator in Pathology, Oxford. Cloth. Price, $1.50. Pp. 140, with 13 illustrations. New York: Oxford University Press, 1914.

This volume is a pocket-size handbook for the guidance of those unfamiliar with the technic of necropsy procedures. The methods described are based on those of Virchow with suitable modifications. The work is designed to cover the technic of ordinary post-mortem examinations as they occur in general hospitals. Special methods for cases of rare occurrence are not discussed. The author gives suggestions for the arrangement of the room for post-mortem examination, including such details as lighting, ventilation, position of sinks, basins, tables, etc. One chapter is devoted to a discussion of instruments and apparatus. The remaining five chapters describe the routine examination of the body and its organs. With true English thoroughness the author gives detailed directions for certain minutiae of the procedure which some would leave to individual initiative. In directions for removing the intestines we read: "Holding up the lower end with the left hand, by a sawing movement of the knife held with the flat of the blade at right angles to the axis of the bowel, cut gradually through the mesenteric attachment. . . . As it is severed, the bowel should be put into a bowl placed on the table at the left side of the body." Minute directions, however, are appreciated by the beginner, and those who are but rarely called on to make post-mortem examinations will find this a valuable pocket guide.

Die körperliche Erziehung des Kindes. Von Prof. Dr. Hans Spitzy. Paper. Price, 17 marks. Pp. 416, with 194 illustrations. Berlin: Urban and Schwarzenberg, 1914.

In this excellent book the subject of the physical development of the child is discussed from conception to puberty. Such topics as exercise in the first week of life, the correct clothing and shoes at the various ages, the proper posture and gait and the deformities affecting them, and those resulting from improper posture, are discussed at length. The hygiene of the schoolchild and systematic plans for play, work and exercise are carefully considered. The author devotes twenty-four pages with illustrations to a discussion of the various types of seats and desks used in the schoolroom and their effect on the child's development. Although nothing especially new is presented to the reader, nevertheless the subject is so thoroughly covered and the text so amply illustrated that the work will be found valuable not only by the physicians but by teachers and educated parents as well.

# Medicolegal

### Defense Rights of Member Under By-Laws of Medical Association

*(Penhall vs. Minnesota State Medical Association (Minn.), 148 N. W. R. 472)*

The Supreme Court of Minnesota reverses a judgment rendered in favor of the defendant association, which was sued for moneys expended by the plaintiff for counsel fees, etc., in defending a malpractice suit the defense of which he claimed the association was obligated under its by-laws to conduct. The court holds that the defendant's officers were mistaken in assuming that its by-laws did not cover claims arising prior to their adoption, for the only exception therein related to causes of action antedating membership in the association, and none other could be implied.

Neither could the by-laws be construed as not imposing any duty or obligation on the defendant's part to defend suits against members, for the purposes of the corporation and the tenor of the by-laws, taken as a whole, led to the opposite conclusion, otherwise the latter would be practically ineffective of beneficial results to members. True, one section, read alone, gave color to the defendant's position, but the other sections must be considered with it, and these unequivocally entitled members to action by the secretary on presentation of the claim, and thereafter to investigation, and, if possible, adjustment by the association, and also, in a proper case, and as expressed in the by-laws, "on conditions" thereinafter specified, "to receive without personal expense therefor," the service and expenses stated. Going down through the by-laws, the conditions referred to were found merely to require presentation of the papers in the litigation to the secretary, and, after performance of certain ministerial duties on his part, the obligation devolved on the defendant's council to investigate the claim made against the member, to adjust it if possible, and, otherwise, to proceed further if it was unjust or the damages demanded were excessive.

The plaintiff, having made due application to the defendant's secretary for assistance, as prescribed in the by-laws, was not required to apply to its council; nor was it necessary for him to give notice of a second action on the same claim after the defendant's refusal to consider his demand with reference to the first, which was dismissed. The defendant having based its refusal of assistance entirely on grounds not involving the merits of the claim against the plaintiff, and the case having been tried and determined solely on such grounds, the question of the burden of pleading and proof on an issue as to whether the character of the claim was such as to entitle the plaintiff to assistance from the defendant was not properly open in this court. Under Section 1 of the defendant's by-laws, entitling members to assistance against malpractice claims on prescribed conditions, and Section 2, making it the duty of the defendant's council to investigate, etc., the burden of pleading and proving that a demand for aid thereunder involved a claim on which the member was not entitled to aid was on the association.

### Recognition Refused of License Obtained in Another State To Evade Requirements

*(People ex rel. Pisani vs. McKelway et al. (N. Y.), 148 N. Y. Supp. 818)*

The Supreme Court of New York, Appellate Division, Fourth Department, affirms an order denying a motion for a writ of mandamus to compel the respondents, constituting the Board of Regents of the University of the State of New York, to indorse a license to practice medicine obtained by the relator in Michigan. The court says that the relator was an Italian, a graduate in medicine of the Royal University of Palermo, Italy. After coming to this country he became, and continued to be, a resident of Buffalo, N. Y. On inquiry as to the requirements for a medical licensing examination in New York state, he found that, by one of the regents' rules, he would be required to take the special subject of second year English, while the state law prescribes that examinations for medical licenses "shall be exclusively in writing and in English." With a knowledge of these facts, and, apparently as charged in an affidavit filed on behalf of the respondents, on finding that he was unable to enter the medical examination conducted in New York state, he applied to the Michigan State Board of Registration in Medicine for admission to the examinations conducted by it, and, having passed the examination, which was taken in Italian and without his being required to take such an examination in English as required in New York state, he was granted a medical license by the Michigan board. A few days later he made application to the respondents for an indorsement of his Michigan license.

Shortly after receiving this application, which had been indorsed by the Michigan board, the relator was notified by the New York officials that his application had been returned to the Michigan board with the request that it withdraw its indorsement of the application on the ground, as stated in the notification: "(1) That you by going to Michigan for the examination have avoided the specific requirement in this state of which you were notified in May, viz., that in order to be admitted to our medical licensing examination you would have to pass the regents' examination in second year English for foreigners; and (2) because you took the examination in Michigan not in English as required by the statute of this state and are not eligible to have your license indorsed." Thereafter the Michigan board complied with this request, and withdrew its indorsement of the relator's application.

The court holds that the relator's attempt to evade the respondents' requirements preliminary to an examination and the further statutory requirement that such examination must be in the English language was a sufficient reason for their refusal to indorse his license in the proper exercise of the discretion given them by the statute. The language of the statute is permissive only, and not obligatory, which provides that applicants with licenses from other state examining boards registered by the regents as maintaining standards not lower than here prescribed may, without further examination, and on submitting such evidence as the regents may require, receive from them an indorsement of their licenses or diplomas conferring all rights and privileges of a regents' license issued after examination.

Nor was the relator entitled to an indorsement of his Michigan license by reason of the reciprocity agreement, so-called, entered into in behalf of the authorized officials of New York state with the official board of Michigan. That authorized the return to the Michigan board of its indorsement for reconsideration, and it, concurring in the propriety thereof, formally withdrew its certification. Acting within the agreement, the respondents properly refused indorsement of the relator's license.

### Fright as an Element of Damages

*(Goddard vs. Watters (Ga.), 82 S. E. R. 304)*

The Court of Appeals of Georgia, in affirming a judgment sustaining a demurrer to a petition in which a woman sought to recover damages for fright alleged to have caused her to miscarry, says that fright may be considered an element of damages where there is physical injury attending the cause of the fright, or, if no physical injury, where the fright is of such a nature as to produce physical or mental impairment directly and naturally resulting from the wrongful act. But to recover damages on account of physical injuries resulting from fright, where there is no actual immediate personal injury, it must appear that the injuries were the natural and proximate result of the fright or shock, and that the defendant could or should have known that the act producing the injuries would with reasonable certainty cause such a result. It must also appear that the injuries resulted from such gross carelessness, coupled with a knowledge of the probable physical results to flow therefrom, as amounted to a wilful and reckless disregard of consequences, or that the fright (with its consequences) was brought about by a deliberate and malicious intention on the part of the defendant to injure the plaintiff. The petition did not state such a case.

# Society Proceedings

## COMING MEETINGS

Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
Amer. Public Health Association, Jacksonville, Fla., Nov. 30-Dec. 3.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Mississippi Valley Med. Assn., Cincinnati, Oct. 27-29.
Southern Medical Association, Richmond, Nov. 9-11.
Southern Surgical and Gynecological Assn., Asheville, N. C., Dec. 15-17.
Virginia Medical Society, Washington, D. C., Oct. 27-30.
Western Surgical Association, Denver, Dec. 18-19.

## INDIANA STATE MEDICAL SOCIETY

*Annual Meeting held at Lafayette, Sept. 24-25, 1914*

The President, Dr. James P. Salb, Jasper, in the Chair

### Surgical Treatment of Goiter

Dr. George K. Throckmorton, Lafayette: In selecting cases for operation, we must first consider the benefit to be derived from operation; also the danger of operation. If we have symptoms of goiter, but no hyperplasia or exophthalmos, we should not operate, for the patient will not receive benefit. In this case we must look to some other ductless gland as the causative factor. The mortality following operation for hyperthyroidism has been very greatly reduced, owing more to the better preparation of patients, time, type, and extent of operation which can be performed in several stages, than to any details of improved technic. The majority of goiter patients can safely undergo thyroidectomy at the time they are seen by the surgeon. Extreme conditions may require medical preparation. In cases of excessive activity we should wait for the symptoms to subside, using medical treatment, giving special attention to the heart, nervous system, intestines and kidneys, as the symptoms may require.

Dr. H. H. Martin, M.D., Laporte: Every goiter should be operated on after medical treatment has failed, or, as is often the case, after making it actually worse. One great advantage in operating under local anesthesia is the ability of the patient to phonate. When one is operating in the region of the recurrent laryngeal nerve, and its location cannot be definitely determined, the ability on the part of the patient to articulate aids as a safeguard. In cases of mild hyperplasia, producing mild symptoms of hyperthyroidism, the patients will usually recover with rest and proper hygienic treatment. Patients who cannot, by rest and hygienic treatment, be rendered fair surgical risks, should be dismissed rather than allowed to jeopardize the standing of the necessary surgical procedure. Some cases of large goiters can be made more favorable risks by ligating the superior thyroid artery.

DISCUSSION

Dr. Charles Stoltz, South Bend: Goiter, toxic and nontoxic, is largely a surgical proposition. Absolute rest in bed is the best preparation for operation. The rational procedure is to do the operation by slow stages, tying off part of the blood-stream, then later a little more, then removing part of the gland, and later, if necessary, removing more.

Dr. Thomas Jones, Anderson: The boundary line between the medical and surgical aspect is hard to follow. The Mayos report 95 to 96 per cent. of cures, but surgery must be resorted to early, if at all.

Dr. D. N. Eisendrath, Chicago: It is important to diagnose the presence of a persistent thymus, either by percussion or by fluoroscopic examination. Treatment should include the removal of the thymus.

Dr. Miles F. Porter, Fort Wayne: Rest in bed is not so much a remedy for the cure of thyrotoxicosis, as it is a help toward making a correct diagnosis and an estimate of the correct line of treatment. Toxic symptoms after surgical interference may be prevented very largely by the delicate handling of the gland during its removal, by shutting off all the circulation in the early stage of the operation, and by using boiling water, or Harrington's solution, as an application over the raw surface from which the gland has been removed. Postoperative intoxication rarely occurs in the hands of experienced operators.

Dr. J. Rilus Eastman, Indianapolis: I favor a general rather than a local anesthetic for this operation.

Dr. Albert E. Sterne, Indianapolis: I, too, favor a general anesthetic. If a patient does not improve in a couple of weeks under enforced rest and quiet, with the use of ice bags, and with as little medication as possible, he is not a good surgical risk; if he does improve, delay the operation, seeking to convert a poor surgical risk into a good one.

Dr. A. C. Kimberlin, Indianapolis: The resemblance of this condition to incipient tuberculosis, the grosser intestinal manifestations, occupational neuroses, etc., makes early diagnosis difficult. Rest in bed is very good, if the mind as well as the body is at rest.

Dr. H. O. Pantzer, Indianapolis: Thorough elimination is very important.

### Position of Normal Stomach

Dr. Burton D. Myers, Bloomington: Forty young adults, from 19 to 26 years of age, twenty-eight men and twelve young women, were given a buttermilk-barium sulphate meal, and their stomachs then examined fluoroscopically. In males, when standing, the average position of the lower border of the stomach was found to be 1 inch below the umbilicus, the extremes being from 1 inch above to 3 inches below this plane. In females, when standing, the lower border of the stomach was found to be 3 inches below the umbilical plane, the extremes being 1⅜ to 4½ inches below the umbilical plane.

DISCUSSION

Dr. A. M. Cole, Indianapolis: Position is not so important as function. With fluoroscopic study we have a much better way of arriving at the question of whether or not we have impaired function. Very few patients need surgical treatment. Put them to bed, give forced feeding and massage; build up their weight, and a great majority of these patients after they have taken on from 15 to 20 pounds will get up and their gastric symptoms will have disappeared.

Dr. Albert E. Sterne, Indianapolis: We cannot treat these cases in a routine way. If the motor force of the organ is good, the question of position is of comparatively little value, provided the position of the organ does not create any mechanical interference with the neighboring organs.

### Early Recognition of Cancer of the Uterus

Dr. Bernays Kennedy, Indianapolis: Early diagnosis is the real and practical hope for the cure of cancer. Direct examination of organs is important—no matter what other diagnostic measures are used. An educated medical profession is necessary for the eradication of cancer, and also an educated and interested public. The belief that cancer is not curable by operation is not based on facts. It is the duty of the physician to overcome such prejudice. It is fatal to the patient to wait for physical changes to take place. Better run the risk of an error in diagnosis than to put off an operation until all possibility of removing the cancerous growth has passed.

DISCUSSION

Dr. T. W. Kelsey, Attica: Educate the women and the general practitioners to realize their responsibility in this matter, because it is to the general practitioners that the women go first for advice as to these conditions.

Dr. Albert E. Sterne, Indianapolis: The women who are afraid of cancer, who run to the doctor if they have a "lump" anywhere, practically never develop cancer, because the doctor has found from repeated examinations whether or not a change has occurred, and they have been operated on early, on suspicion. Cancers are cured before they are cancers, clinically, when operation is performed on suspicion. After certainty is established the question of the outcome in any operation is a debatable one. The Abderhalden test is a distinct aid in the treatment of cancer. Though quite as simple as the Wassermann test, it is more open to error, and must be done with nicety and precision.

### Abderhalden Test in Pregnancy

DR. JANE KETCHAM, Indianapolis: It is possible to diagnose pregnancy in the obese; it will differentiate the menopause from pregnancy; it will disclose an abdominal tumor and accurately diagnose ectopic gestation from tumors of the adnexa; it will disclose a recent abortion. If the test is positive, it does not establish the diagnosis of pregnancy; but if the test is negative, it may be taken as final that there is no living conception present.

### Nitrous Oxid Anesthesia in Obstetrics

DR. ARTHUR E. GUEDEL, Indianapolis: Labor is retarded very little, if at all, as the anesthetic does not produce muscular relaxation beyond that of normal sleep. Therefore, there is no predisposition to post-partum hemorrhage, involution is not delayed, the channels are closed as they should be, and pathogenic bacteria, if present in the birth canal, are not liable to gain entrance into the blood-stream. Its action is rapid and transitory, it is not irritating or unpleasant to inhale; and is less productive of nausea and vomiting.

DISCUSSION

DR. L. PARK DRAYER, Fort Wayne: I do not believe that the Abderhalden test is positive enough as a test of pregnancy.

DR. B. W. RHAMY, Fort Wayne: The greatest objection to the Abderhalden test is that it requires an infinite amount of painstaking care and attention to details, and is reliable only in the hands of an experienced laboratory worker.

DR. W. D. HOSKINS, Indianapolis: My experience in the use of nitrous oxid in obstetrics has been very favorable. It gives relief from pain and accelerates labor without any disastrous results.

### Treatment of Cerebrospinal Fever

DR. W. D. HOSKINS, Indianapolis: Antimeningococcus serum is the only reliable treatment, and its efficiency depends largely on the manner in which it is used. The serum should be administered by the gravity method, through the needle used to make the puncture. The dose should be from 30 to 45 c.c. for an adult, and from 15 to 30 c.c. for children. It should be warmed to body temperature and injected slowly. It should be repeated in twenty-four hours, and whether improvement does or does not follow, the serum should be repeated daily for three or four days, then every third or fourth day until all danger of relapse has passed.

DISCUSSION

DR. L. PARK DRAYER, Fort Wayne: I wish to emphasize the importance of early diagnosis by lumbar puncture. Lumbar puncture is also a splendid adjunct in treatment, because it relieves the pressure. If you use serums, change your make frequently—switch your serum after a certain period of time and introduce a new family. We must not say that a cure has been effected after so many doses; we are not sure until the spinal fluid remains meningococcus free.

DR. ALBERT E. STERNE, Indianapolis: Since we have been employing serums of various types, we do not see the damaging sequelae to the nervous system that we used to before the days of serum. It is my habit to make lumbar puncture, even if I have no serum, because it affords relief for the patient.

### Specialism: Route to the Hypophysis Cerebri

DR. JOSEPH C. BECK, Chicago: Specialism has made great strides in medicine. The general practitioner of former years is practically impossible in large communities, and possible only in sparingly populated districts. The general surgeon is also being rapidly subsidized into the various surgical branches. Ophthalmology and otolaryngology cannot be considered complete without taking into account the management of the structures within the mouth, the face, neck and brain. Men practicing the above-mentioned specialties are really head and neck specialists, and, while not expected to be expert in the entire domain of head and neck surgery, should at least be prepared to recognize the conditions which are intimately associated with diseases of the eye, ear, nose and throat. The best route to the hypophyseal gland is by way of the nose. The incision is made above the gingival margin, above the second central incisor, and carried externally to the first molar. The anterior surface of the superior maxilla is exposed in the same manner as when opening the antrum. The tissues as far as the inferior orbital margin and laterally to the zygomatic fossa are all elevated. The entire anterior surface of the antrum is exposed. Then, by means of an electric burr or biting forceps the entire anterior surface of the superior maxilla is taken off. The middle turbinal is then removed. After this the posterior ethmoidal region through the antrum is opened and the posterior ethmoidal cells curetted. The packing, which was inserted into the nose, is then removed and a probe inserted into the sphenoid sinus as a guide. The anterior wall of the sphenoid is then removed in the usual manner by curets and punches. The septum between the two sphenoid sinuses should also be removed. By means of Hirsh's beveled chisel, three incisions are made into the floor of the sella turcica and this little piece of bone lifted off by the same chisels, and removed by breaking it off from its attachment. By means of two Hirsh's angular spatulas, small particles of the thinned-out floor of the sella turcica are removed and the opening further enlarged by sphenoid punches. The dura is now incised with Hirsh's bistoury, and any desired incision made to enlarge the opening by the same instrument. If the growth is a cyst, then it will probably terminate the operative procedure; but if it be a tumor then the same or part of it is removed by punches and curets. A cigaret drain is placed into the sella turcica and led through the antrum. The remaining portion of the incision in the mouth is closed by two or three stitches.

DISCUSSION

DR. E. DEWOLFE WALES, Indianapolis: There is not enough team-play between the specialist and general practitioner. It is very essential for us to know the symptoms of hyperthyroidism, so that we may recognize the infiltration which often takes place in the tonsil, turbinates and adenoid tissue. I have had good success in referring cases of tuberculosis of the glands of the neck to roentgenologists. These patients have all recovered with Roentgen treatment without any further operative measures.

DR. J. F. BARNHILL, Indianapolis: Those who know intimately the anatomy of the part and the cause of the disease ought to follow it to its termination, and do such surgery as should be done. There was a time when the specialist was looked on as a man who dealt with and treated the two cavities in the nose, the larynx and the drum cavity. Very little was said about the mastoid, and also very little about sinus disease. Conditions are different now.

DR. L. D. BROSE, Evansville: Tracheotomy is often needed as a preliminary operation in these cases of goiter, and can be done very easily under local anesthesia.

DR. J. R. NEWCOMB, Indianapolis: Some men believe that brain surgery should be done by the oculist. It may be all right in a large city, but I very much doubt the advisability of an eye surgeon in a small town undertaking an operation on the brain because he finds choked disk, any more than I would expect him to undertake the operative treatment of a case of nephritis on account of the retinal condition.

DR. JOSEPH C. BECK, Chicago: If a man is an ophthalmologist, and at the same time has surgical training in brain surgery, or head and neck surgery, and makes the diagnosis from the fundus findings of an abscess or brain tumor, he could operate. If he is simply a diagnostician of the fundi, he is not the one to operate. The treatment of tuberculosis of the glands of the neck by the Roentgen ray has been a disappointment to me. The patients come back for further treatment because the focus has not been thoroughly removed.

### Some Ocular Tumors and Their Lessons

DR. F. C. HEATH, Indianapolis: Different observers have reported varying percentages of recurrence in sarcoma of the choroid, the highest being nearly 60 per cent. One-third are local and general, two-thirds metastatic. After three years these growths seldom return, although one has been noted as late as eleven years. Timely and thorough operation is of great advantage. Is it not possible that the prognosis after such operations may be more favorable than is sometimes supposed?

DISCUSSION

Dr. T. C. Hood, Indianapolis: Tumors of the eyeball are not of unusual occurrence. Fortunately, the globe is so placed that it is more open to palpation and inspection than many other organs of the body; therefore, the early diagnosis of new growths in and about the eyeball presents little difficulty. Their early removal is the only means of conserving sight and often, as in the case of malignant growths, of saving life. The difficulty about these cases is that we do not always see them in the early stages.

Dr. Albert E. Bulson, Jr., Fort Wayne: A very guarded prognosis should be given in these cases, not only as regards recurrence, but also as concerns metastases. I have seen quite a large number of cases of intra-ocular sarcoma during the past few years, the majority of which have been melanotic sarcoma of the choroid, and every one of the patients is dead now. The majority died within eighteen months. Although I enucleated the eye, eight or nine of these cases had recurrence in the orbit; many had metastases in the liver. Regarding glioma, there are a few cases on record in which the patients have lived, but they are very few and far between. I also wish to emphasize the necessity of giving these patients the advantage of operative measures, and of having a Wassermann test made in these cases, because frequently, a tumor will disappear under the influence of salvarsan plus mercury and potassium iodid.

Dr. L. D. Brose, Evansville: My experience coincides with Dr. Bulson's regarding glioma. I have had two patients; both died. My experience with sarcoma has been a little more hopeful than his, however.

Dr. F. C. Heath, Indianapolis: I do not wish to convey the idea that prognosis is not grave in these cases. Of course it is—not only in the growth in the orbit, but also from metastases. The point which I wished to bring out was that the grave side has possibly been overemphasized, and we have been in the habit of looking on these cases as hopeless. I have seen only two cases of glioma. One of these patients had a recurrence, followed by death in a very short time after operation; the other was living a number of years after operation.

### Nasal Polypi

Dr. George F. Spohn, Elkhart: Nasal polypi are the results of a chronic morbid state of the mucous membrane. A large percentage of polypoid patients have been mouth-breathers from childhood. In connection with the necessary surgery, the ideal local treatment is the one that keeps the nares clean all the time. My results with autogenous and stock vaccines have not been satisfactory. Some patients do not seem to improve on any treatment. They merely hold their own. Many of these patients have chronic anemia, which has been relieved by large doses of arsenic. I believe arsenic will yield results in these obstinate cases; but it must be given in large doses, intravenously or hypodermatically.

DISCUSSION

Dr. W. S. Tomlin, Indianapolis: There is usually lack of drainage and ventilation in the nasal cavity in these cases, which has caused a sinusitis, resulting in polypi formation. Nothing very much can be done in these cases until the poor ventilation and drainage have been remedied. My experience with vaccines has been to some extent satisfactory, but their value is in direct proportion to the thoroughness with which I have previously operated.

Dr. J. D. Heitger, Bedford: One of the important things in this connection is the humidity of the air we breathe. In our homes it is about 50. In winter the outdoor air has a humidity of between 20 and 30 degrees. This continued series of traumatic shocks to the nasal mucous membrane has a very damaging effect, particularly when there is any obstruction to proper breathing.

Dr. D. W. Stevenson, Richmond: The system of air-washers in some of our public schools is very good. By this method the humidity is increased. I have found the use of vaccines of great help.

(*To be continued*)

## KENTUCKY STATE MEDICAL ASSOCIATION

*Sixty-Fourth Annual Meeting, held at Newport, Sept. 23-25, 1914*

(*Concluded from page 1418*)

### Treatment of the Most Frequent Deformities Following Infantile Paralysis.

Dr. W. Barnett Owen, Louisville: If a child with paralysis of the peroneal group of muscles—the internal group being normal—is allowed to go without protection or support, the healthy muscles rapidly develop and contract, thus forcing the foot into a varus position, because there is no resistance from the paralyzed muscles. The smaller bones of the ankle and foot develop in an abnormal attitude, thereby markedly changing the osseous relationship. If the limb is properly supported, deformity is prevented from progressing, and even if later it becomes necessary (which it most likely will) to practice tendon transplantation, the bones are normal as to size and relationship. It is then only a question of the proper support being transferred from braces to healthy transplanted muscles, or power restored by whatever other operation may be selected as most suitable. Muscles completely paralyzed from infantile paralysis always remain so. Partially affected muscles, however, can be developed greatly by scientific active motion supervised by one who is thoroughly familiar with the conditions. When the parents are advised to "simply let the child run for a while and develop the paralyzed muscles," it means that those completely paralyzed are not benefited, and those partially affected may be overtaxed, thereby losing much strength which could be retained and developed.

### Diagnosis of Paralyses in Childhood

Dr. John J. Moren, Louisville: In recognizing paralysis from infrequent lesions like tumor, hydrocephalus and cerebellar lesions, the symptoms are not always characteristic; they are slow in developing and in many instances one is never satisfied with one's opinion. Some of these conditions remain quiescent or only manifested by occasional epileptic seizures or slight mental deficiency and ultimately present a picture which is cerebral in origin, but one will be unable to classify it as any particular disease. As for the value of localizing cerebral symptoms, my experience has been unfortunate and leads me to the conclusion that none is reliable, and even when one groups them together they are often misleading. I have had children referred to me for nervousness and weak eyes, and from lack of symptoms treat them for such, when really they are suffering from a beginning brain tumor or hydrocephalus.

DISCUSSION ON PAPERS OF DRS. OWEN AND MOREN

Dr. Curran Pope, Louisville: These cases should be turned over to us not for diagnosis but for study. A man cannot in an hour go over a case and make a diagnosis.

Dr. Milton Board, Louisville: I wish to emphasize the importance of long and continued study of all cases involving the central nervous system or the cord.

Dr. Phillip Barbour, Louisville: I have been called in consultation to see children in whom a diagnosis of paralysis had been made, when there was no real paralysis. There was inability to move on account of pain, seemingly. It is not easy to say whether the child can not or does not move because it hurts him. I saw recently a case of pseudoparalysis in which there was inability of the child to move its legs from the pain of ascaris. This child was fed on pasteurized milk and the physician in charge denied the child used pasteurized milk. Following the history we traced it to pasteurized milk first which was the cause of the scurvy condition, and it was rickets which was the cause of so much pain to the child.

Dr. A. C. L. Percefull, Louisville: More stress should be laid on the prevention of these deformities rather than the correction of them. The general practitioner allows these patients to run around, neglects them because they can get around fairly well, and are apparently in good health after the acute stage of the infantile paralysis has been passed. If we will send these children to the orthopedist early we will not have to do so many operations to correct deformities.

### Tumor Formation in Plant and Animal Life; Its Relation to Frequency of Cancer in Man

Dr. A. David Willmoth, Louisville: All malignant growths possess the following history before operation: (1) The time during which the presence of the growth does not attract the attention of the host. (2) The time consumed by patient in waiting before seeking medical advice. (3) The time consumed by the physician in making a diagnosis. Nothing can be done to shorten the first stage, except education of the public so that regular and frequent examinations can be made and cancers detected early. To shorten the second stage, the public must be educated to the fact that all tumors are curable, that the possibilities and probabilities of a cure are in direct proportion to the promptness and manner of treatment. Everyone must know the potential dangers of delay, that a wart on the lip may and does often take on malignancy in a short time. When a woman subjects herself to an immediate operation on discovery of a tumor in her breast, her chances of cure are 85 per cent., with a possible 100 per cent. After the growth has developed to a point at which diagnosis is easy, her best chances of a cure are only 64 per cent. in the adenocarcinoma, and if the growth is a more malignant form, only 33 per cent. To shorten the third stage, the surgeon must fit himself for the task. The remedy lies in every surgical clinic giving daily instructions in diagnosis, teaching living pathology. It must have a pathologic laboratory in which every case is determined positively, no guessing to be made. In Kentucky with a health board active, sending out bulletins regularly to thousands, let them devote a liberal share of space to the cancer problem. Let each physician become a missionary among his own people. Ask the pulpit for an hour four times a year devoted to public health work. Illustrate your talks, if possible, by lantern slides. Get the various women's clubs to take the matter up and help to make a world-wide crusade.

### Obscure Rheumatism in Childhood

Dr. S. P. Garrison, Bellevue: The physician, when dealing with cases of chorea, should always be on the lookout for other symptoms of rheumatism. The rheumatic toxin seems to exert its influence on the unstable nervous system of the child rather early. One of the first symptoms may be simply an unusual irritability of the child; then it becomes nervous, easily frightened, jerking and starting in its sleep, and if not treated, contraction of the voluntary muscles occurs, and other symptoms of chorea or rheumatism soon follow.

### Use of Autogenous Vaccines

Dr. John D. Allen, Louisville: The field in which the most satisfactory results are obtained is the genito-urinary tract. Out of forty-eight cases of acute and chronic pyelitis and cystitis, forty-one made complete recoveries. Thirty-five of these infections were due to the colon bacillus, two to the *Bacillus pyocyaneus*. The others were mixed infections, due to the colon bacillus and *Staphylococcus aureus*, and in addition two of the cases of cystitis showed the gonococcus. Those cases which showed no improvement later proved to be mechanical conditions with secondary infections. Seventy-five cases of chronic gonorrhea which showed the gonococcus, the *Staphylococcus albus* and a diphtheroid bacillus showed improvement and the majority made a complete recovery. Fifteen cases of gonorrhea, which showed only the *Staphylococcus albus* and a diphtheroid bacillus, recovered nicely. The improvement in this type of cases is usually slow. An interesting case was referred for blood examination with instructions to look especially for malarial parasites. The patient gave the following history: Age, 43; was having what he termed, "dumb chills," headaches, nervous, aching in his joints and muscles, generally indisposed, with slight temperature at times. These symptoms had continued intermittently for a period of over two years and he had been treated by several different physicians for malaria. The blood examination showed no parasites, but a leukocytosis of 13,500. Further examination revealed an infected prostate from which a streptococcus was isolated. A vaccine was prepared, and after six doses, all of his symptoms disappeared. The most spectacular results which I have seen from the use of autogenous vaccines have been in tuberculosis of the genito-urinary tract, with mixed infections. The bacteria isolated were the colon bacillus, streptococcus and *bacillus pyocyaneus*. Out of seven cases treated, six showed a tuberculous infection of both kidneys, bladder and testicles. One showed infection of kidneys only. The improvement in all was immediate.

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# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Diseases of Children, Chicago

*October, VIII, No. 4, pp. 257-320*

1 Blood-Pressure in Normal Children. C. F. Judson, Philadelphia, and P. Nicholson, Ardmore, Pa.
2 Blood-Pressure in Anemia in Infancy. J. L. Morse and E. T. Wyman, Boston.
3 *Voice Sign in Chorea. W. B. Swift, Boston.
4 *Diagnosis and Treatment of "Late" Hereditary Syphilis. B. S. Veeder and P. C. Jeans, St. Louis.
5 *One Hundred and Forty-One Cases of Recurrent Vomiting. C. G. Kerley, New York.
6 Myatonia Congenita of Oppenheim. A. Strauch, Chicago.
7 Refractory or So-Called "Fast" Cases of Meningococcus Meningitis. H. Heiman, New York.

3. **Voice Sign in Chorea.**—The following conclusions are drawn by Swift from a study of twenty cases: 1. These choreic voice changes are more frequent in the vowels, less so in whisper, whistle, consonants, air blow and holding of breath; and are less and less in frequence in this order. 2. There is sufficient uniformity and frequency in the appearance of vocal changes to warrant us in classifying changes of pitch and intensity as one of the signs of chorea; of equal dignity with the choreic knee-jerk of Shaw, the respiratory signs of Graves and other minor symptoms. 3. Other less frequent and less marked changes occur that seem of interest subordinate to those in the vowels. 4. The most marked change occurred in the open prolonged sound of "a" as in "are," and Swift therefore offers this as the routine clinical test and method for the elicitation of the voice sign in chorea.

4. **Diagnosis and Treatment of Hereditary Syphilis.**—Veeder and Jeans found the incidence of manifest hereditary lues of the "late" type much greater in proportion to the incidence of "early" syphilis than previous figures would indicate. The largest group of cases (43 per cent.) exhibited lesions of the central nervous system, but the authors call attention to a group of cases with lesions associated as "rheumatic"—chorea, acute arthritis, torticollis, myalgia. By Wassermann reactions and the "therapeutic test" they have found that such lesions are not infrequently due to an hereditary syphilitic infection.

It has been their experience that acutely developing lesions respond promptly to intravenous injections of neosalvarsan, but that in order to obtain any permanent results and prevent the recurrence of symptoms an intensive and long continued mercurial treatment must be given in addition. The syphilitic infection—as measured by the Wassermann reaction—is most persistent, and although an intensive and uninterrupted antisyphilitic treatment has been given for nearly two years Veeder and Jeans have not been able to obtain a negative Wassermann reaction in some of their cases. Moreover, the Wassermann reaction has usually returned when treatment has been interrupted in those cases in which it has become negative as the result of treatment. They do not feel that it has been demonstrated as yet that an hereditary syphilitic infection of the "late" type can be eradicated.

5. **Cases of Recurrent Vomiting.**—Recurrent vomiting, in a vast majority of the cases, Kerley found occurs in the offspring of those who for two or more generations have not been occupied with manual work. The recurrent vomiting patients are the offspring of those who have had business or

professional occupations. Management during the interval. Diet: If the case is a pronounced one, the patient is given a diet with few restrictions, except that cow's milk, butter, cream and sugar are omitted.

Medication: The further treatment consists in the internal use of salicylate of soda, bicarbonate of soda, independent or in combination as advocated by Rachford. In a pronounced case Kerley gives 5 grains of sodium salicylate with 10 grains of sodium bicarbonate three times daily at five-day intervals, or 20 to 30 grains of the sodium bicarbonate daily for a month or two at first. This drug treatment is carried on with rest periods for months and years as the case may require.

Bodily Exercise: A very important factor in the management is in arranging daily physical exercise, such as riding horseback or the bicycle and walking so many street blocks a day. A warm bath and a brisk rub are given at night, and last but not the least important feature in the treatment is the use of physical therapeutics. In severe cases Kerley uses, if possible, daily massage together with various body manipulations and exercises, the latter sufficient to make the child perspire, but not to the point of exhaustion.

A daily evacuation of the bowels is insured by suitable measures. Some children are taken out of school. For others Kerley advises a modified rest-cure. Management during the acute vomiting attack. In the vast majority of the cases, a weak solution of sodium bicarbonate is best retained in the strength of 5 grains of the bicarbonate to 8 ounces hot water. This is given freely.

As laxatives the magnesia preparations are best retained and are used when a laxative is required. Calomel or mercury with chalk will often increase the vomiting. In other cases their use supplies very material assistance. When the vomiting has continued for twenty-four to thirty-six hours the patient is given colonic flushings with sodium bicarbonate, 2 drams to 8 ounces of water at eight-hour intervals. The solution is best retained if it is given warm (105 F.), the tube inserted from 8 to 12 inches.

Feeding: Nothing is gained by attempts at forcing the feeding. When the child is ready for food, he is given barley or rice gruel with dried bread crusts or unsweetened zweiback.

Judging from the results obtained through the withdrawal of highly energized foods and in the use of active and passive exercises it would seem that the chief error in most cases rests in a defective oxidation, or in the giving of food substances of high carbon content in excess beyond the powers of normal oxidation.

### American Journal of Physiology, Baltimore

*September, XXXV, No. 2, pp. 151-204*

8 *Effect of Vagus Stimulation on Blood-Flow Through Kidney after Section of Corresponding Splanchnic Nerve. R. G. Pearce, Cleveland.
9 Reversibility of Geotropism of Arenicola Larvae by Salts. S. Kanda, Woods Hole, Mass.
10 *Functional Variations in Contractions of Different Parts of Small Intestine. W. C. Alvarez, Boston.
11 *Influence of Pituitrin on Respiration. L. B. Nice, J. L. Rock and R. O. Courtright, Norman, Okla.
12 Influence of Temperature on Rate of Heart Beat in Amblystoma Embryos. H. Laurens, New Haven, Conn.
13 *Body Temperature and Pulse-Rate in Man after Muscular Exercise. E. G. Martin, C. M. Gruber and T. H. Lanman, Boston.
14 *Effect of Roentgen Rays on Action of Certain Enzymes. A. Richards, Galveston, Tex.
15 *Toxicity of Sodium Tartrate. W. Salant and C. S. Smith, Washington, D. C.

8. **Blood-Flow in Kidney.**—Since it was thought possible that the increase in urine formation found by Asher and R. G. Pearce to follow stimulation of the vagus nerve after section of the splanchnic nerve might be due to an increased rate of blood-flow through the renal vessels, the present investigation was undertaken by Pearce. It is shown by experiments on dogs under the same conditions as those present in the experiments referred to, that no vasodilatation occurs. These observations were made partly by oncometric measurements, and partly by actual measurements of the blood from the renal vein.

10. **Variations in Contractions of Small Intestine.**—Segments of the rabbit's small intestine, beating in warm oxygenated Ringer's solution were seen by Alvarez to have about 50 per cent. more rapid rhythm when taken from the duodenum than when taken from the lower ileum. Roughly expressed, the rate varies inversely as the distance from the pylorus. These differences in rate observed in isolated segments have been found true also of the two ends of the small intestine as seen in an animal opened under warm salt solution. The oral end of an intestinal loop beats with more regular rhythm and amplitude than the aboral end. The upper end of a loop, or a segment from the upper intestine, is less affected by epinephrin and recovers more rapidly from the inhibitory influence than a lower region. The amplitude of contraction of segments with approximately the same length is greater with segments from the ileum than with those from the duodenum. The rhythm of a segment of the terminal ileum seems to be determined by the rapid rhythm of the sacculus rotundus, for when the two are separated, the segment from the ileum beats at a slower rate. The more rapid rhythm and the smaller amplitude of duodenal segments are apparently associated with a greater tone of this region compared with the lower ileum. The duodenal region is more irritable to mechanic and thermal stimulation than lower parts of the small intestine. It is suggested that the greater tone and irritability and the faster rhythm of the upper part of the small intestine are associated with more rapid peristalsis in this region.

11. **Influence of Pituitrin on Respiration.**—The characteristic effect of pituitary extract on respiration, according to the authors, is an increase in the depth, followed by a shallowness and a decrease in the rate. In some cases, however, the increase in the depth of respiration is followed by shallowness and an increase in the rate. The effect of pituitrin on the respiratory mechanism occurs synchronously with that on the circulatory system. The effect, however, on respiration passes off sooner than that on circulation. After a few injections of pituitrin, the respiratory mechanism becomes immune and the characteristic responses are not elicited.

13. **Temperature and Pulse in Man After Exercise.**—Careful comparisons made by the authors of axillary temperature and pulse-rate after muscular exercise in trained and untrained men fail to show the degree of parallelism to be expected, if Mansfeld is correct in his view that the persistent cardio-acceleration following exercise is the result of heightened blood-temperature. The conclusion is drawn that some other explanation must be sought for the phenomenon.

14. **Action of Roentgen Rays on Enzymes.**—The experiments described by Richards demonstrate that, at least for the digestion of egg-albumin by pepsin and of starch by diastase, a short radiation with Roentgen rays has the effect of accelerating the enzymotic activity, while a longer radiation inhibits it. Between these two strengths lies a point at which the radiation is non-effective. Although the accelerative or inhibitive effects may, perhaps, be slight, they are, nevertheless, definite.

15. **Toxicity of Sodium Tartrate.**—Salant and Smith claim that sodium tartrate may produce acute and subacute intoxication. In frogs, acute intoxication was observed in most cases. In the domestic fowl, sodium tartrate produced acute effects only: (a) Acute effects in rabbits were produced when sodium tartrate was given by mouth or when it was injected intravenously. (b) Subacute intoxication was produced by intravenous and by subcutaneous injections, much smaller doses being required. (c) Symptoms of injury to the kidney alone was produced with small doses. (d) With larger doses renal injury was more marked and symptoms of muscular and nervous symptoms were present. Renal injury and symptoms of muscular and nervous disturbances were observed in the cat. Carrot-fed rabbits were much more resistant than those which were fed oats and cabbage. Young rabbits on a carrot diet are more resistant than those fed on a milk diet. Resistance seems to decrease with age. The toxicity of dextro and levo tartrates was found to be the same.

### Bulletin of Johns Hopkins Hospital, Baltimore

*October, XXV, No. 284, pp. 287-322*

16 *Experimental Observations on Adrenals with Reference to Functions of Their Interrenal Portions. S. J. Crowe and G. B. Wislocki, Baltimore.
17 Primary Carcinoma of Fallopian Tube. C. W. Vest, Baltimore.
18 *Normal Differential Leukocyte Count. S. R. Miller, Baltimore.

16. **Adrenals with Functions of Their Interrenal Portions.**—Crowe and Wislocki sum up their extensive as well as intensive experimental work as follows: In the dog the adrenals are vital organs, and it is probably the cortex rather than the medullary portion which is essential to life. After a partial extirpation of the adrenal, the remaining portion undergoes hypertrophic changes. The increase in size is due to a multiplication and enlargement of the cells of the cortex, chiefly in the fascicular zone; the medulla shows no hypertrophic changes, either grossly or microscopically. A chronic infection in an animal with an adrenal insufficiency is occasionally associated with an interstitial fibrosis and destruction of the cells of the fascicular zone of the cortex. An acute general infection in an animal with an adrenal insufficiency produces in some instances focal areas of complete cell destruction (without hemorrhage) in the fascicular zone of the cortex of the remaining portion of the adrenal. In no instance have the authors seen hemorrhages or injury to the cells of the medulla of the adrenal resulting from an acute or chronic infection in the dog.

After an "almost total" removal of both adrenals, the animals often have general convulsive seizures, a subnormal temperature and other symptoms of an acute adrenal insufficiency; in some instances, recovery gradually ensues after such symptoms and the animal subsequently develops in a normal manner as regards growth and sexual functions. There is also no change in disposition. They increase in weight, but not to an abnormal extent. No polyuria has been found.

There is no permanent raising or lowering of the carbohydrate tolerance resulting from an adrenal insufficiency. A transient glycosuria follows the operative manipulation of either the right or the left adrenal. An autoplastic transplantation of a fragment of adrenal may "take," but is of no functional value. When a fragment of adrenal containing both cortex and medulla is transplanted, the cortical cells may survive, but the medullary cells are absorbed. There seems to be a definite relationship between the adrenals and the lymphatic system. The most striking feature at autopsy on an animal with a long-standing adrenal insufficiency is the enlargement of the mesenteric and retroperitoneal lymph-glands and the solitary lymph follicles in the walls of the intestine. Not infrequently there is also an hyperplasia of the thymus. Further observations are being made by the authors to confirm these findings.

18. **Normal Differential Leukocyte Count.**—The total leukocyte count and differential formula in normal individuals Miller found are subject to relatively wide variations, which must be considered in the interpretation of studies made on the bloods of individuals presumably suffering from abnormal conditions. He says that the interpretation of any differential count should be based on: (a) A knowledge of that particular individual's normal blood-picture, when possible. (b) The average values for the locality in which that individual resides. (c) A consideration of those factors peculiar to the individual which might modify that particular blood. Differential leukocyte counts should always be reported in terms both of percentage and absolute numbers per cubic millimeter, and in all cases, in which possibly more than one differential count should be made, especially in borderline cases in which slight changes are to be regarded as of diagnostic or prognostic value. The tendency to ascribe a diagnostic value to lymphocytosis Miller thinks is probably overdone. Only when the mononuclear elements constantly exceed the average percentage, absolute values and upper limits of variation (35 to 40 per cent.) for the community and when all modifying factors are considered, should one attempt to draw valuable conclusions from the figures obtained.

### Journal of Infectious Diseases, Chicago

*September, XV, No. 2, pp. 245-416*

19 *Tuberculocidal Action of Certain Chemical Disinfectants. L. M. DeWitt and H. Sherman, Chicago.
20 Standardization of Antihog-Cholera Serum. T. P. Haslam and O. M. Franklin, Manhattan, Kan.
21 Biometrical Study of Mucosus Capsulatus Group. J. G. Fitzgerald, Toronto.
22 *Formation of Antibodies in Rats Fed on Pure Vegetable Proteins (Osborne-Mendel Stunting Food). L. Hektoen, Chicago.
23 *Bacteriology of Vaginitis. W. B. Sharp, Chicago.
24 Relative Longevity of Different Streptococci and Possible Errors in Isolation and Differentiation of Streptococci. W. L. Holman, Pittsburgh.
25 *Growth of Gonococcus and Staphylococcus Albus from Urethra in Plate Culture. E. G. Crabtree, Boston.
26 Structural Transformations of Blood-Cells of Vertebrates. G. L. Kite, Philadelphia.
27 *Infection of Man with Bacterium Tularense. W. B. Wherry and B. H. Lamb, Cincinnati.
28 Etiology of Dengue. Attempt to Produce Disease in Rhesus Monkey by Inoculation of Defibrinated Blood. C. H. Lavinder and E. Francis, Washington, D. C.
29 Bacillus Abortivus Equinus as an Etiologic Factor in Infectious Arthritis of Colts. E. S. Good and W. V. Smith, Lexington, Ky.
30 Anaerobic Vibrio Isolated from Case of Acute Bronchitis. R. Tunnicliff, Chicago.
31 Pleomorphic Branching Organism Isolated from Case of Chronic Rhinitis. R. Tunnicliff, Chicago.
32 Esterase Activity of Plain and Dextrose Broth Cultures of Typhoid Bacillus. A. I. Kendall and J. P. Simonds, Chicago.
33 *Bacteriologic and Chemical Evidence of Occurrence of Hexose Sugar in Normal Milk. H. M. Jones, Chicago.
34 *Treatment of Tetanus by Antitetanic Serum. E. E. Irons, Chicago.
35 *Growth and Viability of Streptococci of Bovine and Human Origin in Milk and Milk Products. D. J. Davis, Chicago.
36 *Renal Changes in Rabbits Inoculated with Streptococci. E. R. LeCount and L. Jackson, Chicago.
37 Etiology of Pyemic Arthritis in Foals. F. W. Schofield, Toronto.

19. **Tuberculocidal Action of Disinfectants.**—DeWitt and Sherman found that phenol in 5 per cent. water solution kills human tubercle bacilli in five minutes, one hour, six hours and twenty-four hours. It is nearly as efficient in 1 per cent. solution and shows some tuberculocidal action down to 0.1 per cent. solution. Formaldehyd in 1 per cent. solution kills all tubercle bacilli in one hour (shorter time not tested). In 0.01 per cent. solution it kills in twenty-four hours, so no disease develops in guinea-pigs. Formaldehyd, therefore, is somewhat more efficient than phenol. Ethyl alcohol in 25 per cent. solution kills all tubercle bacilli within one hour (shorter time not tried). Acetone, chloroform and ether have very little if any, tuberculocidal influence. Toluene and iodin show slight influence. Of the metallic salts used, mercuric chlorid shows the greatest tuberculocidal action, 0.001 per cent. killing in twenty-four hours, and 0.1 per cent. in one hour. Gold chlorid in 0.005 per cent. solution kills in twenty-four hours, while 0.025 per cent. silver nitrate kills in the same time. One-tenth per cent. gold tricyanid and 5 per cent. copper chlorid kill the organisms in twenty-four hours.

From a comparison of the results of the experiments contained in this paper with those of disinfection work on other more rapidly growing organisms, the *Bacillus tuberculosis* appears less resistant than the streptococcus, staphylococcus, pneumococcus or gonococcus, or than the *Bacillus typhosus*, coli or anthracis spores, to phenol, formaldehyd, $HgCl_2$, $AgNO_3$ and $AuCl_3$, but more resistant than these other organisms to alcohol, chloroform, ether, acetone, toluene and Lugol's solution. The fat content of the tubercle bacillus does not determine its resistance to disinfectants. These experiments seem to show that if the comparatively high content of this organism differentiates its behavior from that of bacteria of low fat content, it does so by rendering to tubercle bacillus more resistant to fat solvents, and less resistance and to substances insoluble in fats.

22. **Antibodies in Rats on Osborne-Mendel Food.**—In order to learn the effects of the Osborne-Mendel food on antibody production two sets of experiments were carried out by Hektoen, each involving a group of stunted and of normal rats. Similar results were obtained in each case. The stunted rats were placed on the special food five days before the injection of the sheep blood. The materials for the food were supplied by Professor Mendel and the food was pre-

pared according to his directions as follows: take 380 gm. corn gluten (specially prepared), 280 gm. "protein-free milk," 20 gm. Duryea's corn starch, 320 gm. lard; melt the lard at a low temperature and stir into it the other ingredients previously mixed; cool after thoroughly mixing, and put through an absolutely clean meat chopper several times. The paste keeps well in glass jars. The rats were kept supplied constantly with all they would eat, care being taken to pack the food well in suitable cups. The cages were kept clean and fresh water supplied regularly. This food arrested growth. The control animals were fed as usual.

In order to reduce the chances of accidental death the first bleeding was made on the fourth day after the injection of the antigen (1 c.c. of a 10 per cent. suspension of sheep blood per kilo of weight intraperitoneally), then every third day two times, and after that at longer intervals. The determinations of the lysin were made by finding the highest dilution of the serum, heated at 56 C. for thirty minutes, and complemented with guinea-pig serum (0.0125 c.c.), at which, distinct lysis was produced. The total quantity in each tube was 0.6 c.c., including 0.2 c.c. of a 5 per cent. suspension of sheep corpuscles, carefully washed, 0.0125 c.c. of guinea-pig serum, and the requisite amount of heated rat-serum, the rest being salt solution. The mixtures were incubated for two hours and then placed in the ice-box until the following morning.

The curves run fairly parallel; there is no outstanding difference in the results in the stunted and the normal rats, and there is just as much variation between the individual members of one group as of the other. That there should be variation is not surprising especially in view of the probable influence of the bleedings, to which attention has been called. It appears then that, so far as the results of these experiments indicate, the arrest of growth in rats by the Osborne-Mendel method does not cause any disturbances in the production of antibodies.

23. **Bacteriology of Vaginitis.**—From his analysis Sharp concludes that vaginitis is largely (and may be entirely) gonococcal in origin, and that the gonococcus is present as long as the discharge continues. If there is a secondary invader it either cannot easily be cultivated aerobically, or it is a normal inhabitant of the vagina, and it does not altogether replace the gonococcus. The immunity to the gonococcus seemed to diminish after a few months, after which the infection frequently persisted. This immunity could be followed by complement-fixation or cutaneous tests. Sharp found the latter more delicate as it gave a suggestive reaction when the immunity was too weak for complement-fixation. The cases giving a definitely positive test with one did with the other also. Definite diagnosis from smears seemed of value only in the few cases when carefully examined Gram preparations showed the typical gonococcal picture, while a majority of slides could not be called positive unless confirmed by other signs. While laboratory methods are of assistance in determining the nature of the infecting organism, Sharp states, that none of them seems to be of value in defining the time of its elimination.

25. **Growth of Gonococcus and Staphylococcus.**—Crabtree claims that the evidence presented by Warden that gonorrheal urethritis is due to the *Staphylococcus albus* is based on erroneous interpretations of his observations and is fallacious. Gram-negative diplococcal staphylococci may be produced in the laboratory, and it is conceivable that they also occur in the urethra, but Gram-negativeness is due to mechanical interference of albumin with the Gram stain. The *Staphylococcus albus* has no stage of growth in which it is a Gram-negative organism. The appearance is due to an artefact.

27. **Infection with Bacterium Tularense.**—A case of ulcerative conjunctivitis and lymphadenitis in man is shown by Wherry and Lamb to be caused by a minute, capsulated bacterium in all probability identical with *B. tularense*, which was first discovered by McCoy and Chapin in a plague-like disease of the California ground-squirrel. Without the employment of very special methods of staining and cultivation, the virus, although it was known not to pass the Berkefeld filter No. 5, remained invisible. The authors recommend anilin-water-Hoffman's violet particularly for its demonstration, and in addition to the coagulated hen's egg-yolk recommended by McCoy and Chapin for its cultivation, they found that hen's ovomucoid with a trace of yolk is also a favorable medium. Their findings would seem to indicate that this disease is wide-spread among rodents. Further, they call attention to the fact that this recently discovered disease of rodents is apparently sufficiently virulent for gray mice to warrant the presumption that it may some day take its place along with *B. pestis* as a menace to man.

33. **Hexose Sugar in Milk.**—Bacteriologic and chemical evidence is presented by Jones which indicates that milk normally contains a substance which reacts like dextrose.

34. **Treatment of Tetanus.**—An analysis of 225 cases is made by Irons. From these statistics it appears that the mortality of tetanus treated by tetanus antitoxin is about 20 per cent. lower than the average mortality of tetanus treated without serum. Twenty patients of whom 11 were acute, 5 chronic and 4 unknown incubation, received intravenous injections of serum either alone or in combination with other methods of injection. The collective mortality of these was 65 per cent. Of those who died, however, treatment was begun within eight hours in 1, within twenty-four hours in 5, on the third day in 2 and on the fourth day of symptoms, or later, in 3. In 2 the duration of symptoms before treatment was not noted. Of 37 patients who received antitetanic serum intraspinally either alone or in combination with other methods of injection, 16 were acute, 17 chronic and in 4 the incubation period was unknown. The collective mortality was 56.7 per cent. Of those who died 5 received antitoxin within twenty-four hours after the appearance of symptoms, 5 received first treatment on the second day of symptoms, 4 on the third day, 2 on the fifth day or later, and in 3 the duration of symptoms before treatment was not noted.

Irons believes that the delay of treatment until the second or third day of symptoms, and the small doses (1,500 to 3,000 units) which a number of these patients received, go far toward explaining the failure of these methods to reduce the death-rate in this series below 50 per cent. The unfortunate fact that often patients do not apply for treatment until the second or even the third day of symptoms can not be used as an argument against a method of treatment which offers a reasonable hope of success if instituted early in the disease. Magnesium sulphate was given intraspinally in eighteen cases which also received serum. Four cases, two acute and two chronic, recovered giving a mortality for the group of 77 per cent. In two cases death occurred shortly after the injection, with symptoms of respiratory paralysis.

Irons emphasizes that it is important that the full effect of the antitoxin should be obtained immediately and this may be accomplished by giving 3,000 to 5,000 units intraspinally and 10,000 to 20,000 units intravenously at the earliest possible moment after symptoms of tetanus appear. On the following day the intraspinal injection may be repeated. The blood remains strongly antitoxic for several days. On the fourth or fifth day 10,000 units should be given subcutaneously to maintain the antitoxin content of the blood. If only a small amount of antitoxin (3,000 to 5,000 units) is available it should be given intraspinally. Intraspinal and intravenous injections should be given with all the precautions usually employed for these methods.

This use of antitoxin in no respect replaces other necessary recognized non-specific methods of treatment in tetanus. Surgical treatment of the site of infection should be instituted at once. The patient should be placed at rest in bed in a quiet, darkened room, and should receive sufficient sedatives to control convulsions, together with adequate supply of fluid nourishment, and attention to the elimination by kidney and bowel. The necessity for large and continued doses of sedatives such as chloral or chlorbutanol should not blind the physician to the possible danger of giving an overdose. The condition of the patient should be carefully watched, and a revision of the standing orders for sedatives made whenever symptoms suggest the decrease or increase of dose.

35. **Growth of Streptococci in Milk.**—Davis found that in the process of milk-souring the growth of hemolytic streptococci is inhibited and the organisms are gradually destroyed. They are killed in three hours or less by the acidity of sour milk (forty-eight hours after curdling) and of buttermilk. In ordinary butter they die in the course of a few days, due to the acidity, although in neutral butter they live for a long time. In ice-cream, hemolytic streptococci remain alive for at least eighteen days without any appreciable diminution in number or virulence. Ice-cream would seem to be, therefore, a most suitable medium for the transmission and preservation of dangerous streptococci. Separator-cream contains more streptococci than the whole milk, skim-milk considerably less, while the sediment contains a large number. Hemolytic streptococci do not multiply to any extent at 20 C. or below in milk; at 26 C. there is little or no multiplication during the first six hours in sterile or commercial milk, but at the end of twenty hours there is considerable increase in the sterile milk. In the commercial milk their growth is inhibited by the growth of other bacteria; this holds also for higher temperatures. It seems that under no conditions met with in the ordinary handling of milk can there occur any appreciable multiplication of hemolytic streptococci. Inasmuch as under the most favorable temperature, multiplication of hemolytic streptococci in milk does not occur inside of one to two hours, it is impossible for any appreciable increase to occur during the short interval between the raising and lowering of the temperature of milk in the process of pasteurization.

36. **Renal Changes in Rabbits Inoculated with Streptococci.**—Among the results mentioned by LeCount and Jackson are the demonstration of fewer changes in the kidneys of rabbits treated with antistreptococcus serum or vaccine than in those of untreated animals, and the presence of changes characteristic of chronic nephritis in a large number of animals inoculated with streptococci. The most important result, however, is the experimental production of alterations essentially subacute and quite like the acute interstitial nephritis in human kidneys caused by the acute infectious diseases complicated by or due to streptococcus infection. Then, too, the authors wish to emphasize the great need of thorough study of the kidneys of control animals in any investigation of experimental nephritis.

### Journal-Lancet, Minneapolis

*October 1, XXXIV, No. 19, pp. 501-524*

38 1. Periosteal Round-Celled Sarcoma of Femur; 2. Cretinism; 3. Rupture of Symphysis Pubis During Labor. G. M. Williamson, Grand Forks, N. D.
39 Diagnosis and Treatment of Afebrile Convulsions in Infancy and Early Childhood. F. W. Schlutz, Minneapolis.
40 Routine Technic of Test-Meal and Bismuth Roentgenography. H. S. Willson, Minneapolis.
41 Psychic Shock Following Operations. J. E. Engstad, Minneapolis.

### Journal of Medical Research, Boston

*September, XXXI, No. 1, pp. 1-176*

42 Studies on Cerebrospinal Fluid. H. Cushing, Boston.
43 Id. Theories of Drainage of Cerebrospinal Fluid with an Analysis of Methods of Investigation. L. H. Weed, Boston.
44 Id. Pathways of Escape from Subarachnoid Spaces with Particular Reference to Arachnoid Villi. L. H. Weed, Boston.
45 *Id. Dual Source of Cerebrospinal Fluid. L. H. Weed, Boston.
46 *Id. Drainage of Intra-Ocular Fluids. P. Wegefarth, Boston.
47 *Id. Establishment of Drainage of Intra-Ocular and Intracranial Fluids into Venous System. P. Wegefarth, Boston.
48 Id. Analogous Processes of Cerebral and Ocular Fluids. P. Wegefarth and L. H. Weed, Boston.

45. **Dual Source of Cerebrospinal Fluid.**—This lengthy and detailed study is briefly summarized by Weed as follows: Cerebrospinal fluid appears to be derived from two sources: (a) the choroid plexuses in the cerebral ventricles; (b) the perivascular systems of the nervous tissues. No evidence is afforded by these observations of any absorption of cerebrospinal fluid into the cerebral capillaries. Under certain pressure conditions an extensive injection of the perivascular system from the subarachnoid spaces can be secured by the ferrocyanid method.

46. **Drainage of Intra-Ocular Fluids.**—As a result of his studies Wegefarth holds that in the process of elimination of the aqueous fluid at the so-called filtration angle, the fluid gains access to the scleral sinuses in the lower animals (cat, dog, rabbit) by passage through "pectinate villi," which are analogous in structure and function to the arachnoid villi of the cerebral meninges. The process in man is the same as in lower animals, but the pectinate ligament tufts extend in an unbroken chain around the periphery of the anterior chamber. The large neurones of the retina possess pericellular spaces which communicate with the aqueous reservoir, and that by means of these communications the waste products of the cells appear to be in all likelihood eliminated. The rabbit and probably in other animals as well, the ocular and cranial fluids come into direct contact around the central vessels and in the tissue of the optic nerve. The anterior chamber can be injected from the veins after aqueous decompression. Neither the choroid, ciliary body, or cornea play any part in aqueous absorption, whereas the function of the iris in this respect is still a doubtful problem.

47. **Drainage of Intra-Ocular and Intracranial Fluids Into Venous System.**—In Wegefarth's experiments a direct communication between the sinuses of the sclera and the fluid reservoirs in the canine eye has existed for at least forty-eight hours without hemorrhage into the ocular cavity. A direct communication between the superior longitudinal sinus and the subarachnoid space of normal dogs has remained patent during observations up to seven days in length, without hemorrhage into the fluid spaces. Sinoventricular punctures in the case of a hydrocephalic kitten were followed by improvement in the animal's general condition. No intracranial bleeding was occasioned by these punctures.

### Journal of Outdoor Life, New York

*October, XI, No. 10, pp. 289-319*

49 Can I Keep up "Treatment" after I Leave the Sanatorium? E. Washburn, Rutland, Mass.
50 Prenatal and Early Childhood Problems in Tuberculosis. W. C. White, Pittsburgh.
51 Children's Garden at Tuberculosis Day-Camp. "Westfield." R. Weiss.
52 New Health. E. T. Devine, New York.

### Lancet-Clinic, Cincinnati

*October 3, CXII, No. 14, pp. 361-384*

53 Diagnostic Value of Sphygmomanometer in Examinations for Life Insurance. J. W. Fisher, Milwaukee, Wis.
54 Prognosis of Cardiac Disease, with Reference to Life Insurance. R. H. Babcock, Chicago.
55 Chronic Discharging Ears and Life Insurance. W. Mithoefer, Cincinnati.

### Medical Record, New York

*October 10, LXXXVI, No. 15, pp. 615-656*

56 Relation between Surgical Treatment and Radiotherapy of Cancer. I. Levin, New York.
57 Biliary Surgery. J. F. Erdmann, New York.
58 Dietetic Treatment of Children During Second Period of Life. C. G. Leo-Wolf, Buffalo.
59 Hyperthyroidism. I. W. Ballard, Opelika, Ala.
60 Periodicity of Drink Neuroses. T. D. Crothers, Hartford, Conn.
61 Health Officer and Tuberculosis Problem in Rural Communities. S. A. Knopf, New York.

### Military Surgeon, Chicago

*October, XXXV, No. 4, pp. 311-410*

62 Size of Sanitary Soldier. W. H. Crum, U. S. Army.
63 An Efficient Method of Heating Water in Camps of Some Permanency. A. E. Truby, U. S. Army.
64 *Treating Gelatin Capsules with Formaldehyd Solution for Ipecac Medication. E. L. DeLanney, U. S. Army.
65 Methods of Handling Field Hospital Equipment. R. H. Goldthwaite, U. S. Army.
66 Convenient Stake Puller and Stake Driving Cap. W. W. Reno, U. S. Army.
67 Postgraduate Study in Vienna and Its Value. M. A. DeLaney, U. S. Army.

64. **Gelatin Capsules Treated with Formaldehyd.**—To prevent ipecac coming in contact with the stomach DeLanney put it in gelatin capsules previously treated with formaldehyd to render them insoluble in an acid media. Number 00 gelatin capsules were soaked for a few hours in a 20 per cent. solution of formaldehyd and then dried. They became very brittle and somewhat distorted but not enough so to prevent their subsequent filling. They were then filled with 1 gm. of powdered ipecac. This method of giving ipecac proved very satisfactory in a case of amebic dysentery and there was no nausea. The patient improved very rapidly

under the combined treatment and the stools dropped to one a day. The combined method of giving 1 gm. ipecac three times a day and emetin ⅓ grain twice a day for three days, then increasing ⅔ grain for six days seemed to act much better than when either the ipecac or the emetin treatment had been given previously, the patient gaining 5 pounds during the treatment and suffering no inconvenience.

### Modern Hospital, St. Louis

*October, III, No. 4, pp. 215-282*

68 Hospital as an Educational Institution. C. H. Mayo, Rochester, Minn.
69 St. Luke's Hospital, Jacksonville, Fla. E. F. Stevens, Boston.
70 Feeding the Hospital—Food. L. Graves, Cleveland.
71 Hospital Cost Accounting. F. C. Townsend, New York.
72 New Psychopathic Hospital for Chicago Marks New Era. H. I. Davis, Chicago.
73 "Twilight Sleep" from Hospital Viewpoint. W. H. W. Knipe, New York.

### New Jersey Medical Society Journal, Orange

*October, XI, No. 10, pp. 493-544*

74 Oration in Medicine. L. F. Barker, Baltimore.
75 Radiography of Stomach and Intestines. C. F. Baker, Newark.
76 Some of the Histologic Changes Found in Tabes. F. H. Thorne, Morris Plains.
77 German Surgery. J. H. Bradshaw, Orange.

### New Orleans Medical and Surgical Journal

*October, LXVII, No. 4, pp. 311-418*

78 Some Unsolved and Debatable Problems in Tuberculosis. E. O. Otis, Boston.
79 Extensive Case of Osteomyelitis, Involving Two-Thirds of Skull, Originating from Frontal Sinusitis. W. T. Patton, New Orleans.
80 Artificial Pneumothorax in Treatment of Lung Abscess. I. I. Lemann and U. Maes, New Orleans.
81 Origin of Blood-Cells and Differentiation of Leukocytes. H. W. Wade, New Orleans.
82 Differential Leukocyte Count and Its Interpretation. F. M. Johns, New Orleans.
83 Total Red and White Cell Counts and Hemoglobin and Color Index Estimation. J. C. Cole, New Orleans.
84 *Case of Extensive Lupus, Treated with Tubercle Bacilli Emulsion. W. J. Durel, New Orleans.
85 Some Problems in Obstetrics. P. Michinard, New Orleans.

84. **Case of Extensive Lupus, Treated with Tubercle Bacilli Emulsion.**—Taking the neutrophil blood-picture every second day. In a case of skin tuberculosis, with cervical glandular tuberculosis and also taking a differential blood-count, Durel administered tubercle bacilli emulsion according to the changes in the neutrophil index. Starting bacilli emulsion with 0.00,000,000,5 mg.; this was increased, diminished, or stopped altogether, according to the fall or rise in the neutrophil index. During the greater part of the treatment, bacilli emulsion was not given if the neutrophil index was above 96. Bacilli emulsion was repeated when the neutrophil index was at or below 94, and it was never increased if the neutrophil index was not at or below 92.

At the end of four months Durel had reached the dose of 0.00,000,5 mg. of bacilli emulsion, and noticed that the lupus below the left eye showed signs of improvement. Increasing the dose of bacilli emulsion when the neutrophil index was at or below 92, he reached the dose of 00.005 mg. at the end of the sixth month. Then he noticed that the neutrophil index would remain above 96 for a week or ten days at a time, and would fall only when he would cease the use of the bacilli emulsion. Durel also noticed that when he administered the emulsion with the index above 96, especially when the larger doses of emulsion were given, that this was always followed by marked redness around the ulcers, with an increase in secretions and a swelling of the left eye. On four occasions the temperature rose to 100 F., with headache and pains. At the end of the first year, though the ulcers were improved, Durel realized that the healing of the ulcers had been retarded by the giving of too large and too frequently repeated doses of bacilli emulsion, and these given with a neutrophil index above 96. Then it was that he administered (during the last six months) bacilli emulsion in smaller doses (00,000,000,5 to 0.00,000,000,005 mg.), and only when the neutrophil index was below 94 or 92. Never was the dose increased after, if the index was not below 92. This treatment was followed by a progressive healing of the extensive ulcers, and the enlarged cervical glands disappeared entirely three months before the lupus healed altogether. The higher doses and too frequently repeated doses of emulsion caused too frequent local reactions, the latter proving injurious to the patient.

The observations noted in this case confirm, to Durel's mind, the hypothesis that artificial tubercle bacilli proteins stimulate the bone-marrow cells, etc., producing a leukocytosis, especially that of the neutrophils; that a moderate qualitative and quantitative leukocytosis is beneficial to the healing of the tuberculous foci; that overstimulation, with large doses of any of the tubercle bacilli products, causes an excessive and injurious leukocytosis, proving injurious by flooding the blood-circuit with new, immature leukocytes, deficient in effective antibodies, the latter immature leukocytes overcrowding the lupus or tuberculous foci, preventing the healing of the diseased area. This Durel states shows that direct leukocytic immunity is the prime factor in the healing of all tuberculous foci, and that direct immunization takes place in the cells immediately surrounding the tuberculous foci.

### Southern Medical Journal, Mobile

*October, VII, No. 10, pp. 771-844*

86 Medicolegal Relations of Pellagra. J. W. Babcock, Columbia, S. C.
87 Bacteriologic Examination of Knoxville Milk. A. L. Smith, Knoxville, Tenn.
88 Spasm of Pylorus. Report of Case Followed Through Four Years. G. J. Greil, Montgomery.
89 Intestinal Indigestion. C. C. Elebash, Selma.
90 Intussusception—Operation—Recovery. F. W. Wilkerson, Montgomery.
91 Cerebellar Dysergia from Malarial Thrombosis. T. A. Williams, Washington, D. C.
92 Malarial Pernicious Fever. L. Sexton, New Orleans.
93 Clinical Importance of Arterial Hypertension; Treatment. I. W. Ballard, Opelika.
94 Blood Letting in Pneumonia. H. Boyd, Scottsboro.
95 Pneumonia. F. W. Galloway, Florala.
96 Acute Gastric Dilatation. W. Mason, Jr., and N. Evans, Murray, Ky.
97 Adrenalin Cocain Surface Anesthesia. R. S. Cauthen, Charlotte, N. C.
98 Typhoid Perforation with Abscess Appendix—Operation—Recovery. W. C. Gewin, Birmingham.
99 Lithopedion in an Extra-Uterine Pregnancy. J. P. McMurphy and N. E. Sellers, Atmore.
100 Relative Value of Radium and Roentgen Ray in Treatment of Skin Diseases and Cancer. C. A. Simpson, Washington, D. C.
101 Bone Regeneration. Report of Case. R. B. Slocum, Wilmington, N. C.
102 Skin Cancers, J. L. Kirby-Smith, Jacksonville, Fla.
103 Cystoscope: Its Use and Abuse. L. Thompson, Hot Springs, Ark.
104 Renal Hematurias as Influenced by Ureteral Catheterization. G. Timberlake, Baltimore.
105 Treatment of Specific Leukorrhea. R. Duffy, Tampa, Fla.
106 Postgraduate Study in Vienna. N. D. Bitting, Durham, N. C.

## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Medical Journal, London

*September 26, II, No. 2804, pp. 525-564*

1 Evolution of Toxemic Iritis. W. M. Beaumont.
2 Insects and War. A. E. Shipley.
3 Irrigation Treatment of Acute Gonorrhea in Male. W. W. Powell.
4 *Treatment of Fibromyomata of Uterus. A. Donald.
5 *Treatment of Contracted Pelvis in Pregnancy and Labor. H. Jellett.
6 *Id. F. Frank.
7 Case of Rupture of Uterus Through Scar of an Old Cesarean Section. A. T. Smith.
8 Further Experiences with Veratrone in Treatment of Eclampsia. F. W. N. Haultain.
9 *Rapid Relief in Acute Lumbago by Manipulation and Active Movement. W. Haig.
10 Babinski Sign in Transient Functional Diseases. F. C. Eve.

4. **Treatment of Fibromyomata of Uterus.**—Donald is opposed to the Roentgen-ray treatment for uterine fibroids. His objections are stated as follows: 1. All who are engaged in gynecologic work know how difficult it sometimes is to be sure that we are dealing with a fibroid and not with some other condition. Mistakes are not uncommon: (a) In cases of pelvic inflammation in which hard masses are found inseparable from the uterus; (b) in cases of solid or tense ovarian tumors, especially if they are adherent to the uterus;

(c) in cases of ovarian and tubal disease associated with uterine fibroids; (d) in sarcomata and adenomyomata of the uterus, in which the diagnosis is only made with certainty after the tumor has been removed; (e) in carcinomata of the uterus associated with a fibroid, or in large cancerous growths in the pelvic cellular tissues; (f) degenerations in fibroid tumors, especially red degeneration and calcareus change.

Donald has analyzed 201 of the cases in which he has operated and finds the following complications were present: Ovarian cyst, 13 cases; red degeneration, 12 cases; suppuration in tube or ovary, 6 cases; appendicitis, 4 cases; calcareus degeneration, 5 cases; fibrocystic tumor of uterus, 2 cases; carcinoma in the fibroid, 2 cases; adenomyoma, 2 cases; necrosed polypus, 1 case; hydroperitoneum, 1 case—that is, he found complications in 44, or in nearly one-fourth of the cases. Sufficient time has not elapsed since the introduction of the Roentgen-ray treatment for fibroids to enable one to state that there will be no further trouble after the hemorrhage has ceased. But judging from what has happened in many cases after the expectant treatment, Donald says, there is every reason to believe that many of the tumors which seem for the present to have been successfully treated by Roentgen rays will cause serious trouble in the future. The later degenerative changes are just as likely, if not more likely, to occur after this treatment as after the expectant treatment. Further, if operation has to be undertaken at a later stage there is reason to believe that it will be more difficult after Roentgen-ray treatment.

The advantages of operative as compared with Roentgen-ray treatment are summed up as follows: 1. The mortality of the operation is now very small—in cases suitable for Roentgen-ray treatment it is under 2 per cent. (3 cases are deducted from the 9 fatal cases as unsuitable for Roentgen-ray treatment—1 case of acute intestinal obstruction, 1 case of infected fibroid and 1 case of large calcareus fibroid in which death occurred from peritonitis). The mortality following Roentgen-ray treatment cannot be estimated for many years. 2. The cases in which operation was most dangerous (cases of profound anemia) a few years ago, may now be undertaken with little risk. 3. The patient after operation is at once and for all relieved of any anxiety concerning the tumor. Donald believes that Roentgen-ray treatment has a place in gynecology in the treatment of cases of chronic metritis associated with profuse hemorrhage at the menopause. But, he says, it should be given up in cases of fibromyomata of the uterus.

5. **Treatment of Contracted Pelvis.**—As to the treatment of the second degree of pelvic contraction, Jellett says, that pubiotomy is the operation of choice, unless there are special complications present. It is specially indicated in the young multipara, because owing to previous labor, the vaginal canal is dilated and lacerations are unlikely to occur, and because of the effect of the operation on subsequent pregnancies. On the other hand, cesarean section is more suitable in the elderly primipara, because vaginal laceration is more likely to occur, and because it is unnecessary in her to take account of further pregnancies. Premature labor is only indicated under special conditions which render either of the foregoing operations impossible or inadmissible. Craniotomy is only permissible when the child is dead.

6. **Id.**—In cases with large disproportion Frank advises the classical cesarean section, if one can guarantee asepsis. If the asepsis is doubtful, delivery by the suprasymphyseal route is advocated. In the middle degrees of narrowing the subcutaneous symphysiotomy is to be preferred in multipara. In primipara, with narrow soft parts, the suprasymphyseal delivery is to be preferred if there is suspicion of infection. In clean cases in primipara classical cesarean section is advised. In primipara symphysiotomy is to be considered if there is only slight obstruction to delivery.

9. **Relief in Acute Lumbago by Manipulation and Active Movement.**—The method of treatment emphasized by Haig consists of (1) deep thumbing of the lumbar muscles, in process of which a painful area is usually found either in the middle line or to one or other side; (2) fixing the part of the vertebral column below this painful region by firm pressure of the thumb on each side of the spine; and (3) making the patient perform movements of flexion, acute dorsiflexion, lateral flexion and rotation. The result is cure of the attack of lumbago, inasmuch as the patient is able at once to return to his work, and in no case has Haig had to repeat the process.

### Dublin Journal of Medical Science

*September, III, No. 513, pp. 161-240*

11 Relation of Theory and Practice in Operative Treatment of Genital Prolapse. H. Jellett.
12 Insomnia. T. J. Kelly.
13 Treatment of Syphilis by Salvarsan in Dr. Steeven's Hospital, Dublin. H. C. Smyth and G. E. Pepper.
14 Clinical Report of Rotunda Hospital from November 1, 1912, to October 31, 1913. H. Jellett, D. G. Madill and R. M. Allan.

### Lancet, London

*September 26, II, No. 4752, pp. 783-834*

15 Dysentery. F. M. Sandwith.
16 Improvisation of Apparatus in Treatment of Certain Fractures in Modern Warfare. (To be continued.) J. H. Watson.
17 Case of Enteric Fever Complicated by Purpuric Symptoms. G. R. Bruce.
18 *Composition and Derivatives of Urinary Dextrin. P. J. Cammidge and H. A. H. Howard.
19 Case of Extra-Uterine Pregnancy with Prolonged Retention (Two Years) of Fetus. E. M. Farrer.
20 Sterilization of Potable Waters by Means of Calcium Hypochlorite. J. C. Thresh.

18. **Urinary Dextrin.**—The discovery of a process by which the dextrin in urine can be estimated, even in the presence of sugars, if free pentoses have been excluded by preliminary tests, has enabled Cammidge and Howard to investigate the occurrence of this body in diabetes and other pathologic conditions and also to watch the variations that occur in different circumstances. The process, which is described in detail in the paper, is not sufficiently delicate to detect the trace of dextrin present in normal urines and the authors have found that the urine of healthy individuals has no "iodin coefficient" of nought. When carbohydrate metabolism is being imperfectly carried out a high iodin coefficient is obtained. If, however, the interference with carbohydrate metabolism is such that sugar appears in the urines, a previously high iodin coefficient usually falls, to rise again when the sugar disappears.

In many cases of persistent glycosuria, too, this movement of the iodin coefficient and the sugar excretion in opposite directions has been observed, a rise in the one being accompanied or preceded by a fall in the other. In severe cases of diabetes, in which more sugar is being excreted in the urine than would be accounted for by the carbohydrate taken as such in the food, particularly when a fatal termination is close at hand, the course of the iodin coefficient of the urine and the sugar excreted follow each other.

These observations suggest that the urinary dextrin is probably a derivative or antecedent of glycogen intermediate between that substance and dextrose. In the former case the body still possesses the power of breaking down glycogen to a polysaccharid of low molecular weight, but this, instead of being converted into dextrose, which in its turn would give rise to $CO_2$ and $H_2O$, suffers irregular oxidation and may give rise to a body having the formula: $(C_6H_{10}O_5)x{-}O{-}\underbrace{CH{-}CH(OH).CH}_{O}{-}CH.OH{-}CH.OH{-}CH_2.OH$. On oxidizing the end $CH_2.OH$ group the authors should have a substance with the formula: $(C_6H_{10}O_5)x{-}O{-}\underbrace{CH{-}CH(OH).CH}_{O}{-}CH.OH{-}CH.OH{-}CH.OH$. By splitting off the terminal $CO_2$ group a dextrin-like body with the formula: $(C_6H_{10}O_5)\ x{-}O{-}\underbrace{CH{-}CH\ (OH).CH}_{O}{-}CH.OH{-}CH_2.OH$, would result. This corresponds to one of the alternative formula, $(C_6H_{10}O_5)n.C_5H_9O_5$, which the authors' analysis of the urinary dextrin suggests is probable for that body. They suggest that it is also possible that the urinary dextrin may result from an incapacity on the part of the tissues to form glycogen from dextrose, the process stopping short at the intermediate dextrin stage. In support of this view is the fact that in mild and intermittent cases of glycosuria the iodin coefficient of the urine vanishes on a carbohydrate free diet to reappear again when dextrose is added to the food in sufficient amount to bring about a return of the glycosuria, suggesting that when the glycogen stores of the body have been reduced by the exclusion of carbohydrate from the diet the tissues recover to a certain extent their powers of building dextrose into a more complex molecule, but cannot carry all of it beyond the dextrin stage.

The authors found in cases of hepatic disease, in which dextrose can be utilized, but in which levulose and lactose give rise to "alimentary" glycosuria, that the ingestion of dextrose is not associated with an increase in the iodin coefficient of the urine. When, however, either of the other sugars is given in sufficient amount the iodin coefficient rises, suggesting that dextrose can be converted into glycogen, but that part of the levulose and lactose can only be carried to the dextrin stage, some being excreted in an even less completely metabolized condition.

### Archiv für klinische Chirurgie, Berlin

*September 15, CV, No. 3, pp. 529-788. Last Indexed October 3, p. 1237*

21 Treatment of Tuberculous Intracapsular Focus in Neck of the Femur. (Tuberkulöse Knochenherde im Schenkelhals.) W. Keppler and F. Erkes.
22 *Partial Occlusion of Large Arteries. W. S. Halsted (Baltimore).
23 Fenestrated Plaster Cast to Induce Local Passive Hyperemia. (Der gefensterte Gipsverband als Mittel lokaler Stauung.) Sprengel.
24 Fracture of the Calcaneus and Influence on Earning Capacity. (Entstehung und Behandlung der Calcaneusfrakturen und ihre Folgen in Bezug auf die Erwerbsfähigkeit.) Z. Brind.
25 *Tumors Induced by Sensitized Embryonal Cells. (Geschwülste, welche mittels sensibilisierter arteigener Embryonalzellen erzeugt werden.) G. Kelling.
26 *Surgical Treatment of Suppurative Meningitis. Barth.
27 Diagnosis of Horeshoe Kidney. (Hufeisenniere.) M. Zondek.
28 *Kidney Calculi. (Zur Lehre der Nierencalculose. Diagnose. Indikationsstellung. Pyelotomie.) M. Zondek.
29 Fracture of Head of Femur. O. Holbeck.
30 Resection of Tuberculous Hip-Joint. (Die Exstirpation des tuberkulösen Hüftgelenkes; Reposition des Gelenkkopfes.) B. Riedel.
31 *Removal of Second Spinal Ganglion in Treatment of Occipital Neuralgia. F. Oehlecker.
32 *Relations Between Phrenic Nerve and Cervical Neuralgia. F. Oehlecker.
33 Gleanings from Old Works on Military Surgery. (Kriegschirurgische Lesefrüchte aus alter Zeit.) A. Köhler.

22. See The Journal, July 18, 1914, page 207.

25. **Tumors Induced by Injection of Embryonal Cells.**—Kelling says that Cohnheim's theory that tumors originate in or from embryonal cells seems very plausible for a certain proportion of tumors. We know that hydatidiform mole and chorio-epithelioma develop directly from embryonal cells. Kelling has been experimenting with chicken embryos injected into the abdominal cavity of a hen, at the same time that blood was injected elsewhere. This was followed by the development of tumors when the embryo-cell donors as well as the recipient hens had been previously sensitized by blood injections (albumin) and only when the donors had been sensitized long enough beforehand for the ova in the ovaries to feel the effect. The abdominal cavity was examined beforehand to exclude spontaneous tumors.

After the injection of the embryonal cells a tumor developed in five of the twenty-one hens. The structure of the tumors differed entirely from that of spontaneous tumors in hens; these are generally sarcomas. The blood used came from dogs, pigeons, and carp, but the only positive responses were with dog blood. In one instance the albumin was supplied in the form of liver with which the hen was fed. The results of these and his other experiments therefore sustain Cohnheim's embryonal cell theory as to the origin of certain tumors. They show further that alien albumin—even by the mouth—influences the development of these tumors. They seem to be directly connected with overfeeding with albumin. This view is sustained, he adds, by the tumors which develop in trout fed with pig, beef or sheep liver, heart, or lung tissue as Gaylord and March reported in the *Bulletin of the Bureau of Fisheries*, April, 1914. A number of the problems involved might be settled by feeding healthy small animals through several generations with albumin. In human beings we know that disease in stomach or intestines renders the wall permeable to alien albumin; the greater the difference between the species, the greater the irritation it sets up. The infant intestine is very permeable for alien albumin, especially egg albumin. When a congenital tumor, of the types which correspond to Cohnheim's theory, is found in a child, the food the mother and child have been taking should be carefully investigated. One practical conclusion from Kelling's research is that, at least after a cancer has been removed, raw albumin had better be avoided. If it is eaten cooked, then the digestive juices will break up only so much as they can digest and the rest does not get into the blood. (Compare abstract 107, July 20, 1912, p. 231.)

26. **Surgical Treatment of Purulent Meningitis.**—Barth states that he has cured three patients with purulent meningitis by means of lumbar laminectomy and drainage of the dural sac, after lumbar puncture alone had failed to relieve. His first patient was a young man who had been stabbed in the spinal cord at the ninth thoracic vertebra and developed purulent meningitis. Barth trephined the spine at the point of the trauma but as the fever did not subside he then removed the laminae of the second and third lumbar vertebrae and drained the dural sac above and below, and prompt recovery followed. The second patient was a man of 37 with purulent meningitis after fracture of the base of the skull. Only transient relief was obtained by lumbar puncture repeated five times, but prompt recovery followed laminectomy on the third and fourth lumbar vertebrae. The third case was also of traumatic origin, the young woman having fallen on the street. In another case of traumatic purulent meningitis a complete cure was realized under two lumbar punctures alone. These experiences confirm the curability of purulent meningitis up to a certain stage; conditions here are much like those in the peritoneum and the same principles should be applied in treatment. Lumbar puncture has not only a therapeutic effect but it clears up the diagnosis and throws light on the prognosis, especially the discovery of polynuclear leukocytes. The bacteria may have disappeared from the fluid under the influence of the leukocytes. With tuberculosis, lymphocytes predominate.

28. **Calculi in Both Kidneys.**—Zondek discusses what plan to pursue when both kidneys contain concrements. The vessels should be respected at all hazards and he gives special directions for this. If the shadow cast by the stone is median from the shadow of the kidney proper, then pyelotomy may suffice.

31-32. **Operative Cure of Unbearable Occipital Neuralgia.**—Oehlecker has resected the second spinal ganglion for occipital neuralgia of the severest type and reports the complete cure of three of his five patients. The fourth has succumbed since to the progress of a cancer; the fifth was improved for a time but still has some trouble from the auricular nerve which had been injured in a previous operation for enlarged lymph-glands. He first excluded all causes which might have induced secondary neuralgia, including bearing of heavy loads on the head, infectious disease (malaria, meningitis, influenza and angina), gout and deforming arthritis and all processes, such as tuberculosis in the upper vertebrae, which might cause neuralgic pain as a symptom.

Along with the second spinal ganglion he resected the whole of the second cervical nerve and severed the anterior branch. The operation is not a simple one but there are so many intercommunicating branches that there is no disturbance from loss of the nerve. The neuralgia is cured at once and permanently. The operation is as feasible and logical as gasserectomy for trigeminal neuralgia. While gasserectomy has been largely supplanted by deep injection of alcohol this is not possible for treatment of occipital neuralgia on account of the location of the nerves involved and the danger of injury to adjoining structures.

He further discusses the neuralgia in shoulder, neck and arm which may be traced to some lesion in or near the diaphragm. Pressure, chronic inflammation or true neuritis may be responsible for the neuralgia, but whatever the cause, the pains can be abolished by severing the phrenic nerve. This seems preferable to merely crushing it, he says, for reasons which he enumerates, adding that the participation of the phrenic nerve in cervical neuralgia is not appreciated as yet but it explains many puzzling cases, and he shows by diagrams the true connection.

### Berliner klinische Wochenschrift

*September 14, LI, No. 37, pp. 1621-1636*

34 Contact Infection of Comparatively Little Moment in Spread of Cholera. F. Wolter.
35 Hypernephroma at Base of Tongue in Woman of 62. H. Coenen.
36 High-Frequency Electric Current in Treatment of Bladder Tumors. (Blasentumoren.) Renner.
37 High Amputation of Uterus to Arrest Pregnancy and Prevent Further Conception in Pulmonary Tuberculosis. (Methodik der Schwangerschaftunterbrechung und gleichzeitiger Sterilisation bei Lungentuberkulose.) M. Kunreuther.
38 Bouillon Cubes as Portable Dry Culture Media. (Trockennährböden.) Piorkowski.

### Deutsche medizinische Wochenschrift, Berlin

*September 10, XL, No. 37, pp. 1729-1752*

39 Gunshot Wounds of Bones and Joints. (Behandlung der Knochen- und Gelenkschüsse.) A. Brentano.
40 Surgical Impressions from the Russo-Japanese War. Schäfer.
41 *Sterilization of Drinking Water in the Field. (Trinkwassersterilisation im Felde.) F. Croner.
42 *Rapid Course in Case of Deforming Spondylitis. (Seltener Fall von Bechterewscher Krankheit.) Hoene.
43 *Chronic Intermittent Mild Technic for Treating Syphilis with Salvarsan. (Der Fehler in der Salvarsanbehandlung der Syphilis.) Kromayer.
44 Cervical Catarrh May Be Induced by Gonorrheal Threads Free from Gonococci. (Verursachen sterile Tripperfäden weissen Fluss?) Orlowski.

41. **Sterilization of Drinking-Water for the Troops.**—Croner remarks that filtration has not proved reliable for troops in the field, and addition of chemicals is not satisfactory on account of the high concentration required. The safest method is by boiling. The German army is supplied with portable apparatus for the purpose which every hour turn out 800 or 900 liters of filtered, sterilized and cooled water. The apparatus is drawn by two horses and weighs about 4,400 pounds. Smaller ones weighing only 100 pounds are also provided; they take apart so that the load can be distributed between two men.

42. **Case of Ankylosed Spine.**—Hoene's patient was a carpenter of 24 who developed Bechterew's disease consecutive to muscular rheumatism. The spine became rapidly rigid so that in six months he was scarcely able to move and had wasted away almost to a skeleton. Three similar cases were mentioned in the army report for 1908-1909; they had been mistaken for muscular rheumatism at first. Siegert has reported three cases much benefited by steam spraying, but nothing gave more than transient subjective relief in this case.

43. **Treatment of Syphilis.**—Kromayer advocates a chronic course of mild doses of salvarsan, beginning with 0.02 gm. and continuing with 0.1 gm. or 0.2 at intervals of a few days until 2 or 3 gm. of the drug have been given in the course of four to six weeks. The effect of this is fully equal to that of an intensive course of mercury during the same period. The general condition improves under the salvarsan, he says, instead of being depressed as with other drugs. Existing heart, kidney, liver or brain affections do not contra-indicate this mild course, only the caution must be redoubled, commencing tentatively with only 0.02 or 0.05 gm. salvarsan. His patients did not seem to stand well the combination of mercury and salvarsan, so now he alternates the course of each. The great drawbacks of salvarsan are its high price and the inconvenience of intravenous administration. For these reasons salvarsan in practical importance ranks below mercury.

### Medizinische Klinik, Berlin

*August 9, X, No. 32, pp. 1345-1376*

45 *Progress in Clinical Diagnosis of Inherited Syphilis. (Physiognomik und Theorie der hereditären Syphilis.) J. K. Friedjung.
46 Examination for Catarrhal Apical Process. (Zur Untersuchung des Lungenspitzenkatarrhs.) R. Güterbock.
47 Induced Pneumothorax in Treatment of Tuberculous Pleuritic Effusion. (Behandlung tuberkulöser pleuritischer Exsudate mit Gaseinblasung.) F. Deutsch.
48 Mechanism of Action of Carbonated Baths on Weak Heart. (Wie wirkt das kohlensaure Bad, ist es ein schonendes oder gymnastisches Verfahren für das schwache Herz?) J. Jacob.
49 *Hematin in the Blood in a Case of Addison's Disease. (Morbus Addisonii und Hämatinämie.) H. Beuttenmüller.
50 Treatment of Acute Gonorrhea. Orlowski.
51 *Necessity for Combating Hypersecretion with Gastric or Duodenal Ulcer. W. Wolff.
52 Term "Metasyphilis" No Longer Justified. E. Schwalm.

*August 16, No. 33, pp. 1377-1398*

53 Care of the Wounded and after Sunstroke. (Versorgung der Verwundeten und Erkrankten im Kriege; Einrichtung der Militärlazaretter im Operationsgebiete.) Brandenburg.
54 *Fracture of Transverse Process of Lumbar Vertebrae. A. Hoffmann.
55 *Vincent's Angina and Diphtheria. (Plaut-Vincentsche Angina und Diphtherie.) F. Reiche.
56 Eruptions with Gonorrhea. C. Diernfellner.
57 *Fatal Potassium Permanganate Poisoning. (Kaliumpermanganatvergiftung.) E. Adler.
58 Modified Technic for Serodiagnosis. (Ueber die Verdauung von Placentapepton durch Serum—gemessen mit der Formoltitration.) E. v. Graff and P. Saxl.

*August 23, No. 34, pp. 1399-1420*

59 Prophylaxis of Contagious Diseases in the Army. (Verhütung der übertragbaren Krankheiten im Heere.) K. Brandenburg.
60 Beware of Venereal Disease. (W. v. G.: Warnung vor Geschlechtskrankheiten.) F. Pinkus.
61 Civilian Physicians in the Base Hospital. F. Pinkus.
62 Transformation of Treatment of Syphilis. (Wandlungen der Syphilistherapie.) H. Huebner.
63 Pathology of Peritonsillar Abscess. A. Proskauer.
64 *Examination of the Placenta for Gaps. (Beurteilung der Placenta hinsichtlich ihrer Vollständigkeit.) H. Küster.
65 Electric Treatment of Tabes. (Erfolge der Tabesbehandlung mit hochgespannten Gleichströmen.) F. Walzer.
66 Experimental Suture of Aorta. A. Hoffmann.

45. **Clinical Diagnosis of Inherited Syphilis.**—Friedjung declares that the physiognomy of children with inherited syphilis is so characteristic that he can pick out such children at a glance, as a rule, even although their syphilis may be entirely latent. There are three special types which he looks for, infants under 6 months, infants between 9 months and 2 years, and children 8 years old and upward. In young infants the head (skull and face) is round like a ball, as if it had been turned in a lathe; the complexion is a light coffee-color, and the child usually snuffles. One or more palpable lymph-glands can be detected, especially at the lower end of the internal sulcus of the biceps. Goldreich found one or more enlarged lymph-glands in 83 to 90 per cent. of his cases. Quite often the spleen and liver are also enlarged. Infants over 9 months old all display more or less rachitis and the pallor is striking, sometimes with a touch of yellow. The skull is usually large, either from moderate hydrocephalus or excessive bone growth at certain points (tubera) or diffuse with a deep groove along the sagittal suture. If the coronal suture is as if hollowed out too, the grooves cross and make four protruding regions. Other characteristic features are the broad flat nose and the fine radiating scars on the lips, relics of torn infiltrations at the margin of the lips. The cubital lymph-glands, spleen and liver are liable to be enlarged.

By the age of 8 the face forms an equilateral triangle, the point at the chin. The broad overhanging brow causes the eyes to seem sunken in; the face tapers downward owing to the shallowness of the upper jaw and the small mouth. The lips are small, pale and drawn up by the fine radiating scars; often scars left by specific eruptions can be detected near by. The nose has grown larger in proportion but still is of the suspicious flat, broad type with exposed nostrils. The grooves along the sutures are occasionally still evident but Hutchinson teeth are comparatively rare. Of the accessible lymph-glands the cubital may be found still enlarged. The children are pale and usually undernourished and are backward in their physical development as a whole. Among ninety-four children representing these three types but with no actual manifestations of syphilis, the Wassermann was positive in 67 per cent. Transitional types are common. In a number of cases merely the facts that the children did not seem to be thriving on breast milk and that the cubital glands were enlarged suggested possible syphilis, and a tentative course of specific treatment for syphilis was followed by marked improvement.

51. **Treatment of Gastric and Duodenal Ulcer by Combating Hypersecretion.**—Wolff found hyperacidity evident in 51.8 per cent. of 56 cases of gastric ulcer and hypersecretion in 15.2 per cent., both together in 66 per cent. The proportion was even higher in 14 cases of duodenal ulcer, over 78.6 per cent. showing hypersecretion plus hyperacidity. This discovery of hypersecretion in two-thirds of the gastric ulcer cases and in three-fourths of the duodenal cases emphasizes the necessity in treating gastric or duodenal ulcer for measures to combat hypersecretion and hyperacidity, chief among which he lists emulsified fats, butter and cream, supplemented by atropin and all other measures useful in controlling excessive secretion. (Compare with abstract 64 in The Journal, October 17, p. 1429. Wolff has been working with Strauss.)

54. **Fracture of Lumbar Vertebral Transverse Process.**—The possibility of a fracture of this kind should always be considered when there are complaints of pain in the abdomen or lumbar region after lifting a heavy weight or trauma acting in this direction. Hoffmann reports a case: a man was pushing a boat into the water when he felt a sudden sharp pain in the lower part of the trunk, mostly to the left, and soon there was a swelling in the left inguinal region. This gradually subsided but the pains persisted, especially in the sacral region, on bending over, but examination showed nothing abnormal until roentgenoscopy revealed that the five transverse processes in the lumbar region had been fractured. The Roentgen findings were exactly like those Hoffmann had noted in a former case after lifting a heavy weight, bending forward. He gives illustrations of the conditions, traction from the muscles readily explaining the fracture. The only reason they do not fracture oftener is because the traction is perpendicular in the erect position and the broadest diameter of the transverse process then takes the strain. In the nine cases of the kind on record, including the one here reported, the first and second lumbar processes were fractured in four; the third in six; the fourth and fifth in two cases. The pain in the abdomen complained of at first in every case is due to irritation of trunk nerves from pressure or the hematoma. There is usually also a transient reflex rigidity of the abdominal wall from the same cause. There may even be sharp pain on pressure of the psoas which may suggest appendicitis if the trouble is on the right side. Other symptoms are local tenderness in the lumbar region on pressure from behind, and bending is painful. The disturbances may all subside in time but if they keep up from the pressure of callus or dislocated fragments, the disturbing element must be cut out. Such cases probably were labeled traumatic neuroses or the like before the Roentgen rays explained them.

55. **Vincent's Angina Plus Diphtheria.**—Reiche tabulates the details of twenty-three cases with the clinical and bacteriologic picture alone of the Plaut-Vincent angina, but diphtheria bacilli were found also in the throat. They did not modify the clinical picture in the least, however. Three of the patients were between 4 and 5 years old, one was 10, the others from 14 to 26 years old. Four had had diphtheria from one to nine years previously. Of the eighteen adults only two had a febrile temperature and one of these was the only one who had no spirilla. The other, a child of 4, developed severe fatal diphtheria of the tonsils after the angina had cleared up. It was most pronounced on the tonsil spared by the Vincent angina. In two other cases the angina and true diphtheria developed together and both ran a typical course; the patients were both 20 years old and only one recovered. The other developed pneumonia and died four weeks after the first symptoms of trouble. Antitoxin had been injected the fourth day but did not seem to modify the disease. In two other cases patients with the Vincent angina became infected with diphtheria while in the hospital. These were the only ones that contracted diphtheria out of fifty with the Vincent angina erroneously admitted to the diphtheria ward; they were transferred to another ward as soon as the bacteriologic examination had shown the absence of diphtheria bacilli. The diphtheria ran an exceptionally mild course. The first mentioned group were evidently diphtheria bacilli-carriers, but there was no suspicion of this until the throat happened to be casually examined for another throat affection. The presence of the diphtheria bacilli did not seem to aggravate it or superpose true diphtheria except in three out of the total twenty-five cases.

57. **Suicide with Potassium Permanganate.**—A woman of 37 took 10 gm. of potassium permanganate in solid form and died the fourth day. When seen an hour after she had taken the drug there was no cyanosis but the breathing was very irregular, with pauses up to twenty seconds, during which the pulse dropped from 72 to 44, but the heart action kept good. Apnea has not been mentioned before as a symptom of poisoning from the drug. It subsided with the signs of acute intoxication and death was not due directly to the drug but to the complications, as in the two other cases of the kind on record, the corroding action of the chemical on the throat entailing phlegmons in the neck and pneumonia.

64. **Examination of the Placenta.**—When scraps of decidua come away with the placenta, they may protrude above its level like small tumors, and there may be corresponding small depressions when scraps of the placenta stick to the wall of the uterus. By examining the vessels at the edge of the placenta it is possible to detect the presence of a supernumerary placenta as a placenta succenturiata always has two arteries and one vein at least running to it from the main placenta, and these vessels break off if the other does not come away with it. A single torn off vessel does not necessarily indicate a supernumerary placenta; it may be merely a vessel which turned back on its course at the edge of the placenta. When a defect in the surface seems to indicate that part of the placenta is still adhering to the uterus wall, especially when a torn off vessel can be seen in the depths of the defect, certainty as to the significance of this is obtained by placing the placenta on a smooth surface, the maternal side up. The tip of a syringe containing milk is then introduced into the umbilical vein at one side, and milk is pumped into the vein. If the placenta is all there, no milk escapes at any point as the fetal circulation is in a closed vascular system. The placenta becomes distended with the milk but not a drop appears on its surface if it is intact. If not, the milk pours out of the torn vessel and this is at once a guide for further management of the case.

### Münchener medizinische Wochenschrift, Berlin

*September 8, LXI, No. 36, pp. 1897-1928*

67 Experimental Proof of Occurrence of Protective Ferments under Various Conditions. (Die experimentellen Beweise für das Vorkommen von Abwehrfermenten unter verschiedenen Bedingungen.) E. Abderhalden.

68 Differentiation of the Three Genera Cladothrix, Streptothrix and Actinomyces. W. Rullmann.

69 Experiences with Spinal Anesthesia. (Lumbalanästhesie.) Gfroerer.

70 Causes of Death with Aneurysm of the Aorta. Pohrt.

71 Salvarsan and Soft Chancre. (Darf bei weichen Schankergeschwüren prophylaktisch Salvarsan angewandt werden?) H. Müller.

72 Prophylaxis and Treatment of Dysentery in the Field. (Ruhr im Felde.) A. Schmidt.

73 Injury of the Intestines from Contusion. (Stumpfe Darmverletzungen.) Lobenhoffer.

74 Combating Tuberculosis Among the Troops at the Front. (Bekämpfung der Tuberkulose in der Feldarmee.) A. Mayer.

75 Principles for Treatment of Gunshot Wounds. (Einige wichtige Grundsätze zur Behandlung der Schusswunden.) E. Graser and M. Kirschner.

76 Carbon Monoxid Poisoning on Steamship. (Schwere Kohlensäurevergiftung an Bord eines Lloyddampfers.) Brausewetter.

77 Compression with Rubber Sponge to Arrest Bleeding from Gunshot Wounds. (Gummischwammkompression gegen Schussblutungen.) Werner.

### Therapeutische Monatshefte, Berlin

*September, XXVIII, No. 9, pp. 609-640*

78 *Practical Obstetrics. (Praktische Ergebnisse der Geburtshilfe.) J. Hirsch.

79 *Inherited Syphilis Does Not Get Proper Treatment. (Die heutige unzureichende Behandlung der Lues congenita.) E. Welde.
80 Technic for Intravenous Injection of Colloidal Silver. (Was für kolloidales Silber wird intravenös injiziert?) J. Voigt.

78. **Recent Progress in Obstetrics.**—Hirsch remarks that the last few years have witnessed almost a revolution in favor of expectant management of childbirth. Various factors have contributed to this, among them the discovery of the action of hypophysis extract in stimulating the uterus to contract forcibly. It acts more rapidly than ergot, but its effect is less durable. The dose of ergot required to start the uterus to contracting is dangerously near the tetany dose, so that it is best to reserve ergot for the third stage of labor. Another recent acquisition is the appreciation of the fact that the height of the contraction ring is usually an index of the degree of dilatation of the os uteri. This can be felt from the outside during a labor contraction, the bladder empty. When the contraction ring is found four fingerbreadths above the symphysis, the os is fully dilated; with two fingerbreadths, it is open only to about the size of a 5 mark piece. This sign can be relied on, he declares; the only difficulty is that it is not always possible for the woman to empty her bladder. To draw the urine artificially is an internal maneuver which is just what we are trying to avoid. [Unterberger found this sign fail in only 5 per cent. of 300 women examined and the findings controlled by other means. The incorrect findings were explained in some instances by the fact that the bladder had not been emptied; only in three cases did the test give puzzling false findings. The gradual ascent of the contraction ring during normal labor thus enables us to supervise the course of the dilatation of the cervix. When it is completely open the contraction ring can be felt about four fingerbreadths above the symphysis, and it always lies across, he says, never slanting. Hoehne has found the ascent of the contraction ring especially valuable in warning of impending trouble, unfavorable presentation or overstretching of the lower segment of the uterus. Internal examination is necessary then to ascertain the true condition, but the rise of the contraction ring far above the symphysis gives the warning signal. This sign was first taught by Schatz in 1883, but its value has only recently been appreciated as a means of avoiding the necessity for internal examination.] In regard to puerperal fever, Hirsch says that progress has been along the lines of beginning to combat it early and protect the patient against local irritation. It has been noticed also that puerperal fever is liable to recur at the next pregnancy especially if the interval is short. It might be safer therefore to postpone another conception until the woman's defensive forces have finally destroyed any germs left behind.

79. **Prevailing Inadequate Treatment of Inherited Syphilis.**—Welde says that systematic reexamination of children treated with salvarsan has shown that it often transforms a positive into a negative Wassermann reaction. Persevering treatment is necessary for this, however, as a rule; the danger that a child might be overtreated is far outbalanced by the danger otherwise of inadequate treatment. When the history of children with congenital syphilis is traced into later life, the conclusion seems inevitable that, almost without exception, the treatment applied stopped considerably short of actually curing the child. When the Wassermann test is applied the proportion of the uncured is found appallingly high. Of 396 infants treated for congenital syphilis in Heubner's service at the Berlin Charité he was able to trace the later history of 200 of the children: 94 died in the hospital and 10 soon after dismissal and 14 died later of measles, etc. Of the remaining 82, he was able to examine 36, and found specific evidences of syphilis in 27. Only 9 were apparently healthy, with negative Wassermann.

Many of the children had been brought for only a single treatment; only 13 of the 296 policlinic cases were under observation for two or three years. He urges physicians generally to keep track of child patients given salvarsan or other treatment. The prognosis of pemphigus, etc., has become more favorable since the introduction of salvarsan but whether on the whole it is superior to mercury for inherited syphilis is still a question. Proper nourishment is as important as medicinal treatment, he insists, and the recent progress in infant feeding has been of great benefit for babies with the syphilitic taint. Last and far from least, he emphasizes the necessity for warding off other infections from these children. An epidemic of influenza sweeps them away by scores. This is an additional reason for organizing special institutions for children with inherited syphilis. They can be more easily protected against other infections while treatment can be systematic and adequate.

He is convinced that more careful examination of infants will reduce the number of cases of "tardy inherited syphilis," and permit treatment before irreparable lesions are installed. Since the Wassermann test has been systematically applied in asylums for the blind, crippled, deaf-mutes and imbecile, an unexpectedly large percentage of syphilitics has been discovered, as also in children's hospitals, etc. If a child coughs, the mother fears tuberculosis and takes the child to be examined by a physician, but it may be covered with a syphilitic eruption without suggesting to the mother that this is anything but "hives." Even if the mother suspects syphilis she thinks the child is doomed and that there is no use in contending against this. Education of the public is thus a vital necessity in this line. Welde urges that the state should seek out and cure early the children with inherited syphilis; this would release sums now devoted to maintenance of asylums for feeble-minded, etc. An important argument for the necessity of this is that the syphilitic infants are liable to infect healthy nurses; he has known of five cases in the last two years. The plan he advocates is that as soon as the inherited syphilis is discovered, the child should be given vigorous treatment in a special institution for a year, and then be sent home but kept under medical supervision and be sought out at home at regular intervals, and never lost track of. The parents should be held responsible for repetition of the course of treatment as the medical inspector reports that it is needed.

### Therapie der Gegenwart, Berlin

*August, LV, No. 8, pp. 337-384*

81 *Pneumothorax Treatment of Bronchiectasia. W. Zinn.
82 *Chronically Weak Circulation. (Chronische Kreislaufinsuffizienz.) J. Pick.
83 *Chronic Pyelitis. M. Fritz.
84 *Extra-Uterine Pregnancy with Living Child at Term. B. Rewald.

*September, LV, No. 9, pp. 385-408*

85 The Postgraduate Course for Volunteer Army Surgeons. (Bericht über den Orientierungskurs für freiwillige Kriegsärzte.) A. Paasche.
86 *Treatment of Erysipelas. J. Arneth.
87 *Prophylaxis and Treatment of Typhoid. (Bekämpfung des Abdominaltyphus.) F. Neufeld.
88 War, Food and Alcohol. B. Laquer.
89 Consulting Surgeons at the Front. (Ueber die Stellung der konsultierenden Chirurgen des Feldheeres.) Stromeyer.

81. **Pneumothorax in Treatment of Bronchiectasia.**—Zinn reports three cases which encourage the hope that artificially induced pneumothorax may have a future in treatment of bronchiectasia. It is certainly logical, and if done before the tissues have become hopelessly rigid there is prospect of a complete cure. Even if this is not possible, enough collapse may be realized to amount to a clinical cure as long as the compression is kept up. In this case the pneumothorax may have to be maintained indefinitely as in a case of this type reported. The technic is the same as for compression of the tuberculous lung. The benefit from the pneumothorax was so prompt and permanent that he was almost inclined to doubt his diagnosis at first. The course of treatment need not be so long as with pulmonary tuberculosis (two months, three and five in his three cases). Therapeutic pneumothorax can be induced without harm in weak patients if done cautiously. Even bilateral bronchiectasia does not contra-indicate the method, taking one side at a time.

82. **Underpressure Procedures in Treatment of Chronic Cardiovascular Insufficiency.**—Pick recalls that the circulation is a physical process and hence can be aided by physical measures when it lags at any point. This is certainly more logical than to look to drugs for aid. He has found negative pressure procedures very useful. They start the blood to flowing from the periphery to the lungs. The full atmo-

spheric pressure is felt at the periphery while the pressure in the lungs is much below this. The blood consequently pours inward. This relieves the right heart and sustains those factors in the circulation which break down the most readily—parts which normally have to do two and a half times as much work as other parts.

He cites as an illustration of the benefit from systematic underpressure procedures in chronic insufficiency on the part of the circulatory apparatus the case of a man of 36 who had suffered for twenty years from what was labeled neurasthenia. His disturbances were so severe at times that he was unable to attend to business. The heart sounds were faint but pure, the pulse wave very small. Pick diagnosed the case as too little blood for the patient's size and weight; it did not reach the heart fast enough. Pick had him breathe in the underpressure apparatus three times a day for ten or twenty minutes at a time, arranging it for a negative pressure of 20 or 25 cm. water. By the second day there was considerable reaction, palpitations and vertigo, and then the condition improved remarkably and the patient was soon able to return to business with new zest in life. His supposed neurasthenia thus proved to be merely disturbances from chronic insufficiency on the part of the circulation. The tissues, especially the nerves, did not get enough blood to nourish them as the volume was small and the force to pump it into the lungs was inadequate. By starting a vigorous pumping process three times a day the forces were trained to do the work better and the nervous system received proper nourishment and recuperated throughout. Even if the former symptoms should return later, the benefit already realized during the months to date has been a great gain. The "neurasthenic" symptoms had included insomnia, distress, restlessness, palpitations, oppression, vertigo and loss of the senses of smell and taste. The return of the sense of smell the fifth day of the underpressure treatment was followed in a few days by return of the sense of taste. This return of these special senses has been frequently observed in his experience with cases of this kind; the starved nerves started to work again as soon as they got food.

83. **Chronic Pyelitis.**—Fritz states that he has encountered 161 cases of pure chronic pyelitis without participation of the parenchyma of the kidney, among his 1,800 urologic cases at the Wildungen spa. The pyelitis may exist for years on one side without the other becoming affected, and if it does, it seems to be traceable to the same primary source of infection as the first one. This is evidenced especially in the cases in which one kidney is removed as a prophylactic measure and months or years later the other kidney develops pyelitis too. The first kidney involved may recover and keep healthy while the second later in life may develop pyelitis. Treatment in acute cases or acute relapses includes regulation of the bowels and drinking large amounts of fluid (tea, lemonade or mineral water). He has never seen much benefit from hexamethylenamin, etc.

The primary source of the infection must be sought and cured. In the chronic cases copious fluid intake is also necessary but if the pyelitis persists, after the kidneys have been flushed in this way, local treatment is indispensable. His nine years of experience with local treatment have demonstrated its usefulness and harmlessness with aseptic precautions. The main point is to assume that the bladder always contains pathogenic germs which are liable to be carried up into the kidney pelvis. Boric acid is not strong enough to kill them, so he uses a solution of mercuric oxycyanid (Hydrarg. oxycyan.) to fill the bladder, and then rinses out the kidney pelvis with a stronger solution (1 to 2,000) until the fluid comes away clear. He then injects a 1 to 200 solution of collargol to be retained. The pyelitis may take long to heal, but with pure pyelitis a cure may always be counted on if the urine gets an outlet by systematic catheterization of the ureter. He thinks the mechanical influence of the catheterization is at least as important as the medication. Even when there have long been severe symptoms and the general health is materially impaired this combination local treatment should be given a persevering trial before considering nephrectomy.

84. **Extra-Uterine Pregnancy with Viable Child.**—Essen has compiled twenty-five additional cases since Sittner's compilation of 142 in 1903. The list includes a case from his own practice, a primipara of 30 at term. The breech of the fetus could be palpated in the left lower abdomen, the head in the right epigastrium, the back forward; the heart sounds were audible to the right of the umbilicus. The child was thus unusually high in the abdomen and the cervix was not dilated. During the course of pregnancy there had been occasional severe pains in the abdomen and back, returning at times every day, followed by long intervals of freedom from pain. There had been pain and hemorrhage for one day the second month but there were no pains from the third to the ninth month. They then returned extremely severe, like labor pains. The uterus was found to be empty and a normal girl baby, 51 cm. long, was delivered through an abdominal incision below a Momburg tube constricting the waist to prevent excessive loss of blood.

Four physicians had examined the woman superficially during the pregnancy but only one suspected extra-uterine pregnancy and advised an operation. If the history of the case had been heeded none could have overlooked the extra-uterine location of the fetus. There is usually bleeding for one day to several weeks and the hemorrhage is always accompanied with pain. This is a striking symptom and is never absent with early complications. In 277 cases of extra-uterine pregnancy there was pain in all but thirteen cases. The pain generally comes on suddenly and is severe, sometimes on one side only and radiating into the legs. As the pregnancy progresses, the pains become less severe but more persisting; they are due to interference with neighboring organs. Pains like those of labor may occur from accumulation of secretions in the uterus or expulsion of decidua or actual colic in the uterus. If the fetus lies free in the abdominal cavity, its movements may cause intolerable pain. In the early stages the pregnancy may be suspected from the livid discoloration of the entrance to the vagina. Expulsion of decidua was known in only 22 of the 277 cases, and in 5 not until the third to fifth day after the operation. In the case reported the placenta was twice the normal size and in three lobes; one presented toward the left ilium, one to the mesocolon and the third to loops of small intestine. The membranes ruptured as the child was being extracted and a number of bleeding vessels had to be ligated. The patient was able to be up in less than a month. The child is now five years old, normal and healthy.

86. **Erysipelas.**—Arneth reviews his experience with several hundred cases of erysipelas. He has encountered a few rapidly fatal cases, among them that of a healthy man between 30 and 40 who died eight days after the onset of severe erysipelas; staphylococci were found in pure cultures in the tissues. In another case a healthy woman of 46 developed erysipelas after removal of a small dermoid cyst on the arm. The erysipelas spread over the whole body and fatal paralysis of the heart developed. In such severe cases all treatment is futile, and in the mild cases spontaneous recovery is the rule whatever treatment is applied. It is important however to restrict the spread of the erysipelas and he has never found anything so effectual for this as painting the region and vicinity with a 5 per cent. oil solution of phenol. This is applied three or four times a day, leaving the area uncovered all the time. There is no caustic action from the phenol and the tissues are not irritated as by application of salves or dressings. The thin coating of oil softens the skin and works its way in; it relieves the pain and tension and by its anesthetic action tends to subdue the inflammation. In his years of experience with this carbolized-oil treatment he has never witnessed any signs of intoxication from it, and it does not stain the linen. This principle of refraining from irritating procedures and anything that might force the germs into the depths of the tissues, he thinks, should be followed in treatment of all suppurative processes. He refrains from touching even a blister, and never tries to cleanse the erysipelas region until several days after all signs of inflammation have subsided. Then he clears off

with olive oil any loose skin, not permitting water for some time yet. Otherwise there is danger of the process flaring up again; still virulent germs might easily be mobilized by any manipulations of the kind. He reviews numerous other methods of treating erysipelas as practiced by about fifty other clinicians, but thinks the phenolized oil surpasses them all in efficiency. Treatment can be only symptomatic but everything that builds up the general condition is a help, sustaining the heart, possibly also whipping up the neutrophil leukocytes. He remarks that it is odd that the diseases with pronounced neutrophil leukocytosis, pneumonia, diphtheria, tonsillitis and erysipelas, do not immunize against future attacks, but instances are known of complete recovery from leukemia after intercurrent erysipelas. Glaser has reported a case of severe dropsy with subacute nephritis in a boy of 12 who was permanently cured after an attack of erysipelas.

87. **Prophylaxis of Typhoid.**—Neufeld states that with all the efforts to exterminate typhoid in the protected area in southwestern Prussia in the last ten years the disease has not been eradicated. The number of cases has dropped from 3,487 in 1904 to 1,097 in 1913. The persistence of the disease is due in large measure, he thinks, to the early contact infection of others occurring during the incubation stage. Experience has shown that washing the hands after defecation and before eating is perhaps the most important prophylactic measure. If all could be trained to do this systematically, many illnesses would be saved, not only typhoid but various other diseases.

### Zentralblatt für Chirurgie, Leipsic

*September 12, XLI, No. 37, pp. 1465-1488*

90 *Permanent Diversion of Fluid with Ascites. (Zur Dauerdrainage bei Ascites.) A. Oberst.

90. **Continuous Drainage of Ascites.**—After the fluid has been drawn, the skin is always relaxed and Oberst cuts a flap from it, leaving half of the flap still attached to the subcutaneous tissues. The other half is dissected loose and is worked through a small laparotomy incision down into the abdominal cavity. The skin is then sutured over it. The interposition of the skin flap in the incision prevents its growing together, and thus a constant communication is maintained between the abdominal cavity and the subcutaneous cellular tissue permitting fluid to drain freely into it. Oberst gives illustrations of four modifications of the principle involved.

### Zentralblatt für Gynäkologie, Leipsic

*September 12, XXXVIII, No. 37, pp. 1233-1248*

91 *Dangers of Intra-Uterine Pessary. (Ueber die Gefahren des Intrauterinstiftes.) E. Opitz.

91. **Dangers of Intra-Uterine Pessary.**—Opitz reports two cases in which a Fehling glass tube was introduced into the uterus as the women were sterile and longed for children. Fatal peritonitis developed in one case and severe inflammation in one ovary and tube in the other case, requiring several weeks of conservative measures in the hospital before it subsided. He ascribes the trouble in both cases to the intra-uterine pessary.

### Gazzetta degli Ospedali e delle Cliniche, Milan

*September 3, XXXV, No. 105, pp. 1105-1120*

92 Difference in Blood Pressure on the Two Sides with Neuralgia. A. Campani.

*September 10, No. 107, pp. 1137-1152*

93 *Pneumonia Due to Staphylococcus Albus. C. B. Farmachidis.

*September 13, No. 108, pp. 1153-1168*

94 Transvesical Prostatectomy: Three Cases. (Operazione del Freyer nella cura dell'ipertrofia prostatica.) O. Ortali.

93. **Staphylococcus Pneumonia.**—The patient was a man of 39; both the right lung and the pleura were involved and there was a pleural effusion. The crisis came the eighth day and the man started on a favorable convalescence but this was interrupted in a day or so by a return of pleuropneumonia in a severer form accompanied by symptoms indicating irritation of the meninges. The *Staphylococcus albus* was alone cultivated from the pleural effusion and from the blood-stream. The delirium subsided by the twelfth day from his first symptoms and rapid recovery followed.

### Brazil-Medico, Rio de Janeiro

*August 15, XXVIII, No. 31, pp. 297-306*

95 Large Aneurysm of the Descending Aorta Protruding in the Back. F. Luz.

*August 22, No. 32, pp. 307-316*

96 Guiding Treatment of Syphilis by the Wassermann Reaction. (Do criterio scientifico no tratamento da syphilis pela reacção de Wassermann.) D. Madeira.

### Hospitalstidende, Copenhagen

*September 16, LVII, No. 37, pp. 1137-1168*

97 *Juvenile Deforming Osteochondritis; Five Cases. (Fem Tilfælde af Calvé—Perthes Sygdom.) K. Michelsen.

97. **Juvenile Deforming Osteochondritis.**—The Roentgen findings and the negative tuberculin skin reaction are the criteria which distinguish a hip-joint affection described by Calvé (1910) and Perthes (1913). (It was described in these columns May 2, 1914, p. 1444.) Michelsen here reports with illustrations five cases some of which date from before this, and which he had already recognized as something apart from the general run of hip-joint diseases. He thinks that it is the same as Köhler's disease only that the localization is different. There is no doubt that it has frequently been erroneously diagnosed as a tuberculous process. Massage to prevent atrophy of the muscle should accompany the immobilization of the joint called for by the severe changes found in the bone.

### Ugeskrift for Læger, Copenhagen

*September 10, LXXVI, No. 37, pp. 1579-1626*

98 *Operations on Tendons. (Senesutur og Senetransplantation.) C. D. Bartels and J. Jensen.

99 *Roentgen Treatment of Superficial Cancer. (Om Røntgenbehandling af hudkræft.) J. Nordentoft. Commenced in No. 36.

*September 17, No. 38, pp. 1627-1654*

100 Cancer in the Ear; Three Cases. (Om Oeregangscarcinom.) E. A. Hallas.

101 Pseudomyxoma in the Peritoneum of Appendicitic Origin. H. S. Bülmann.

98. **Operations on Tendons.**—The clinical and experimental research reported demonstrates that a severed tendon will heal after suture without immobilization, and healing occurs even sooner and more perfectly when the part is exercised. The histologic findings at various intervals after the experiments on seventy rabbits are described in detail—all confirming the prompt and complete restoration of approximately normal conditions when the part was used from the first. The lessons learned from this research were advantageously applied to a girl of 10 to correct contracture of the finger. The autoplastic transplantation was hampered by considerable scar tissue. This was resected and the tendon which had been bound down by adhesions was loosened up for 3 or 4 cm. The gap in the tendon, extending from the metacarpophalangeal articulation to a little beyond the first phalangeal joint, was bridged with a segment cut from the tendon of the palmaris longus. The transplant was embedded in the subcutaneous fat tissue and the wound healed by primary intention but opened again the tenth or twelfth day and scraps of fat and tendon tissue were expelled, after which all healed anew. Active and passive movements were begun the second and third day and kept up even while the necrotic tissue was being expelled. Now, a year since, the finger can be used fully and perfectly except for a trace of stiffness in the second phalangeal joint. In another case of contracted and stiff finger after a destructive felon he applied the same technic, only that to strengthen the tendon, prevent adhesions and promote its viability he wrapped the tendon in a strip of fascia from the forearm. It soon healed but two weeks later the whole of the implant was cast off. The scar tissue from the long median incision evidently afforded no possibility of nourishment for the implant. It would be better, on this account, to treat felons and phlegmons with several small side incisions rather than with one large one.

99. See abstract 89 in The Journal, Oct. 17, p. 1432.

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## THE WEIR MITCHELL LECTURE

# SURGICAL EXPERIENCES WITH PITUITARY DISORDERS *

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Our variously acquired bits of information concerning the ductless gland disorders lie distractingly before us like the fragments of a modern picture puzzle. Here and there a few pieces, possibly on the basis of similarity of color, have been assembled and fitted together, but the relation of these groups to one another or to the design as a whole is not at all clear. Some of them subsequently prove to have been upside-down; marginal groups are found to belong at the side when they had been thought to go at the top; and the disappointing stage is always reached when pieces appear to have been irrevocably lost. A chance bystander with an eye for form picks up an odd piece, fits it into its proper place, and it immediately becomes apparent from the new outline that two isolated groups or foci of the picture can be articulated. So in the ductless gland puzzle, out of a jumble of fragments the pituitary group of pieces has come to be assembled; and though it is not quite complete in itself, nor is it quite clear where it will go in the finished picture, we at least know what it represents and which is top and which is bottom.

Thus while others were brooding over the thyroid and adrenal, Marie fitted together some oddly fashioned and disconnected pieces, and behold, acromegaly! Fröhlich fifteen years later made another symptomatic grouping of tumor, optic atrophy, adiposity and sexual infantilism; and though subsequently a few isolated pieces were marginally attached to each of these growing foci of the picture, it was not until the series of experiments with Crowe, Homans, Goetsch and Jacobson in the Hunterian Laboratory in Baltimore in 1908 and 1909 that Fröhlich's syndrome of dystrophia adiposogenitalis was observed to be wrong side up, for when reversed it fitted into Marie's fragment, making hypopituitarism and hyperpituitarism.[1]

During the six years which have since elapsed the clinical manifestations of pituitary disorders have been so widely discussed that physicians to-day are quick to recognize their constitutional expressions when full-blown, but as our acquaintance with these conditions progresses it becomes increasingly apparent that minor evidences of a functional glandular disturbance occur with considerable frequency but fail to cause comment of any kind. Indeed, in the ordinary walks of life beyond hospital walls outspoken examples, not only of acromegaly, but of the more newly appreciated syndrome of hypophysial insufficiency, are encountered sufficiently often to make us realize that a pronounced constitutional evidence of dyspituitarism in one direction or the other need not be incompatible with a reasonably comfortable and effective life or cause the victim to seek medical advice on the score of physical incapacitation.

When, however, a pituitary derangement, even of lesser grade, is accompanied by an extreme glandular enlargement, or when the secretory activity of the gland is impeded by the pressure of a suprasellar tumor, disturbing symptoms may arise of quite a different order from the constitutional expressions of the disease. Just so may a goitrous thyroid flatten the trachea and mechanically embarrass respiration, whether or not the struma is accompanied by symptoms of hyperthyroidism or hypothyroidism, or even in the absence of any appreciable endosecretory manifestations whatsoever. These local and neighborhood symptoms being essentially of a mechanical (pressure) nature call for mechanical (operative) means of relief; and the aspects of pituitary diseases which deal with the glandular enlargement or tumor will be made the main topic of this lecture. Naturally the experiences of a surgeon comprise a high precentage of cases of this order.

It may be recalled that much of our knowledge of pituitary disorders has revolved around the question of tumor—using the term in a comprehensive sense. It was the presence of a tumor which first led Marie, and subsequently Fröhlich, to couple with this comparatively obscure gland the syndromes which bear their names. And for the most of us to-day manifestations of tumor continue to be a necessary guidepost, so that those who venture to predict pituitary disease in their absence do so with misgivings and merely on the ground that similar constitutional symptoms have been known to arise in conjunction with a growth.

With all this stress upon the tumor and its local manifestations we must not overlook the fact that the constitutional indications of pituitary disease may bear little relation to the size of the lesion, for outspoken acromegaly may occur with but little enlargement of the gland, and the counterposed secretory state may accompany a primary glandular hypoplasia, so that tumor may not enter into the question at all. Con-

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* This paper formed the basis of the eighth Weir Mitchell Lecture, before the College of Physicians of Philadelphia, Feb. 25, 1914. As delivered it was fully illustrated by composite lantern slides portraying the varied clinical types of dyspituitarism in the author's series, chief emphasis being laid on the sellar deformations, on the histologic character of the various lesions, and on the perimetric fields before and after the operation. As these illustrations are too numerous for reproduction in a single article, the address in its present form is largely reduced to the mere statistical consideration of the operative results.

[1] The Hypophysis Cerebri: Clinical Aspects of Hyperpituitarism and of Hypopituitarism, The Journal A. M. A., July 24, 1909, p. 249.

versely, a surprisingly large tumor producing extreme distortion of the structures of the interpeduncular space may give insignificant and hardly appreciable clinical evidence of its presence.

So far as the endosecretory expressions of pituitary disease are concerned the subject is rendered increasingly complex as soon as we attempt to differentiate between the symptoms produced by the two lobes of the gland, for they have very different physiologic activities. It is possible that there may be an overaction or underaction of one lobe alone, or an overaction of one lobe associated with insufficiency of the other: and as in the case of the adrenal cortex versus the medulla, attempts have been made to disengage from the combined picture the symptomatology of a lesion confined to one or the other anatomic division.[2] Furthermore, additional complexity is added by the polyglandular nature of every ductless gland disorder, which in some cases is so apparent as to make it doubtful which of the endosecretory organs is primarily at fault.

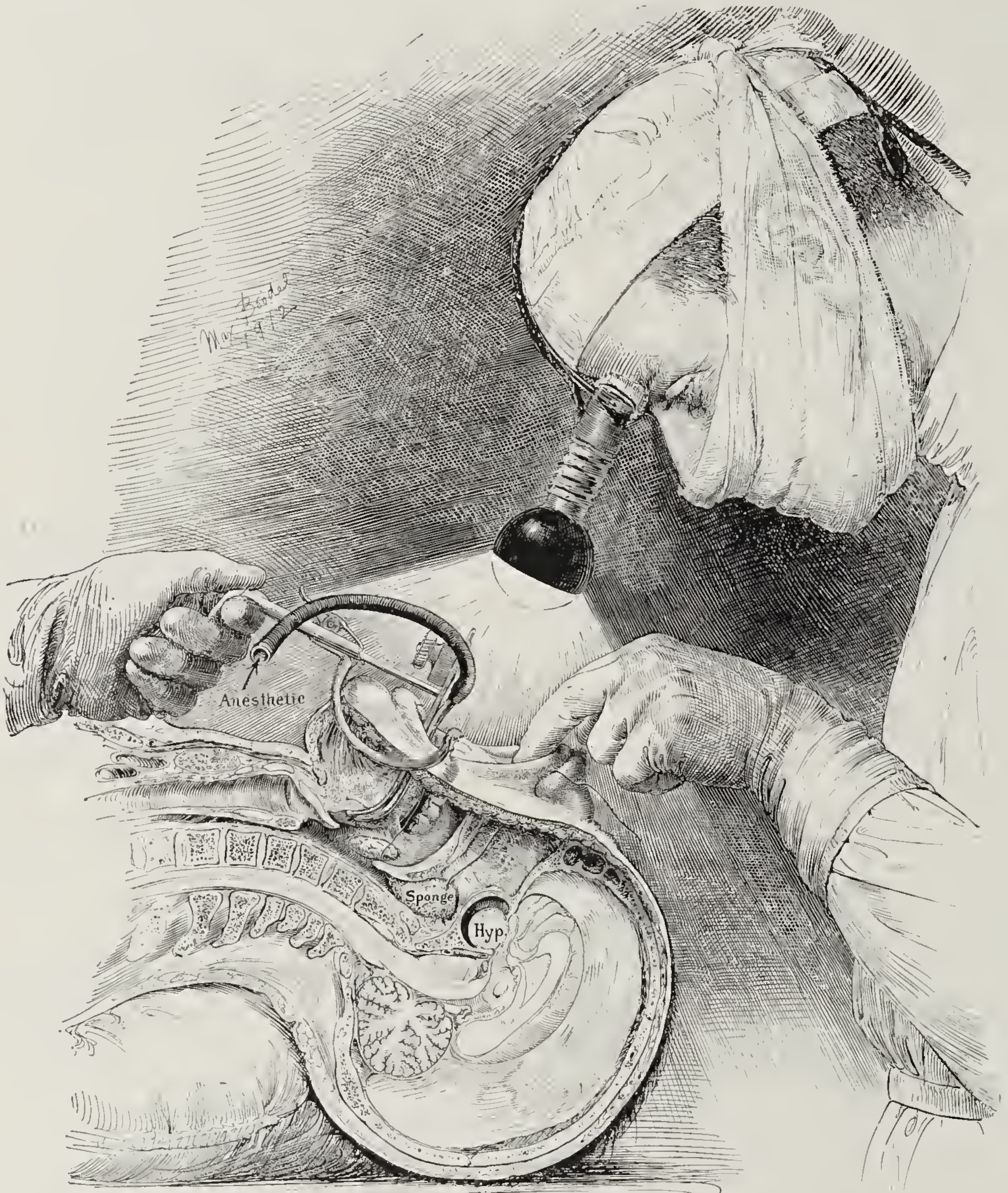

Fig. 1.—To show anatomic relation of structures concerned and illumination of operative field; also position of patient, with modified Sewell mouth-gag and tongue-elevator in place; sponge in retropharynx (no longer used); lip being elevated preparatory to making the sublabial incision.

As I have said elsewhere, I feel that our most helpful working basis accepts the now prevalent view that derangement of any one of these correlated glands leads to more or less evident disturbances in other members of the series, but with the qualification that a primary disorder of any individual gland or pair of glands, whether on the side of oversecretion (perversion?) or undersecretion, produces its own peculiar group of symptoms. With some of the resultant syndromes we are already familiar. For example, a primary pituitary insufficiency, whether of childhood or adult life, bears a certain resemblance in its constitutional manifestations to a thyroid insufficiency in an individual of corresponding age; yet the two conditions, even without a tell-tale glandular struma, are easily distinguished. The insufficiences of adrenal, parathyroid and pineal glands, of the islets of the pancreas, and of the interstitial cells of testis and ovary, likewise give rise to their own peculiar syndromes; and though we know little of the constitutional expressions of the reverse conditions, except in the case of the thyroid (exophthalmic goiter) and the pars anterior of the pituitary body (acromegaly), yet we have reason to believe that the recognition of corresponding states of primary overaction of the other glands will be forthcoming.

So far as is now apparent, a functional hyperplasia of the pars anterior of the pituitary body stimulates tissue growth, chiefly apparent in the skeletal, cuticular and subcuticular tissues, but at the same time, as the feeding experiments of Goetsch would indicate, there is an excitatory effect on the reproductive apparatus, reflected on the secondary characters of sex.[3] Conversely, anterior lobe insufficiency should inhibit skeletal growth and sexual development. Little is known, on the other hand, of the consequences of functional hyperplasia of the posterior lobe. This portion of the gland appears to be more concerned with tissue metabolism, for when rendered inactive by disease or by compression, metabolic processes are checked; a high tolerance is acquired for carbohydrates, which are promptly stored as fat; there is drowsiness, insensitivity, slow pulse and respiration, with a lowered respiratory quotient, a subnormal temperature, low blood-pressure and so on. This complex of symptoms, as has been pointed out,[4] in some measure simulates the phenomenon of hibernation, a state in which the metabolic fires burn low, and one in which marked histologic changes have been shown to occur in the gland—changes which suggest a seasonal wave of physiologic inactivity.

A tendency to progress toward a state of relative glandular inactivity is apparent in most cases of pituitary disease. It is true that hyperpituitarism may be recovered from without subsequent hypopituitarism, but commonly symptoms of glandular insufficiency are in the course of time superimposed on those of outspoken acromegaly. Moreover, it is sometimes possible to recognize by radiographic studies slight evidences of antecedent acromegaly in individuals in whom present signs of hypopituitarism are the outstanding and conspicuous expressions of the disorder. It was an appreciation of this mixture of symptoms which made it seem advisable to adopt the term "dyspituitarism" to cover all types, though numerous examples, particularly of glandular insufficiency, lie unquestionably on the side of hypopituitarism from the outset.

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[2] Concerning the Symptomatic Differentiation Between Disorders of the Two Lobes of the Pituitary Body. Am. Jour. Med. Sc., 1913, cxiv, 313.

[3] The Pars Anterior and Its Relation to the Reproductive Glands, Proc. Soc. Exper. Biol. and Med., 1913. xi, 26.

[4] Hibernation and the Pituitary Body, Proc. Soc. Exper. Biol. and Med., 1913, xi, 25.

Many symptoms of former etiologic obscurity, other than those of accelerated or retarded skeletal growth, are so often associated with dyspituitarism that when they occur in more or less isolated fashion a suspicion of pituitary disease is now aroused. This is particularly true of many forms of obesity; but it must be realized that there are lean as well as fat examples of pituitary disorder, as I shall have occasion to illustrate, and it may be recalled that emaciation has been shown experimentally to be a consequence of the administration of posterior lobe extracts over long periods. Other symptoms of moment are the hypophysial polyurias, which are thought by some to be the key to diabetes insipidus.[5] States of undue drowsiness, some of the psychoses,[6] disturbances in the sexual sphere, as amenorrhea or impotence, delayed or precocious puberty, likewise suggest in many cases a hypophysial influence and lead us to-day to scrutinize the patient for possible correlated secretory or neighborhood symptoms.

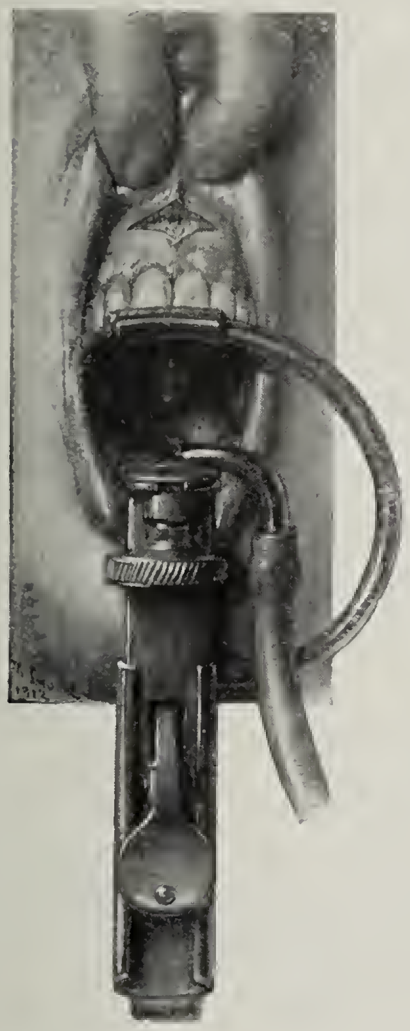

Fig. 2.—Anterior view of field with mouth-gag in position; also the small transverse Loewe-Halstead incision across the frenum. (In this and the following sketch the view of the parts is upright, the reverse of the operator's view during the procedure.)

These, to repeat, are among the constitutional symptoms due to changes in the secretory activity of the gland, and their treatment calls for glandular therapy, administered so far as may be possible, to offset the apparent insufficiency of one or the other pituitary lobes. Happily the results of glandular feeding are often as gratifying as in the case of thyroid insufficiencies, but I am doubtful whether the functional hyperplasias of early acromegaly, in the absence of neighborhood disturbances, should be attacked by a partial removal of the gland, as is practiced in exophthalmic goiter; for hyperpituitarism, as I have pointed out, tends more often to become stationary or even to pass over into the stage of glandular inactivity than does hyperthyroidism. Still, promising results have followed such procedures, and I have occasionally been led to make a fractional hypophysectomy in cases of acute acromegaly when the patients have been victimized by severe pituitary headaches from distention of the capsule—a surprisingly infrequent form of discomfort as a matter of fact, for even the hypertrophied sella of acromegaly readily gives way to pressure.

It is quite a different matter when pronounced neighborhood disturbances are present, whether or not they are accompanied by endosecretory evidences of the disease; and in a series of 148 cases[7] regarded as primarily hypophysial, 101 have shown definite local signs of pressure implication of structures in the immediate vicinity of the gland.

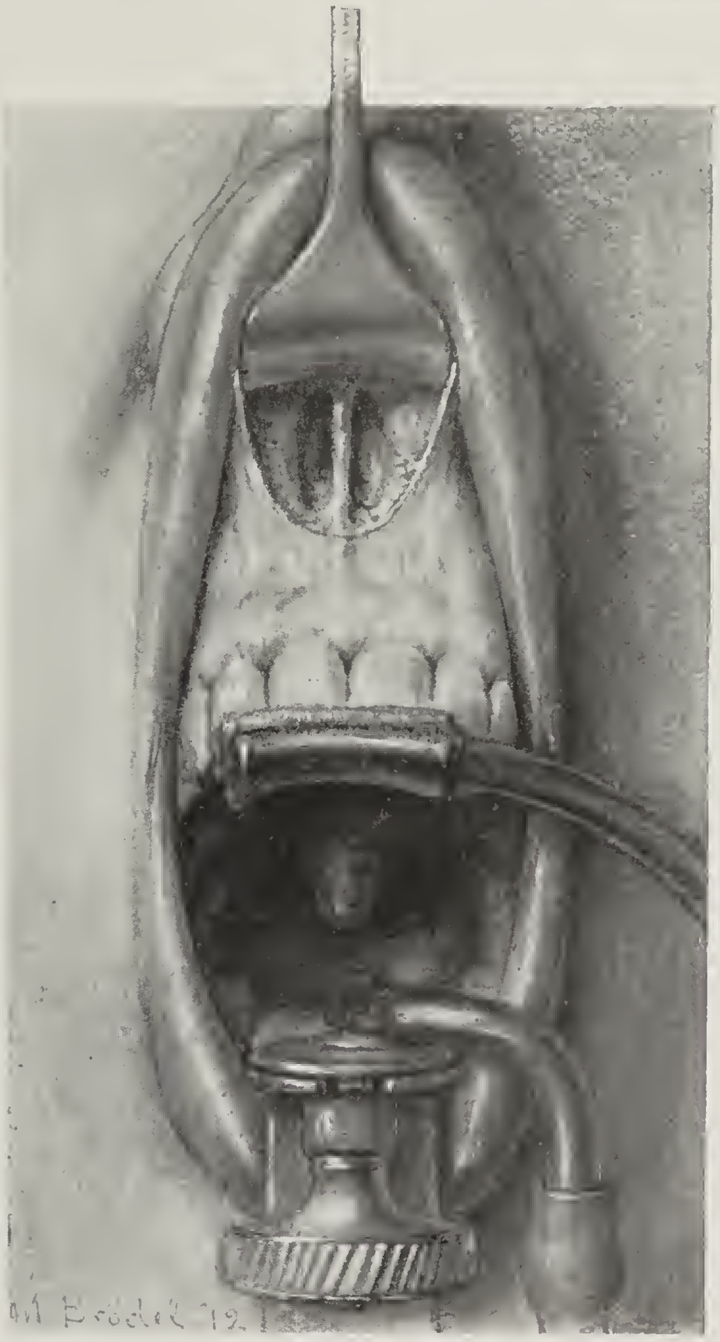

Fig. 3.—Exposure by blunt dissection of the lower edge of the cartilaginous septum. The mucous membrane is elevated from the septum to a considerable depth preparatory to the introduction of primary retractors.

I confess to the difficulty of satisfactorily classifying all of the examples of hypophysial disease of which I have records without running into too great complexity. I struggled with the subject rather ineffectually three years ago at the time of preparing a monograph on the subject, when there was much less material at hand to illustrate the varied types of dyspituitarism. Nevertheless it is necessary to give some idea of the character of the cases which are to be reviewed from the standpoint of surgical treatment, and for present purposes they may be divided into two groups —namely, the 101 cases presenting definite tumor manifestations and the forty-seven cases without these local signs of the disease.[8]

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[5] Concerning Diabetes Insipidus and the Polyurias of Hypophysial Origin, Boston Med. and Surg. Jour., 1913, clxviii, 901.

[6] Psychic Disturbances Associated with Disorders of the Ductless Glands, Amer. Jour. Insan., 1913, lxix, 965.

[7] At the time this lecture was delivered the series was limited to 136 cases. I have taken the liberty of bringing the statistics up to date (June 1, 1914) by including the cases observed in the succeeding four months.

These 101 cases may be conveniently subdivided into the forty-eight cases in which the tumor has apparently arisen from some suprasellar source—usually from a congenital anlage—and the fifty-three cases in which an actual enlargement (struma) or tumefaction of the gland itself has served to call forth the local symptoms. Radiographic and perimetric studies are to be largely depended upon in distinguishing between these two conditions, and it may be said in general of individuals manifesting neighborhood complications that those showing acromegalic tendencies usually represent cases of primary glandular (intrasellar), and those with adiposogenital dystrophic tendencies cases of supraglandular (or suprasellar), tumor. However, this rule is far from dependable, for exceptions arise, particularly in the large group possessing huge glandular strumas with insignificant signs of dyspituitarism. Moreover, a primary glandular struma may burst through the dural capsule and involve the chiasm and other interpeduncular structures without any very great enlargement of the sella; on the other hand, a superimposed tumor may wipe out the sellar outlines and cause blindness, simulating a primary glandular tumefaction were dependence to be placed solely upon the late x-ray diclosures.

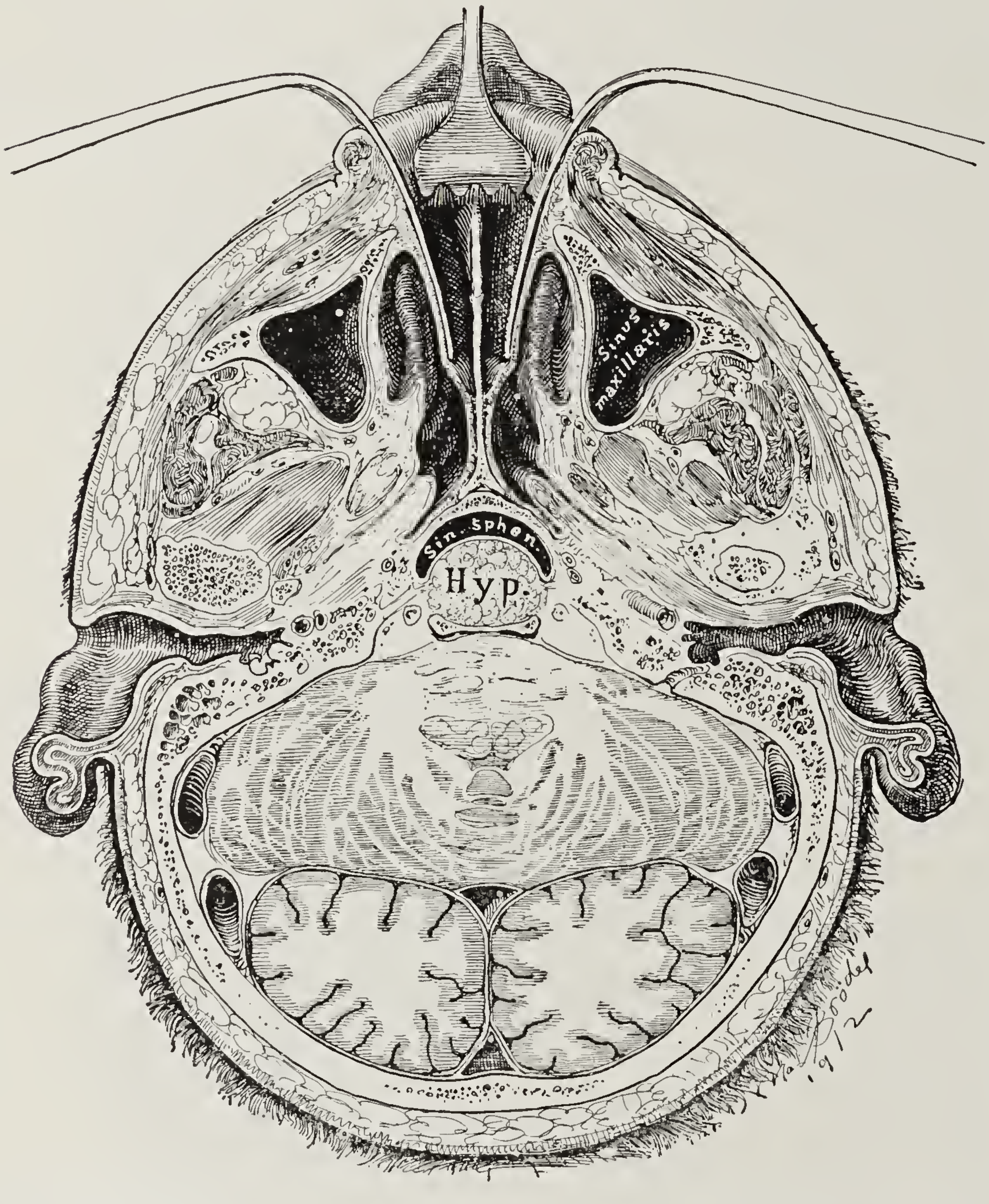

Fig. 4.—Horizontal section to show position of the lateral retractors introduced between the reflected mucous membrane and the denuded septum

Let us return for a moment to a further brief analysis of the 148 cases on the basis of their endosecretory or constitutional symptoms, irrespective of a tumefaction or otherwise of the gland or its environs. 1. The characteristic skeletal metamorphoses of acromegaly were apparent in forty-three cases. 2. The reverse clinical picture, namely, that of glandular insufficiency, was evident in ninety-four cases, some of them of the fat and some of the lean type, and almost all with more or less marked secondary genital dystrophy, though it must be acknowledged that in many, particularly the adult cases, the constitutional manifestations were so inconspicuous that they might have been overlooked had not pronounced neighborhood signs and symptoms been in evidence. 3. Finally, there occur in the series twelve cases of obvious polyglandular involvement, in which the hypophysis merely participates, without reasonable assurance that it is the primary source of the endosecretory disorder. In our present connection these three groups deserve further consideration, on the basis of the coexistent neighborhood disturbances—in other words, on the basis of the presence of symptoms which call for operative rather than medicinal therapy.

1. *Endosecretory Symptoms on the Side of Hyperpituitarism.*—In so far as its skeletal changes are concerned, acromegaly represents a permanent structural alteration, whether or not the secretory disorder which incites these alterations has ceased to be active. This is often a matter most difficult to determine, for doubtless, as in hyperthyroidism, the periods of activity of the process may occur in waves. Only when outspoken manifestations of glandular insufficiency are of long standing in cases in which there are coexistent skeletal evidences preceding acromegaly, is it safe to say that hyperpituitarism has permanently subsided. Of the 43 cases listed in the group of acromegalics (including 7 acromegalic giants), in 30 the typical features of this derangement were pronounced, whereas in 13, though unmistakable, they were far less evident, there being 4 examples in which traces of acromegaly would have been overlooked without roentgenologic studies.

Hence it is conceivable that in a still larger proportion of the patients an antecedent wave of hyperpituitarism may have occurred, though not sufficient to bring about any demonstrable fixed skeletal changes.

All of these cases in the acromegalic group showed sellar changes, varying from moderate enlargement of the fossa with the characteristic thickening of its walls to conditions of extreme distention. It is notable, however, that in only 20 of the 43 cases was any chiasmal involvement demonstrable on perimetric tests at the time of admission, and moreover that these 20 cases, with but a few exceptions, were all ones in which a large struma had developed with coincident signs of pituitary insufficiency. Only one or two of the cases in the stage of advancing acromegaly showed deformations of the visual fields. Thus more than half of the patients in this the acromegalic group gave no outspoken neighborhood indications of tumor demanding operation, though it must be confessed that in one or two cases large unsuspected intracranial extensions of the struma which did not implicate the chiasm have been found post mortem.

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[8] It should be noted in this connection that the mere enlargement of the sella, whether in association with acromegaly or otherwise, is not included among the so-called "neighborhood symptoms."

In a number of these patients the polyglandular involvement was clinically apparent, for, in addition to the more common secondary disturbances on the part of the reproductive glands, they showed either coexistent goiters, or diabetes, or pigmentation with asthenia suggesting adrenal participation. However, in these cases the acromegalic changes were sufficient to overshadow the evidences of derangement of the other glands, and to stamp the condition as of primary pituitary origin.

In almost all of the cases subjected to operation the tissues removed proved to be more or less rich in acidophilic cells, whereas neutrophilic cells characterize the strumas of hypopituitarism.

2. *Endosecretory Symptoms on the Side of Hypopituitarism.* — This group possibly should include the 20 acromegalics spoken of above in whom there were distinct evidences of present glandular insufficiency. It will, however, in the present analysis be limited to the 94 cases in which the endosecretory manifestations appeared to be on the side of insufficiency from the outset. In 82 of these cases pronounced tumor symptoms were present. The 12 which were free from these neighborhood symptoms presented the typical constitutional picture of adiposogenital dystrophy, in association usually with an undersized sella. The absence of local symptoms naturally does not preclude the presence of a growth, for, as has been pointed out, the interpeduncular congenital lesions may be tolerated for years and may reach a considerable size before giving symptoms, but it is presumptive that the majority of the 12 cases represent a primary glandular hypoplasia without tumor.

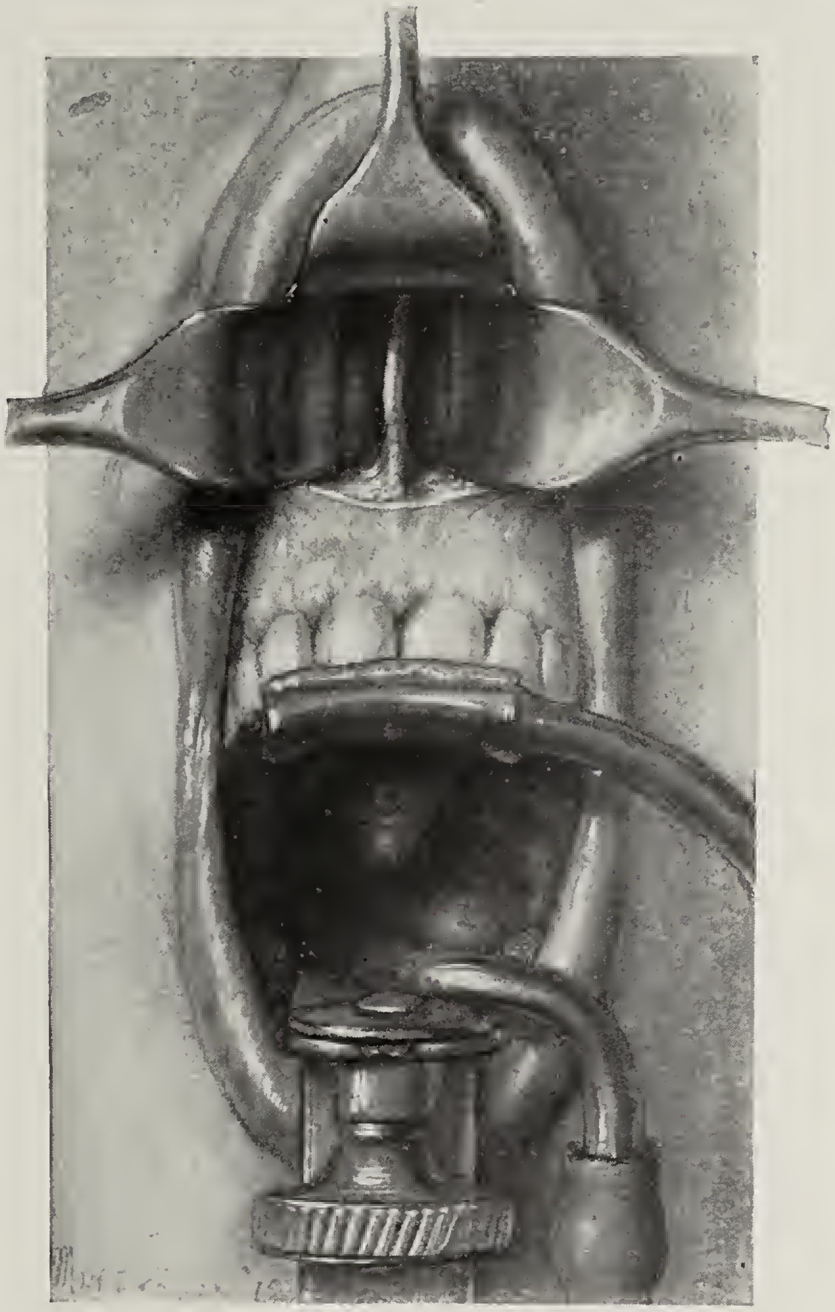

Fig. 5.—Anterior view of Figure 4 with primary lateral retractors in place before removal of septum.

The 82 cases with tumor may be grouped as follows: (1) 10 cases of adiposogenital dystrophy with tumor in which the onset of symptoms antedates adolescence —the typical syndrome of Fröhlich; (2) 8 cases of genital dystrophy with tumor but with extreme leanness rather than adiposity; (3) 63 cases in which the symptoms have arisen in adult life, often with retrogression of the secondary characters of sex, a more or less marked tendency toward the deposition of fat and invariably with pronounced neighborhood symptoms. As a matter of fact, however, in about half of these cases the constitutional evidences of hypophysial disorder were so relatively inconspicuous that without a localizing diagnosis the patients would readily have passed muster as normal (from an endosecretory standpoint) individuals.

In 29 of these 63 cases the lesion was of intrasellar origin—the so-called pituitary goiter or chromophobe struma, which in 4 instances had assumed malignant tendencies — and the radiographic outlines of the distended fossa were more or less completely obliterated. In the majority of the remaining 34 cases the lesion presumably arose from a suprasellar source, it having been certified in 15 cases as follows: developmental cystic tumor, 7; developmental solid (mixed) tumor, 6; endothelioma, 3; tuberculoma, 1. Though the existence of a retrochiasmal or suprachiasmal growth is reasonably certain in the 19 other cases, the diagnosis has not been assured by operation or necropsy.

3. *Endosecretory Symptoms of a Polyglandular Character.* — Here are included 12 cases with obvious pituitary implication but in which it is not apparent that an hypophysial disorder is the underlying element, unlike the cases of acromegaly mentioned above in which polyglandular manifestations are also clinically recognizable. They are cases in which a pineal, thyroid, adrenal, testicular or ovarian symptomatology is sufficiently pronounced to make a primary hypophysial disorder questionable. Three of these patients have been subjected either to a cranial exploration or decompression for relief of pressure symptoms, but their further consideration is beyond the scope of this report.

*Perimetric Deviations.*—The tumors or glandular strumas which accompany pituitary disease enlarge slowly, and symptoms may often be traced back for many years. Though as a rule the optic chiasm is the first of the neighborhood structures to suffer, it is extraordinary what a degree of stretching and displacement it is susceptible of without affecting the acuity of vision or causing any disturbance in the fields. The characteristic chromophobe struma originating in the gland itself may distend the sella to the point of absorption of its walls and stretch the glandular capsule until it gives way, permitting the enlarged gland to grow upward into the cranial chamber. Such an intracranial extension may occur to one side of or behind the chiasmal cross-roads, so that eventually either a homonymous or a bilateral defect in the fields of vision may be made out; but manifestations of pressure against the uncus, or against the crura, or even the frontal lobe, may give evidence of extensive intracranial invasion long before there are appreciable signs of chiasmal distortion.

Nevertheless, of all the local symptoms, evidences of pressure on the chiasm are of course the most characteristic and definite. Special studies of these chiasmal disturbances have been made with my co-worker Clifford B. Walker, and will be submitted elsewhere. It will suffice to say here that in the majority of the cases in which perimetric changes have been present, the defects in the fields of vision occurred in the upper quadrants, whether bitemporally or homonymously, indicating pressure against the chiasm from below. We have seen fit to speak of these field defects as grades or stages of hemianopsia, for true half vision, particularly when it affects both eyes symmetrically, is not only comparatively rare, but shows a seriously advanced stage of the process. In the earliest stage, which unhappily is not often recognized, there is merely a slanting off of the form field possibly in one eye alone, with a more or less definite quadrantal loss for colors and often a relative paracentral scotoma —to which de Schweinitz in an excellent paper on the subject has called attention. From the early defect of this Stage 1 the process advances in characteristic fashion through what we call Stage 4 of typical hemianopsia to Stage 8 in which blindness ensues. Moreover, on relief from pressure the process retraces its steps, occasionally with great rapidity — a matter of days oftentimes—until the fields are again normal, or as near normal as the stage of the advance will have permitted.

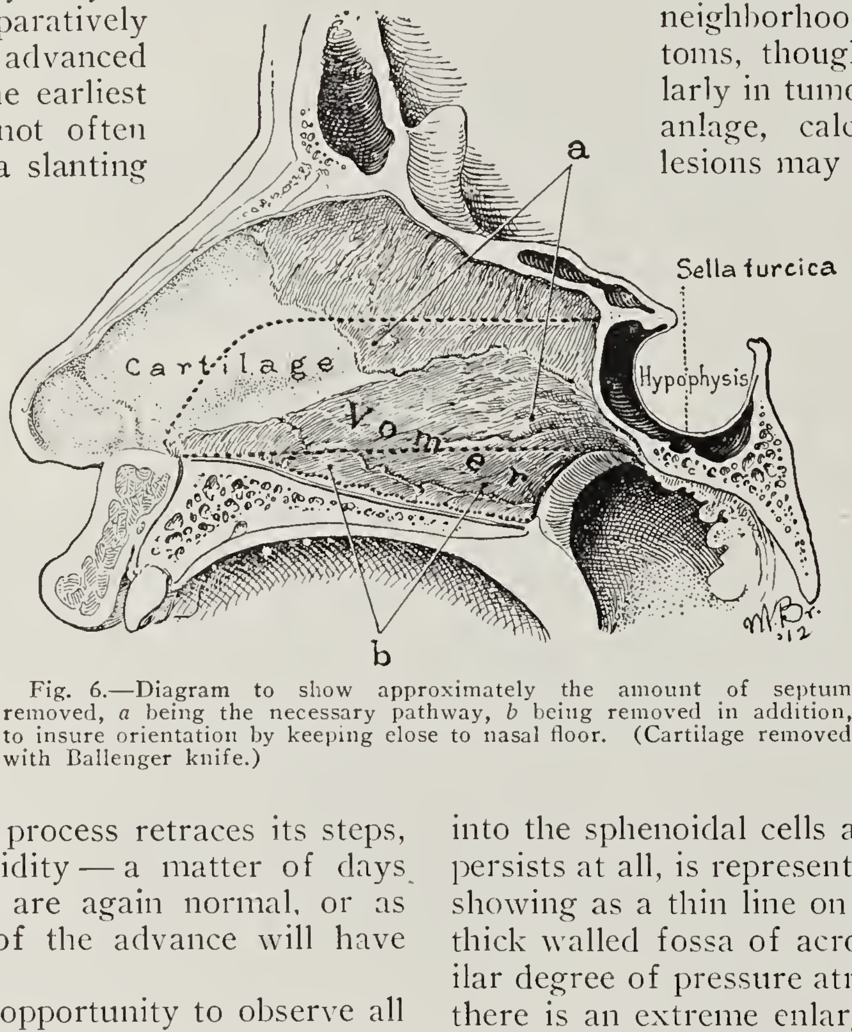

Fig. 6.—Diagram to show approximately the amount of septum removed, *a* being the necessary pathway, *b* being removed in addition, to insure orientation by keeping close to nasal floor. (Cartilage removed with Ballenger knife.)

We have had an unusual opportunity to observe all variations of advance and recession in the field defects and have concerned ourselves particularly with the early stages in patients with pituitary disease in whom evidence of chiasmal involvement has just begun to appear. There are, of course, bizarre forms of field defects—defects which begin at the lower quadrants, or as concentrically enlarging central scotomas, but these are rather more characteristic of the various superimposed lesions in which the visual cross-roads are more or less irregularly enveloped by the lesion. In the larger number of cases the condition progresses in the way which has been briefly described.

I need make no apology for this digression concerning the visual disturbances inasmuch as it is for their relief that operation is chiefly indicated, and a consecutive study of the field defects gives the best possible index, in the average case, of the efficacy of the procedure. Rarely in surgery do we have such a clearly measurable standard of the benefits of an operation.

*Sellar Deformations.*—Inasmuch as the surgical procedure best adapted for the relief of neighborhood symptoms hinges largely upon the radiographic disturbances of the pituitary fossa, it may not be out of place to comment briefly upon the several types of sellar distortion, though this is a special subject in itself. For our present purposes we need consider only three varieties: (1) the undeveloped sella; (2) the sella affected by superimposed pressure; (3) the sella distended by a primary glandular struma.

1. Abnormally small sellas or sellas with fused clinoids are frequently seen in cases of primary hypopituitarism without neighborhood symptoms. Not infrequently there is a coincident failure of full development of the sphenoidal cells, and the fossa may be perched on a comparatively solid sphenoidal base.

2. Sellas of approximately normal size but in a more or less abnormal position and with more or less irregular outlines often occur in conjunction with a superimposed tumor. Under these circumstances the diagnosis must usually hinge alone upon the neighborhood and constitutional symptoms, though occasionally, and particularly in tumors arising from a congenital anlage, calcareous depositions in the lesions may cast a radiographic shadow. Three examples of this occurring in my series have been recorded by Dr. Alfred Luger.[9]

3. The sellar enlargement accompanying glandular tumefaction is of two main types: (*a*) that occurring in simple acromegaly, in which bony thickening of the walls accompanies the distention, and (*b*) that in which progressive enlargement with thinning of the walls so deepens the fossa that it bulges into the sphenoidal cells and the thinned dorsum, if it persists at all, is represented merely by a scale of bone, showing as a thin line on the negative. Still even the thick walled fossa of acromegaly may undergo a similar degree of pressure atrophy in those cases in which there is an extreme enlargement of the gland.

These then are the main forms, though many deviations are met with, varying all the way from complete absence of any trace of the fossa except the anterior clinoid processes, to grades of flattening, of irregular bony thickening and so on, which require special interpretation. This may be difficult in the cases in which the pressure of a superimposed lesion has greatly deformed and flattened the fossa; and particular caution must be observed lest the sellar enlargement, due to distention of the third ventricle in conditions of internal hydrocephalus produced by a subtentorial tumor, be mistaken for a primary pituitary enlargement. This error is the more likely to occur in view of the signs of secondary hypopituitarism which often accompany hydrocephalus. Several cases of this kind have been referred to us with the diagnosis of primary pituitary disease; and needless to say, the performance, under this diagnostic error, of a transphenoidal operation with opening of the third ventricle would be disastrous.

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[9] Luger, Alfred: Zur Kenntniss der im Röntgenbild sichtbaren Hirntumoren mit besonderer Berücksichtigung der Hypophysengangsgeschwülste, Fortschr. a. d. Geb. d. Röntgenstrahlen, 1914, xxi, 605.

For our present purposes the first form need not be further discussed. Examples of hypopituitarism with a small sella and no neighborhood signs are cases for glandular and not surgical therapy. From an operative standpoint we need consider only the second and third types when they occur in conjunction with neighborhood symptoms.

*Operative Procedures for Suprasellar Tumors.* — The chief difficulty arises when pronounced tumor symptoms, and possibly pronounced glandular symptoms as well, are associated with a sella of fairly normal configuration. How can the lesion be approached in these cases? Certainly not from below unless for the purpose of sellar decompression alone in the hope of improving the secretory capabilities of a flattened or compressed gland. In regard to this, however, I do not feel particularly hopeful, though a few remarkable examples of improvement from such a measure occurred in my earlier series. Obviously, if the lesion itself is to be attacked, some intracranial procedure is necessary, and two routes have been advocated: a lateral subtemporal route, practiced by Horsley and used by us in our canine experiments, and a frontal approach, first proposed by Hartley, Krause and McArthur and of late strongly advocated by Frazier and Elsberg.

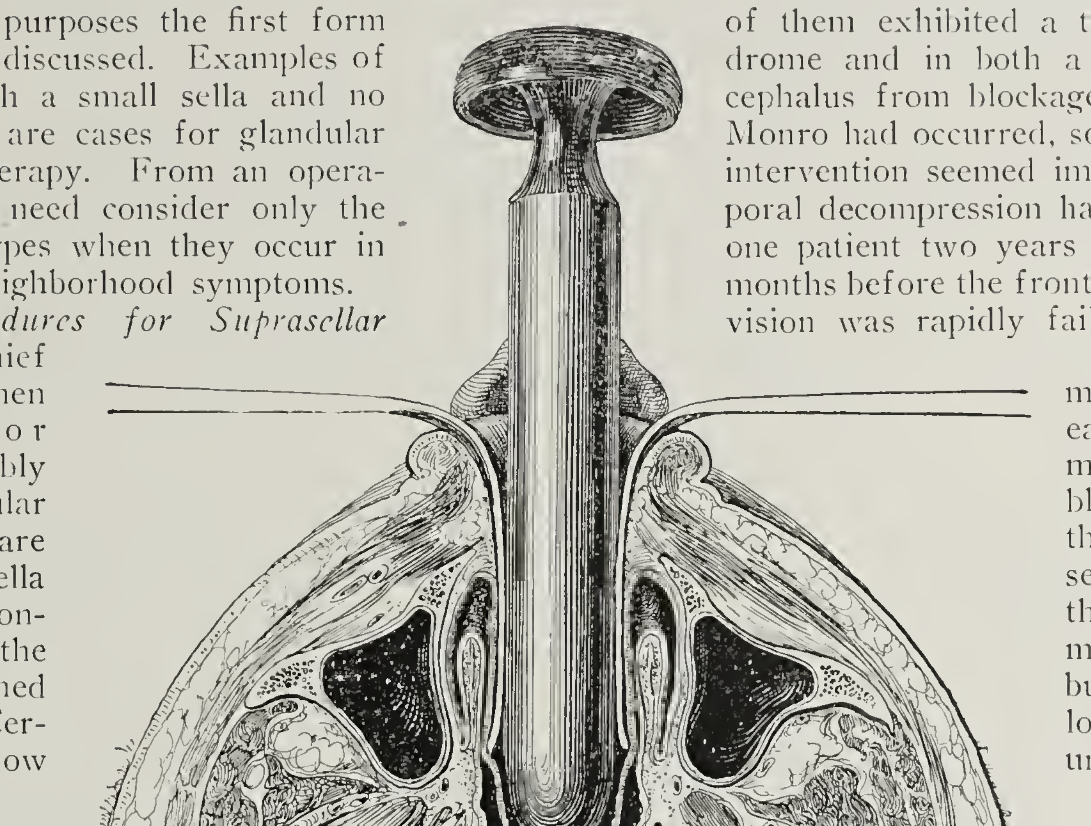

Fig. 7.—Horizontal section to show introduction between the retractors of one of a series of dilating plugs which serve to flatten the turbinates.

My own experiences have not been particularly happy with either of these measures. Subtemporal explorations have been made in eight instances. Great difficulty has been met with owing to tension, and only twice have I ventured to expose the dural margin of the fossa sufficiently well to justify fragmentary removal of the lesion. Unjustifiable laceration of the temporal lobe would have been produced had a more radical exposure been made. Such relief as these patients experienced was attributed to the cranial decompression, and consequently in the later series recourse has been had to this palliative measure alone for the larger number of these cases with an interpeduncular tumor.

My experience with frontal operations, likewise small, has been limited to five patients. Two of them exhibited a typical Frölich's syndrome and in both a complicating hydrocephalus from blockage of the foramina of Monro had occurred, so that some operative intervention seemed imperative. A subtemporal decompression had been performed in one patient two years and in the other six months before the frontal operation. In both vision was rapidly failing.

In each case a freely movable tumor was easily exposed, but its manipulation led to bleeding. In one of the patients at a second session some days later the growth was removed in its entirety, but with such extreme local damage that the unfortunate child's death twelve hours later was a blessing. In the second case the outcome would have been the same had I ventured to attempt a removal. Both of these growths were hard, calcified lesions, the one which was removed bringing with it a large cholesterin cyst the size of a golf-ball. Neither was capable of removal or partial removal piecemeal.

The three other cases were hardly more encouraging. All were adult patients with practically normal sellas but with nearly total blindness from primary optic atrophy. In two of them suprasellar cysts were found and evacuated—the condition supposedly most favorable for this type of operation. In one case vision had returned in each eye on the afternoon of the operation, but faded again after three or four days: the operation was repeated and an attempt made to permanently drain the cyst, with again a return of vision which failed after several days; on a third attempt the cyst was punctured by a "Balkenstich" and there was a slight return of vision after some days, which, however, was not permanent. In the two other cases the condition remained unchanged.

It is fair to say that this experience while discouraging is slight, and I shall further pursue the matter as favorable circumstances arise, but certainly the cases for which a frontal operation is indicated cannot compare, either in number or on the ground of risk or of promised improvement, with those to be discussed under the following heading in which a transphenoidal operation is suitable. It is conceivable that our diagnostic facility may so improve that we shall be able to recognize the presence of a suprasellar lesion before it has enlarged to any considerable extent; also that we may be able to foretell the presence of a cystic growth suitable for operative evacuation by this route; but judging from the post-mortem study of a number of these cases, few if any of them could have been benefited by a partial removal of the growth and its total removal would have been out of the question. Mere drainage, as the experience recounted above would indicate, will not always serve to give permanent results even in the case of a simple cyst.

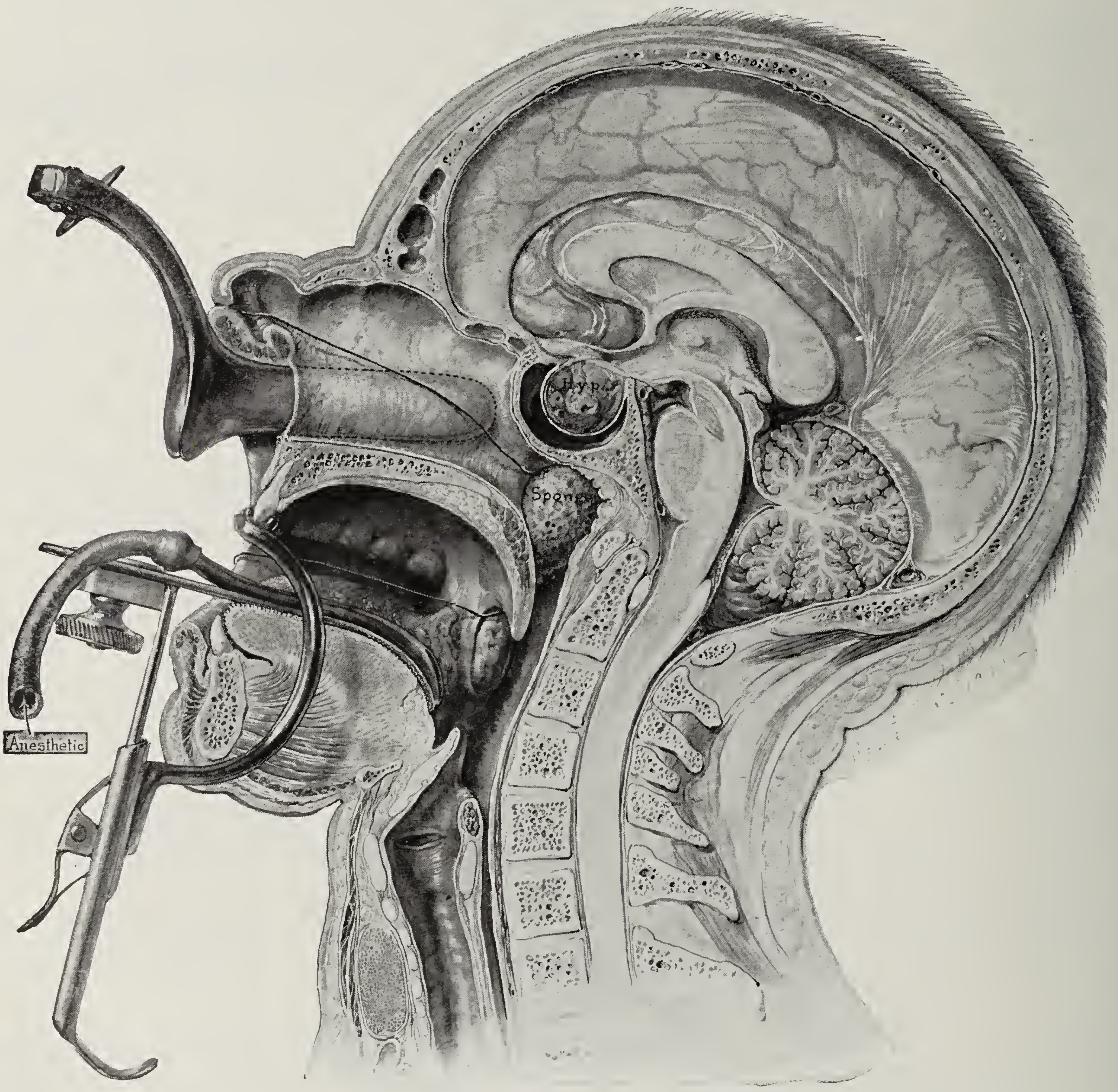

Fig. 8.—Sagittal section to show position of structures and substitution for the two lateral retractors of a self-retaining bivalve speculum through which the further manipulations are conducted.

*Operative Procedures for Tumefactions Which Distend the Sellar Fossa.*—The surgical story is here far more encouraging. In the analysis of 148 cases given above it was stated that neighborhood (usually chiasmal) symptoms accompanied by a greatly distended sella turcica were present in 20 of the acromegalics and in 29 of the patients with apparent primary hypopituitarism. Thus 49 cases in the series were clearly suitable for the transphenoidal procedure and almost without exception the 43 cases of the type which were subjected to operation have been greatly benefited. Some 25 other cases have been similarly treated, with less definite or with no improvement and, as the final statistics will show, with some fatalities.

The performance itself has been much simplified since the original transphenoidal operation which

Schloffer boldly originated. The procedure which I have come to employ is merely a composite of such modifications of the Schloffer operation, suggested by Kanavel, Halstead, Hirsch and others, as are adapted to my own requirements. It therefore makes no claim for originality.[10]

Few words in description of the operation are needed to supplement Mr. Max Brödel's drawings which are here reproduced, for, as is true of all his supurb medical illustrations, they serve to make the context superfluous. The sketches, however, were made two years ago, before my departure from Baltimore, and since then the operation has undergone some further simplification. At that time much reliance was placed upon the Sewell mouth-gag and tongue depressor, which with its leverage upon the upper teeth is admirably suited to hold the tongue forward—an important matter when, as in cases of acromegaly, there is considerable lingual hypertrophy. My anesthetist at that time, Dr. S. Griffith Davis, modified the apparatus by soldering a tube to the upper surface of the tongue depressor, so that the ether vapor could be conducted directly to the glottis, which the tongue depressor effectively holds open. Moreover, in the earlier operations tears were often made in the mucous membrane, with some leakage of blood into the pharynx, and to avoid this it was customary to occlude the posterior nares with a sea sponge, as shown in the drawings. Latterly, however, we have made use of Meltzer's intratracheal method, and with greater experience in conducting the submucous resection tears in the mucous membrane are usually avoided and we no longer need to occlude the posterior nares.

The operation combines all the advantages of the endonasal procedure of Hirsch, and for one who does not possess the practiced hand of the rhinologist it has the further advantage of affording almost double the room that an operation through one nostril permits. Furthermore, it possesses the advantage of a midline procedure, which affords almost as much operative space as was given in the earlier mutilating operations in which septum and turbinates were removed; for with the introduction of the dilating plugs the lower turbinates are temporarily flattened. By this method there is a complete avoidance of the postoperative ozena which, as von Eiselsberg points out, is one of the disagreeable consequences of exenteration of these structures.

When working at a depth in an operation of this kind the field must be absolutely dry, as identification of the structures at every bite of the rongeurs is essential. In the simple cases removal of the anterior wall of the sphenoidal cells exposes the bulging struma, which is often covered merely by mucous membrane and distended dural capsule, with possibly a few scales of the thinned sellar base between them. On slitting the coverings the soft struma extrudes from the incision and as much of the tissue as judgment permits is scooped out of the base of the sella by a blunt spoon.

There are many helpful surgical devices, many precautions to be taken, many abnormalities which must be recognized, the discussion of which would lead too far at this time. One precaution alone may be mentioned, and this concerns the cases in which a superimposed tumor has distended and obliterated the sella, giving the radioscopic appearance of a primary sellar enlargement. Under these circumstances, on slitting the distended dura resistant tissue instead of the soft struma is exposed, and inasmuch as a flattened pituitary gland may be interposed between operator and tumor, it is well to remove a small snip of tissue for microscopic purposes and to postpone further progress by this route, if any is justifiable, for a subsequent session.

In the average case, however, there is no difficulty of interpretation; and after the extirpation of such of the struma as seems wise the bivalve speculum which holds apart the intact mucous membrane linings of the septum is removed, a cigaret of gauze covered by petrolatumed protective is placed in each nostril, to hold the submucosal surfaces of the septum in approximation, and the sublabial incision is closed with two or three catgut sutures. As no drainage from the sphenoidal cells is used the raw gland must be left completely dry before withdrawal from the deep field. The cigaret plugs are removed after a few hours, and in many cases there is no subsequent discharge and it would be impossible to gather from a nasal examination that an operation had been performed. The patients are usually able to leave the hospital in a week or ten days.

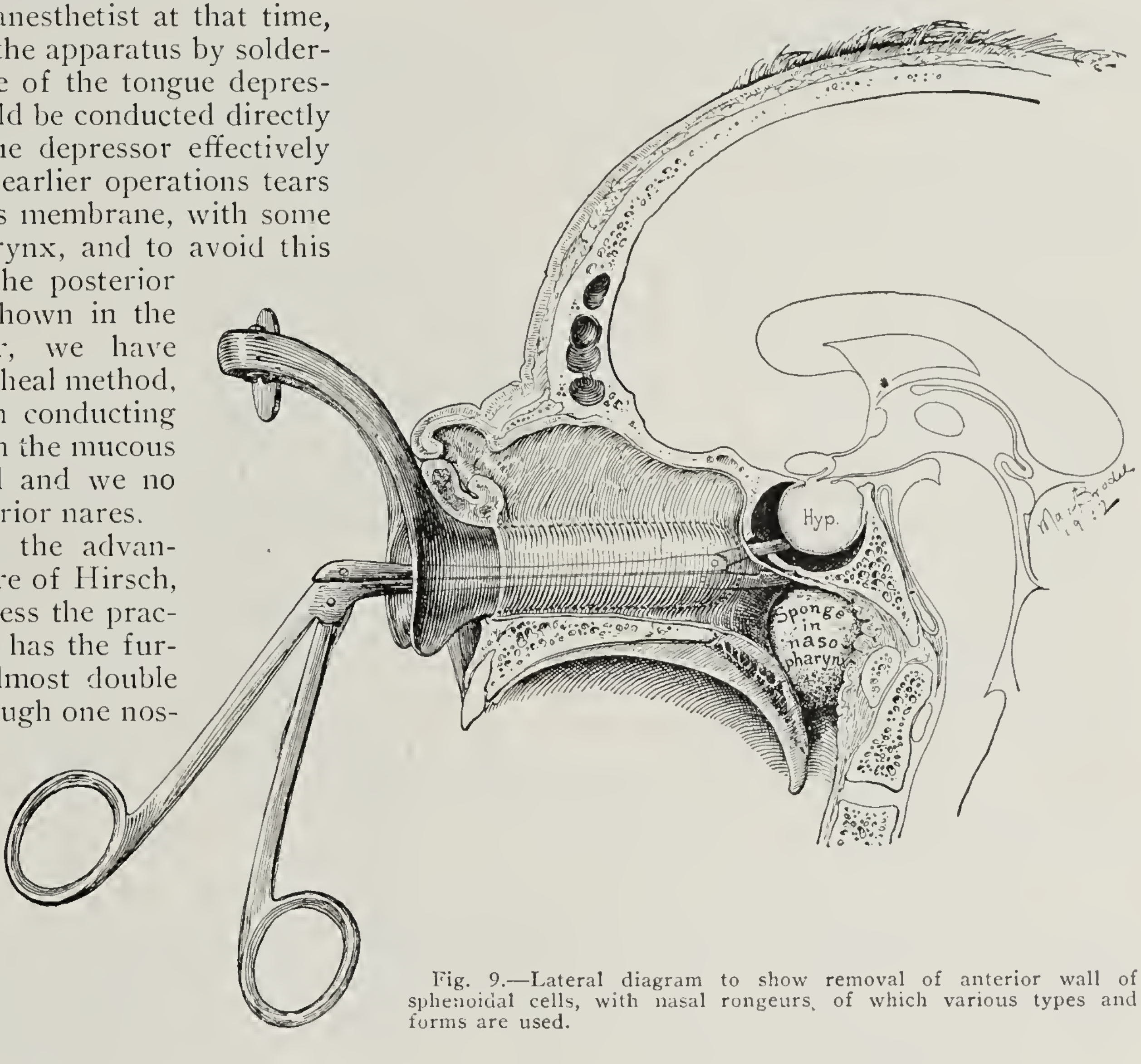

Fig. 9.—Lateral diagram to show removal of anterior wall of sphenoidal cells, with nasal rongeurs, of which various types and forms are used.

The criterion of success, however, is not the getting in and out without risk or without a tell-tale of the operation, but the betterment of vision. Improvement is apt to be so abrupt in favorable cases in which the temporal defect has not advanced beyond the stage of a midhemianopsia that patients are often aware of an increased acuity on recovering from the anesthetic. Even in cases of more advanced visual impairment improvement may follow, and in not a few cases vision has been regained in previously blind eyes, demonstrating, as I have elsewhere emphasized, that so-called primary optic atrophy with blindness need not represent a complete anatomic destruction of the nerve but rather a physiologic block to the transmission of light.

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[10] A written comment on the operation may be found in "The Pituitary Body and Its Disorders," J. B. Lippincott Company, 1912, p. 297, *et seq.*

### OPERATIVE STATISTICS

As already stated, in the series of 148 patients with evidences of a hypophysial derangement manifestations of tumor were present in 101 cases. In 95 of these cases surgical measures were undertaken. In a number of patients in the earlier series operations were attempted which experience has shown to have been unwise, and possibly these are offset by the number of favorable cases in the series that have refused operation. Hence it may be roughly estimated that about two-thirds of the individuals with outspoken pituitary disease suffer from defects of vision or from pressure discomforts capable of some measure of surgical relief.

The various types of operation, from the side, from in front, and from below, with their purpose, may be indicated as follows:

1. A *subtemporal decompression* for the sole purpose of relieving general pressure symptoms in case of a primary suprasellar tumor or of a growth arising from the gland itself which has extended into the cranial chamber.
2. A *lateral exploration of the interpeduncular region* with an osteoplastic resection, according to Horsley's method of approach under the temporal lobe.
3. A *fronto-orbital exploration,* after the method of McArthur, Frazier and others, to expose a suprasellar tumor, an operation which in the case of an irremovable lesion cannot be transformed into a decompression owing to its situation.
4. A *transphenoidal operation,* resulting in (*a*) a simple sellar decompression, or (*b*) a sellar decompression combined with partial removal of the intrasellar tumor.

In not a few instances, as will be seen, two or more of these performances were carried out on the same patient, so that all told, on the 95 patients subjected to operation, 124 operations were performed.

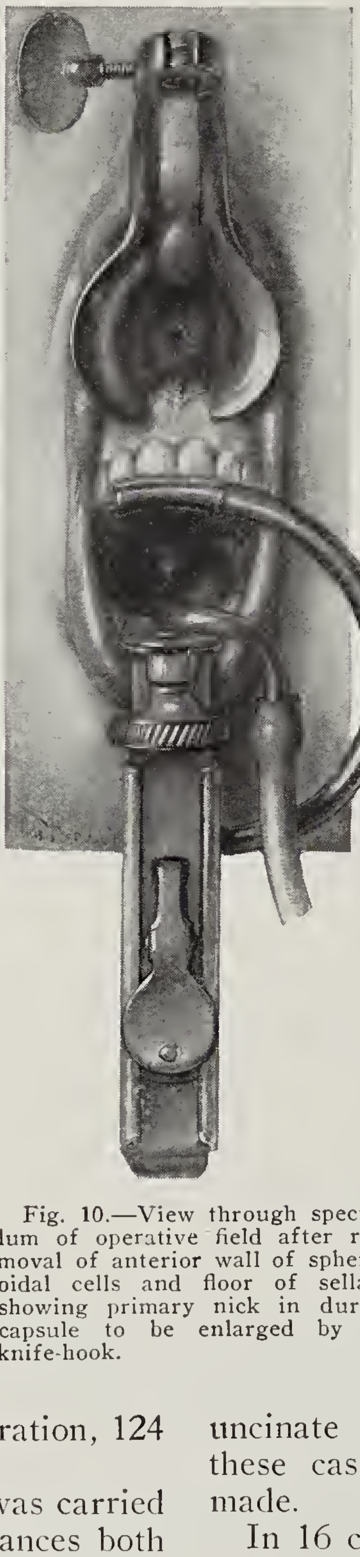

Fig. 10.—View through speculum of operative field after removal of anterior wall of sphenoidal cells and floor of sella; showing primary nick in dural capsule to be enlarged by a knife-hook.

1. A simple *subtemporal decompression* was carried out on 33 of the 95 patients and in 4 instances both sides were decompressed. There were two fatalities in the early series, both of which have been recorded in my monograph (Cases V and VIII). Of the remaining 31 patients about 20 were relieved of the coexistent general pressure symptoms. In a few instances there was an unexpected improvement in vision: one patient, for example, who was completely blind, with a primary atrophy, regained hemianopic vision in each eye. In 9 cases there was no apparent change subjectively or objectively, but it must be realized that in the greater number we were dealing with large tumors. In the 6 patients who suffered from uncinate attacks the decompression failed to modify this distressing symptom.

2. In 8 cases a *lateral osteoplastic resection combined with a subtemporal decompression* was carried out and an exploration was made below the temporal lobe to the point of exposure of the interpeduncular region, but in only one case was a partial removal of the growth possible. Though there were no fatalities the less difficult and dangerous decompression by itself would have accomplished as much for these individuals.

In 13 patients a subtemporal decompression or exploration was preceded or supplemented by another operation. Thus in 9 instances a transphenoidal operation had been previously or was subsequently carried out, and in 4 a fronto-orbital operation, and consequently for statistical purposes these cases are included in each operative group. All told therefore there were 45 subtemporal procedures, with the 2 operative fatalities which have been mentioned.

3. Our experience with *fronto-orbital operations* has already been related. All but one of the 5 cases had previously been subjected to a subtemporal decompression owing to pressure headaches, with relief in each case. Vision was not greatly impaired at the time of the palliative decompression in any of these cases, and the transfrontal operation was not undertaken until a later period (one year, six months, four months, two months). As recounted, one operative fatality occurred after the removal of a large tumor at a second-stage procedure. Another of the patients was operated on twice; hence there were 6 transfrontal operations, with one death. That they were difficult cases, not susceptible to prompt relief by customary measures, is shown by the fact that in the 5 cases there have been 15 operations, including the subtemporal decompressions, callosal and ventricular punctures, and the direct attacks on the growth itself.

4. Of the *transphenoidal operations* 74 have been performed on 68 patients—twice in 5 cases and in one instance a third time owing to the continued enlargement of the growth with return of chiasmal symptoms and a persistance of uncinate seizures. As already pointed out, in 9 of these cases a subtemporal decompression was also made.

In 16 cases a simple *sellar decompression* was performed, with slitting of the dura but with no tissue removal. This was purposeful in some instances: in others further progress was checked owing to bleeding from the surface of the tumor: in others it was inadvisable owing to a threatened leakage of cerebrospinal fluid: in still others impossible, for the reason that a flattened pituitary gland lay between the tumor and the operator. In one or two of these cases of simple decompression, in lieu of tissue removal, a radium tube has been inserted into the substance of the struma and withdrawn after a few hours.

These cases therefore represent some of the more difficult experiences in some of the earlier operations, and the three deaths from meningitis which occurred in this series all followed misdirected operations in cases of this type with a small sella and superimposed tumor. Another patient recovered after a severe meningitis.

In 52 patients a *sellar decompression combined with extirpation* of tissue or evacuation of a cyst has been carried out 58 times. In these 58 operations there have been 4 operative fatalities: 1 after a primary partial removal of a sellar struma in the case of an acromegalic who had a large intracranial extension of the growth which was unsuspected but which should have been recognized; 2 others after a second attempt to partially remove a large suprasellar tumor from below; and the fourth after a third transphenoidal operation as related. The post-mortem examination in all four of these cases showed that operative relief by the route chosen was utterly impossible and that they were cases suited only for a subtemporal decompression. Thus in the 74 operations in this transphenoidal group there have been 7 fatalities (9.5 per cent.), all but one of them occurring in the earlier series.

The results of the transphenoidal operation, which, as has been made clear, is carried out chiefly for the relief of chiasmal involvement, have been most gratifying in the 61 survivors in the 68 cases. Progressively failing vision has become stationary or has been slightly regained over periods varying from a few months to several years in 22 cases. There has been a prompt widening of the fields with marked improvement of vision, often with return to the normal, in another 22 cases. In 2 patients vision was temporarily made worse as a result of the operation, but there was subsequent great improvement. Though vision had been completely lost in 5 cases before the operation, in 2 of the cases it was partially regained. In 8 cases it was unaffected before the operation, and still remains so. In only 3 cases was there a progressive failure of vision despite a successful operation and in all of them the tissues removed showed a malignant transformation of the lesion to which the patients have since succumbed.

The entire operative series for the 95 patients may be tabulated as herewith, 19 of them having been subjected to a decompressive craniectomy in addition to the direct attack on the tumor.

TABULATION OF OPERATIVE SERIES

| | Cases | Operations | Fatalities |
|---|---|---|---|
| Subtemporal decompressions ...... | 33 | 37 | 2 |
| Subtemporal explorations ........ | 8 | 8 | 0 |
| Subfrontal explorations .......... | 5 | 6 | 1 |
| Transphenoidal decompressions ... | 16 | 16 | 3 |
| Transphenoidal extirpations ...... | 52 | 58 | 4 |
| | 114 | 125 | 10 |

Thus there was a total operative mortality of 8 per cent. and a case mortality of 10.5 per cent. Moreover, in the 74 operations in the two transphenoidal groups there have been 7 fatalities (9.5 per cent.), most of them occurring in the earlier series.

Thus in these 95 patients there have been 125 operations, with 10 fatalities—8 in my earlier Baltimore series of 74 operations (10.8 per cent.), 2 in my subsequent Boston series of 50 operations (4 per cent.), showing a lowering of the mortality with a wider experience.

That these mortality figures can be further improved with increased familiarity in the proper selection of cases and with perfected operative methods is evidenced by the fact that in the last 33 transphenoidal operations there has been only one death, this having occurred in the case of the patient in whom, as recorded, a third operation was unwisely undertaken.

Statistics are dreary matters but it is periodically incumbent upon us to assemble our cases not only for our own instruction lest we bury in obscurity our mistaken and bad results, but also to acquaint others with the standing of operative measures.

We have become confronted of late years with new surgical problems relating to a group of patients with disorders which were unrecognized by our forebears, and hesitating as our steps may be in meeting these problems our operative experiences must from time to time be recorded in all their lights and shadows.

The Peter Bent Brigham Hospital.

# TWO NEW METHODS OF CLOSURE OF THE PYLORUS FOR PYLORIC AND DUODENAL ULCER *

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CHICAGO

Closure of the pylorus for pyloric and duodenal ulcer has been recognized more and more in recent years as of the greatest importance in the cure of pyloric and duodenal ulcer. Prominent among the investigators and surgeons who have demonstrated various methods are Kelling, who, in 1900, used a silk ligature, and Parlavecchio, who, in 1910, used a ligature of cotton and wool, which was tied around the pylorus only tight enough to bring the mucous membrane into apposition. This was insufficient in both man and animals, the ligature cutting through, leaving the lumen of the pylorus the same as before operation. In addition, patients operated on by this method suffered severe gastric pain. Bier modified this method by crushing the portion of the stomach where the ligature was placed. He claimed that these patients have no pain. Closure is not complete, but adequate clinically. In 1913, at the German Surgical Congress, he stated that he is dissatisfied with all methods of closure, and now has returned to the use of the simple ligature, by simply infolding the ulcer with sutures, after the method of Moynihan. This is not a complete closure, but it suffices. Mayo and Moynihan used the puckering-string method. The ligature passes only through the muscularis, in order to infold the mucosa. Both here and in England good results have been obtained by this method. Küttner and Körte have both had success and failure, and in animals no lasting stenosis is accomplished.

Körte used puckering sutures both on the anterior and posterior walls, whenever possible. If perigastric adhesions are present, then it suffices to place them in the anterior wall only. This does not give a complete closure, as is shown on the cadaver by passing the finger into the stomach after ligatures are applied.

Girard and Doyen performed a pyloroplasty at right angles to the usual direction, which narrows instead of widening the lumen. They cut down to the mucosa only. Propping reported failures by this method.

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* Additional illustrations appear in the author's reprints.

* From the Department of Experimental Surgery of the Morris Institute of Medical Research of the Michael Reese Hospital.

Bogoljuboff and Wilms used the fascia lata and anterior sheath of the rectus. This method seemed an improvement over all other methods. Wilms had used it in twelve cases at the time of the German Surgical Congress in 1913. The patients had no blood in the stools and no pains. The Roentgen ray showed closure to be complete, the stomach emptying itself in one hour. In three other cases Wilms used omentum. These were also reported as successful. Siegel, however, reports a complete failure by this method, and after two months no trace of the fascia was demonstrable. Bier reports a case of enormous scar formation and perigastritis by this procedure.

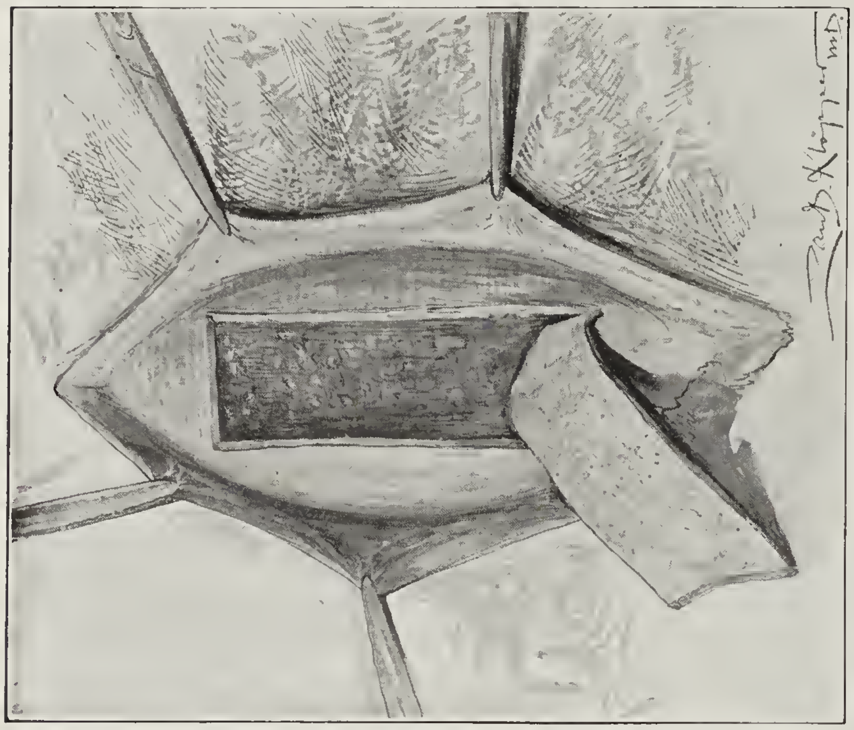

Fig. 1.—First method of pyloric closure. Anterior sheath of rectus exposed and flap resected.

Brewer used an aluminum band 1 cm. in width and 5 cm. in length. This was placed around the pylorus and rolled snugly with the fingers to produce sufficient compression to obliterate the lumen. He reported experiments on nine animals, the oldest of which was 9 weeks, in which the pylorus was closed.

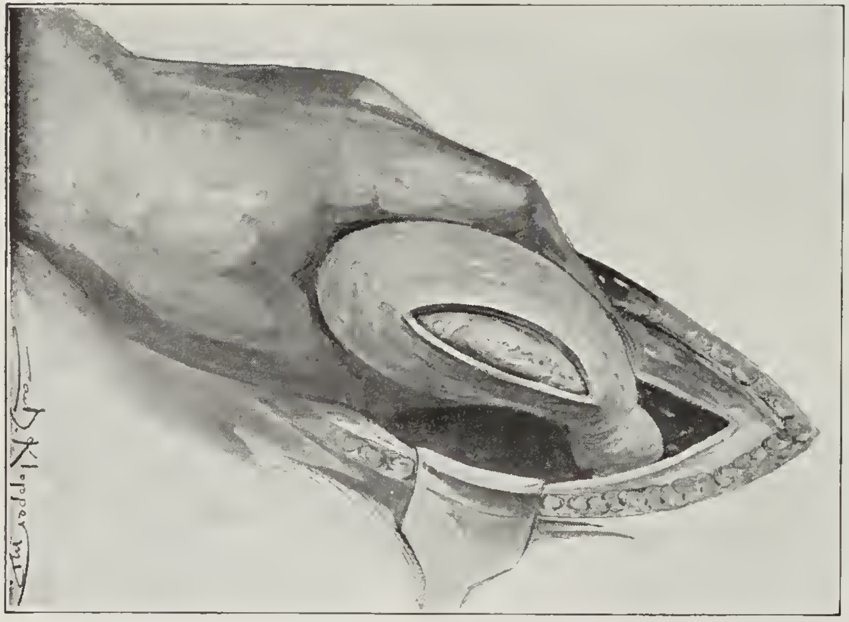

Fig. 2.—Incision in stomach to pyloric sphincter, exposing mucosa.

Bartlett divided the muscular coats and mucosa by means of a metal skewer. This is thrust directly through both walls of the stomach into the lesser peritoneal cavity, and out again. A clamp is placed behind the skewer and several mattress sutures introduced between skewer and clamp. This embraces the whole thickness of both walls of the stomach. The skewer is cut out with a sharp knife and the mattress sutures tied. A hemostatic running stitch of silk or linen unites the four exposed cut edges. The ridge of tissue formed by the mattress sutures is inverted with a continuous Lembert row.

Von Eiselsberg's unilateral exclusion of the pylorus is the most exact method. It would be recommended in all cases were it not a relatively long operation, producing a great deal of shock. The exclusion is a larger operation than the gastro-enterostomy itself, and almost impossible to perform when dense adhesions are present. Henle, who otherwise recommends it, lost 16.65 per cent. with exclusion, versus 6 per cent. with gastro-enterostomy alone. A fair number of cases of fatal hemorrhage have been reported following this operation.

While I was carrying on my work, Biondi published, in October, 1913, a method of pyloric closure. The first step, which is shelling out the membrane, is practically the same as one of the methods to be described here, but the second step, producing closure, is entirely different, both in method and in principle. He divides the shelled-out membrane, making a closed cuff at each end with sulk sutures.

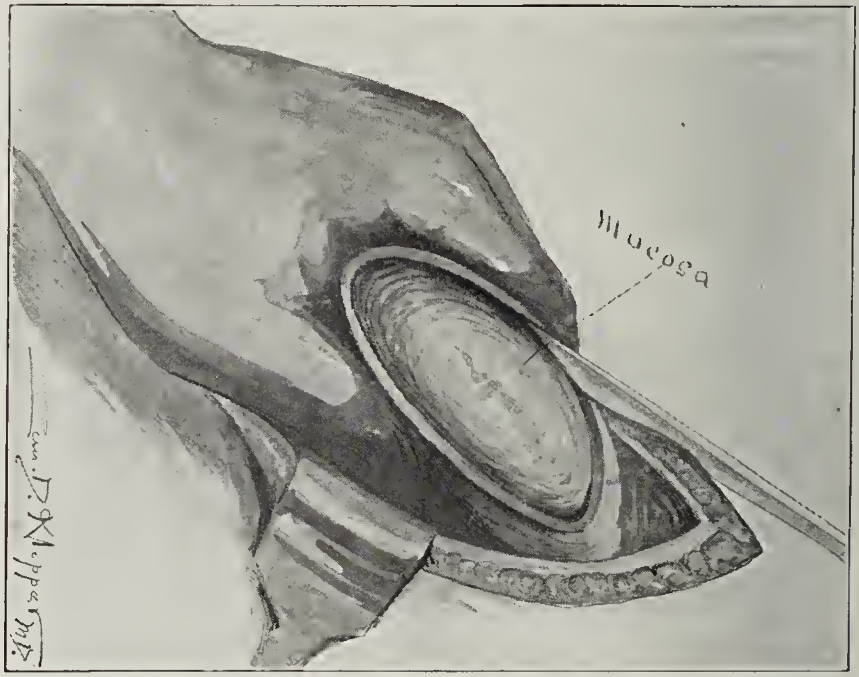

Fig. 3.—Method of freeing mucosa.

It will be noticed from the foregoing that the methods can be divided into two great classes: First, those which attempt to close the pylorus by bringing the mucosa into apposition with ligature, puckering string, fascia and metal band. Second, those which divide the mucosa alone or mucosa and muscularis. The ligature method is bound to fail at all times, because no ligature can be buried, especially near the pylorus, where the peristaltic waves are most powerful. The ligature produces an anemic necrosis, and sloughs inward toward the lumen of the bowel. I believe there are two important factors which explain this. First, the force of the action of the peristaltic wave of the stomach is toward the central portion of its lumen; consequently any ligature or object which produces an anemic necrosis will be forced inward. The intra-abdominal pressure possibly is a factor. We know that in the normal collapsed stomach intra-abdominal pressure far exceeds the pressure within the gastric cavity. This gives additional force to bodies in the wall of the stomach, causing them to be forced in the direction of least resistance, namely, its lumen.

Placing fascia around the muscularis of the pylorus has the disadvantage of having to overcome the powerful peristaltic contractions, the occurrence of adhesions and the possibility of absorption.

The second class, which divides the mucous membrane or mucous membrane and muscularis, has a fair amount of success. The ligatures which close the mucosa slough inward, as is well known in gastro-enterostomy. If this occurs at both divided ends at the same time, it leaves a communication. It is also a well-established fact that all physiologic tubes—stomach, bowel, ureter, common bile duct—if given the slightest chance, have an inherent tendency to reestablish their mucous lining and lumen.

Taking advantage of the above facts, that the mucous membrane of the stomach, when divided, has a tendency to reestablish its lumen, and that ligatures are always forced toward the lumen of the bowel, I tried to keep this work within the limits of the following principles: First, the closure must be accomplished without division of the mucous membrane, but rather a closure produced by connective tissue contractions, such as one finds in the stricture of the bowel and hour-glass stomach. Second, the operation should be a simple one, which can be done in a short time, so as not to add too much additional shock to the necessary operation of gastro-enterostomy.

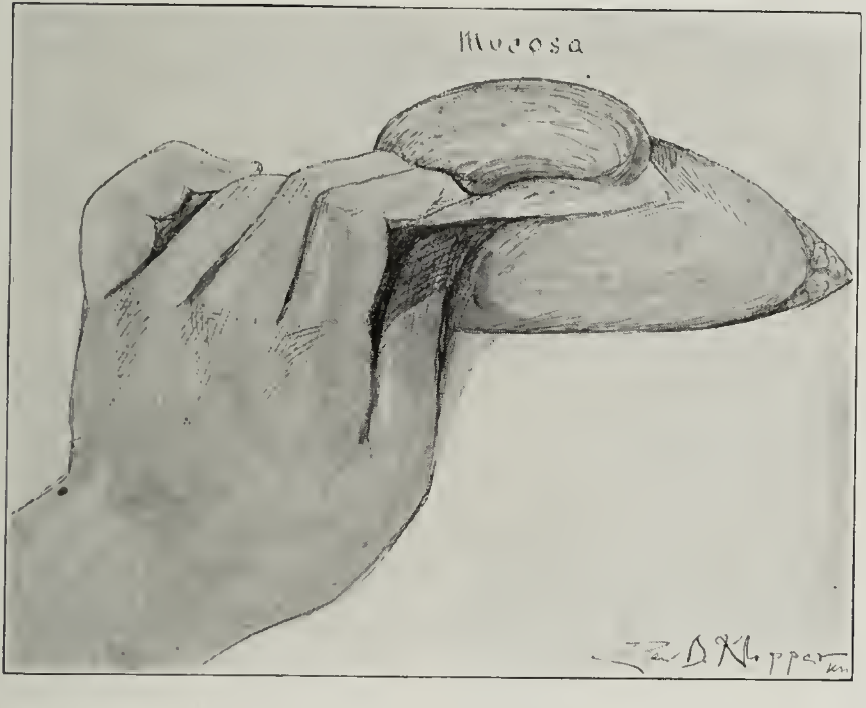

Fig. 4.—Muscularis everted, mucosa lying on its surface.

### AUTHOR'S FIRST METHOD

With the above facts in mind the following surgical procedure was carried out:

A right rectus incision was made ½ inch to the right of the midline, extending from the angle of the ribs down to the umbilicus. The anterior sheath of the rectus was exposed and a flap resected, ¾ by 1½ inches (Fig. 1). In resecting this a thin, adherent layer of muscle fibers from the rectus muscle was taken with it. The stomach was next brought into view. The pyloric portion was then tightly grasped between the thumb and index finger. An incision was then made proximal to the pyloric sphincter on the upper outer surface 1½ inches in length (Fig. 2). This exposed the mucosa. Two strokes with the scalpel on each side, between the mucosa and muscularis, freed the mucosa sufficiently (Fig. 3), so that the thumb could be placed under the pylorus and, grasping the edge of the muscularis, the entire muscularis could be everted (Fig. 4), so that the mucosa lay on the everted muscularis like a rubber tube. This step is the most important one. Without eversion it is next to impossible to separate the mucosa from the muscularis without tearing it. It can now be easily separated with a sharp scalpel. There is only a small amount of oozing of blood.

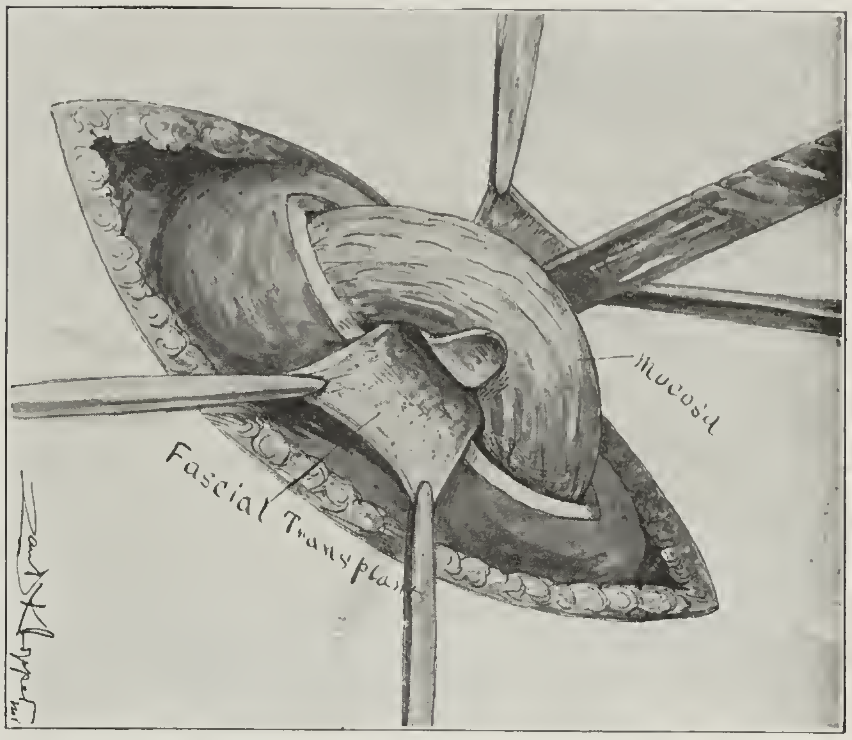

Fig. 5.—Free fascial transplant from rectus placed around mucosa.

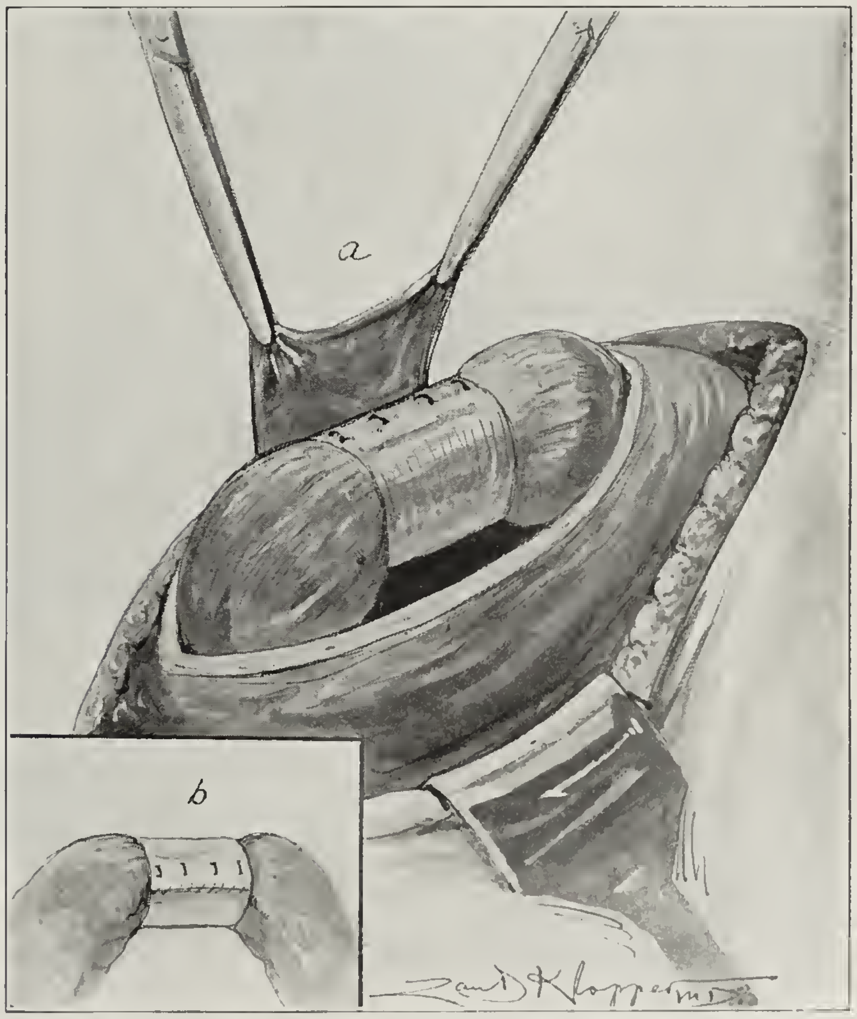

Fig. 6.—*a*, End of transplant sutured to mucosa and traction being made to cause collapse of mucosa; *b*, final suturing of end of transplant. Note double suturing.

The free fascial transplant of the rectus was placed around the mucosa (Fig. 5). One end of this transplant was sutured with four interrupted sutures to the mucosa (Fig. 6, *a*); on the other end traction was made, which collapses the mucosa and rotates it about one-eighth of a turn on its longitudinal axis. This aids in making it a complete closure. The end of the transplant was sutured with four interrupted sutures to the surface of the attached portion, just tightly enough to hold it in a collapsed condition, and a third continuous suture holding down the edge (Fig. 6, *a*).

The mucosa was now replaced in its normal position within the muscularis and was closed by continuous interlocking sutures, as in Figure 7, two of the sutures catching the fibrous band so that it cannot slide forward and backward on the inner surface of the muscularis.

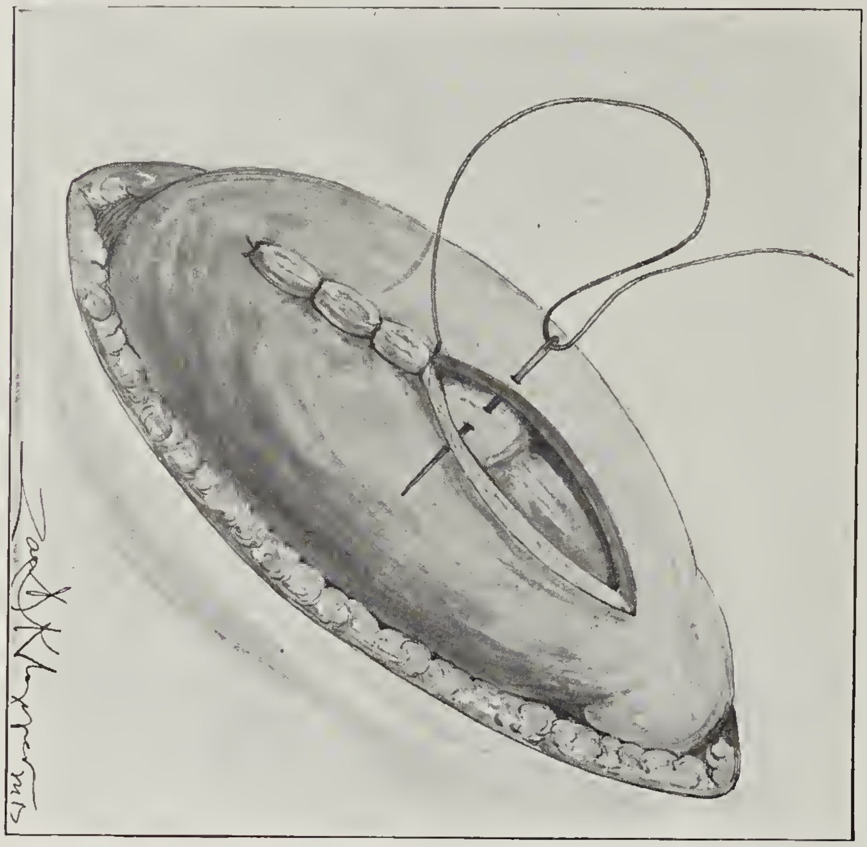

Fig. 7.—Mucosa replaced in normal position and closed by interlocking sutures. Note catching of fibrous band in sutures to prevent slipping.

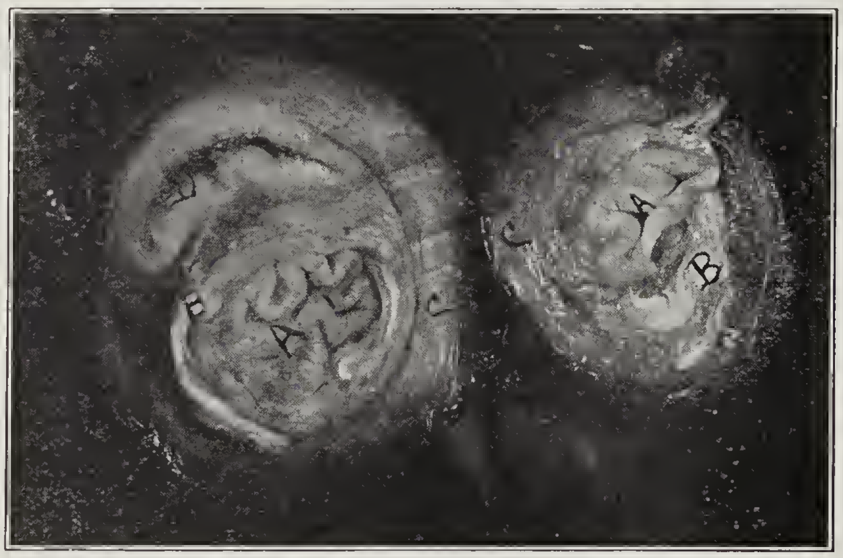

Fig. 8.—Cross-section of closed antrum of the pylorus. From a photograph. *A*, mucosa; *B*, fascial transplant holding mucosa; *C*, muscularis of pylorus; *D*, blind fold of mucosa at upper end of closure outside of fascial transplant.

I have performed this closure at the junction of the fundus of the stomach with the antrum pylori as well as near the sphincter pylori, in order to show that ulcers in the antrum pylori as well as duodenal ulcers could be shut off by this method. The suture material used was No. 2 braided waxed silk. The procedure takes fifteen minutes—five minutes for shelling out the mucosa, five for placing on the transplant and three to five for closing the musculature. In seven cases the anterior sheath of the rectus was used; in five cases the transversalis fascia, muscle and peritoneum and in four cases fascia lata.

The gastro-enterostomy was performed in the usual manner, with the exception that the anastomosis was placed on the posterior wall as near the closed pylorus as possible. It seems when the anastomosis is made at the most dependent portion of the greater curvature, on the posterior wall, the stomach empties quickly up to the point of anastomosis and then leaves a residue of food between the pylorus and the anastomosis for hours.

In August, 1913, I first started on this procedure, but, owing to an epidemic of distemper, almost all dogs operated on died within a few days following the operation. After the epidemic subsided, sixteen dogs were operated on by the above procedure, and practically all of them made uneventful recoveries. None of the dogs vomited following the operation, and all were placed on a full diet within six days. They all appeared in perfect health and many of them gained in weight. At the end of two months the first animal was roentgenographed and fluoroscoped and then killed. The roentgenogram showed the pylorus absolutely closed and the gastro-enterostomy working. In this dog the closure was performed at the junction of the antrum pylori and fundus of stomach. Necropsy showed the stomach and pylorus perfectly free. On examining the pylorus one would not know that the operation had been performed on it. The stomach was removed, the gastro-enterostomy clamped off, and the esophageal end of the stomach attached to a hydrant. Under enormous hydrostatic pressure not a drop of water could be forced through the pylorus. The pylorus was sectioned and the water test again performed, with the same result. The cross-section of the closed pylorus (Fig. 8) showed the mucosa firmly collapsed. Around it, the free transplant could be distinctly seen attached to the mucosa on one side, and on the other side to the muscularis. The muscularis appeared perfectly normal.

*Histology.* — Complete cross-section (Fig. 9) of the pylorus shows the mucosa normal and collapsed, with no sign of pressure atrophy in any portion of it. Around it is seen the fascial transplant perfectly organized and containing many small bloodvessels attached to the mucosa. The striated muscle fibers from the rectus also appear normal, still retaining their nuclei. The muscularis is attached to the fibrous transplant, and shows no changes.

In Figure 10 is shown a section of the fibrous band under high power. The glands of the mucosa appear normal. The fascia is intimately connected to the latter. In it are many bloodvessels and nuclei. The muscle fibers of the rectus sheath also appear to be normal.

At the end of four months six animals were killed. The changes were the same as noted above. All of them showed an absolutely watertight pylorus. Three of the dogs had a few web-like adhesions from the sutures of the pylorus to the under surface of the liver. At the end of five months four more were killed, with the same findings. At the end of six months two more were killed, with the same findings. In one of these the closure was made proximal to the sphincter pylorus, and the transplant used was peritoneum, transversalis fascia and transversalis muscle. On cross-section the mucosa is collapsed and around it can be seen the fascial band. The muscularis appears normal. Histologic examination shows, on complete cross-section, that the peritoneum had disappeared and little could be seen of the transversalis muscle, but the white fibers of the transversalis fascia seemed to be perfectly organized, as in the specimen described above.

My reason for taking this particular transplant of peritoneum, transversalis fascia and muscle was that my recent work on artificial ureter[1] made from this particular transplant showed a complete metaplasia, the fascia being transformed into a bony plate. No such metaplasia occurred when placed around the mucosa of the pylorus, showing that the metaplasia which did occur was due to the chemical constituents of the urine.

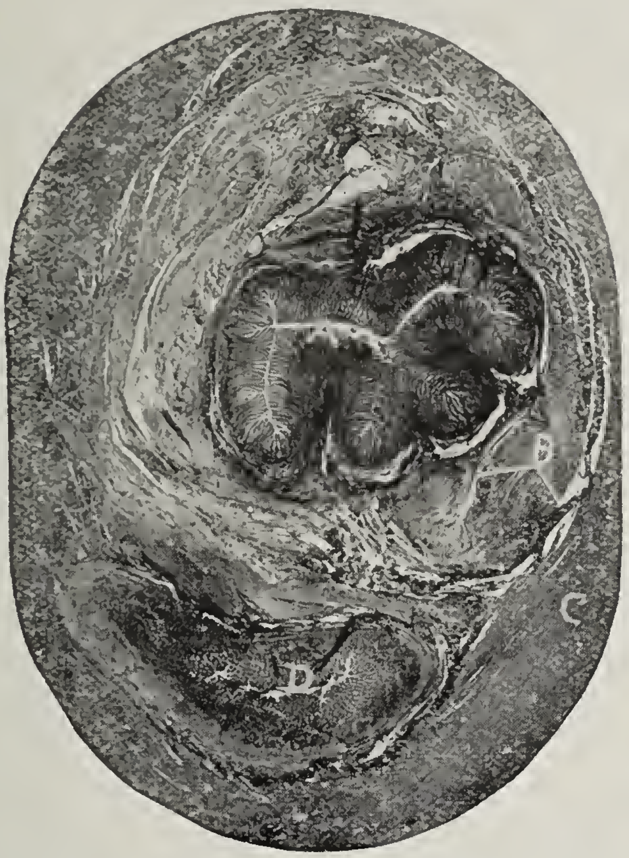

Fig. 9.—Cross-section of portion of pylorus shown in Fig. 8. From a photomicrograph × 5.5; A, collapsed mucosa; B, fascial transplant around mucosa; C, muscularis; D, blind fold of mucosa.

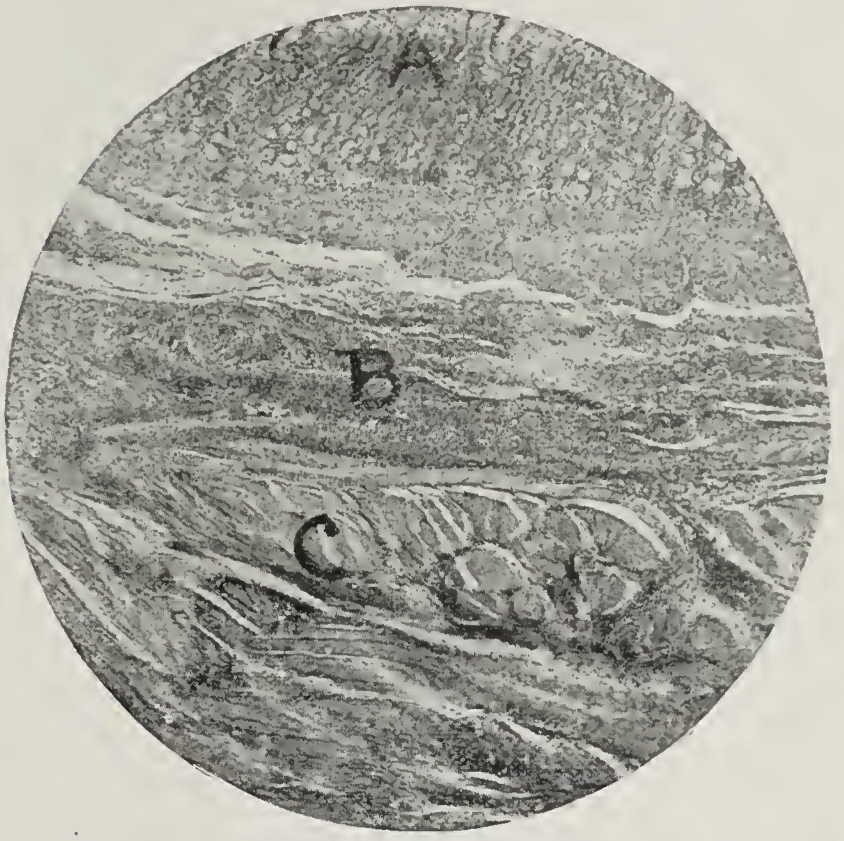

Fig. 10.—Section of portion of pylorus shown in Fig. 8. From a photomicrograph; A, mucosa; B, connective tissue of transplant; C, muscle fibers of transplant.

AUTHOR'S SECOND METHOD

The second or silk-ribbon method was based on two facts: (1) ordinary ligatures cut through the pyloric musculature, and (2) fascial transplants placed around the pylorus have a tendency to give way under the powerful peristaltic contractions. Furthermore, these transplants become adherent to adhesions or disappear entirely. To overcome these obstacles a piece of ordinary white silk ribbon ¾ inch in width was sterilized. A closed Kocher forceps was passed beneath the pylorus through the mesentery. The forceps was next opened to enlarge the mesenteric opening and the ribbon pulled through (Fig. 11, *a*). One end of the ribbon was sutured with four interrupted sutures to the muscularis, as in Figure 11, *b*. The other end was sutured to the ribbon with four interrupted sutures, and the edge with continuous sutures (Fig. 11, *c*). The sutures near the antrum pylori were not placed as tightly as those near the sphincter pylori. The effect was funnel-shaped, thus preventing the abrupt cutting off of the peristaltic waves. The ribbon sutured in this manner was just tight enough to place the mucosa in apposition. The tissues covering the ribbon contract down on it still tighter, making the closure still more complete. This method is very simple and takes only five minutes.

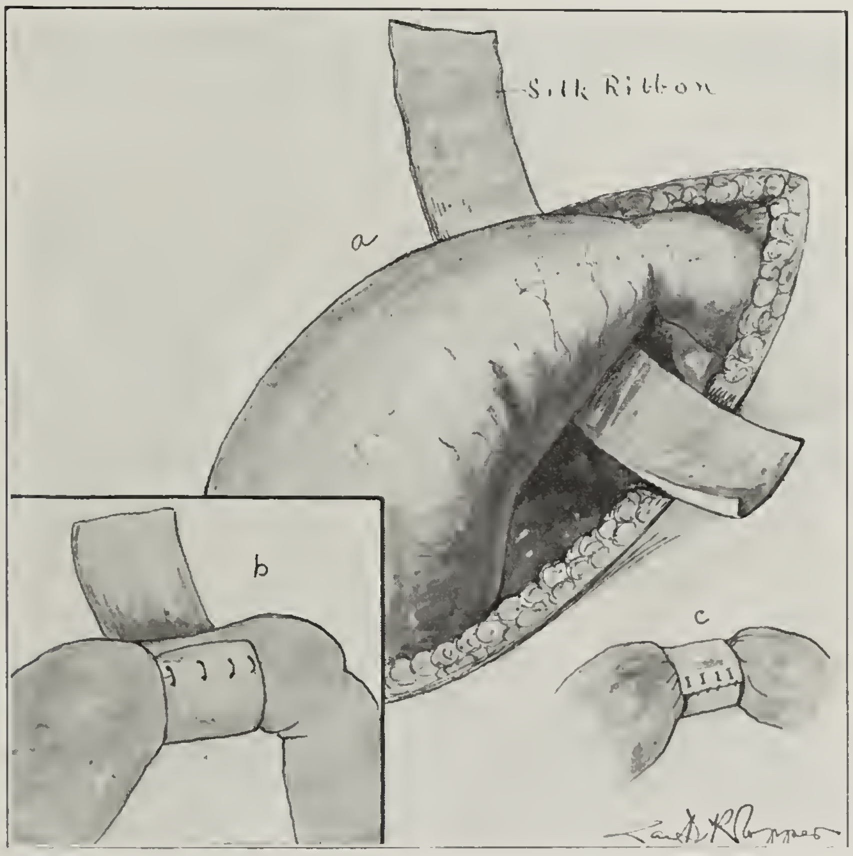

Fig. 11.—Silk ribbon method; *a*, ribbon pulled through mesenteric opening; *b*, end of ribbon sutured to muscularis; c, final suturing of ribbon.

Twelve dogs were operated by the above method. One animal tore open its abdomen at the end of one week. Another died of peritonitis, the cause of which could not be ascertained. The other ten made uneventful recoveries. At the end of five days one dog was killed. The tissues from the lesser omentum had covered the ribbon completely, as in Figure 12. At the end of four weeks one dog was killed, showing the same findings. At the end of two months four more dogs were killed, with the same findings. In one of these the ribbon was placed more tightly than usual, and cut only a small way into the tissues. At the end of five and one-half months three more animals were killed. In these the ribbon was covered by a glazed, transparent tissue, as in Figure 13. The pylorus in two was perfectly free, while in the third quite dense adhesions were formed between the pylorus and the liver. All of these stomachs were put to the water test, and the pylorus found absolutely closed.

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[1] Strauss, A. A.: Surg., Gynec. and Obst., January, 1914.

In six additional dogs a rubber ribbon was used instead of silk ribbon, the rubber being impregnated with 15 per cent. sulphur. All of these animals, with the exception of one, died in from five to eight days following operation, the constant contractile power of the rubber cutting through the pylorus. One animal lived, and was killed at the end of two months. It showed the same results as with the silk-ribbon method, only here under high pressure the pylorus was not water-tight.

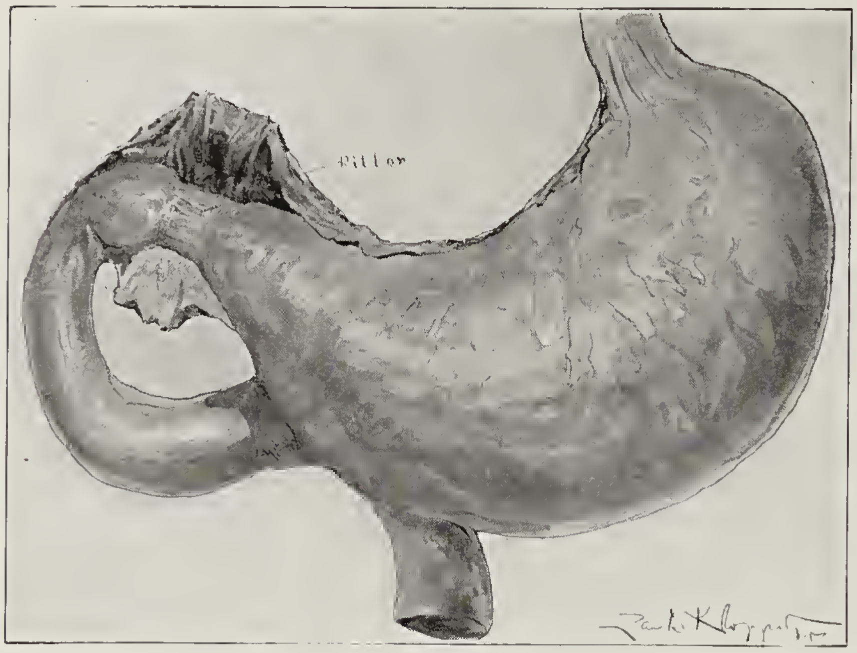

Fig. 12.—Stomach from dog killed five days after operation. Ribbon completely covered by tissues from lesser omentum.

### CONCLUSIONS

1. In the sixteen dogs operated on by the submucous transplant method, the pylorus was water-tight under hydrostatic pressure, and as shown by fluoroscope and roentgenogram. The free fascial transplant became organized with the mucosa and muscularis in every instance, producing sufficient contraction to hold the pylorus closed without producing any necrosis of mucosa. This I believe is due to the fact that the connective tissue used is placed under a tension similar to what it would be in the anterior sheath of the rectus.

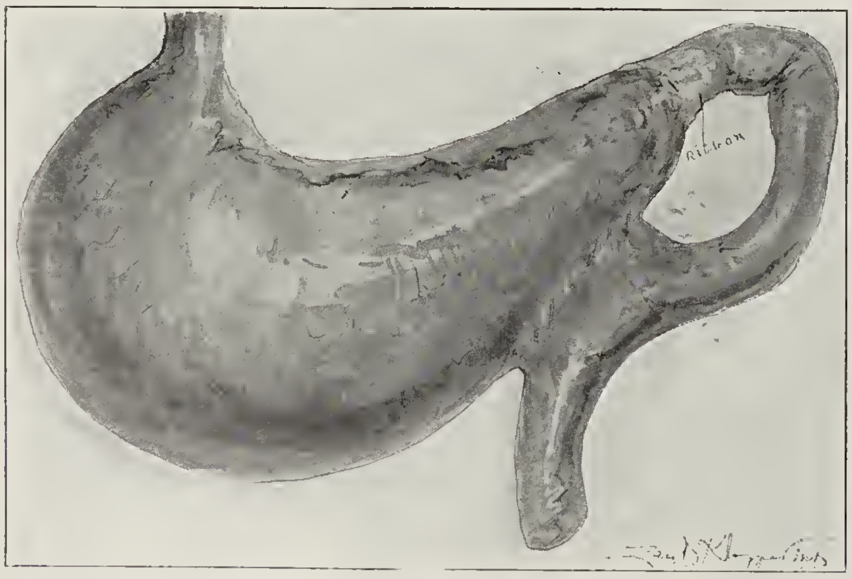

Fig. 13.—Stomach from dog killed five and one-half months after operation. Ribbon covered by glazed transparent tissue.

2. The free transplant placed between the mucosa and muscularis has the advantage of not having to overcome the powerful peristaltic contractions of the pyloric musculature, and is not subject to the formation of adhesions and inflammatory changes, as a transplant placed around the musculature of the pylorus would be.

3. The method of shelling out the mucosa is safe, in that there is no danger of hemorrhage from large vessels, and less danger from infection, as in the methods by which the mucosa has to be divided.

4. The silk-ribbon method, while it is very simple and produces a perfect closure, and while the number of experiments seems to show it to be a fairly safe method, has the objection of having a large foreign body buried. Of the two methods the transplant method is by far the one of choice. The rubber method I would consider dangerous and a failure.

I want to thank Dr. E. Kirk of the Morris Institute of Medical Research for the valuable advice he has given me while carrying on this work, and Miss Wilton who assisted me in the operative technic.

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# THE RESULTS IN ONE HUNDRED OPERATIONS PERFORMED ON THE DIAGNOSIS OF BRAIN TUMOR*

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The firm confidence with which the experienced surgeon of the present day approaches the solution of the problems set before him suffers a severe setback when these involve the operative treatment of brain tumors. True, we frequently read of single successful operations, but the infinite measure of our failures becomes apparent only in a few larger statistics. In no other domain of surgery are we so much at the mercy of the treacherous patient. None of us have been spared annoying surprises and numerous disappointments. And yet, when we glance back at what has been achieved at operations performed on the diagnosis of brain tumor, we need not abandon ourselves to too pessimistic a view of our accomplishments. We should always bear in mind that, without operation, the patients progress toward a terrible fate —excruciating headaches, epileptic attacks, paralysis, and chiefly, steadily advancing blindness which renders life no longer worth the living for these unfortunates. And here we find the explanation why we never encounter serious difficulties in obtaining the consent to operation on the part of the patients themselves, or of their relatives, although they have been made familiar with its dangers.

The results of operations for brain tumor will always depend on the certainty of diagnosis and the peculiarity of each particular case. The relatively large number of our decompressions demonstrate that impossibility of localizing the process, or of determining its extent, only too often frustrates radical operation and, with it, a permanent result. Much could be improved if brain-tumor suspects were only brought under competent neurologic observation early in the disease. I am very well aware of the difficulties of a diagnosis of brain tumor in the beginning of the affection.

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

We, too, are in a position to consider the diagnostic brain puncture of Neisser and Pollak as a great step forward, and its slight danger must not weigh too heavily against its great advantages. More particularly, we should not overestimate the danger of hemorrhage. At the necropsies in two cases I was able to note that the median meningeal artery had avoided the puncturing needle and that in another case the needle had perforated the transverse sinus without causing a hemorrhage. Still, I have occasionally observed a direct rise of pressure in connection with brain puncture which necessitated immediate operation. From this I draw the lesson that diagnostic brain puncture should be performed only under conditions which permit immediate trepanation, should this become necessary.

The diagnostic brain puncture also enables us to exclude an operation as futile in some cases, namely, when pathologic products can be demonstrated through punctures far apart. Thus, only recently I was able to demonstrate glial proliferations in a little girl, the suspected host of a tumor of the temporal lobe, through puncture into the frontal lobe as well as into the temporal fossa. In view of the extent of the process a radical operation would have been beyond the scope of possibility, but, in addition, exact histologic study showed these glial proliferations to be reactive in character rather than elements of a genuine tumor. I was gratified to note that as the result of conservative treatment all symptoms, including choked disk, materially subsided.

Occasionally definite tumor symptoms with focal phenomena may also be present without any space-reducing process at all. Bonhoeffer and I have seen such a case in which there was choked disk and other symptoms pointing to a left-sided tumor of the frontal brain. Yet, at the trepanation only a softening focus was found, which, as could be demonstrated at necropsy, had developed gradually on the basis of an arteriosclerosis.

In contrast thereto, I unexpectedly encountered a tumor in a woman, aged 31, who was admitted to the clinic with posttraumatic convulsions. Observation disclosed cortical epilepsy arising from the left facialis region, but no tumor symptoms. Excision of the facial center was done, and its microscopic examination suggested reactive glial proliferations. At the operation, however, the surroundings had appeared suspicious of tumor, and at the second operation a true glioma which diffusely infiltrated the depth was removed as far as possible. This was the only one of my cases in which even the symptom of headache was absent.

That very large tumors may develop with relatively slight symptoms, especially in the domain of the central region, I was able to observe repeatedly, while it is generally assumed that tumors in this region produce the classical symptoms very early. This is probably true only of tumors situated close to the surface; those deeper down may attain considerable dimensions without furnishing phenomena of diagnostic significance.

Some time ago I successfully excised such a subcortical tumor of the size of a man's fist—a fibrosarcoma of the right central region—in a male patient from Manila. Notwithstanding the size of the tumor, choked disk developed only a few days before operation, almost under my very eyes, more marked on the affected side than on the normal.

Generally speaking, I have frequently seen more marked, occasionally also only unilateral, choked disk on the same side as the tumor, but I do not believe that any definite conclusions may be drawn from this as to the localization of the tumor, since the reverse has also occasionally been observed. Absence of choked disk was noted in five cases.

Palliative trepanations which I had to perform over the central region or in its neighborhood, for instance, in disease of the posterior frontal or temporal brain, were in some cases followed by annoying contralateral paresis or complete paralysis. This annoying complication, experienced also by many other operators, in some of the cases subsided in the course of a few weeks; in other cases, however, improvement, as compared with the phenomena developing immediately after operation, unfortunately does not take place. Measures of prevention, such as two-stage procedure, a very large bone defect, smoothing of the edges of the bone defect, covering them with flaps from the dura, etc., did not succeed in averting the unpleasant complication when the pressure was so great that when the dura was opened, the brain was immediately forced into the gap. This contralateral paresis was observed with special frequency in inoperable gliomas.

Repeatedly decompression was not successful, namely, in cases in which even approximate localization was impossible. When, for example, in disease of the posterior cranial fossa, the decompression defect is placed over the cerebrum and vice versa, the designed relief (collateral drainage) is not obtained. In such doubtful cases it might possibly be well to decompress simultaneously above and below the tentorium, which is possible from an area in the occiput. Two opposing door-wing flaps of the dura are formed with the transverse sinus as a temporary base.

I have seen nothing that is gratifying from puncture of the corpus callosum and ventricular drainage. True, my material in this respect is rather small. But since in one case at necropsy seven weeks after puncture of the corpus callosum the opening was found completely healed, and in another case eight weeks after operation it could no longer be found at all, I am averse to continuing the employment of this measure, especially since palliative trepanation has rendered excellent service, notably in cases of chronic hydrocephaly.

As regards the technic of trepanation for brain tumor, I have departed from the formerly preferred one-stage operation and have become an adherent as a matter of principle of the two-stage procedure, even in palliative trepanations, unless acute symptoms of brain-pressure demand immediate opening of the dura.

The introduction of local anesthesia with 0.5 per cent. solutions of novocain-suprarenin has, in my clinic too, been welcomed as a great advance. One can always operate on the sitting patient, respiration is free and under easy control, and no special hemostasis is necessary for the scalp. In sensitive patients an ostensible narcosis is introduced which, however, remains so superficial that conversation can be carried on with the patient. I now employ full narcosis with ether only in exceptional cases, and then prophylactic hemostasis is attained by means of Makkas' clamps, which with us have displaced the back-stitching suture of Heidenhain.

For the cerebrum osteoplastic flaps are made. I formerly used mostly electrically-driven instruments —Doyen's burr, Borchard's excellent plow and

Sudeck's fraise. But since this rather complicated instrumentarium has very often failed to work, I have now again returned to the employment of hand-drills, Dahlgren's forceps, or Gigli saw. After the flap has been divided on three sides, the bone is slightly grooved at the base and then broken across with the aid of two raspatories. The splitting of the dura is done in various ways, forming one large, or two door-wing, flaps, or with cross-incisions.

In the posterior cranial fossa preservation of bone is always dispensed with, because the breaking across of the flaps is here not devoid of danger and the periosteum as well as the powerful muscles at the back of the neck offer sufficient protection. In one case, in which the osteoplastic method was employed in the posterior cranial fossa, on injection of the local anesthetic for the second operation, respirations suddenly ceased. Evidently the injected fluid had forced the lower edge of the bone flap against the upper portion of the medulla oblongata, thus causing the alarming paralysis of respiration. This was fortunately relieved by long-continued artificial breathing.

Among the 104 surgical interventions performed at the Breslau clinic on 100 patients within the past six and one-half years, we succeeded in removing the tumor in 30 instances. In addition, the presence of a tumor was later demonstrated in 34 cases. Three cases proved to be tuberculous meningitis. In the remaining cases the tumor symptoms were traced back to hydrocephalus, the residues of hemorrhages, etc. In a few patients who died and on whom no necropsy was obtained, the cause of the disease could not be definitely ascertained.

Forty-five patients died as a result of the operation and its complications; F. Krause, too, who probably disposes of the largest material in Germany, has an operative mortality of about 50 per cent.; von Eiselsberg's mortality is 38 per cent. Twenty-four of the patients operated on are positively known to be living. Of those who survived the operation and its complications:

14 died in from 1 to 3 months
5 died in from 4 to 5 months
3 died in from 6 to 8 months
2 died in from 9 to 12 months
2 died after 1 year and 3 months
1 died after 1 year and 6 months
1 died after 2 years and 6 months

Among the patients operated on there are still living:

6 less than 6 months after operation
3 less than from 8 to 10 months after operation
1 less than 1 year after operation
2 less than 1¼ years after operation
1 less than 1½ years after operation
3 less than from 2 to 2¾ years after operation
6 less than from 3 to 4 years after operation
2 less than from 5 to 6 years after operation

Among these twenty-four survivors there are two tumors of the hypophysis, one tumor of the base of the frontal lobe, one of the parietal lobe, two tumors of the cerebellopontine angle and three tumors of the central region. In thirteen cases no tumor was found.

Of these twenty-four patients eleven may be considered cured for more than six months to six years; only two remain uninfluenced in their disease, while the remaining show, some of them very considerable, improvement.

Four of the cured patients had become totally blind before operation, and these had good vision restored to them later.

It should be emphasized here that even among the conservatively treated cases, in which there was suspicion of a brain tumor, in three cases complete recovery was achieved. Before the German Surgical Congress of the year 1913, Oppenheim, whose great experience in this domain commands the admiration of all of us, has sought to warn against too great a tendency for operation, referring to the good results achieved with conservative treatment. So prominent a neurologist as Oppenheim will certainly often be in a position to find the indications for an expectant attitude justifiable, and we surgeons are always dependent as a last resort on the advice of the neurologist and chiefly of the experienced ophthalmologist. Too long a delay, however, when choked disk is present, could scarcely be justified.

Examining, for the purpose of comparison, statistics of conservatively treated brain tumors, we find in the compilation of Bonhoeffer that among 63 cases observed in his clinic 26 patients were operated on and that 26 died in his clinic without operation, while 11 patients have withdrawn from further treatment. Among the patients who were treated in my clinic without operation, 58.8 per cent. also have died within six months. Of the remaining, either nothing at all is known, or the operation was declined by us on account of uncertainty of diagnosis—a course justified by later events.

The results to be expected after operations performed on the diagnosis of brain tumor may by no means be designated as absolutely bad from the results reported, when we bear in mind that the host of a brain tumor in every instance faces death after the most horrible suffering. The beneficent influence of decompression, more particularly in cases of chronic hydrocephalus, on restitution of vision, encourages and urges also early surgical procedure. Especially meritorious in advancing brain surgery in America as regards technic and diagnosis has been the work of Halsted's school, more particularly that of Cushing, who probably at this time possesses the greatest experience in this domain. We are only just beginning to gather experiences, and the technic also needs further perfection. Whether improvements in methods of diagnosis will lead to early recognition of the disease, and with this to early operation for brain tumor, is still an open question. Should success in this direction reward our efforts, we shall later be able to look back with the greater satisfaction on our surgical achievements.

## ABSTRACT OF DISCUSSION

**Dr. William G. Spiller**, Philadelphia: Dr. Küttner has mentioned the difficulties of differentiating between brain tumor and simple hydrocephalus. Any one doing decompression should not imagine that he is doing a trivial operation. It does not usually produce serious results, but it may produce very grave results. Dr. Küttner's paper is decidedly pessimistic. Decompression should be done only when there are proper indications for its use. I have seen decompression make a mild dementia very grave; I have also seen it produce hemiplegia by pressure of the blood-vessels against the bone at the opening. The hernia itself is disfiguring, but the disfigurement should be disregarded if the results otherwise are satisfactory. Decompression will do no good in saving vision if optic atrophy has occurred, and I have declined to recommend it under such circumstances. It is not always possible to determine whether optic atrophy has occurred. In high grades of choked disk decompression seems almost useless for atrophy will almost invariably follow.

At the meeting of the New York Neurological Society and Section in Neurology of the New York Academy of Medicine last fall I called attention to a condition which has been almost entirely overlooked—the enlargement of the brain itself occurring with tumor. I have seen this enlargement of the brain with other tumors than glioma and believe it is caused by irritation from the tumor. This enlargement helps very materially in the production of intracranial pressure. Puncture of the corpus callosum is of great interest and importance.

The diagnosis between hydrocephalus and tumor is difficult, as Professor Küttner mentioned. I think we have a valuable means in the roentgenogram. In many cases of intense intracranial pressure the Roentgen rays will show on the inner table of the skull markings like the convolutions of the brain. This is not a positive means of diagnosis and yet I think it is valuable. It is more likely to occur with hydrocephalus, when pressure is great, than with tumor. It may occur with tumor if the tumor has developed slowly. Most tumors produce much pressure and are likely to cause death before this atrophy of bone is intense. Circumscribed hydrocephalus under certain circumstances cannot be helped by puncture of the corpus callosum.

Professor Küttner has referred to brain puncture. So far as I know it is a method which has not been received favorably by American and English surgeons. He also referred to cases of brain tumors without symptoms. Symptoms may be slight when a glioma does not destroy the axis cylinders passing through the tumor, though it may destroy the medullary sheaths.

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# STUDIES IN LIVER FUNCTION *

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In recognition of the need of better criteria for judging of the functional capacity of the liver in disease, this investigation was undertaken to determine (1) the degree and frequency with which functional changes can be demonstrated in anatomically diseased livers, (2) in what clinical types of liver injury the functional changes are most marked and (3) the diagnostic and prognostic value of these changes. In other words, an attempt has been made to regard the liver, in disease, from a physiologic point of view, and to study its various functions with the hope of ascertaining its behavior under pathologic conditions.

## THE FUNCTION OF THE LIVER IN HEALTH

In health the liver has three well-established functions: 1. The glycogenic function, which has to do with carbohydrate metabolism, and consists in (*a*) the conversion of the monosaccharids (dextrose, levulose and galactose) into glycogen; (*b*) the temporary storage of that glycogen as such, and (*c*) the reconversion of it by enzyme activity into dextrose as needed in the body. 2. A participation in nitrogenous metabolism which consists in the conversion of certain nitrogenous bodies (ammonia, amino-acids, etc.), into urea. 3. The production of bile.

In addition, the liver apparently plays a part in the production of fibrinogen and antithrombin, although the connection of the latter functions with the liver is not so well established as the first three mentioned.

## THE TESTS OF LIVER FUNCTION

The following tests based on well-known physiologic functions of the liver have been employed:

1. *Carbohydrate Metabolism.* — In this connection two tests have been employed, namely, Strauss'[1] levulose test and Bauer's[2] galactose test. The former consists in the ingestion of 100 gm. of levulose on an empty stomach and the examination of the urine voided during the next few hours to determine the presence or absence of the sugar, using Fehling's and Seliwanoff's tests. Bauer's is similar to Strauss' test except that 30 gm. of galactose are used instead of 100 gm. of levulose. The ingestion of these sugars in the amounts indicated does not result in their appearance in the urine in normal individuals, according to Strauss. Their appearance in the urine is due to a decrease in tolerance for these substances, indicative of decreased functional capacity of the liver.

2. *Nitrogenous Metabolism.*—In relation to nitrogenous metabolism and liver function a study of the nitrogen partition in the blood and in the urine has been made. If the liver converts the ammonia and amino-acids of the blood into urea, then it might be expected that in liver injury we should find a decrease in the urea percentage of the total non-protein nitrogen of the blood and an increase in the amino-acid nitrogen of the blood, while in the urine we might expect to find a decrease in the relative amount of urea with an increase in the ammonia and amino-acids. (The view that the liver is not wholly responsible for the conversion of the ammonia and amino-acids of the blood into urea has recently received support from the work of Folin[3] and Van Slyke[4] and of Fiske and Sumner.[5])

3. *Urobilinogen.*—It has been maintained by many observers that the presence of urobilinogen in the urine is indicative of liver disease. Determinations were made in the majority of cases, but owing to the work of Wilbur and Addis[6] and our own unsatisfactory results, they were discontinued. These investigators showed that observations on a single or a twenty-four-hour specimen have no significance. Great variations occur from day to day. Only when repeated tests are made covering a period of two weeks, controlled by studies of the urobilin content of the feces, can findings be accepted.

4. *Fibrinogen.*—There is evidence to show that the liver is active in the formation of fibrinogen, and Whipple[7] has suggested that the determination of the amount present in oxalated plasma may be used as an index of liver function.

5. *Lipase.*—Whipple[8] has also suggested that the estimation of the lipolytic activity of the blood may constitute a test of liver function.

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* From the Medical Clinic of the Johns Hopkins Hospital, and from the Departments of Physiological Chemistry and Pharmacology of the Johns Hopkins University.

* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Strauss: Berl. klin. Wchnschr., 1898, xxxv, 398; ibid., 1899, xxxvi, 159; Deutsch. med. Wchnschr., 1901, xxvii, 757.

[2] Bauer: Wien. med. Wchnschr., 1906, lvi, 20.

[3] Folin: Jour. Biol. Chem., 1912, xi, 87.

[4] Van Slyke, D. D.: Jour. Biol. Chem., 1913, xvi, 213; Protein Assimilation, abstr., The Journal A. M. A., April 12, 1913, p. 1183.

[5] Fiske and Sumner: Jour. Biol. Chem., 1914, xviii, 285.

[6] Wilbur, R. L., and Addis, Thomas: Urobilin: Its Clinical Significance, Arch. Int. Med., February, 1913, p. 235.

[7] Whipple and Hurwitz: Jour. Exper. Med., 1911, xiii, 136. Whipple, G. H.: Hemorrhagic Disease—Septicemia, Melena Neonatorum and Hepatic Cirrhosis, Arch. Int. Med., March, 1912, p. 365. Whipple, Mason and Peightal: Bull. Johns Hopkins Hosp., 1913, xxiv, 207.

[8] Whipple, Mason and Peightal: Bull. Johns Hopkins Hosp., 1913, xxiv, 207. Whipple, Peightal and Clark: Ibid., 1913, xxiv, 343. Whipple: Am. Jour. Physiol., 1914, xxxiii, 50.

6. *Phenoltetrachlorphthalein.*—This drug was introduced by Rowntree, Hurwitz and Bloomfield[9] as a test for hepatic function, and clinical studies by them and simultaneous experimental studies by Whipple and co-workers[8] showed that a normal excretion could be established and that many liver injuries, particularly of severe grades, were associated with a decided decrease in the phenoltetrachlorphthalein output. Further studies with this test have been carried on.

7. *Fibrinolytic Ferment.*—Dr. Goodpasture of the pathologic staff was already interested in the presence of a fibrinolytic ferment in the blood in liver cirrhosis when this work was undertaken. Samples of blood from all our patients were submitted to him for study, and through his courtesy we present the results of his studies, details of which will appear later. The ferment is specific for fibrin, does not attack fibrinogen and is destroyed by heating to 56 C. (132.8 F.).

### METHODS AND NORMAL LIMITS OF TESTS

*Phenoltetrachlorphthalein.*—This test was employed according to the method described by Rowntree, Hurwitz and Bloomfield, details of which are given in full in their publication.[9] The lower limit of normal excretion is considered to be 30 per cent. in forty-eight hours after the intravenous injection of 400 mg. of the substance. In health, phenoltetrachlorphthalein is practically never excreted in the urine after injection of such amounts.

*Fibrinogen.* — The heat coagulation method as described by Whipple[10] was used in these determinations, and values below 350 gm. per hundred c.c. were regarded as abnormal.

*Lipase.*—Determinations of the lipolytic activity of the blood were made, using Loevenhart's[11] method, which consists in the determination of the total acid production of the blood when exposed to known quantities of ethyl butyrate at 37 C. (98.6 F.). The result is expressed as the number of cubic centimeters of tenth-normal acid produced by 1 c.c. of plasma and 0.26 c.c. ethyl butyrate, diluted to 4 c.c. and allowed to react for from twenty to twenty-four hours. The upper limit of normal has been taken to be 0.40 c.c. of tenth-normal acid.

*The Nitrogen Partition in the Blood and Urine.*—The total non-protein nitrogen of the blood was estimated by the micro-Kjeldahl method of Folin and Denis,[12] with slight modifications, as suggested by Dr. B. B. Turner.[13] The urea percentage of the total non-protein nitrogen of the blood was determined by Marshall's[14] method, utilizing soy bean urease, and values below 40 per cent. have been regarded as abnormal.

The amino-acid determinations were made by Van Slyke's[15] method. As yet, data concerning the amount of amino-acids present in the blood of normal individuals are scarce, but from a study of patients who were practically normal, 3 mg. per hundred c.c. of serum has been the value regarded as the upper limit of normal for the free amino-acid nitrogen.

The total nitrogen of the urine was determined on twenty-four-hour specimens collected under toluol by the Kjeldahl-Gunning method, the urea by Marshall's[16] and the ammonia by Folin's[17] method. The distribution of the urinary nitrogen between urea and ammonia has been shown to be dependent on the total excretion of nitrogen. The normal limits of the various nitrogenous constituents of the urine, with varying levels of nitrogen excretion, are therefore hard to define sharply. However, one can probably safely conclude that with a urinary nitrogen excretion of 10 gm. or more, the lower limit for urea nitrogen is 80 per cent. and the upper limit for ammonia nitrogen is 5 per cent., while with a nitrogen excretion of from 5 to 10 gm., the lower limit for urea is 70 per cent. and the upper limit for ammonia is 8 per cent. Furthermore, excessive acid production in the organism is accompanied with a lowering of the urea percentage and an increase in the ammonia percentage. The free amino-acid in the urine was determined by Van Slyke's[18] method, and 1.5 per cent. has been adopted as the upper limit of normal. Future work may change these values.

### SUMMARY OF FINDINGS

Forty-five cases have been studied in this series, in nearly all of which some abnormality of the liver was thought to be present. Some of the cases called cirrhosis were certainly not far advanced, and in some instances it appeared that the diagnosis was not definite, differences in opinion being frequently encountered. On account of lack of space the details of the cases are not given here,[19] but a summary of the results obtained is given in Table 1.

Column 1 shows total number of tests made, Column 2 the total number of positive results, while the remaining columns show the number of positive results in the various diseases. The figures in italics indicate the number of cases in which each particular test was applied in the particular disease studied, while the other figures indicate the number of positive findings in the particular disease.

From this table it will be seen that the following results were obtained: The *phenoltetrachlorphthalein test* was applied in the feces in 42 cases with 16, and in the urine in 34 cases with 21 positive. *Fibrinogen* was determined in 40 instances, 8 of which were below 350 mg. and 12 below 400 mg., while 8 were above 800 mg., that is, 20 abnormal findings. The *lipolytic activity* of the blood was investigated in 39 cases, 5 of which showed an acid production of more than 0.4 c.c. and 3 above 0.5 c.c. The presence of *fibrinolytic ferment* was tested for in 40 instances, and found in 7, all of which were cirrhoses. The *galactose* test was applied in 29 and the *levulose* in 19 cases, the former showing only 4 and the latter 2 positive findings. The *total non-protein nitrogen* and *urea nitrogen of the blood* were determined in 37 cases. The urea nitrogen was less than 40 per cent. of the total in 9 instances. The *amino nitrogen of the blood* was determined in 35 cases, and amounted to more than 3 mg. per hundred c.c. in 25 instances and above 4 mg. in 13 instances. The *total nitrogen urea and ammonia in the urine* were determined in 41 cases. The total nitrogen of the urine was above 10 gm. in 13 cases, and in these the urea nitrogen was below 80 per cent. in 7 instances, and the ammonia nitrogen above 5 per cent. in 10 instances. Twenty-one cases showed a urinary nitrogen between 5 and 10 gm., and of these, 4 cases showed a urea nitrogen below 70 per cent. and 11 an ammonia nitrogen above 8 per cent. The *amino-acid nitrogen* content of the urine was investigated in 22 cases, 12 of which showed values above 1.5 per cent. of the total nitrogen.

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[9] Rowntree, Hurwitz and Bloomfield: Bull. Johns Hopkins Hosp., 1913, xxiv, 327.

[10] Whipple: Am. Jour. Physiol., 1914, xxxiii, 50.

[11] Loevenhart: Am. Jour. Physiol., 1902, vi, 331.

[12] Folin and Denis: Jour. Biol. Chem., 1912, xi, 527.

[13] These modifications will be described shortly by Dr. Turner.

[14] Marshall: Jour. Biol. Chem., 1913, xv, 487.

[15] Van Slyke: Jour. Biol. Chem., 1912, xii, 399.

[16] Marshall: Jour. Biol. Chem., 1913, xiv, 283; xv, 495.

[17] Folin: Ztschr. f. physiol. Chem., 1902, xxxvii, 161.

[18] Van Slyke: Jour. Biol. Chem., 1913, xvi, 121.

[19] Findings of all tests, clinical notes, necropsy findings in fatal cases together with a discussion of the functional findings appear in the article in the Proceedings of the Society of American Physicians, 1914.

*Liver Cirrhosis.*—The results in the fourteen cases of cirrhosis studied were as follows: Phenoltetrachlorphthalein studied in feces in 14, positive in 6, in urine in 11, positive in 7; fibrinogen in 14, positive in 6; lipase in 14, positive in 2; fibrinolytic ferment in 14, positive in 7; galactose in 11, positive in 2; levulose in 10, positive in 2; urea nitrogen percentage (blood) in 14, positive in 5; amino nitrogen (blood) in 14, positive in 10; urea percentage (urine) in 14, positive in 3; ammonia percentage (urine) in 14, positive in 10; amino nitrogen percentage (urine) in 7, positive in 5.

*Myocardial Insufficiency.*—Twelve cases of myocardial insufficiency were studied. Phenoltetrachlorphthalein studied in feces in 9 cases with 1 positive, lowest being 18 per cent., and in urine 10 cases with 5 positives; fibrinogen in 11 with 1 positive; lipase in 11 cases with 1 positive; fibrinolytic ferment in 12, positive in none; galactose in 7, positive in none; levulose in 3, positive in none; urea nitrogen percentage (blood) in 12, positive in 1, in which 6 were over 50 per cent., and 3 over 60 per cent.; amino nitrogen (blood) in 9, positive in 7.

TABLE 1.—SUMMARY OF FINDINGS

| | Total Number of Tests | Total Number of Positive Tests | Cirrhosis of Liver | | Myocardial Insufficiency | | Carcinoma | | Syphilitic Hepatitis | | Pernicious Anemia | | Poly-serositis | | Miscel-laneous | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of cases tested | .. | .. | .. | 14 | .. | 12 | .. | 3 | .. | 2 | .. | 2 | .. | 2 | 9 | 10 |
| Phthalein in feces ...... | 42 | 16 | 14 | 6 | 9 | 1 | 3 | 2 | 2 | 1 | 2 | 2 | 2 | 0 | 9 | 4 |
| Phthalein in urine ..... | 34 | 21 | 11 | 7 | 10 | 5 | 3 | 2 | 2 | 1 | 1 | 0 | 2 | 2 | 5 | 4 |
| Fibrinogen .. | 36 | 8 | 14 | 6 | 11 | 1 | 1 | 0 | 2 | 0 | — | — | 2 | 0 | 1 | 1 |
| Fibrinolytic ferment ... | 40 | 7 | 14 | 7 | 12 | 0 | 1 | 0 | 2 | 0 | — | — | 2 | 0 | 9 | 0 |
| Lipase ....... | 39 | 5 | 14 | 2 | 11 | 1 | 1 | 0 | 2 | 0 | — | — | 2 | 0 | 9 | 2 |
| Galactose ..... | 29 | 4 | 11 | 2 | 7 | 0 | 1 | 0 | 2 | 1 | 1 | 0 | 2 | 0 | 4 | 2 |
| Levulose ..... | 18 | 2 | 10 | 2 | 3 | 0 | 0 | 0 | — | — | 1 | 0 | 1 | 0 | 3 | 0 |
| Blood: | | | | | | | | | | | | | | | | |
| Urea-N %.. | 37 | 9 | 14 | 5 | 12 | 1 | 1 | 0 | 2 | 1 | — | — | 2 | 2 | 6 | 0 |
| $NH_2$-N .... | 35 | 25 | 14 | 10 | 9 | 7 | 1 | 1 | 2 | 1 | — | — | 2 | 1 | 6 | 4 |
| Urine: | | | | | | | | | | | | | | | | |
| Urea-N %.. | 41 | 11 | 14 | 3 | 11 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 2 | 0 | 8 | 2 |
| $NH_3$-N % . | 41 | 28 | 14 | 10 | 11 | 7 | 2 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 8 | 5 |
| $NH_2$-N % . | 22 | 12 | 7 | 5 | 6 | 2 | 1 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 5 | 2 |

The functional injury in liver cirrhosis is relatively greater than in chronic passive congestion, for a consideration of all the tests in each condition indicates that in 10 of the 14 cases of cirrhosis there was definite functional injury, 3 with less marked injury and only one with a practically normal function throughout, while in chronic passive congestion only 4 showed definite decrease, while 7 showed a practically normal function.

*Carcinoma of Liver.*—Little data outside of the phenoltetrachlorphthalein have been collected. C 28, who definitely had metastasis to the liver,[20] showed a 23 per cent. output five months before death. H 29, with gastric carcinoma and clinically thought to have metastasis to the liver, showed a 24 per cent. output, phenoltetrachlorphthalein positive in urine and the urea only 21 per cent. of the total non-protein nitrogen of blood. These cases are in keeping with the three cases of liver carcinoma reported last year in which the phenoltetrachlorphthalein excretion was 8, 14 and 7 per cent., respectively. However, a slight decrease in phenoltetrachlorphthalein, for instance, from 20 to 25 per cent. does not indicate liver carcinoma, since such findings have been found in gastric carcinoma when no proof of liver metastasis was at hand, in which case it is merely the expression of the influence of anemia and cachexia on liver function.

*Anemia.*—Clinically, a severe grade of anemia depresses the function of the liver as indicated by phenoltetrachlorphthalein. That there is also a decrease in the fibrinogen has been shown by Whipple, but owing to the quantity of blood necessary for carrying out the test, it is not applicable in all cases of anemia. Changes in the urinary nitrogen partition may appear.

*Luetic Hepatitis.*—Of the two cases studied, one showed normal phenoltetrachlorphthalein, a low lipase, urinary nitrogen partition changes and a positive galactose, while the other showed a low phenoltetrachlorphthalein content in feces, positive in urine, an abnormally high fibrinogen, low urea percentage of total non-protein nitrogen in blood and urinary nitrogen partition changes.

*Polyserositis.*—Two cases with much the same clinical condition and both with large livers showed practically identical findings, for instance, normal phenoltetrachlorphthalein in feces, but positive in urine, fibrinogen and lipase normal, low urea percentage of total non-protein nitrogen in blood, and changes in urinary nitrogen partition, but no decreased tolerance for sugar.

### THE PHENOLTETRACHLORPHTHALEIN TEST

Previously the results of eighty applications of the test on sixty-seven patients were reported. The total number of patients studied to date is 113, thirty-three of whom had no clinical evidence of liver disease. The positive findings in health and in various types of liver disease, together with the appearance of the drug in the urine, are shown in Table 2.

### NECROPSY CASES

In this series five cases came to necropsy, and pathologic findings controverting the functional findings have not been encountered. It is of interest to note that two of the cases which clinically were thought to be cirrhosis of the liver, but showed slight functional changes, proved, at necropsy, to have no cirrhosis at all, but to be cases of chronic peritonitis in which the liver was enlarged owing to a thickened capsule. In one instance, a case of cirrhosis, microscopic study of the liver suggested greater injury than was shown by the functional studies. In the six cases which came to necropsy last year there was harmony between the anatomic and functional findings of the phenoltetrachlorphthalein test.

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[20] Details of these cases can be found in the article in the Proceedings of American Physicians.

### RELATIVE VALUES OF TESTS

The series of cases is not sufficiently large to draw far-reaching conclusions as to the relative values of the different tests, but the following impressions have been received:

(*a*) Phenoltetrachlorphthalein: A phenoltetrachlorphthalein output in the feces below 30 per cent. or its appearance in the urine is infrequent in health and frequent in anatomically diseased livers. A normal output does not exclude liver injury.

(*b*) Fibrinogen: Low values are frequent in cirrhosis, but inconstant. Very low findings may carry prognostic significance.

TABLE 2.—POSITIVE FINDINGS IN HEALTH AND IN LIVER DISEASE

| | Examined | Less Than 30 Per Cent. | Urine Examined | Positive |
|---|---|---|---|---|
| Normals .... | 33 | 2 | 22 | 3 |
| Cirrhosis .... | 18 | 9 | 11 | 7 |
| Congestion .. | 32 | 11 | 10 | 6 |
| Carcinoma of liver ...... | 6 | 6 | 3 | 2 |
| Carcinoma .. | 5 | 3 | 3 | 2 |
| Luetic liver.. | 5 | 2 | 2 | 1 |
| Severe anemia | 9 | 7 | 1 | 0 |
| Miscellaneous. | 5 | 2 | 2 | 2 |
| Totals .... | 113 | 42 | 54 | 23 |

(*c*) Lipase: Determination of lipolytic activity of blood furnishes little or no information of diagnostic or prognostic value in these types of cases.

(*d*) Bauer's galactose and Strauss' levulose tests yielded very little information in this series.

(*e*) Dr. Goodpasture's fibrinolytic ferment studies on this series of cases show that this ferment is present only in cirrhosis and hence when present is of diagnostic value.

(*f*) Blood Nitrogen Partition: Urea nitrogen was low in several instances and especially low in cases of advanced cirrhosis. Amino-acid nitrogen was high in a considerable proportion of the cases.

(*g*) Urinary Nitrogen Partition: The ammonia and aminonitrogen were increased in most of the cases studied, particularly in cirrhosis. Owing to the non-exclusion of acidosis considerable difficulty is experienced in interpreting these results. It would have been advisable to have attempted to exclude acidosis by the feeding of alkalies.

### PRACTICABILITY OF TESTS

*The phenoltetrachlorphthalein test* involves an intravenous injection and careful collection of stools for forty-eight hours. Three undesirable features are connected with its application: 1. The quality of red color obtained in certain instances (from 10 to 20 per cent. of the cases) is such that accurate quantitative estimation is difficult. Only in rare instances is this a serious difficulty leading to error of more than 5 per cent. 2. Thrombosis frequently follows at the point of injection, as evidenced by slight local pain or tenderness together with resistance offered to the palpating finger along the course of the vein. This occurred in eight instances in this series of cases, but in no case has it occasioned serious discomfort or resulted in actual harm to the patient. 3. With salt solution made with freshly distilled water chills following the injection are infrequent. When no dilution is employed chills are less frequent and not accompanied with increase in temperature.

*Fibrinogen determinations* are inapplicable in the presence of severe anemia. They necessitate the withdrawal of from 40 to 50 c.c. of blood. A high speed centrifuge and considerable chemical equipment are requisites. The test is time-consuming. *Lipase determinations* require neither complicated apparatus nor much time. *The determination of the total nonprotein nitrogen, urea nitrogen and amino-acid nitrogen* of the blood cannot be carried out when severe anemia exists. Technically the determinations are easy but are time-consuming. *The nitrogen partition* in the urine requires somewhat less time. *Galactose* can be administered without discomfort to the patient, but technical difficulties attend the use of *levulose,* at least 25 per cent. of the patients refusing to take the full amount or developing nausea or vomiting following its ingestion. *The fibrinolytic ferment* is readily demonstrated. *Urobilinogen determinations* in the urine are valueless unless made daily for a period of two weeks and unless associated with urobilin determinations in the feces.

### CONCLUSIONS

1. Outspoken changes in liver function can be demonstrated in most cases of advanced liver cirrhosis, in markedly congested livers associated with myocardial insufficiency, in carcinoma of the liver, in luetic livers and in conditions of cachexia with marked anemia.

2. Functional changes have been most marked in cirrhosis, neoplasm of the liver and in cachectic conditions associated with severe grades of anemia. Functional changes in chronic passive congestion have not been frequent or pronounced.

3. Harmony in the findings of the tests is present in some cases, that is, most of the tests indicating either a decrease function or a normal function. However, lack of harmony is striking in other cases.

4. Concerning the relative merits of these tests the impressions that have been received are that the determination of the phenoltetrachlorphthalein excretion, the fibrinogen, and the nitrogen partition in the blood and urine are of decided value in revealing the presence of, and to a less degree the extent of, functional involvement, while the demonstration of a fibrinolytic ferment is of decided diagnostic importance. The determination of the sugar tolerance and of the lipolytic activity of the blood apparently afford information of much less value.

The information derived from these studies on the liver does not compare in diagnostic and prognostic value with that derived from corresponding studies of the kidney. This may depend on several factors, namely, (*a*) the inadequacy of our knowledge of liver physiology; (*b*) the limited number of cases and of types of severe liver injury under observation; (*c*) the possible existence of a great "factor of safety" in the liver, whereby in case of necessity function is carried on efficiently by a relatively small proportion of liver substance; (*d*) the fact that the prognosis in many of these cases is controlled by factors other than decreased liver function, and (*e*) the lack at present of correlation of anatomic, clinical and functional findings occasioned by the newness of the subject. The results, however, encourage us in the belief that scientifically and also clinically this subject is worthy of extensive investigation.

## ABSTRACT OF DISCUSSION

Dr. William S. Thayer, Baltimore: In the Johns Hopkins Hospital we believe that these tests have brought us somewhat nearer to an understanding of liver disease, but there is still much to be done. The tetrachlorphenolphthalein test for hepatic function is by no means of so clear a value as the phenolsulphonephthalein test for renal function, but the work may well lead to something in the future.

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# NINETY-THREE PERSONS INFECTED BY A TYPHOID CARRIER AT A PUBLIC DINNER

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The city of Hanford, Cal., experienced an explosive outbreak of typhoid fever in the latter part of March, 1914. The epidemic consisted of ninety-three cases, all of which were traced to a church dinner. The infection came from a typhoid carrier among those who prepared and served the food—a woman who did not suspect that she had ever had typhoid fever.

Of special interest were the incubation periods, which were, in the majority of instances, less than eight days. The shortest was three days.

The disconcerting observation was made during the investigation that under conditions which are not at all unusual, baking can actually incubate the inner portions of masses of food instead of sterilizing them.

## THE OUTBREAK

The epidemic began with one case on March 20. During the following three days the daily number of new cases rose rapidly to the maximum, nineteen. After that the number fell quickly. The last case developed on April 16.

TABLE 1.—CASES IN THE HANFORD EPIDEMIC

| | |
|---|---|
| Proved cases of typhoid fever<br>(Cases giving a complete Widal reaction [dilution, 1:50] or a positive blood-culture.) | 45 |
| Cases of Typhoid Fever giving a partial Widal reaction<br>(Cases showing the symptoms of typhoid fever and giving a partial Widal reaction; most of these tests were made early in the disease.) | 23 |
| Cases of typhoid fever not giving the Widal reaction<br>(Cases presenting typical symptoms but failing to give the Widal reaction early in the disease; blood for further tests not obtained.) | 7 |
| Cases of typhoid fever not submitted to the Widal test<br>(Cases showing typical symptoms; blood not obtained for the Widal test.) | 9 |
| Doubtful cases of typhoid fever<br>(Cases showing symptoms suggestive of mild typhoid fever, but negative to the Widal test; blood not obtained late in the disease.) | 9 |
| Total number of cases | 93 |

On request of Dr. J. A. Crawshaw, the president of the Hanford Board of Health, to the California State Board of Health, Dr. W. W. Cross was sent to investigate the early cases. His report stated that they were typhoid fever.

April 1, the State Board of Health instructed me to go to Hanford to investigate the outbreak and to advise measures for its control. I arrived in the morning of April 2 and stayed until the local investigation was finished, April 18. Most of the patients were visited at least once, and as a rule blood was taken for the Widal test or for a culture. The Hanford Board of Health, Dr. C. L. Scott, city and county health officer, and the physicians of Hanford cooperated vigorously in the investigation and furnished valuable assistance.

The total number of cases in the outbreak was ninety-three. Several other cases were investigated and were found not to be typhoid fever. The ninety-three cases were classified as in Table 1.

In Table 2 the cases are classified according to severity.

TABLE 2.—CASES CLASSIFIED ACCORDING TO SEVERITY

| | Including Doubtful Cases | Excluding Doubtful Cases |
|---|---|---|
| Moderate and severe cases | 77 | 77 |
| Mild cases (in bed for very few days) | 11 | 5 |
| Ambulatory cases | 5 | 2 |
| Totals | 93 | 84 |

Three of the severe cases resulted in death and several others in serious danger. The low mortality (3.2 per cent.) is in part due to the discovery in this sudden epidemic of more of the mild and ambulatory cases than would ordinarily have been detected.

The ages of the patients ranged from 16 months to 65 years. A baby 16 months old developed a severe case of typhoid fever and her blood gave a positive Widal reaction.

The majority of the cases of typhoid fever were typical.

Blood-cultures were taken in eleven of the cases, and the typhoid bacillus was isolated and identified in four.

Previous attacks of typhoid fever, without laboratory confirmation, were reported by fourteen of the patients.

A number who ate at the dinner were sick during the following night from a mild form of food poisoning which probably had no relation to the typhoid epidemic.

A number of the persons infected at Hanford traveled considerable distances during the incubation period. This illustrates how typhoid fever is carried into cities which are not responsible for the infection. Two of the ninety-three persons traveled over 200 miles to San Francisco, and developed the disease there. Three of the cases developed in Fresno, 30 miles north of Hanford. Although typhoid fever was conveyed to San Francisco, Fresno, Exeter, Alpaugh, Tulare, Armona and Selma, and to ranches in the country around Hanford, no secondary infections from these cases have come to my attention.

The infection could not be traced to the water, milk or vegetable supplies.

## THE INFECTION TRACED TO A PUBLIC DINNER

Early in the investigation it was definitely determined that the infection came from food served at a public dinner and supper held in a public hall, March 17. All of the ninety-three persons who developed typhoid fever ate food served there. Eighty-five of the patients attended one or both of the meals and received their infection in this way. The other eight were infected from eating food brought to their homes from the hall by friends.

A few examples taken from the great mass of evidence collected will illustrate the definiteness with which the outbreak was traced to the dinner on March 17.

After the noon meal several kinds of food were sent to a family which had recently undergone considerable hardship owing to the prolonged illness of the mother. She had undergone a severe surgical operation, and after spending a month in a hospital, which was free from typhoid fever, she had reached home on the day before the dinner. The family ate of the food and the mother and the four children developed typhoid fever.

In another household the mother helped at the dinner and ate there. Afterward she brought home some of the food to her children. The mother and two sons came down with typhoid fever. In another family the son was unable to attend the dinner, owing to his work in a nearby town. The mother helped at the dinner and ate there, and afterward took food home for her son. Both of them developed typhoid fever.

### THE INCUBATION PERIOD

The Hanford outbreak furnished an unusual opportunity for observing the duration of the incubation period in typhoid fever, as the exact time of infection was known. It is customary in investigating typhoid epidemics to determine the dates of onset and to count back about fourteen days to find the probable date of infection. This method would have excluded from consideration the real cause of this epidemic, as it would have indicated that the probable date of infection was at least a week before the date of the dinner which caused the epidemic. The first case developed three days after the dinner, and the sixth day after the date of infection saw the appearance of the greatest number of cases. Over half (forty-nine) of the ninety-three cases had developed by the evening of the seventh day, and over two-thirds (sixty-four) before the tenth day. The last case developed on the twenty-ninth day. The incubation periods and dates of onset are shown in the accompanying chart.

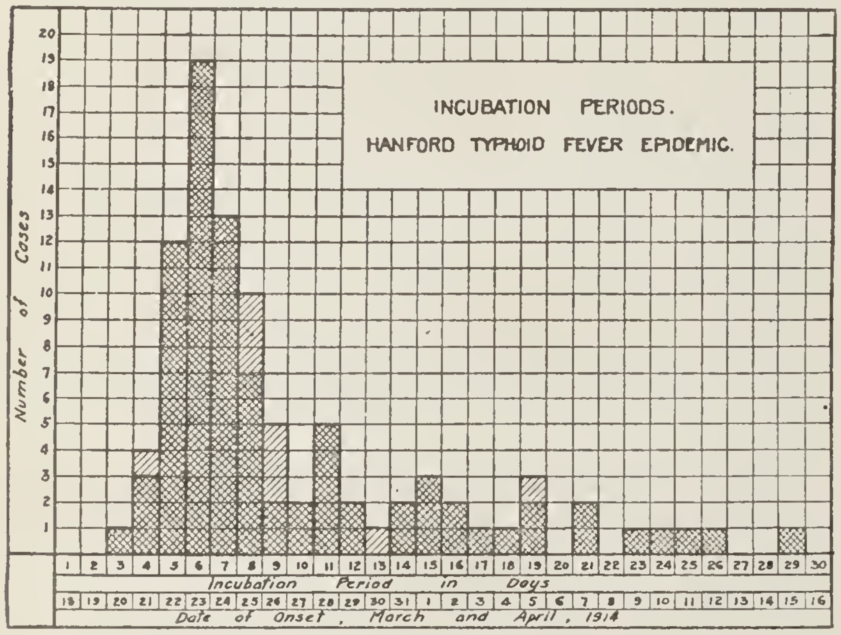

Chart of the cases in the Hanford typhoid fever epidemic, showing incubation periods and dates of onset. The heavily shaded areas represent definite cases of typhoid fever. The lightly shaded areas represent the doubtful cases.

### THE SOURCE FROM WHICH THE FOOD WAS INFECTED

While the infection was easily traced to the public dinner, the source from which the food became infected was at first obscure. Fifty-five of the patients were interviewed and information was obtained from others through their physicians. The facts regarding the kinds of food eaten at the dinner were tabulated and studied. Those who planned and prepared the dinner were very helpful in furnishing information.

The dinner was a church dinner partaken of by about 150 persons, about 125 eating at noon and 45 in the evening. Of the 150 who ate at the hall 85 (57 per cent.) developed typhoid fever.

The bill of fare at the noon meal consisted of chicken pie, mashed potatoes, Spanish spaghetti, baked beans, potato salad containing onions and hard-boiled eggs and served on lettuce, bread and butter, olives, several kinds of pie, cheese, iced tea, and coffee. At the evening meal ice-cream and cake were added to the list. Most of the food was donated, and was prepared at various homes or at the hall. Butter, bread and potatoes were bought from stores whose other customers remained well.

Most but not quite all those present ate chicken pie. Investigation showed that these chicken pies had come from several different households, and it was found that at least three of these various lots had been served to persons who became infected. The gravy served on the pie sometimes came from the pie itself and sometimes from a pan of extra gravy. This could not explain all of the infections.

A considerable number of those infected did not eat the mashed potatoes. The milk used in the preparation of the mashed potatoes and in the coffee came from cows on the farm of one of the women who contracted typhoid fever at the dinner. The farm had previously been free from the disease. No milk was drunk at the dinner.

Next to the chicken pie, the Spanish spaghetti was the dish eaten by the largest number of the persons who became sick. Since the chicken pie was of three or more lots, the spaghetti was the dish eaten in common by the most of the typhoid patients. A few, however, were positive that they had not eaten the spaghetti.

Only a few ate the baked beans. Many did not eat the potato salad. The lettuce leaves on which the salad was served were donated from a private garden which had been watered with city water and fertilized with horse-manure from the barn on the premises. The family had been eating this lettuce and had remained entirely well until two members were infected with typhoid fever at this dinner. Each of the other items, bread, butter, olives, each of several kinds of pie, cheese, iced tea and coffee, could be excluded from being the principal vehicle of infection because it had not been eaten by a considerable number of the typhoid patients. The ice-cream served in the evening was not under suspicion as most of the persons were infected at the noon meal.

From this inquiry the infection could not be traced to any one item of food, as no one kind was common to all cases. It appeared that the typhoid bacilli must have been distributed on the dishes and in various kinds of food.

While there was no common article of food, there was abundant opportunity for the transfer of infection from one kind of food to another. In serving, the usual procedure was to place the chicken pie, spaghetti and mashed potatoes together on each plate before it was brought from the kitchen. Moreover, the hurried washing of dishes by hand would distribute typhoid bacilli from a heavily infected food over all the dishes and utensils. At first the dishes were washed in cold water and later in hot.

It appeared that the food had most probably been infected by an ambulatory case, or carrier, who had taken an active part in preparing and serving the food at the hall. The number of persons infected suggested that the total quantity of typhoid bacilli in the food was unusually large. While infectious material might have reached the food from the contact of an ambulatory case or carrier during the final preparation and serving, this did not satisfactorily account for the massive infection. It seemed more probable that some item of food which was favorable to the multiplication of the typhoid bacilli had been contaminated long enough before the dinner to permit considerable multiplication. As the evidence did not point definitely to any single item of food as the conveyer of the infection, it became necessary to search for the original source by investigating all the persons who had been active in preparing or serving the dinner.

In searching for the source of the infection it was of considerable assistance to know that typhoid bacilli were present in the food as early as twenty minutes after 11 in the morning. At that time the first patrons of the dinner were infected.

Twenty persons had sufficient connection with the dinner to need special investigation. Sixteen of these were women who were actively engaged in preparing or serving the food. One of the twenty persons did not eat at the hall. The other nineteen ate the food, and twelve of them developed typhoid fever. One of these cases began late in the investigation.

The eleven who had developed typhoid fever were investigated on the supposition that they might have been ambulatory cases at the time of the dinner, and those who remained well were studied as possible typhoid carriers. Two of the group of persons who developed typhoid fever received special attention. The first was a woman who developed typhoid fever on the third day after the dinner. She gave a partial Widal reaction as late as the fifteenth day of her illness, and a distinct positive on the twenty-first. As far as could be learned she had had no opportunity for becoming infected except at the dinner. She supplied no food for the dinner, and her work at the hall consisted principally in washing dishes. The second of these patients gave a suggestive history, since he had suffered several attacks of cystitis and malaise, but these were shown not to be due to typhoid bacilli.

There was nothing in the history of the others who developed typhoid fever to indicate that they were ambulatory cases at the time of the dinner. All of this group of cases could be excluded as possible chronic carriers, as typhoid carriers could not have caused acute typhoid fever in themselves by eating bacilli to which they were constantly exposed and for which they possessed a high degree of immunity.

As the investigation progressed the conviction grew stronger that the infection came from one of nine persons who prepared and served food and had not developed typhoid fever at the time of this part of the investigation. The blood of each was examined and found negative to the Widal test. Two were excluded as possible sources of infection. One of them furnished no food to the dinner and did not help until noon, which was after the first persons eating at the hall had received their infection. The other furnished a pie and a cake and spent a half hour at the hall peeling potatoes. These foods were not under suspicion.

The remaining seven women had taken a very active part. All of them prepared food and most of them brought it from home. All of them took part in serving the dinner. Specimens of urine and feces were obtained in sterile bottles from each and were sent packed in ice to the State Hygienic Laboratory in Berkeley to be examined for typhoid bacilli.

There was danger that the laboratory examinations might not detect the carrier, as typhoid carriers are usually intermittent in the discharge of bacilli. Therefore as much circumstantial evidence as possible was collected at Hanford while the laboratory work was going on in Berkeley. Only two of the seven persons who were under special investigation gave a history of having had typhoid previously, and there were no cases among members of the households of these two until after the dinner, when children of both women came down, showing that people living in intimate contact with them were susceptible to the infection at the dinner. The husband of another one of this group of women had had typhoid fever twenty-two years before, and her daughter fourteen years before, but she herself had been running a boarding-house in which typhoid fever had not appeared. Another had had one case of typhoid in her family many years ago, before coming to California. Two more had not had typhoid fever in their families before the dinner. The daughter of one of these was infected at the dinner, and the mother herself came down with typhoid fever when the investigation was nearly completed.

One member of this group presented a history which made it seem probable that she was a chronic typhoid carrier. Mrs. X had formerly kept a boarding-house in Hanford. Seven and a half years before, in October, 1906, one of her twelve or fifteen boarders came down with typhoid fever. He was sick in the hospital for five or six weeks. The source of his infection was obscure, but his sickness was laid to a well from which he had drunk from three to five days before. A week after this case had appeared another man who was boarding with Mrs. X developed typhoid fever. His illness began Oct. 21, 1906, and kept him in bed for six weeks. Again the source of infection was not clear. He had not eaten away from the boarding-house for a month. The attack was laid to a hotel which he had visited while traveling, two months before. This man is at present in business in Hanford and I was therefore able to get the facts from him.

In March, 1912, two more cases appeared in the boarding-house of Mrs. X. She had moved since the first cases appeared. While she formerly bought milk from a dairy, she then kept a cow. A girl aged 15, who boarded with Mrs. X, came down first and was sick for five weeks with typhoid fever. No possible source of infection was discovered. The girl's mother is living in Hanford and was interviewed. There were about sixteen or eighteen boarders at that time. Four or five days after this case developed, on about March 14, 1912, another boarder, a young man, came down with typhoid fever. He had felt somewhat sick three or four days earlier. He is at present working in Hanford, and when seen, he stated that he had not eaten away from the boarding-house for three months before his attack. The source of the infection remained undiscovered. He was sick in the hospital for five weeks. His blood was examined at the time and was stated to have given a positive Widal reaction.

The history of four previous cases of typhoid fever among the contacts of Mrs. X made it seem probable that she was a chronic carrier, and was the source of infection, not only of the four boarders, but also of the ninety-three persons infected at the dinner on March 17. Later the proof that she was a chronic carrier was received by telegram from the laboratory. The typhoid bacillus had been isolated from her feces, obtained April 9, and had been definitely identified by cultural and serologic tests. Her urine and the feces and urine from the other persons under special investigation were found to be free from typhoid bacilli. The source of the typhoid infection had been found in a chronic carrier, but a plausible method by which such a mass of infection could enter the food still remained to be discovered.

This carrier, Mrs. X, aged 63, had no knowledge of ever having had typhoid fever. The disease was present in her household thirty-five years before, when a daughter passed through an attack, and Mrs. X may have received her infection then. Unrecognized cases probably play a more important part in the spread of typhoid fever than is generally supposed, and are responsible for a considerable portion of typhoid carriers. In the Hanford epidemic sixteen (17 per cent.) of the ninety-three cases were mild or ambulatory cases and might easily have been overlooked had there been no epidemic. It is not improbable that some persons actually infected in this epidemic developed so few symptoms that they did not regard themselves as sick, and consequently were not discovered in the investigation.

Mrs. X, although not entirely well during recent years, has had no symptoms having any apparent bearing on this investigation. There is no history of gall-stone attacks. The son and daughter of Mrs. X went to the dinner and ate the food, but both escaped infection. This suggests that they may have been immune, owing to previous mild infection with typhoid bacilli from their mother.

Macroscopic agglutination tests were performed with antityphoid serum on the fifth and eighteenth generations of subcultures of the typhoid bacillus from the feces of Mrs. X and also on the well-known Hopkins strain as control. All three of these cultures gave complete agglutination and sedimentation for the dilution of 1 : 1,000 and some visible agglutination at 1 : 20,000. The three cultures were nearly equal in agglutinability. The cultures from Mrs. X showed little change in agglutinability between the third, fifth, and eighteenth generations, differing greatly in this respect from the strain previously isolated from a carrier at the State Hygienic Laboratory and found to be only slightly agglutinable in the third generation, but, in the eleventh, equal to the Hopkins strain in agglutinability.[1]

The strain of typhoid bacilli isolated from the feces of Mrs. X was tested in the third generation with serum in dilution of 1 : 50 from two of the typical typhoid cases in the Hanford epidemic. Under the microscope complete agglutination was observed to take place within half an hour.

Serum from Mrs. X was obtained on April 16 and was tested by the macroscopic agglutination test with the Hopkins strain and with her own strain. As controls, serums from two persons who had not had typhoid fever or typhoid vaccination were used. There was no agglutination of the Hopkins culture by any of the serums when the dilution was 1 : 100. The culture from Mrs. X was partially agglutinated at dilutions of 1 : 200 by one of the control serums and distinctly agglutinated by the serum of Mrs. X. When the higher dilutions of serum were used there was no agglutination. The test as made is so delicate that the results may be regarded as practically negative, although the serum of Mrs. X had a little more effect on her own culture than did the serum of the controls. The almost complete absence of agglutinins for the typhoid bacillus in the serum from Mrs. X suggests that her infection and immunization had not taken place recently, as there had been time for the Widal reaction to disappear. In this respect the conclusions in the laboratory confirmed the opinions based on the history of typhoid fever among her contacts.

## THE MANNER IN WHICH THE INFECTION REACHED THE FOOD

The source of the infection had now been found to be Mrs. X, but the method by which the infection entered the food remained to be investigated. She helped serve the dinner, cutting the bread, waiting on table, and helping a little in the kitchen. She undoubtedly came in contact at the hall with the food or dishes of a considerable number of persons, and, while this could possibly explain the outbreak, it seemed improbable that the small number of bacilli which could easily be distributed in this way would infect so many people. This was especially true as Mrs. X did not reach the hall until about 10 o'clock in the morning and there was little time for incubation of typhoid bacilli in any of the foodstuffs before the first persons were infected, at twenty minutes after 11. The one article of food with which Mrs. X came in contact before the dinner was the Spanish spaghetti. She had prepared this dish at her home, up to the point of the final baking, which took place at the hall just before the dinner. This final baking would appear at first glance to justify the elimination of the spaghetti as the dish responsible for conveying the infection.

The Spanish spaghetti was prepared as follows: On the day before the dinner the spaghetti was boiled in water. Then it was washed and separated with city water running from a tap. On the same day a Spanish sauce was made out of a quart of milk, two cans of tomatoes, butter, seasoning, cooking soda, and the strained liquid in which dried peppers had been boiled. Probably a little flour was added for thickening. These ingredients were put together and cooked. On the day of the dinner, at about 10 a. m., the spaghetti and the sauce were mixed in a large dish-pan and covered with cheese. The weather was warm and would have been conducive to the multiplication of bacteria. The spaghetti arrived at the hall between 10 and 10:30 a. m. and was put into the oven of a gas stove immediately. The late arrival of the spaghetti caused the women to fear that there would not be sufficient time for the proper baking of this important item on the bill of fare. When the first patrons arrived they were served from the upper and warmer layers of the spaghetti, as it was thought that the deeper portions would not be as hot as desired.

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[1] Sawyer, Wilbur A.: A Typhoid Carrier on Shipboard, The Journal A. M. A., May 4, 1912, p. 1336.

The evidence would be strong that the spaghetti carried the infection if it could be shown that this dish was a good culture-medium and was not sterilized by the baking. Experiments were undertaken at the State Hygienic Laboratory to clear up these two points. A dish of Spanish spaghetti was prepared as nearly as possible according to the methods used by Mrs. X. The spaghetti and sauce were prepared separately. Some of the sauce was put in flasks and sterilized and set aside to be tested for its properties as a culture-medium. The remainder of the sauce and the spaghetti were inoculated with a broth culture of the typhoid bacillus of the strain from Mrs. X. The following day the sauce and spaghetti were thoroughly mixed in a small dishpan and covered with one pound of grated cheese. The dish was not as large as the one prepared by Mrs. X and would therefore be more easily heated through. This mass of Spanish spaghetti was 5 inches deep and ranged from 9 to 13 inches in diameter. The oven of an ordinary gas range was heated to baking temperature and the dish of spaghetti was put in. After seven minutes the door was opened for an instant and it was noted that the cheese had melted. After fifteen minutes the dish was removed from the oven. The surface was not properly browned and the temperature in the middle of the spaghetti had risen only one degree above room temperature (from 16 to 17 C. or 60.8 to 62.6 F.). In the following half hour, while the dish was standing in the room, the temperature at the middle rose to 21 C. (69.8 F.) as the heat gradually penetrated to the inner portions. Cultures taken from various depths all developed colonies of typhoid bacilli.

A large hot-air sterilizer was then heated and kept between 160 and 170 C. (320 and 338 F.). The pan of spaghetti was introduced and subjected to this heat for thirty minutes. When the dish was removed the surface was of a golden brown color. The appearance and aroma suggested that the spaghetti was thoroughly cooked and very hot. The temperature near the top was 54 C. (129.2 F.) and at the middle 23 C. (73.4 F.). Ten minutes later the temperature at the middle was 24 C. (75.2 F.) and the dish was then returned to the oven. Cultures taken at various levels showed that the typhoid bacilli were alive even close to the surface.

In the next baking the oven was kept at temperatures ranging between 207 and 214 C. (405 to 417 F.). After half an hour the pan was removed. The surface was dark brown and the points sticking up from it were charred. The liquid around the margin was boiling vigorously and the whole dish was sizzling. The temperature just under the surface was 83 C. (181.4 F.). At the middle it was 28 C. (82.4 F.) and near the bottom it was 48 C. (118.4 F.). An hour later the temperatures had become nearly equalized and were 46 C. (114.8 F.) near the top, 42.5 C. (108.5 F.) at the middle, and 43 C. (109.4 F.) near the bottom. This showed that the interior of the dish did not reach even a pasteurizing temperature.

Cultures taken at the surface soon after the pan had been removed from the oven showed no typhoid colonies and very few of other kinds. Cultures taken at a distance of half an inch from the surface showed a few colonies of the typhoid bacillus, most of the organisms having been killed. Cultures from a depth of 2½ inches showed abundant colonies of typhoid bacilli. In these cultures the typhoid colonies were identified by their appearance on Endo medium and Russell medium and also by agglutination by antityphoid serum.

In this way it was shown that sterilization of the pan of spaghetti at the dinner in Hanford was not only improbable but practically impossible. The mass of the spaghetti there was much greater than in the experiment and conditions were less favorable for thorough baking.

The thickened sauce, consisting so largely of milk, was suspected of being the culture-medium in which the multiplication of the typhoid bacillus took place. Ten c.c. of the sauce, which had been set aside when the experimental dish was prepared, was put in a test-tube and sterilized in the autoclave. The same amount of sterilized milk was used for comparison. Each tube was inoculated with 0.0001 c.c. of a twenty-four hour broth culture of the typhoid bacillus isolated from Mrs. X. The tubes were thoroughly shaken and then incubated at 37 C. (98.6 F.). Table 3 shows the number of bacilli present in each cubic centimeter of the sauce and the milk at the time of inoculation, and after twelve and twenty-four hours of incubation.

TABLE 3.—COMPARISON OF THE SAUCE AND MILK AS CULTURE MEDIUMS

| Hours of Incubation at 37 C | Number of Bacilli in Each Cubic Centimeter | | Percentage Increase in the Number of Bacilli | |
|---|---|---|---|---|
| | Sauce | Milk | Sauce | Milk |
| 0 | 850 | 1,250 | 0 | 0 |
| 12 | 25,000,000 | 57,000,000 | 2,940,000 | 4,560,000 |
| 24 | 74,000,000 | 56,000,000 | 8,700,000 | 4,480,000 |

From Table 3 it is readily seen that the sauce is a good culture-medium for the typhoid bacillus, although it is somewhat inferior to sterilized skim milk, as is shown by the less rapid multiplication in the sauce during the first twelve hours.

The laboratory experiments completed the explanation of the Hanford outbreak by showing that the sauce used in making the Spanish spaghetti was a good culture-medium and that the dish had not been sterilized after leaving the house of the typhoid carrier.

Moreover, it was demonstrated that cooked dishes must be considered as possible conveyers of infection unless it can be shown that the method of cooking would produce complete sterilization. The slowness with which heat penetrates dishes like the Spanish spaghetti shows that very prolonged heating would be necessary for sterilization of large dishes of such food. Ordinary baking merely incubates the interior of these masses of food.

### THE PREVENTION OF SECONDARY CASES

April 6, Dr. C. L. Scott, the city and county health officer, requested the State Board of Health by telegraph to take charge of the vigorous clean-up campaign which had been recommended as necessary to prevent secondary cases. Under the immediate supervision of Sanitary Inspector E. T. Ross of the State Board of Health, eight men inspected the premises of the entire city and ordered such alterations as were necessary.

The work was finished on April 24. The city and county officials and the individual citizens cooperated with the inspectors to such an extent that in no instance was it necessary to prosecute a property owner in order to have a nuisance abated. The city continued the employment of one sanitary inspector after the campaign was finished.

Secondary cases were almost completely absent up to the time of the preparation of this report, three months after the dinner which caused the epidemic. One case of typhoid fever was reported, and the date of onset was given as May 10. The attending physician could discover no relation between this case and those infected at the dinner. No other cases have been reported.

In order to lessen danger of further infections from this carrier, various precautions were laid down by the State Board of Health and agreed to by Mrs. X in writing.

### CONCLUSIONS

1. The source of infection in the ninety-three cases of typhoid fever in the Hanford epidemic was a typhoid carrier who prepared food served at a public dinner.

2. The vehicle of the infection was a large pan of Spanish spaghetti prepared by the carrier. This dish was baked after it had been infected, but this baking was shown by laboratory experiments to have incubated the bacteria instead of sterilizing the food. Certain customary methods of cooking are thus shown to be inadequate as a protection against infection.

3. The incubation period in the majority of the cases in this epidemic of typhoid fever proved to be shorter than the time usually regarded as the minimum. The first case developed three days after infection. More cases showed their first definite symptoms six days after the infected food was eaten than on any other one day.

4. The ways in which a carrier may transmit infection are so varied and so numerous that attempts at the control of mere channels of infection will not offer sufficient protection. Those who were suspicious of the raw salad at the dinner in Hanford and ate the freshly baked spaghetti turned from a safe dish to one which was heavily infected. The best protection against carriers will come through thorough investigation of the source of infection in every case of typhoid fever. When carriers are discovered, they can be advised and controlled.

5. Until there are more trained epidemiologists on a full-time basis among state and local health officials, the danger from carriers will not be noticeably diminished, and the individual will find in antityphoid vaccination his best protection against infection from carriers.

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**Labor Camp Sanitation.**—The New York State Department of Labor has promulgated a set of rules and regulations governing the sanitation of living quarters and camps. The most important of these rules are:

> The roof and walls of living quarters must be water-tight. The floor of every room used for sleeping purposes must be built of wood, asphalt, or cement. If built of wood, it must be raised at least 1 foot from the ground and the boards must be planed, tongued and grooved and at least ⅞ inch in thickness. If built of asphalt or concrete, it must be laid on a solid foundation other than earth and must be at least 2 inches in thickness. All such floors must be given a smooth, nonabsorbent finish.
>
> In every room used for sleeping purposes there must be provided a minimum of 400 cubic feet of air for each person over 14 years of age, and 200 cubic feet of air must be provided for each child below this age. All living quarters other than tents must have at least one window opening directly to the outer air. These windows must be easily opened and have a minimum area of 4 square feet. Ventilation must be adequate. No bed or bunk may be placed one above the other. Finally, all labor camps must be provided with living quarters, kitchen and dining room accommodations under shelter and plenty of water for drinking and bathing purposes must be furnished in every camp.

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# BLOOD TRANSFUSION BY THE SYRINGE CANNULA SYSTEM *

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The time allowed for a paper under the present circumstances will not permit of a full discussion of the subject in hand. I therefore omitted a summary of the literature, the excellent work of others in this field, problems of technic, questions of accidents, etc. I will confine myself to some of the principles involved in blood transfusion and speak of some of its applications.

When one considers the many facts about the blood, not generally recognized, which are known, and the many facts yet to be learned, one cannot help but realize the complexity of this tissue. Many diseases produce changes in quantity and quality of the blood. Changes in quantity and quality of the blood are responsible for many pathologic conditions. Failure on the part of the blood to modify its quality properly and adequately to meet the required demands in the various conditions is frequently responsible for the existence of disease, especially infections. It is only by a thorough study of this complex tissue in the normal and by a study of this tissue under pathologic conditions that one may obtain a clear conception of the possibilities of blood therapy. Further studies of the mode of operation of substances and elements of the blood in disease will perhaps suggest to us possibilities in modifying the blood of a donor or patient to meet the needs of the case and make more potent the agencies involved in overcoming disease. These studies are necessary not only that we may know when and how to apply blood therapy but equally important that we may know when not and why not to employ it.

Permit me to take up with you some of the conditions in which blood transfusion therapy may be considered.

*Aplastic Anemia.*—A disease usually of young adults, short, febrile course and always fatal. The anemia is progressive with no remissions of the disease, and the termination is usually in hemorrhage. In this disease leukoblastic and erythroblastic activity becomes completely and permanently paralyzed. The introduction of fresh blood is wholly inadequate to modify favorably the course of the disease. This statement is based on three cases in my own experience with a support of the literature among the reliable authors.

*Splenic Anemia with Hematemesis.*—In this group we may for our purposes include Banti's disease. In many cases syphilis plays a prominent rôle. Where syphilis prevails and the anemia is in excess of the blood lost, transfusion will be of little aid until the patient has received antisyphilitic treatment (case report[1]). After receiving such treatment, transfusion in severe cases is specific. Following the combined therapy splenectomy deserves respectful consideration.

*Gastric Ulcer with Hemorrhage and Anemia.*—In traumatic hemorrhage or hemorrhage from ulcer, nature provides two factors of safety in checking it: (1) a fall in blood-pressure, and (2) a decrease in coagulation time. The decrease in coagulation time is brought about by dilution of the blood with fluid of the tissue. This fluid carries with it tissue extract. Tissue extract reduces coagulation time. If transfusion be contemplated it should preferably be done after all bleeding has ceased, and a sufficient time allowed for a crust to seal over the bleeding area. If both operation and transfusion be done, transfusion should preferably be done first whether the patient is actively bleeding or not. Anesthesia and operation should immediately follow. The patient will bear the anesthesia well, the shock of operation will be prevented; sensory and other reactions which occasionally follow transfusion never become manifest, and a poor surgical risk is converted into a good one. My experience is that when the hemorrhage is profuse and several occur within twenty-four or thirty-six hours, the ulcer is likely to be a deep one. These are naturally more liable to perforate. In these cases transfusion and operation should be done without delay.

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* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Lindeman, Edward: Blood Transfusion, THE JOURNAL A. M. A., March 28, 1914, p. 993.

The treatment of severe hemorrhage by blood transfusion is specific. The results when proper transplantation is accomplished are nothing short of brilliant.

*Alcoholic Cirrhosis of the Liver with Severe Secondary Anemia.*—The liver cirrhosis is no contraindication. The results are good. Ascites may follow transfusion, but this ascites clears up later. My patients have all done well even when syphilis was associated. In liver disease Whipple found a diminution in the fibrinogen of the blood. The purpuric eruptions and also hemorrhages which not infrequently accompany the disease may thus in a measure be easily accounted for. Where varicosities of veins prevail both factors may be operative in causing hemorrhage and anemia. Hence the rational procedure for the relief of the condition is the transfusion of whole blood.

*Acute Leukemias.*—I have had no success in the treatment of this disease, in either the proliferative or destructive forms, with or without hemorrhage.

*Hemophilia.*—A family disease following the law of Nasa. Here we encounter a condition of the blood which permits of a greatly delayed coagulation time, the blood failing to clot in over one hour. In the circulating blood fibrinogen, calcium salts, prothrombin and antithrombin are constant constituents. Antithrombin holds the prothrombin in combination and prevents its conversion or activation into thrombin. When blood is shed the disintegration of platelets furnishes material called thromboplastin which combines with the antithrombin and the prothrombin is liberated. Prothrombin freed is rapidly changed to thrombin and in the presence of calcium salts converts fibrinogen into fibrin (Howell). From the most recent researches of Howell in hemophilia, the condition is associated with a decrease of prothrombin which necessarily means a relative increase of antithrombin. In this disease two conditions are corrected by blood transfusion: (1) prothrombin is supplied; (2) the lost blood is replaced. Human blood-serum in sufficient quantities will supply enough prothrombin to stop the bleeding. Blood-serum will not replace the formed elements of the blood lost. Hence, in severe cases blood transfusion is the measure of choice and should be performed during the active stage of bleeding. In some cases it might be considered as a prophylactic after all bleeding has ceased. After transfusion the coagulation time is materially reduced but, curiously enough, does not remain constant. A case may illustrate this point:

> A typical case in the series of Dr. W. Gilman Thompson, Bellevue Hospital, in a man, aged 29, with multiple hematoma in joints, loose tissues of the neck and floor of the mouth. His life was endangered by strangulation May 22, 1913, coagulation time over 45 minutes; May 23, 230 c.c. was transfused; May 24, coagulation time 17 minutes; May 25, coagulation time 19 minutes; May 25, 200 c.c. was transfused; May 28, coagulation time 12 minutes; May 29, coagulation time 14 minutes; May 30, coagulation time 15 minutes; June 2, 200 c.c. was transfused; June 4, coagulation time 8 minutes 10 seconds. Patient had no recurrence of bleeding since the second transfusion until one year later, when he came to my office with a hematoma of the left wrist. His coagulation time was then a little over one hour when an imperfect clot had formed. He was then transfused again with good result. Dr. Crile, in a personal talk, informed me that some of the cases in his experience remained in a normal condition for several years after treatment.

*Simple Anemia of Grave Degree of Unknown Cause.*—Most common in girls and young women between 10 and 20 years of age, frequently fatal. The coagulation time is slightly delayed, menstruation is irregular and at times a little excessive. Epistaxis is occasional. The anemia is frequently fatal and yet shows none of the characters of pernicious or aplastic anemia or hemophilia. In cases in which the usual forms of treatment have been exhausted with no improvement, striking results are obtained with blood transfusion. After overcoming some of the anemia by blood transfusion, the patient, who has previously shown no hematopoietic function, begins to make new blood. However, the anemia must be overcome to a considerable degree before the patient is capable of blood regeneration. Not only does the new blood correct the pathologic condition in part but apparently stimulates hematopoiesis. We may well apply here the maxim, *Ex nihilo nihil fit*, "Nothing can be made out of nothing." This stimulation is probably due to the increased nutritional condition of the hematopoietic organs themselves, which nutriment furnishes material from which new blood may be made. Once the patient assumes good hematopoietic activity the road to recovery is rapid and cure is complete.

*Postoperative Cholecystotomy* (where bleeding from the wound cannot be controlled).—Human serum in large quantities may help. In some cases, however, this may not help and transfusion of blood is necessary. In severe cases it may be necessary to transfuse every day or every other day or every three or four days according to the variation in coagulation time and variations in the blood lost. If the patient's blood coagulation time is maintained within eight minutes all bleeding will cease; but at this point the patient remains at a low level of safety. Hence, though bleeding has ceased, a lower coagulation time should be aimed for. A severe anemia from preceding illness may be present and a relatively small hemorrhage can produce grave symptoms. Whole blood adequately satisfies all the necessary needs of the case. According to Falta, also King, bile pigments have considerable affinity for calcium; when the pigments appear in the circulation the heart muscle rapidly gives up some of its calcium. In consequence the heart action is impaired. In this condition, as well as in some cases of pernicious anemia, I usually use Locke's modified Ringer's solution, without the dextrose, for improving, if possible, this cardiac tone. The solution is used in place of saline.

*Carcinoma and Sarcoma.*—The fact that malignancy is common in some families and absent in others, and the fact that tumors are not transplantable in all individuals of a species, would lead one to conjecture the possibility that inhibitory substances may be present in some individuals and that these substances reside in the blood. Crile has reported a cure of sarcoma in a dog by blood transfusion from an immune animal. In my experience thus far I have no evidence one way or another. The operative risk, as in many other conditions, is undoubtedly diminished by blood transfusion.

*Malnutrition.*—The life of a starving animal cannot be maintained by the transfusion of blood from a normal, well-fed animal. The bulk of the energy represented in the blood is in a potential form. That which is kinetic is relatively small. Hence, one cannot hope for much in cases of malnutrition in infants. I have had a little success in this field, but I feel that what virtue it may possess must lie in its stimulating quality. Of course, when anemia is associated, the results in some cases should be good. In the majority of cases of malnutrition in infants, in spite of the pallor and emaciation, the red cells and hemoglobin approach very close to normal, sometimes even higher. This is a little difficult to understand. There may be a reduction in volume of the blood due to dehydration of the tissues, and the anemia may be masked by concentration. This, however, is a theoretical point, and deserves no place here.

*Purpura Hemorrhagica.*—The condition may be primary, or may be secondary to some accompanying or preexisting disease. We may divide them conveniently for our purposes into four groups: (1) cases associated with diminution of platelets; (2) cases associated with diminution of fibrinogen; (3) cases associated with diminution of prothrombin; (4) all other cases.

Groups 1, 2 and 3 are either improved or cured by blood transfusion. As to Group 4, the condition or course of the disease in many of the cases in this group is not modified.

*Sepsis.*—I must here cite one case, a patient referred to me through the kindness of Dr. F. S. Meara of New York:

A. H., aged 11 years. Diagnosis: Rheumatic fever with malignant endocarditis. Child is very ill, emaciated, very weak, anemic; hemorrhagic mucous membranes; petechiae on skin and blood in stools. Systolic murmur of mitral insufficiency; liver and spleen just at the level of umbilicus, and some edema of extremities. For the past eighteen months child has been ill with the following diseases in succeeding order: asthma, tonsillitis, rheumatic fever, bronchopneumonia, diphtheria, otitis media, mastoiditis with involvement of sphenoid bone, and is now suffering with the disease mentioned above. In spite of repeated negative blood-cultures, it was felt that the child had a blood infection, from some obscure focus, probably the heart valves.

July 18, 1913: Strong positive complement fixation test to *Strepococcus viridans* (Research Laboratory, Department of Health, New York); 280 c.c. of blood was transfused in median basilic vein from father. Time three minutes. One hour later temperature 101 F.; normal in evening.

August 1: Second transfusion; 360 c.c. of blood was transfused from father. Time from beginning to end of operation twelve minutes. No reaction.

August 8: Third transfusion; 260 c.c. of blood was transfused from father. No reaction. Mastoid wound previously showed little tendency to heal, but now shows increased granulations and decreased discharge.

August 15: Fourth transfusion; 220 c.c. of blood was transfused from father. No reaction.

August 21: Red blood-cells, 2,700,000; hemoglobin, 70 per cent.

August 22: Fifth transfusion; 260 c.c. of blood was transfused from father. Fifteen minutes later there was a slight general urticaria. After this transfusion child made rapid progress in strength and increase in appetite.

August 29: Sixth transfusion; 280 c.c. of blood was transfused from father. Fifteen minutes after this transfusion child developed a general urticaria. First transfusion was followed by chills and slight temperature. No chills and no rise of temperature followed the succeeding transfusions.

September 5: Child began to go out in an automobile daily. Her course has been one of continuous progress ever since. Convalescence dates from August 29, the day of the last transfusion.

November 22: Child is now practically well save for occasional attacks of asthma for which she is sent to a warmer climate.

December 1: Condition good.

Aug. 1, 1914: Condition excellent. Child weighs 90 pounds. No recurrence of the disease.

In the analysis of the case of A. H., and in the explanation of the successful results obtained, I desire to advance the following statements which I present in the form of a theory:

In this case it might be said that three prominent conditions prevailed:

1. Chronic sepsis.
2. A severe anemia secondary to sepsis.
3. Multiple purpuric hemorrhages secondary to sepsis.

[From observations in this case and from observations in nine other cases of chronic sepsis, I am convinced that blood of a normal healthy individual contains bactericidal elements or elements that inhibit bacterial growth, that possess considerable potency. These elements when introduced convey some degree of passive immunity.

### THEORY

"This immunity follows the law of passive immunity and is greatest at the time of introduction of blood, and gradually disappears with time either by elimination or modification. If this be true the introduction of fresh blood will inhibit septic processes for a time at least until the bactericidal or inhibition substances introduced become impotent. At this point bacteria may assume their previous activity and the condition is unrelieved. However, if blood is introduced repeatedly, this bacterial activity will be checked in part.

The parallelism of anemia and low resistance to infection is a well-known fact.

When a sepsis produces an anemia a vicious cycle presents which prevents the host from developing active immunization to the infection.

If we assume a certain threshold necessary in the host, in terms of red blood-cells and hemoglobin for the production of an active immunity, then repeated transfusions will check septic processes and overcome the anemia to a degree that will enable the host to develop his own active immunization which will destroy the organism causing the disease."]

It takes more than one swallow to make a summer. And, in support of my contention I have had nine other cases of sepsis in which there were two deaths.

In one case in which death occurred a child of 6 years had appendix abscess and spreading peritonitis and gangrene of the cheek. In the other case a man aged 39 had a streptococcus septicemia. The blood culture yielded 200 colonies per 3 c.c. of blood. These cases will be published in detail elsewhere. The literature of many experimental workers would seem to bear out this contention. Von Behring, Fodor, Nuttal, Nissen, Buchner, all showed that fresh normal blood and blood serum will kill bacteria in a reagent glass. Lemaire and also Buxton found that after the infection of pathogenic micro-organisms directly into the circulation there is first a reduction in their number followed later by an increase. It is supposed that the natural antibactericidal forces of the serum and leukocytes take up the destruction of the bacteria until the former are exhausted, and from this time proliferation will take place without hindrance. In typhoid infection it would seem that the first organisms which reach the circulation are killed. In this destruction there is a great loss of bactericidal agencies, so that continued invasion results in general infection. Evidence is abundant that the blood is endowed with a natural protection against the invasion of bacteria, and in most of us it is only when infected by an organism of high virulence that we are overwhelmed. If, however, by the removal of the natural immune substances through long illness, alcoholism, bad habits, etc., an individual may be wholly incapable of warding off infection, even of low grade virulence, and chronic sepsis may easily ensue. The increased bactericidal power of the serum which develops in immunization or infection is an index of the increased resistance of the individual against infection. If this be true the reverse must be true, and where there is no bactericidal power in the blood there is no resistance to infection. In streptococcus and staphylococcus infections, protective serums have been obtained in laboratory animals, but the quantity required for use in man at the present time precludes the possibility of application. The defense of the body against streptococci depends on the power of the leukocytes as well as the opsonin and other bactericidal substances of the serum. Hence the bactericidal power *in toto* resides in the whole blood.

40 East Forty-First Street.

## ABSTRACT OF DISCUSSION

Dr. G. M. Dorrance, Philadelphia: The published results from transfusión in pernicious anemia, and my own results agree with them, have not been favorable in cases in which only one transfusion of a large amount is performed. Exceptional cases of course occur. We have had two cases of cure, both in young subjects, and several cases in which transfusion was successful in the first instance but was followed by death several months later. The syringe method of which Dr. Lindeman is an advocate seems to be destined to supersede the direct connection between artery and vein and from vein to vein. This method has been used for several years by Drs. Cooley, Edwards and others, the difference being that they use a larger syringe. We have not had experience in the treatment of chronic infections by frequent transfusions, but in acute infections the use of blood-serum or one large transfusion has not altered the course of the disease in any of our cases. In most melena cases, serum, foreign or human, usually controls the bleeding. In a few very severe cases transfusion is indicated. Too much care cannot be exercised in the selection of the donor in order to rule out syphilis, tuberculosis, etc.

Dr. S. Adolphus Knopf, New York: Will Dr. Lindeman tell us what has been his experience with tuberculosis cases and how the patients felt after transfusion?

Dr. A. E. Jaffin, Jersey City: Five years ago I transfused a patient with pernicious anemia by the cannula method, and although the patient died three days later the hemoglobin rose 20 per cent. Coincident with this rise in hemoglobin there was cardiac distress that stopped us from going higher. As an intern I recall cases of malignant endocarditis that were repeatedly transfused shortly after Dr. Crile had revived the subject. The success we had then was not as marked as Dr. Lindeman's now. In one case there was a streptococcus invasion of the mitral valve.

Dr. E. Lindeman, New York: In the technic, specially devised cannulas are painlessly inserted into veins of the donor and patient, without skin incision. About 15 syringes are employed. No syringe is used a second time until thoroughly cleansed. One operator manages the syringe of the donor, another that of the patient. One syringe is being filled while another is being emptied. A little saline is allowed to trickle through the patient's cannula every now and then to prevent the possibility of any coagulation in the cannulas. The syringes are passed from donor to patient in rapid succession until the desired quantity of blood has been transfused. The system thus operates as an artificial human heart. It requires from six to twelve seconds to fill and empty a syringe. The largest quantity I have taken from one donor in one sitting is 1,500 c.c.; the time required was fifteen minutes; 30 c.c of saline was used. The coagulation time of blood carefully drawn into a syringe is never less than five minutes. Hence, no change can take place in the blood during the transfer, for the entire blood-mass, regardless of the amount, is outside the human body for a period of less than twelve seconds. In speaking of sepsis, I tried to emphasize the fact that we have, in the circulating blood of normal healthy persons, natural bactericidal substances more powerful than any substances in the pharmacopeia at present capable of being injected into the circulation for the treatment of many infections. Undoubtedly, the degree of natural immunity will vary with many persons, as Dr. Park has shown in the protection from diphtheria; some possess it, others do not. In the selection of donors, those who have proved successful in septic cases are used for similar cases. For the treatment of typhoid fever donors are kept immunized during the typhoid fever season. In answer to Dr. Knopf's query concerning transfusion in tuberculosis, I must beg to decline to make a statement at present. The work is being pushed as rapidly as possible and a report will follow in due time. I have purposely omitted the subject of pernicious anemia, yet there is perhaps no disease that presents itself more frequently to one engaged in the field of blood therapy. Cases referred to me from time to time now make a large series. These have been subjected to a critical analytic study. Because there is so much to be said on this subject I have preferred not to enter on it at this time. When the patient, however, has reached a critical condition, when all other forms of treatment have been exhausted, there is no therapeutic measure known that has any parallel in efficacy in robbing the disease of much of its terrors as blood transfusion when properly applied.

**Characteristics of the Health Movement.**—The New Health is thus an index of our civilization, a composite result of all our well-being and a tremendous asset for the advancement of that well-being. Health is economic. Sound men cannot be exploited; and for that reason, if for no other, I greet with enthusiasm the advent of the New Health. Health is moral. Sound men will not be unjust and for that reason I salute the era of the New Health. Health is civic. Sound men will eliminate poverty and that of itself should make us all sanitarians. Sound men will learn to do without jails, recognizing that so-called criminals are properly candidates either for an educational reformatory or for a custodial hospital, and therefore again I turn gladly toward the dawn of the New Health.—Edward T. Devine, *Journal of Outdoor Life.*

# ACUTE MYELITIS, SECONDARY TO PERIRECTAL ABSCESS, DEVELOPING A FEW HOURS AFTER SEVERE FRIGHT *

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Fright has been considered, especially by German authors, a cause of organic paralysis, and cases with this etiology are reported in the older literature. It is probable that many of these cases were instances of functional paralysis and not organic. In 1903 I had the opportunity of studying a case in which a struggle with burglars was followed in two days by paresthesia of the lower limbs of sudden onset and some days later by motor and sensory paralysis of these limbs and then death. Pus within the abdomen extending from the rectum and severe myelitis were found. The fright may have had no connection with the paralysis, but on the other hand it may have disturbed the circulation in the spinal cord and in connection with the exertion caused by the struggle have rendered the cord more liable to infection.

H. E. S., white, first came to the nervous dispensary of the University Hospital, Nov. 9, 1900. He was a railroad conductor, aged at that time 35 years. While coming from Omaha he had become paralyzed in the right side of his face after he had been sitting by an open window. The paralysis was severe, and the entire right side of the face was affected. He made a complete recovery from this paralysis.

April 22, 1903, he returned to the nervous dispensary, when the following notes were taken: He had been perfectly well since he had had the facial palsy. He denied venereal disease. He had been married five years, from 1891 to 1896, but his wife had never been pregnant.

During the night of April 17, 1903, he was attacked while in an eating-house. He was the proprietor of this restaurant and at 1 o'clock in the morning three men entered his place of business and tried to rob him. With the assistance of another man who was in the place, he succeeded in driving off his assailants and it is very certain that he was not injured bodily in any way, although he was very much excited.

During the afternoon of April 19 he was sitting by a window in his house. He had been perfectly well until this time. While he was sitting by the window the man who had assisted him in expelling the robbers passed and the patient's thoughts were directed to the attempted robbery. Soon after the man passed he rose from his chair but noticed that both of his legs were asleep, as he expressed it, and he walked therefore with some difficulty. The paresthesia has persisted until the present time. When he first experienced the paresthesia his feet and right leg seemed numb, and gradually the numbness spread to the knee on the left side and to the hip on the right side, implicating also the penis, scrotum and gluteal region. The rest of his body seemed normal. He knows when he has passed urine or when the rectum should be emptied, but he cannot feel the passage of the urine or feces. He has not had involuntary micturition or defecation. He has not had any sexual desire or seminal emission since his symptoms first appeared, but the time has been short. He tires very readily and needs to make more effort to perform voluntary movements. The station is fair even with eyes closed.

Standing on the right leg alone is not so easy as standing on the left leg alone. He moves all the joints normally. He can place his heel at any desired point with fair accuracy. Objective sensation in its different forms is little if at all affected; when tested he occasionally gives an incorrect answer, but soon corrects himself. He complains that he feels as though he were walking on felt and that he does not seem to have shoes on.

Both patellar and Achilles tendor reflexes are normal. In testing the Babinski reflex the large toe seems to go up first and then to go down. The reactions of the irides are normal.

April 27: The Babinski reflex is positive on each side.

May 2: Since Sunday, April 19, the patient had been able to walk without difficulty and came to the dispensary, although his gait was slightly ataxic. The toes of each foot had been forcibly extended from irritation of the sole of the foot. He had no marked disturbance of gait until Thursday morning, April 30, when, about 11 a. m., he fell to the floor but was able to pull himself on the sofa. He had not passed urine since half past five of that morning. So soon as he climbed on the sofa he began to have pain in the lower part of the abdomen. Dr. Lindauer was sent for and catheterized the patient. The man had not had any pains in the lower limbs at any time although he had pain in the lumbar region. Bowels have not moved since April 30.

About 2 p. m., April 30, the patient succeeded in rising from the sofa and by supporting himself was able to pass into another room on the same floor. He sat in a chair three-quarters of an hour. Later he walked into the front room and walked several times about the room until he was brought to the University Hospital about 6 p. m., April 30.

Friday, May 1, the morning after admission to the hospital, he was able to stand and he walked around the bed. Dr. Nisbet, about 3 p. m. of this day, had the patient get out of bed and stand by the side of the bed, supporting himself slightly with one hand. As he was unable to void urine while standing, he was catheterized.

Resistance to passive movements in the lower limbs was nearly normal, and he could flex and extend the leg and thigh even when these movements were resisted. The patellar reflex was exaggerated, especially on the right side. Ankle-clonus and Babinski reflex were distinct and both were more marked on the right side. Tenderness to pressure over the vertebrae was not felt.

Condition May 2: The lower limbs are not at all atrophied but are completely paralyzed, so that there is scarcely any movement in the toes or hips. The patellar reflex on each side is not so prompt as it was yesterday; it is about normal on the left side and slightly below normal on the right side. Ankle-clonus is persistent and typical on each side, but more pronounced on the right side. Babinski's reflex is very distinct on each side; on the right side the movement of the big toe upward is typical and slow; on the left side the movement of the big toe upward is of the same quick character as it was last week. The lower limbs are cool to the touch and are spastic.

Tactile sensation is much impaired in the lower limbs, beginning about 2 or 3 inches below a line passing through the umbilicus. The outer part of the right thigh and the feet are almost anesthetic. Pain sensation is acute in the lower limbs except on the outer side of the right thigh, but is not so acute as in the upper part of the trunk. Sensation for temperature is much impaired in the lower limbs and over the abdomen below the umbilicus, but the sensation seems to vary during the examination. The abdomen is very rigid and painful to slight touch.

The movements of the upper limbs are free and the motor-power is normal. The grasp of each hand is normal. Sensation for touch, pain and temperature in the upper limbs and face is normal.

The reaction of the iris to light and in convergence is prompt in each eye. The movements of the eyeballs are normal in all directions. The tongue is protruded in the median line. The muscles of the facial and motor trigeminus supply are normal.

May 3, 2 p. m.: The lower limbs are completely paralyzed. The patellar reflex is absent on each side even on reinforcement. Babinski's reflex is present on each side. Ankle-clonus is not obtained on either side. The abdomen is rigid and tender. Sensation for touch in the right lower limb is lost on the outer side below the crest of the ilium, on the anterior side below Poupart's ligament, on the inner side

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below the patella, and on the posterior side below the popliteal space. In the left lower limb tactile sensation is impaired below the knee. Pain sensation in the right lower limb is lost on the outer side below the trochanter, and on the inner and outer surfaces of the leg below the patella, and is impaired in the rest of the right lower limb. It is lost in the outer part of the left leg 2 inches below the patella to 2 inches above the ankle.

Heart and lungs are normal.

May 5: The upper limbs are not at all affected. Respiration is entirely costal; the abdomen is distended. Since yesterday morning the patient has been having intense pain over the trunk back and front from about 4 inches below the nipples to the inguinal region. The whole spinal column from below the spines of the scapulae is very tender to pressure. Sensation for touch and pain is entirely lost in the lower limbs and abdomen as high as a line about 2 inches below the umbilicus. Patellar reflex and Achilles tendon reflex are completely lost on each side. Babinski's reflex is still very distinct on each side. The man has frontal headache. He complained of a sensation of fulness in the bladder which was removed by catheterization.

Death occurred May 9, 1903.

The necropsy was performed by Dr. William S. Wadsworth, coroner's physician. He reported that the findings showed such clear evidence of gradual extension from the region of the rectum that he gave as cause septicemia by extension of infection from the rectum. Dingy greenish pus was found in the tissues about the rectum with emphysema and cellulitis extending to the buttocks above the brim of the pelvis, implicating the retroperitoneal space and the lymph-glands of the abdomen, extending as high as the pleura, following the nerves to the spinal cord, and causing general peritonitis. There was evidence of beginning pleurisy. The bladder did not contain pus.

Dr. J. S. Evans, Jr., reported, May 16, 1903, that intradural cultures were negative, subcutaneous cultures were contaminated, but a culture taken the day before death from the area of cellulitis of the buttocks showed the presence of the *Streptococcus pyogenes.*

My findings in the spinal cord were as follows: Lumbar Region: A section from the midlumbar region showed much softening although it was possible to distinguish white from gray matter. The anterior and posterior roots stained deeply by Weigert's hematoxylin method. The nerve-cells of the anterior horns were much diseased; by the thionin stain, they contained few chromophilic elements, and had very imperfect dendritic processes. The nucleolus stained deeply and it was a little difficult to make out the nuclear membrane. In some of the cells of the anterior horns the chromophilic elements had entirely disappeared. There were recent hemorrhages at some places in the cord, but no accumulation of pus-cells could be found in the cord. Sections from the lower thoracic region showed more disintegration than did those from the lumbar region, and it was impossible to distinguish here white from gray matter. Collections of round cells were seen within the cord.

There was diffuse staining with the Marchi method in the lumbar region and to some extent in the thoracic region, but it was not intense.

The nerve-cells of the anterior horns in the cervical region were much diseased. They stained deeply, were shriveled, had few processes, and in some the nucleus was peripheral. The anterior and posterior roots were normal in the cervical region.

The fright in this case was very pronounced. Could it have had any relation to the paralysis?

The tendency is to attribute all acute paralyses developing immediately after fright to hysteria, and this tendency is justifiable in most cases; but there is a possibility that fright may act as an *agent provocateur,* in the sense of French writers, and be a cause of organic change. Papers bearing on this subject are found chiefly in the older literature. In many instances the fright is only a coincidence, but in others it may affect the circulation in vessels already diseased. When syphilitic endarteritis has occurred in the vessels of the cord, apoplectiform myelitis has been observed not infrequently. I have already written on this subject.[1] Paralysis under such circumstances may develop within half an hour without any apparent exciting cause; how much more probable is paralysis, therefore, when severe emotion disturbs an impaired circulation. Blushing shows chiefly in the face and may be intense as a result of mild emotion, but the blushing is not confined to the face and may affect a large part of the body. Are the interior organs implicated in blushing? It is at least possible. A congestion of the vessels of the spinal cord from vasomotor disturbance when those vessels are diseased may cause thrombosis, and this certainly may cause paralysis, or, if the thrombosis be mild, the vitality of the affected part of the cord may be reduced and the susceptibility to toxins may be increased. One may well hesitate at the present time to accept as proved acute organic paralysis as caused by fright in cases in which the vessels are in normal condition. It may be well to review briefly some of this older literature on fright paralysis.

Kohts[2] refers to fright as a cause of exophthalmic goiter, icterus, turning white of the hair, and cerebral apoplexy. He had an unusual experience in that he was able to observe a great many cases of nervous and other disease that developed during the severe bombardment of Strassburg. During the thirty-one days of the siege the town was bombarded almost every night; 193,722 bombs were thrown into the city, and after the surrender only two houses showed no marks of the firing. Kohts reports cases of paralysis agitans, and of myelitis and other diseases which developed immediately after severe fright, one of which was with necropsy. The people of the city took refuge in the cellars, and repeatedly saw those about them killed. The effect of psychic trauma has probably never been more clearly shown. Kohts offers no explanation for the manner in which fright leads to organic disease. It is difficult to attribute such an array of cases to mere coincidence.

Since the investigation of emotional paralysis by von Leyden and Kohts, very little attention has been given to the subject, although their publications first appeared in 1873 and 1874.

The case of Todd,[3] described by him as emotional paralysis, is questionable as regards an organic basis, according to von Leyden.[4] Hine's[5] case was one of chorea of pregnancy developing after severe fright. The midthoracic region of the cord was softened. Pasque's[6] case was one of paralysis of the lower limbs cured by strychnin.

Leyden reported the case of a woman aged 21 who was awakened by fire in a house opposite the one in which she was. She was greatly frightened. Immediately after the fire was extinguished and she had returned to her bed, she experienced severe pain in the left leg. The following morning the left leg was weak and gradually spastic paraplegia developed. A diagnosis of thoracic myelitis from fright was made. The necropsy showed sclerosis in the midthoracic region of the cord.

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[1] Spiller, W. G.: Jour. Nerv. and Ment. Dis., October, 1909.
[2] Kohts: Berl. klin. Wchnschr., 1873.
[3] Todd: Clinical Lecture by Beale, London, 1861.
[4] Von Leyden: Klinik der Rückenmarks-Krankheiten, 1874, i, 173; 1875, ii, 181, 190, 430; Ztschr. f. klin. Med., 1880, i, 12; Berl. klin. Wchnschr., Feb. 20, 1905, p. 193.
[5] Hine: Med. Times and Gazette, 1865, cited by von Leyden.
[6] Pasque: Arch. de méd. belge., December, 1842.

The second case that Leyden reports was as follows: A girl aged 23, previously healthy, during the siege of Strassburg found on returning home that her house was on fire. Symptoms began immediately and gradually the lower limbs became paralyzed and contracted. The necropsy showed chronic diffuse myelitis with meningitis, the upper thoracic region was most affected.

Another case reported by Leyden is as follows:

A servant girl, aged 16, was greatly frightened by an attempt to rob a house. The two nights immediately following the attempted robbery she slept badly. On the morning of the third day following the psychic trauma, or more exactly, after sixty hours, the lower limbs became weak. Paresthesia soon appeared in both upper limbs as well as pain in both lower limbs, and the patient became unable to move any of her limbs and had flaccid paralysis with complete loss of sensation in all the limbs. She had retention of urine and incontinence of feces only during a few days, and the disturbance of the trunk disappeared, so that motion and sensation were lost except in the head, neck and trunk. She had no mental symptoms. Tendon reflexes became normal, and Babinski's reflex and electrical reactions were normal. The case described above Leyden regarded as functional, and the result of suggestive treatment demonstrated the correctness of this view.

Brieger[7] says that organic cases caused by fright or mental shock have been reported by Todd, Hine, Pasque and Berger, but all were without anatomic foundation. Leyden was the first to show that such a cause might produce tissue changes in the central nervous system. He refers to the case in which Leyden found sclerosis in the midthoracic region, and to another in which he found diffuse sclerosis of the upper and middle thoracic regions. Brieger knew of no other anatomic evidence at the time he wrote his paper. His patient was a prostitute, aged 23, who had the symptoms of lumbothoracic myelitis developing first within a few hours after she was much frightened by a drunken man. The necropsy revealed a myelitis in the upper lumbar and lower thoracic regions. The patient had had syphilis. Brieger says clearly that fright was the only cause of the myelitis. It was not syphilitic, because no signs of visceral syphilis were found, but the syphilitic infection and the irregular life had made her more vulnerable. Still one may suspect syphilis notwithstanding Brieger's opinion. He thinks that the fright may have caused a temporary interruption of the circulation in the spinal cord, the lumbar region of which was exhausted by recent prolonged dancing. Fright affects the stomach and may cause vomiting, loss of appetite, ulcer and hematemesis, and may affect the lumbar region, causing pollution, etc. It is questionable whether the explanation given by Brieger can be accepted. The necessity of frequent micturition preceding examinations is well known by students.

P. K. Pel,[8] writing in 1881, in describing this *Schrecklähmung,* said that while functional disturbance following fright is well known, other cases are observed in which disease of the spinal cord has followed fright. Such are the cases of Russel-Reynolds, Todd, Hine, Leyden, Kohts, Brieger and others. Such cases are rare. Pel's case seems to have been one of functional paralysis following fright.

A case reported by Daus[9] is a valuable contribution to fright paralysis. A boy, aged 14, was physically poorly developed, and was obliged to walk much, but was healthy until Nov. 16, 1901. On this day he was so greatly frightened by an automobile that without being struck by it he fell to the ground and did not lose consciousness. When he tried to rise he was unable to do so, and he was carried home and put to bed. He had severe pain in the feet and both lower limbs were anesthetic as high as the gluteal region, and he had rectal and vesical symptoms.

Daus says that the most commonly affected region in fright paralysis is the lumbar cord, and this is because of functional overuse of this region. In his case there was no evidence of sexual abuse, which I have known to be the immediate cause of paralysis from lesion of the spinal cord, but the boy had been much on his feet, and in this way may have rendered his lumbar region more susceptible, but one would suspect some undiscovered cause in addition to fright. His case seems to show that the epiconus region has especial vulnerability to *Schrecklähmung.*

I have known persistent paralysis of the lower limbs to develop rapidly in a man during the early morning following repeated sexual intercourse occurring the preceding night.

The literature that Daus refers to on *Schrecklähmung* is of ancient date. With the exception of Leyden's paper in 1905 and Daus' in 1903, the subject seems to have been ignored by almost all of the recent writers.

Emotion has seemed in some cases to be the cause of hemiplegia in a person previously healthy. Cases of this kind have been oberved by Babinski[10] and Oppenheim,[11] and another was reported by E. Frank.[12] A woman, aged 26, developed left hemiplegia after a severe fright. The paralysis was believed to be organic and the result of a pontine lesion. No cause for this hemiplegia could be determined; the heart appeared to be normal, and at first no signs of syphilis could be detected, but the Wassermann reaction was positive. Careful examination revealed small scars near the mouth, the result of a facial eruption at the age of 5 years. The history of corneal opacity at the tenth year was obtained. Hereditary syphilis seemed probable. It is not likely that a healthy vessel would rupture from an emotion, but a diseased pontine vessel might yield, and the blood leak gradually.

Urinary paraplegia has been discussed in the older literature, but now one hears comparatively little of it. The paper of T. J. Walker has attracted considerable attention. He observed three cases of acute ascending paralysis following longstanding chronic cystitis. Urinary paraplegia, as he calls it, he states has been recognized since 1833, when Stanley made a communication to the Medico-Chirurgical Society; but Stanley's case seems to have been different. In Walker's[13] case, the patient had a stricture of the urethra and chronic cystitis, and during an exacerbation he developed during a night numbness in the feet and some loss of power in the legs. The following morning he had paresis of the limbs up to the thighs. By the evening of the same day the paralysis had extended upward to the arms and thorax, and breathing was embarrassed. The symptoms rapidly progressed, and death occurred eighteen hours after their onset. So far as the author could remember, the catheter or bougie was not used during the last illness.

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[7] Brieger: Ztschr. f. klin. Med., 1881, ii, 121.

[8] Pel, P. K.: Berl. klin. Wchnschr., June 6, 1881, p. 325.

[9] Daus: Monatsschr. f. Psychiat. u. Neurol., 1903, xiv, 66.

[10] Babinski: Semaine méd., 1909, No. 1.

[11] Oppenheim: Lehrbuch.

[12] Frank, E.: Berl. klin. Wchnschr., June 21, 1909, p. 1154.

[13] Walker, T. J.: Tr. Clinical Society of London, xxxviii, 80; Lancet, London, March 11, 1905, p. 636.

In Case 2 the patient had chronic cystitis. December 31, he had acute exacerbation of his bladder trouble with malaise and some fever, but the symptoms were not urgent. On the morning of January 4 he experienced uncomfortable sensations and feebleness in the lower limbs. By midday he had paraplegia. He died forty-eight hours after the first indication of paralysis.

In Case 3 there had also been chronic cystitis. The extension of the paralysis upward was rapid. Death occurred eighteen hours after the first appearance of paralytic symptoms.

Necropsy was not obtained in any of the three cases.

The literature referred to by Walker is not extensive. In addition to Stanley, who in 1833 directed attention to urinary paraplegia and explained it as reflex paralysis, Troja is said by Leyden to have stated that violent inflammation of the kidneys may produce an irritation of the nerves of the kidneys and the inflammation may extend to the spinal cord. Guel[14] upheld the nervous reflex view of urinary paraplegia. Leyden[15] believed that the lesion was myelitis. He assumed that the inflammation first passed to the nerves and neuritis so produced may lead to myelitis. Fenwick accepted Leyden's views, but there seems to be little or no pathologic study of these cases.

A case of rapidly fatal ascending paralysis in a man with pyuria and prostatic hypertrophy, but without necropsy, was reported by G. B. Buchanan.[16] It was suggested that the passage of an instrument in a patient, who had recently been losing health with his urinary system obviously diseased, might have induced an increased absorption of poisons into the blood, leading to a profound intoxication of the cord without giving any precursory signs.

Orr and Rows in several papers, and later in association with Stephenson,[17] have demonstrated that inflammation of the central nervous system is easily induced by infection of the ascending lymph-stream of nerves, and that the spinal cord and brain are exposed to infection in this way. Their experimental work has shown that infection of the lymph-system of peripheral nerves causes an ascending neuritis which spreads upward to pass over the posterior root ganglia and along the spinal roots to the cord. Any part of the central nervous system may be attacked by organisms or toxins passing up the nerves from infective foci, and the ultimate result of infection may vary according to the quality of the exciting cause.

The case which I report in this paper should, I think, be explained in the light of Orr and Rows' findings, and the myelitis should be regarded as secondary to the perirectal infection. It is not impossible that the liability to myelitis was increased by the fright which the man experienced. Ascending neuritis, however, has always been regarded as very uncommon.

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## ABSTRACT OF DISCUSSION

DR. HUGH T. PATRICK, Chicago: I would suggest to Dr. Spiller that if he will put in a sentence to the effect that myelitis is, after all, a nerve disease, he would do a lot of good. The authority of that statement, if he feels like making it, would be of advantage. I presume we have all had the same experience of having a diagnosis of myelitis made in a condition which is not really a myelitis. Dr. Spiller would, I know, be the one best fitted to handle this question, as he was one of those who investigated the matter of so-called myelitis. As a matter of fact I believe it is true that inflammatory or infectious myelitis is a decided rarity, and if Dr. Spiller would put the weight of his influence in this direction I think it would be very useful.

DR. FRANK P. NORBURY, Springfield, Ill.: Some recent experimental work concerning fear is that of Dr. Cannon of Harvard Medical School, on the study of the adrenals in states of emotion, especially fear, rage and pain. The experiments were on cats frightened by a dog. He shows a very close relationship in emotional excitement between the secretion of the adrenals and the reactions which follow, including blood-pressure. His papers were published in *The American Journal of Physiology*.

DR. C. D. CAMP, Ann Arbor, Mich.: Dr. Spiller's paper has a tremendous medicolegal importance if it proves that organic disease might result from fright. One point did not seem entirely clear to me, and that is, did Dr. Spiller's patient have the abscess before the fright, or did it develop subsequently?

DR. CHARLES K. MILLS, Philadelphia: As Dr. Camp has stated, this paper might have great importance medicolegally. It might even have some effect in enlightening the Supreme Court of the state of Pennsylvania on their expressed opinion that fright must not be taken into account in a court of law in cases of suit brought to recover damages for accident. That is one of the curious conditions in which we find ourselves in the state of Pennsylvania. This decision has probably had the effect of making the attorneys for the plaintiff extremely careful about bringing the question of fright into the issue, causing them to dwell more on the effect of the reception of contusions, lacerations or other physical injuries which might be made the basis for damages. I am familiar with the paper to which Dr. Norbury refers, having recently used it in the preparation of an article of my own. In this important paper of Cannon, the author dwells on the effect of excessive emotion, as rage or fear or joy, on the autonomic nervous system. He explains the effect of such emotion on the vessels, heart and glands and other organs or parts which are under the influence of this system. Very extraordinary disturbances of this part of the nervous system can, of course, be brought about by fright. If we accept the James-Lange theory of emotion, impressions are made on that system before there is any expression of the emotion itself. The only point which does not appear to me as logical in Dr. Spiller's paper is that, in a case such as he has referred to, how can fright bring about the microbic condition which was evidently at the bottom of the abscess formation? There seems to be a link wanting in the etiologic chain. I am pretty well satisfied, however, that fright can do some dreadful things and not impossibly bring about organic changes in the nervous system.

DR. E. E. SOUTHARD, Boston: I should be inclined to deny, and I believe almost every member of the Section would also deny, that the emotion in Dr. Spiller's case was an important factor in producing the spinal-cord lesion. Of course, however, the literature of the *stigmatisées* of France may be quoted in rejoinder. Professor James was fond of quoting from more modern French writers certain cases in which posthypnotic suggestion determined favorably or unfavorably the course of suppuration. Again, I should say that Dr. Cannon's work on the zones in which the sympathetic system comes into contact with the cranial and the sacral, autonomic symptoms might have a bearing on a case like Dr. Spiller's.

DR. WILFRED HARRIS, London, Eng.: The author probably would include not only fright, but profound emotion of other kinds as well. We have all seen nervous diseases of various kinds follow violent emotion. I have seen the first symptoms of locomotor ataxia develop the next day after violent emotion, and I have seen trigeminal neuralgia develop in a woman three-quarters of an hour after seeing her child killed in the street. Paralysis agitans, too, was noticed, especially frequent after the horrors of the siege of Paris. If we study the question we must give up the materialistic point of view that emotion has no relationship to the development of organic disease. In Dr. Spiller's case I should be less inclined to accept fright as the cause, but, as suggested by him, should be inclined to believe that ascending neuritis had much more to do with it, as the abscess must have been present for some time previous to the fright. In bicycling days it was not uncommon for perineal neuritis to develop as the result of saddle pressure. In one such case that I remember a man who had been riding on a bicycle for a number of hours developed ascending neuritis and myelitis and died. These cases of ascending neuritis are, I think, extremely rare, and Orr and Rows' work must be looked on very critically before it is accepted as evidence of ascending sepsis. Of course, we know that in tetanus there is an ascending poisoning of the motor roots, but it is stopped by the posterior root ganglia. Then we have, as a safeguard against ascending sepsis, the normal exudation of the cerebrospinal fluid outward along both anterior and posterior roots, and I think that it must be because of this safeguard that these diseases are not more common. Otherwise ascending myelitis would be much more common than it is at the present time, and it is an extremely rare disease.

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[14] Guel: Guy's Hosp. Rep., 1861.
[15] Leyden: German Clinical Lectures, New Sydenham Society.
[16] Buchanan, G. B.: Brit. Med. Jour., Jan. 20, 1906, p. 145.
[17] Orr, Rows and Stephenson: Review of Neurology and Psychiatry, July, 1913.

Dr. Walter B. Swift, Boston: I have seen a case of multiple sclerosis, one of general paralysis and several others in which fright was said to be the cause of, and had in fact immediately preceded, the onset. From these and many other cases which have come under my observation, I have been led to believe that fright merely lowers resistance—the precipitating element. This inference may also be drawn from the work of Cannon. He has shown how fear and rage cause increase of secretion. With this the metabolic decrease of a resistive process might very naturally follow. If fright really caused paralysis agitans, in Paris they all would have had it. No, the disease was potentially there, the fright merely withdrew the resistance.

Dr. William G. Spiller, Philadelphia: Dr. Patrick asks whether I regard myelitis as rare. If by myelitis is meant only those conditions in which micro-organisms are found in the cord, it is very rare. If, on the other hand, those are included which show lymphocytic infiltration and congestion, as in poliomyelitis, I must say myelitis is not rare. It is common in syphilis. What shall be recognized as myelitis has been discussed over and over again. Where shall we make sharp distinctions? Lesions caused by occlusion of the blood-vessels are common with inflammation, as in syphilitic myelitis, and they are the common finding in cases of pressure on the cord, as in fracture of the vertebrae.

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**Harvey's Precepts for Lecturing.**—Harvey laid down the following precepts for his own guidance as lecture precepts which the modern anatomical lecturer might observe with propriety: (1) to show as much as may be at a glance, the whole belly for instance, and afterward to subdivide the parts according to their position and relations; (2) to point out what is peculiar to the actual body being dissected; (3) to supply only by speech what cannot be shown on your own credit and authority; (4) to cut up as much as may be in the sight of the audience; (5) to enforce the right opinion by remarks down from far and near and to illustrate more by the structure of animals according to the Socratic rule; (6) not to praise or dispraise other anatomists, for all did well and there was some excuse even for those who are in error; (7) not to dispute with others; (8) to state things briefly and plainly; (9) not to speak of anything which can be explained without the body or can be read at home. Here we have a combination of orthodox medical ethics and sound pedagogy.—Dempster, "Pathfinders of Physiology."

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# OCCLUSION OF THE POSTERIOR INFERIOR CEREBELLAR ARTERY

## REPORT OF CASES *

ANDREW C. GILLIS, A.M., M.D.
BALTIMORE

The posterior inferior cerebellar artery is usually described as the largest branch of the vertebral artery, and its course as passing obliquely backward around the medulla oblongata, at first between the roots of the hypoglossal nerve, then between the roots of the accessory and the vagus nerves, to end on the inferior surface of the cerebellum.

In a recent study Bury and Stopford[1] have shown that there is considerable variability in the course of the artery; that in many cases, instead of passing directly backward after its origin from the vertebral, it forms a distinct loop, the convexity of which is toward the pons. The ascending limb of the loop usually passes upward in the posteriolateral sulcus, and in this position supplies small terminal branches to the medulla oblongata. Occlusion of the posterior inferior cerebellar artery produces a definite clinical syndrome, in spite of the variability in the course of the artery, and in the number of branches it supplies to the medulla oblongata. Cases have been studied pathologically by Hun,[2] Thomas,[3] Wallenberg,[4] Spiller[5] and others, and their investigations have shown that the lesion in the medulla extends laterally from the restiform body to the inferior olive and vertically from where the restiform body passes into the cerebellum to about the middle of the hypoglossal nucleus. The structures usually involved are the descending root of the fifth nerve, the nucleus ambiguus, the glossopharyngeal and vagus nuclei and the ventral and dorsal spinocerebellar tracts (Wilson[6]).

The symptom complex produced by occlusion of the posterior inferior cerebellar artery is as follows: sudden onset with giddiness and marked tendency to fall to the affected side; no loss of consciousness; difficulty with swallowing and occasionally with phonation; loss of appreciation of pain, heat and cold over part or the whole of the trigeminal area on one side of the face (usually the side of the lesion) and a corresponding loss of pain and temperature sense over the opposite side of the body from the face down; touch, tactile discrimination, deep pressure and muscular sense are intact; paralysis of the sympathetic on the side of the lesion, causing retraction of the eyeball, contraction of the pupil and drooping of the eyelid; ataxia of the arm and leg, usually on the side of the lesion. In the course of from two to six months practically all symptoms disappear, other than the sensory changes, which usually are permanent. Although a comparatively rare condition, sufficient cases have been studied to show that the symptom complex varies very little, especially so when the initial symptoms have passed away.

During the past year, two cases have come under my observation, one of which I have had the privilege of studying from within a few days of the onset; the second case, an old one, I have observed especially in regard to the presence of permanent symptoms. Both patients are quite intelligent, and this has been of great value in the study of sensory changes.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Bury and Stopford: Med. Chronicle, Manchester, 1913, lviii, 200.
[2] Hun: New York Med. Jour., 1897, lxv, 513.
[3] Thomas, H. M., Maryland Med. Jour., 1907, l, 204.
[4] Wallenberg: Arch. f. Psychiat., 1901, xxxiv, 923.
[5] Spiller: Jour. Nerv. and Ment. Dis., 1908, xxxv, 365.
[6] Wilson: Proc. Roy. Soc. of Med., Neurol. Sec., 1909, p. 52.

Case 1.—The patient is a married woman, aged 40, whom I saw in consultation with Drs. William T. Watson and A. W. Macdonald of Baltimore, Oct. 6, 1913. Her general health had been fairly good up to the present illness, with the exception that she had complained of pain in the back for several years. She gave the following history in regard to her present illness: Oct. 2, 1913, while attending to some household duty, she suddenly became giddy and found that on attempting to walk, there was a tendency to go to the right side. This did not bother her very much, and on the following day she was able to come from her home in the country to Baltimore, a distance of about 40 miles. That night, about midnight, thirty hours after the initial symptoms, she had a sudden sharp pain in the right forehead, lasting for about an hour. This pain was followed by a sense of numbness over the upper part of the right face. The following afternoon (October 4) about 4 o'clock, she had an attack of vomiting lasting for a few minutes. When I saw the patient, October 6, she presented the following condition:

The right eye was slightly retracted, the pupil small, and slight drooping of the eyelid. Both pupils reacted to light and distance. The right did not dilate as readily as the left when the skin of the neck was irritated. There was no nystagmus. Sight, hearing, taste and smell were normal. No weakness of the muscles of the face, pharynx or larynx was noticeable, nor was there any difficulty in swallowing, nor any disturbance of voice. There was a marked tendency to fall to the right side when the patient attempted to sit up in bed, and it was impossible for her to stand up on account of this condition. The patellar and Achilles reflexes were somewhat more marked on the right side than the left; the arm reflexes were equal on both sides; the plantar reflex was normal on both sides.

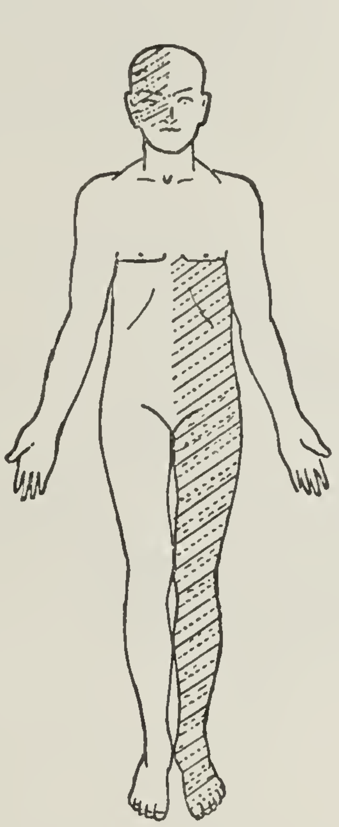
Fig. 1.—Areas affected in Case 1.

Sensory Disturbances: The patient complained of slight numbness over the right side of the face, and the left side of the body from the nipple line down; the right eye felt peculiar, the right nostril as if it were swollen. Touch, tested with cotton-wool, was perfect over the entire body. Tactile discrimination, tested by means of the compasses, showed no difference between one side of the body and the other. The conjunctiva and cornea of the right eye were insensitive to the touch of cotton-wool. The right nostril was not so sensitive as the left. Deep pressure sense was normal on both sides.

Muscular Sense: The patient could appreciate all movements either of arm or leg on either side of the body. Recognition of weight, size, shape and form was normal.

Pain Sense: There was absolute loss of cutaneous pain over the upper part of the right side of the face, comparing roughly with the distribution of the first and second branches of the trigeminus nerve. There was also total loss of pain sense over the left side of the body below the nipple line, or about from below the distribution of the fourth spinal root segment.

Temperature Sense: There was loss of appreciation of heat and cold over the same area as that of loss of pain.

There was no change in the patient's condition until about October 17. On that date it was found that a pin-prick produced a peculiar, disagreeable, tingling feeling over the affected area on the left leg up to about the knee. Stroking or scratching caused the same disagreeable feeling. The affected area on the face was somewhat less in extent, but there was no change in the character of sensation experienced there. There was still difficulty in standing erect.

October 25: Area of disagreeable feeling produced by stroking or pin-prick now felt up to the hip. No change over forehead. Patient is able to stand without assistance, but is still unable to walk.

October 31: Disagreeable feeling now felt over the entire affected area on the left side. Extremes of heat and cold can be recognized over the forehead.

November 28: No change in the sensory symptoms, with the exception that the disagreeable, tingling feeling was not so marked. The right pupil was about normal size, but there was still some drooping of the eyelid and retraction of the eyeball. The patient could walk fairly well, but was somewhat uncertain in going down stairs.

The patient went to her home, Nov. 30, 1913, and I did not have an opportunity to examine her again until June 18, 1914. At this time, examination showed practically no change in her condition. The sensory disturbances and the eye symptoms were the same as on Nov. 28, 1913. There was still a slight tendency to fall to the right side when the head was quickly turned, either to the right or left, and some slight unsteadiness in going down stairs.

From the increase in severity of the symptoms for a period of over forty-eight hours until the clinical syndrome was complete, one would usually consider this case to be one of thrombosis rather than embolism of the artery. No cause could be found for the supposed thrombosis. There was persistent high blood-pressure, ranging from 250 mm., October 4, to about 200 mm., Nov. 28, 1913, and on June 18, 1913, it was still found to be abnormally high—210 mm. There seemed to be no signs of arteriosclerosis unless the high blood-pressure could be counted as symptom. The urine was normal: a Wassermann test of the blood-serum was negative.

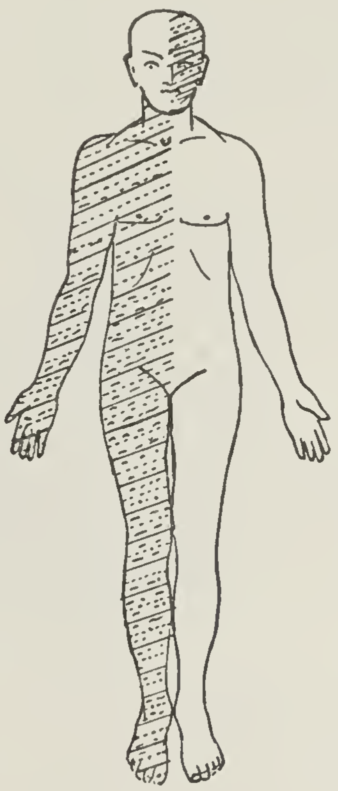
Fig. 2.—Areas affected in Case 2.

Case 2.—The patient is an unmarried man, aged 39, who was referred to me by Dr. A. G. Rytina of Baltimore. One morning after breakfast, in August, 1913, this patient had a severe attack of giddiness, so severe that he could not stand and was forced to crawl back to bed. Even when sitting up in bed, there was a marked tendency to fall to the left side. He had severe vomiting; was unable to swallow anything for several hours, and for a week could swallow only liquids. His voice was weak and husky for several days. There was no interference with sight, hearing, smell or taste. When examined by a physician, it was found that there was total loss of pain and temperature sense over the left side of the face and over the entire right side of the body, the face alone excepted. At the time of the onset of his illness the patient was employed in St. Petersburg, Russia, as a skilled mechanist. He was thought to have lues, and was treated by a Russian physician with mercurial treatment for six weeks. At the end of that time, he was able to walk fairly well, and to travel to Aachen, Germany. Here he took the baths for six weeks longer, and then sailed for his home in Baltimore. Although he experienced no difficulty in walking on land, aboard ship he found, even when the ship was very steady, that he was insecure on his feet. In fact, he avoided going on deck because he was afraid he would be thought intoxicated, on account of his unsteady gait. A few weeks after arriving home, he attempted to work at his trade, but he found that he could not use his right hand so readily as formerly in doing any careful or exact work. In March, 1914, he again took up his former employment and seems to be getting along all right. The patient states that he improved gradually for the first six months after the onset of his illness, but that there has been little, if any, improvement since then. He was given three doses of salvarsan during 1911 and 1912, and before that time had taken mixed treatment for several months, without any change in his condition. I have examined him several times since my first examination in November, 1913, and find no change in his condition, so the symptoms that are present are undoubtedly permanent. These are as follows: left eye slightly retracted, slight ptosis of left eyelid, loss of corneal and conjunctival reflexes; entire loss of appreciation of pain, heat and cold over the upper half of the left side of the face, and partial loss over the lower half. On the right side of the body up to about the nipple line, pin-prick produces a diffuse disagreeable sensation. The same sort of sensation is produced by stroking or scratching the skin. Heat is felt as gentle warmth over the entire right side of the body from the face down. Cold causes a disagreeable feeling over the same area. The skin of the left side of the face bleeds very readily when pricked with a pin. Touch, tactile discrimination, deep pressure and muscle sense are present over the entire body.

Both of these cases are fairly typical of the clinical result produced by occlusion of the posterior inferior cerebellar artery. There are a number of very interesting questions which arise in connection with an attempt to explain the various symptoms found in this condition. I shall not attempt to correlate each symptom with a corresponding anatomic or pathologic fact, especially as my reports are merely clinical ones, and I shall mention only the probable cause of the principal symptoms.

The sudden giddiness and instability in standing or sitting can be attributed to disturbance of Deiter's nucleus and the neighboring fibers (Wilson).

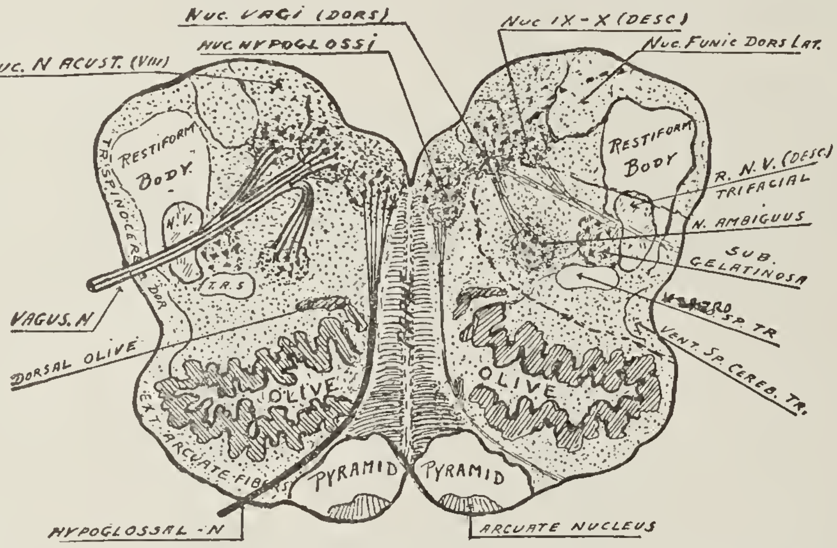

Fig. 3. Transverse section of medulla (after Edinger). Dotted line shows area usually involved in lesion.

The ataxia of the arm, or occasionally the hemiataxia, is probably due to interference with the dorsal spinocerebellar tract.

The loss of pain and temperature sense over the trigeminal area, usually on the side of the lesion, results from the destruction of the descending or sensory root of the fifth nerve. The presence of touch and pressure sensation in the disturbed area of the face can be explained as suggested by Woods,[7] by the probability that these sensations, after reaching the gasserian ganglion, enter the sensory root and go directly into the chief trigeminal nucleus, and thus escape in destruction of the descending root.

The involvement of only the first and second branches of the trigeminus, as in Case 1, has been attributed to the fact that the first branch of the nerve descends lowest in the medulla oblongata, the second branch next lowest, and the third branch highest (Müller,[8] Spiller[5]). A lesion involving the lower part of the medulla would implicate only the first and second branches of the nerve.

The loss of pain and temperature sensation on the side opposite the lesion is due to involvement of the fibers which carry sensation of pain, heat and cold, these fibers having crossed shortly after entrance to the posterior horns. The area of intact sensation between the face and the disturbed area on the body, as in Case 1, shows that only a part of these fibers are involved in this case. Somewhat similar cases have been reported by Mai,[9] Kutner and Kramer,[10] and Harris.[11]

The retraction of the eyeball, drooping of the lid and contraction of the pupil usually on the side of the lesion, show that the sympathetic fibers entering the lower part of the cervical cord do not cross over until they reach the upper part of the medulla.

The symptom complex produced by occlusion of the posterior inferior cerebellar artery is so definite and usually varies so little that it should be readily recognized. The sudden onset, without loss of consciousness, the tendency to fall to one side, the loss of pain and temperature sense, without involvement of touch and other forms of sensation, affecting one side of the face and the opposite side of the body, are very striking symptoms, and are sufficient on which to base a definite diagnosis.

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## ABSTRACT OF DISCUSSION

Dr. William G. Spiller, Philadelphia: Cases of occlusion of the posterior inferior cerebellar artery are not uncommon. I have seen a number of them clinically and have reported two with necropsy. They have a distinct symptom-complex and are easily recognizable by one familiar with the condition. Dr. Gillis referred to the fact that in his two cases the conjunctival reflex was lost although the tactile sensation of the face was preserved. Some years ago I called attention to the fact that loss of the conjunctival reflex occurs with loss of pain-sense in the face, not with loss of tactile sense. The cases of occlusion of the posterior inferior cerebellar artery afford proof of the correctness of the statement that the afferent path for the conjunctival reflex is over pain fibers. In this connection I again call attention to a symptom-complex I reported a number of years ago which seems to have attracted very little attention. In occlusion of the upper part of the anterior spinal and vertebral arteries we get a symptom-complex the complement of that shown in occlusion of the posterior inferior cerebellar artery. The former arteries supply the anterior pyramids and the lemniscus, and as a result of occlusion of these vessels we have preservation of the functions lost by occlusion of the posterior inferior cerebellar artery. We have also paralysis or paresis of all four limbs, coming on rapidly, a loss of deep sensation, of the sense of position, of passive movement and of bone sensation, and impairment of tactile sense with some impairment of the hypoglossal nerves.

Dr. Ernest M. Hammes, St. Paul: Was there any history of periodic headache in either of Dr. Gillis' two cases? In a case that Dr. Riggs and I reported before this Section last year there was a previous history of headache of an occipital nature, and I think both Oppenheim and Wallenberg reported similar conditions in their cases. Our case was of interest because after the thrombosis of the posterior inferior cerebellar artery, the headaches disappeared entirely and have not returned in a period of two years. Another condition of interest in our case was the presence of a persistent glycosuria. I think Wallenberg reported two cases in patients with glycosuria. In our case sugar was present in from 2 to 8 per cent., and has persisted. So far as the history shows, the date of its initial appearance corresponded somewhat to the time of onset of the occlusion, and I have often wondered whether in this case there might not have been some analogy in the distribution of the posterior inferior cerebellar artery, and that an occlusion caused irritation of the floor of the fourth ventricle.

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[7] Woods: Jour. Nerv. and Ment. Dis., 1913, xl, 91.

[8] Müller: Deutsch. Ztschr. f. Nervenh., 1906, xxxi, 452.

[9] Mai: Arch. f. Psychiat., 1904, xxxviii, 182.

[10] Kutner and Kramer: Arch. f. Psychiat., 1907, xlii, 1002.

[11] Harris: Proc. Roy. Soc. Med., Neurol. Sec., 1910, iii, 81.

Dr. Wilfred Harris, London, Eng.: I have seen many of these cases clinically but have followed only one to necropsy. The best description I have yet seen of that condition was presented by Dr. Spiller. I think Dr. Gillis did well to bring forward this condition because those not familiar with its clinical symptoms and pathologic findings are likely to be completely lost when they first meet such a case. A short time ago I saw a case of this kind with a very good doctor indeed, but he had not the least idea what he had in front of him. An old man of 80 was suddenly taken with giddiness and was totally unable to walk. When I saw him and attempted to make him walk he had crossed hemianalgesia and a crab-like gait. This is very suggestive of posterior inferior cerebellar thrombosis. The anesthesia varies according to the amount of damage. Sometimes there is no analgesia on the opposite side from the lesion. One symptom which I have seen in a case of this kind I have not seen elsewhere described. The case was that of a man past 70 who was taken suddenly with the first symptom as he expressed it, as though thousands of needles had been thrown against the side of his face. About twelve months after this, when able to walk again with some comfort, he said that he began to experience pain in the face, and the case was sent to me as one of trigeminal neuralgia. The pain was paroxysmal and shooting, resembling tabetic pains, and I think might be accounted for as due to sclerosis of the spinal root of the fifth nerve. On investigating the case I found it was not one to attack with injection, as there was complete analgesia of the left fifth nerve, but the pain was so agonizing something had to be done, and I was urged to attack it; therefore I did so against my judgment. The result was that his pain was even worse than before.

Dr. A. C. Gillis, Baltimore: With regard to headache, there was no history of it in either case, nor has there been any since the condition occurred. There was no glycosuria. I had those points in mind in investigating the cases, having read Dr. Hammes' report, and I could find absolutely no sign of glycosuria. I bring these cases before the Section not because they are fairly rare, but to emphasize more particularly the clinical syndrome described by Dr. Spiller, which I followed largely, in order to bring it to the attention of the general practitioner. I believe that it can be as readily recognized by the ordinary practitioner as by the neurologist.

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**Man's Redemption of Man.**—The human heart by which we live has been touched as with the wand of a Prospero. What availed the scepter race! What the glory that was Greece, or the grandeur that was Rome! Of what avail even has been the message of the gospel, while the people at large were haunted by fear and anxiety stricken by the pestilence of the darkness and the sickness of the noon-day? The new socialism of Science with its definite mission cares not a rap for the theories of Karl Marx, of Ferdinand Lassalle, or of Henry George; still less for the dreams of Plato or of Sir Thomas More—or at least only so far as they help to realize the well-being of the citizen. Nor is there need to fear that in weighing the world in our balance we may drain the sap of its life, so long as we materialize in the service of man those eternal principles on which life rests—moral fervour, liberty and justice.—William Osler.

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# A CASE OF MYASTHENIA GRAVIS *

CHARLES A. McKENDREE, M.D.
CROMWELL, CONN.

The case of myasthenia gravis which I am about to report will not contribute anything new to the etiology or pathology of the disease, but from the standpoint of unusual development and duration it seems to me worthy of description. Incidentally, the clinical features may serve to provoke discussion of the neurogenic, myogenic or combined lesions often considered responsible for the syndrome presented. The time alotted me will not allow elaboration of the many theories of causation and of the widely divergent postmortem findings obtained by most careful investigators. Suffice it to say that as yet, as far as I have been able to learn, no definitely accepted pathology has been determined.

I am indebted to my chief, Dr. Frank K. Hallock, for permission to report the following observations:

*History*.—Mrs. X., aged 48, was the fifth of nine children. The father died at 75 of nephritis, but had always been strong. The mother died at 52 of a "brain-fever," so called, and was of a decidedly nervous temperament. Of the brothers and sisters there are three now living and well. Of the five who died, two died from the effects of appendectomies, one of gunshot wound, one at birth, and one of septicemia. One of the sisters for years previous to the surgical operation which caused her death suffered from trophic disturbances of the cornea and the skin, which were never diagnosed. As a child the patient was considered exceptionally strong and at an early age took on herself many household responsibilities. Patient was married at 28. The first child was born in the second year of her marriage. She had a difficult, thirty-six-hour labor, with retained placenta and moderate fever. This necessitated bed treatment of four weeks.

Eight months after the birth of this child the patient, on arising one morning, discovered that her eyes did not move together and that motion was limited. As far as she could determine the left eye seemed the more affected. Diplopia suddenly became marked.

She was seen at once by an oculist, who noted beside the muscular defect of which the patient complained a slight ptosis of the left eye. She endured this very disagreeable condition for many years, during which time she had three normal children and no miscarriages. She maintained her position as the head of a large household, with many social responsibilities, and took an active part in the upbringing of her children. Six years ago, in spite of the eye-strain involved, she took up the study of art and drawing and became utterly exhausted. This collapse required absolute quiet and rest. Shortly afterward an eminent oculist made an exhaustive study of her ocular condition and concluded that the limitation of movement together with the diplopia were due to a central lesion following childbirth.

Four years ago the patient fell down a flight of stairs and struck the right side of her head with considerable force. Since this accident she has been unable to move the right eye as much as formerly, has had no endurance, and her daily life has been progressively more circumscribed.

She passed through the menopause at 46 with no particularly disagreeable vasomotor disturbances.

About eighteen months ago she noticed for the first time that her speech became peculiar at the end of some length of time in reading aloud or in conversation. This feature has persisted, off and on, with varying intensity.

During the past twelve months she has observed a fatigue of her muscles of mastication, especially of the tongue, while taking her meals. At times the sensation has been so overpowering that she has been forced to rest the bolus in her cheek until she could swallow it after sufficient rest. On a few occasions liquids have passed into the upper nasopharynx and posterior nares.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

Walking has become more and more difficult, and prolonged conversation exhausting.

Feeling concerned over a certain loss of interest in things, and a diminution of her keenness of concentration, she came under our observation in April of last year, for the purpose of learning how best to adjust herself to her home surroundings with her ocular limitations. At no time was the patient alarmed by her symptoms, but rather comforted herself with the explanation that her "lack of vitality was due to eyestrain."

The following is my record of physical and neurologic findings, April 23, 1913:

*Examination.*—Patient in recumbent posture presents moderate Basedow facies, although exophthalmos is very slight. Sallow complexion; mucous membranes show no noteworthy pallor; skin generally dry; tongue clean; appetite fair; digestion normal; bowels not constipated.

Pulse 80; regular in force and rhythm. Systolic pressure, left arm, recumbent, 112 mm. (Tycos). Lungs negative; noted peculiar formation of anterior chest resembling flattened pigeon-breast. Patient is unable to take deep inspirations, failing apparently to put lower intercostal muscles and diaphragm into normal play. Heart negative except for very faint hemic murmur at base. Sounds well defined. No hypertrophy.

Abdomen is negative except for moderate bilateral renal ptosis. Liver and spleen not palpable; no tenderness elicited except on deep palpation over kidneys.

Pelvic examination made at a later date negative except for moderate ligament relaxation.

Thyroid gland not enlarged.

Mental state is apparently normal; patient is intelligent; excellent witness; good memory; not easily depressed; essentially not neurotic in type.

Special Senses: Vision: Acuity not tested—refractive error corrected by glasses. Fields are normal to rough test. Fundi examined at a later date and found normal. Hearing is normal to watch-tick and to tuning-fork tests. Taste and smell are normal by actual tests for salt, acid, sweet, etc.

Cranial Nerves: Third, Fourth and Sixth: There is the smallest possible lateral movement of ocular muscles to right and left, no upward and very slight downward motion. Axes are parallel. Very moderate ptosis on the left, none on right. No strabismus; diplopia only in upward fields. No nystagmus. Normal reaction to Barany caloric tests within the range of the muscular limitation. Pupils are equal, regular, central and moderately dilated. The reaction to light accommodation and consensual tests is definitely present, but sluggish.

Fifth nerve is intact in motor and sensory tests.

Facial Nerve: Levator palpebrae superioris acts well and equally right and left. Orbicularis palpebrarum very weak, right and left to resistance, but patient closes eyes normally at will except when very tired, then action of the right is not complete. Slight right facial paresis noticed in weakness of frontalis, orbicularis palpebrarum and corrugator supercilii muscles.

Eleventh and Twelfth Nerves: Swallowing tests are normal; palate rises equally, right and left. Tongue protrudes in the middle line; no tremor and no wasting.

Speech during examination is normal, but has a certain nasal quality.

The motor system, including head and neck, upper and lower extremities and trunk is intact. Range and tone are normal. Power is somewhat diminished, but not more than one would expect in a patient who has been so restricted in activity. There is no tremor, wasting or ataxia in upper or lower extremities.

The sensory system is intact for cotton-wool, pin-prick, deep pain, position, vibration and astereognosis tests.

Reflexes: Palatal, present right and left. Jaw-jerk normal. Supinator, bicipital and tricipital present and equal, right and left. Epigastric and abdominal, absent right and left. Knee- and ankle-jerks increased equally right and left. No clonus. Plantar negative to Gordon, Oppenheim and Babinski tests. There is noted a *mouvement d'eventail* and marked flexion of the right toes; and on the left a slight flexion of the toes only. On both sides the great toe remains stationary on plantar stimulation.

Gait normal. Rombergism absent.

Sphincters normal.

Urine Examination, April 28: Daily quantity, 52 ounces; specific gravity, 1.010; acid; albumin and sugar absent.

Blood Examination, October 7: Red cells, 5,560,000; leukocytes, 8,666; polymorphonuclears, 63.5 per cent; transitionals, 1 per cent.; small lymphocytes, 30.2 per cent; large lymphocytes, 3.8 per cent.; eosinophils, 0.5 per cent. basophils, 1 per cent.; platelets normal; 500 cells counted.

*Progress under Observation.*—The foregoing points covering dysphagia and dysarthria were not complained of during the first interviews because the patient did not consider them of any importance. At first she complained only of general fatigue and wished instructions of how best to manage her physical and nervous force. Placed on a routine of two or three short walks daily, together with massage and passive movements, the patient soon presented a picture of fatigue of a peculiar order. A ten-minute walk was often followed by profound sleep, varying from one to two hours in length. She complained of indefinite aching throughout the body, but particularly of the trunk. Massage produced great fatigue. Within a few days difficulty in chewing her food was noted—a fatigue of jaws and tongue which passed away with a few moments' rest—with a return in as many moments. Soon the patient was tested for reading aloud. At first the words were clearly enunciated, but at the end of three minutes, the voice became noticeably husky and steadily more and more indistinct. At the end of five minutes the dysarthria became painful, accompanied by an overwhelming sense of oppression in the chest and a general exhaustion. On one occasion the patient was forced to go on to an almost complete mumbling of words and then commanded to clear the throat two or three times and continue. The surprising fact was noted that without more than momentary rest, such as was required in clearing the throat, the words gradually became more distinct until the reading was quite intelligible. Absolute exhaustion followed this forced test and the patient was unable to take her dinner or to sleep during that night. Consequently, in later observations, this test was not repeated, although dysarthria in ordinary conversation was constantly noted.

The patient often required support for her head and neck while in a sitting position because of great weakness.

During the latter part of May the myasthenic reaction was sought in the face, neck, shoulder-girdle and forearm muscles without positive results. Brisk faradism brought forth a sharp, apparently normal wave of contraction to repeated shocks continued for several minutes. At a later date, however, it was definitely shown that continuous mechanical irritation of the deep reflexes produced a diminution of reaction. June 10, the patient went to her summer home, where her physical and mental activities were restricted. Easy fatigue was constantly noted. During the summer she gained 5 pounds in weight.

She returned for further observation October 2. The rest of our experience with her was devoted to experimental therapy. Placed on carefully regulated thyroid medication she speedily developed untoward symptoms such as rapid loss of weight, increased pulse, moderate hyperpyrexia and malaise. Thyroid was discontinued after five days. It may be interesting to note here that although the patient manifested at no time neurotic tendencies, bromid in 10-grain doses seemed to afford the greatest relief. Strychnin and hypophosphites long continued were apparently of no service. A second blood examination including a differential count was entirely negative. No Wassermann was taken because patient's knowledge of medical procedures seemed contra-indication. Under absolute rest and restricted use of voice and eyes, local manifestations of easy fatigue continued to show in various tests. Diagnosis of myasthenia gravis was made in November. Dr. Frederick Tilney of Brooklyn in consultation confirmed the diagnosis. Because of a change of residence, the patient then passed out of my direct observation.

The history since then has been one of variable states; at times the patient has been overwhelmed with sensations of "sinking" exhaustion, sometimes immediately followed by comfortable days. There have been no attacks of dyspnea, although as remarked above, the intercostal muscles and diaphragm were apparently affected. As far as I have been able to learn there has been no profound change in the condition in the past six months.

In conclusion I would call attention to four facts which I consider worthy of reiteration:

1. The disease is now of nineteen years' duration, and the patient is not at present in an alarming state. I believe that in point of time it is the longest case reported.
2. There was sixteen years' interval between the appearance of the first objective sign, that is, ocular paresis and ptosis, and the throat and jaw symptoms.
3. During these sixteen years the patient suffered only from what she considered a low state of vitality induced by eye-strain; managed her household and had three normal labors.
4. Passive manipulation of the general muscle-groups produced at times great exhaustion.

## ABSTRACT OF DISCUSSION

**Dr. George A. Moleen**, Denver: Myasthenia gravis has been a subject of particular interest to me inasmuch as one of my early cases was distinctly one, I think, of myasthenia gravis from the clinical point of view. It was reported, however, by me, owing to the findings later, as one resembling Addison's disease. It began twenty-four years prior to the time I saw it, with muscular weakness, ease of fatigue, dysphasia, and some ocular symptoms which I do not recall now. There were remissions from time to time. The patient was examined at that time by Dr. Church of Chicago, who thought that it was then a progressive muscular atrophy. Some six years later he again had opportunity of seeing the case, when he concluded that it was one of myasthenia gravis. The attack was in its height when I first observed the case in Denver in one of the summer months. A considerable dysentery was the reason for my being called. When we find a patient in Colorado with a blanket over his shoulders, suffering with dysentery and unable to move because of extreme weakness our first impression is—tuberculosis. My question as to how long the lung condition had existed was met with the prompt response, "I have no lung trouble, it is muscular weakness." I found that this was true. There was profound fatigue, dysphasia and dysarthria; the reflexes were normal, but rapidly enfeebled by examination. In short, the examination as carried out revealed a tenderness in the right hypochondrium, and catheterization of the ureters also showed that the pus that was in the urine came solely from the right kidney. An operation was advised, and a large perinephritic abscess was opened, the poles of which could not be reached, but it was fair to presume that the upper pole of this abscess compressed the adrenal between the abscess cavity and the liver. Evacuation of the abscess was followed by prompt relief. In the course of four or five days after leaving the hospital the patient walked from his residence some eleven or twelve squares and returned, progressing from that time on, and is conducting a business in one of the middle states at present. This case would suggest the relation of the internal secretions at least. Further than this I have nothing to say. I was struck by the statement that thyroid had been used and aggravated the symptoms. It might be pertinent then to suggest that the adrenal substance might be used in this case. I have been very frequently reminded of my experience in this one case, which was unique, and which is, I think, at least worthy of mention in association with Dr. Karpas' case.

# THE NECESSITY FOR RESTRICTION AND CONTROL OF SEWAGE POLLUTION OF THE GREAT LAKES SYSTEM *

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The success of any sanitary improvement depends on public opinion, and before we achieve any decided improvement in the condition of our sewage-polluted sources of water-supply there must exist a healthy sentiment in favor of such improvement. There has been considerable popular clamor in favor of "prevention" of pollution, but by demanding the impossible these well-intentioned enthusiasts did more harm than good.

Absolute prevention of pollution of waterways on an inhabited watershed is impossible. Speaking generally, water-supplies taken from streams and lakes which receive the drainage of agricultural and grazing lands, rural communities and unsewered towns are unsafe for use without purification, but are safe for use if purified.

If pollution on uninhabited watersheds is inevitable and water taken from such sources must be purified, why, asks the practical city engineer, may we not utilize the streams for sewage disposal and avoid expensive methods of sewage treatment?

In waterways where some pollution is inevitable and where the ratio of the volume of water to the volume of sewage is so large that no local nuisance can result, the method of sewage disposal by dilution represents a natural resource, and the utilization of this resource is justifiable for economic reasons, provided that an unreasonable burden or responsibility is not placed on any water purification plant and that no menace to the public health is occasioned thereby.

Thus the whole question of how much or how little sewage treatment is necessary in an equitable adjustment between sewage treatment and water purification hinges on "what constitutes an unreasonable burden to impose on a water purification plant."

In order to estimate what constitutes an unreasonable burden or responsibility for a water purification plant we must first have a clear idea of the ultimate result expected of the plant, namely, a safe drinking water.

### WHAT IS SAFE DRINKING WATER?

To be absolutely safe in answering the above query we would say that a safe drinking water must be a sterile water. However desirable this ideal may be it is not practicable in the public supplies of large cities. We must accept a slight occasional pollution as inevitable. Instead of attempting to find the germs of typhoid fever, Asiatic cholera and dysentery in water, we accept the presence of the *Bacillus coli* as an index of pollution with sewage, for the reason that the chances of finding the *B. coli* are very much better than the chances of finding the specific germs in the small quantity of water examined.

When we consider the grossly polluted water-supplies used by many of our large cities until recent years, we must admit that even if the present effluents from filter plants do not show constant absence of

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* From the United States Public Health Service.

*B. coli,* they must be classed as reasonably safe, or relatively safe water.

In order to secure statistics from some of our largest filtration and purification plants a circular letter was sent out to about forty cities.

About fifteen responded, and in most instances the statistics covered at least one year. The list included mechanical, or rapid sand filtration, slow sand filtration, precipitation and disinfection, and disinfection alone.

TABLE 1.—SHOWING AVERAGE NUMBER OF BACILLUS COLI PER HUNDRED C.C. IN BOTH RAW WATER AND FILTERED OR TREATED WATER OF CERTAIN CITIES

| City | No. of Samples | Type of Filtration | Average Number of B. coli per Hundred C.C. | |
|---|---|---|---|---|
| | | | Raw Water | Filtered or Treated Water |
| Toledo, Ohio ...... | 342 | Mechanical | 804 | 0.02 |
| Minneapolis, Minn.. | 418 | Mechanical | 75 | 0.1 |
| Grand Rapids, Mich. | 365 | Mechanical | 92 | 0.3 |
| Cincinnati, Ohio .. | 240 | Mechanical | 1,175 | 1.4 |
| Birmingham, Ala. .. | 205 | Mechanical | 196 | 1.0 |
| | 174 | Mechanical | 400 | 0.2 |
| Binghamton, N. Y.. | 420 | Mechanical | 59 | 1.2 |
| Columbus, O. ..... | 365 | Mechanical | 606 | 1.3 |
| Washington, D. C.. | 348 | Slow sand | 2,501 | 1.4 |
| Providence, R. I... | 600 | Slow sand | 732 | 4.3 |
| Reading, Pa. ...... | 138 | Slow sand | 68 | 5.8 |
| Baltimore, Md. ... | 306 | Alum and calcium hypochlorite | 1,349 | 2.5 |
| Richmond, Va. .... | 237 | Alum and calcium hypochlorite | 460 | 8.0 |

Following a sanitary survey of the cities and towns in the basin of the Great Lakes, I recommended, among other things necessary, that a standard for filtered or treated water be established which should be a minimum requirement for the prevention of the spread of water-borne disease in interstate traffic, and that a standard of not more than 2 *B. coli* per 100 c.c. of water, taking the average of many samples by the Phelps' method,[1] should be adopted.

The surgeon general of the United States Public-Health Service in 1913 appointed a commission, consisting of the most eminent experts in the United States, to fix a standard for water-supplies used by common carriers in interstate commerce. This commission recommended four negatives out of every five tests of 10 c.c. each or the equivalent of 2 *B. coli* per 100 c.c. reckoned by Phelps' method. This standard was to be a minimum to prevent the spread of water-borne disease in interstate traffic and was purposely lenient because of the difficulty of enforcing a more rigid standard over the wide area from which common carriers in interstate commerce must secure their water-supplies.

Allowing a sufficient margin of safety, filter plants with a good raw water should produce effluents of less than 2 *B. coli* per 100 c.c. and it is my opinion that a modern water purification plant which delivers an effluent which has more than 2 *B. coli* per 100 c.c. is either inefficiently operated or is dealing with a raw water which imposes an unreasonable burden on the plant. Accepting tentatively the standard of less than 2 *B. coli* per 100 c.c. as a good drinking water, although perhaps not an ideal or a safe drinking water at all times, the results indicate that this standard is attained by both rapid and slow sand plants, even with a very bad raw water. Cincinnati and Washington, D. C., are good examples of each type.

TABLE 2.—SHOWING BY MONTHS THE AVERAGE NUMBER OF B. COLI PER HUNDRED C.C. IN BOTH RAW AND FILTERED WATER IN WASHINGTON, D. C.

| Month | Number of Days' Samples | Average Number B. coli per 100 c.c. | |
|---|---|---|---|
| | | Raw Water | Filtered Water |
| 1913 | | | |
| January ...................... | 25 | 4,582 | 7.4 |
| February ..................... | 23 | 502 | 1.0 |
| March ........................ | 25 | 2,871 | 0.5 |
| April ........................ | 26 | 20,910 | 4.1 |
| May .......................... | 26 | 661 | 0 |
| June ......................... | 25 | 910 | 0 |
| July ......................... | 26 | 5 | 0 |
| August ....................... | 24 | 88 | 0 |
| September .................... | 25 | 412 | 0.5 |
| October ...................... | 27 | 622 | 4.7 |
| November ..................... | 23 | 1,167 | 0.5 |
| December ..................... | 25 | 538 | 0.5 |
| 1914 | | | |
| January ...................... | 25 | 640 | 0 |
| February ..................... | 23 | 211 | 0.5 |
| January, 1913, to February, 1914. | 348 | 2,501 | 1.4 |

Washington, D. C., has a slow sand filtration plant. There is a large reservoir capacity, and some alum is used in times of high turbidity. No hypochlorite or chlorin is used at any time. The general average for the Washington plant for 348 samples shows 1.4 *B. coli* per 100 c.c., which must be classed as a very good effluent. A close study of the results for individual months shows that there is a great fluctuation in the character of the raw water. There was a bad raw water in January, 1913, and April, 1913, and the results show that this unusual burden was probably too much for the purifying capacity of the plant.

TABLE 3.—SHOWING BY MONTHS, AVERAGE NUMBER OF BACILLUS COLI PER HUNDRED C.C. IN BOTH RAW AND TREATED WATER IN CINCINNATI

| Month | Number of Days' Samples | Average Number B. coli per 100 c.c. | | |
|---|---|---|---|---|
| | | Raw Water | Filtered Water | |
| | | | Without "Hypo" | With "Hypo" |
| 1913 | | | | |
| September ................ | 28 | 964 | 2.1 | ... |
| October .................. | 31 | 358 | 1.5 | ... |
| November ................. | 30 | 1,990 | 2.7 | ... |
| December ................. | 31 | 1,841 | 3.0 | ... |
| 1914 | | | | |
| January .................. | 31 | 1,232 | 9.1 | 0.6 |
| February ................. | 28 | 1,260 | 3.5 | 1.2 |
| March .................... | 31 | 825 | 2.4 | 0.06 |
| April .................... | 30 | 933 | 20.0 | 0.4 |
| September, 1913, to April, 1914 .................. | 240 | 1,175 | 5.6 | 1.4 |

The Cincinnati plant utilizes plain sedimentation followed by coagulation and mechanical filtration. Sulphate of iron and caustic lime are used, the latter to assist the action of the iron sulphate and not for softening purposes. Calcium hypochlorite is added to the filtered water for about five months in the year. Hypochlorite is used during January, February, March, April and May, which covers the period of muddy water and high bacterial counts.

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1. Phelps, Earle B.: A Method for Calculating the Number of *B. coli* from the Results of Dilution Tests, Reports and Papers of the American Public Health Association, 1907, xxxiii, Part 2, pp. 9-13.

An efficiency of 98 per cent. with a raw water containing 500 *B. coli* per 100 c.c. would give an effluent containing 10 *B. coli* per 100 c.c. This could not be considered safe water, especially if this were an average for a considerable period, because, of necessity, the maximum and other days included in the period would show greater pollution than 10 *B. coli* per 100 c.c. Ninety-nine and one-half per cent. efficiency with 500 *B. coli* per 100 c.c. in the raw water would leave 2.5 *B. coli* per 100 c.c. in the effluent. Thus, even with the highest limit of filter efficiency which may be expected in practice, raw water with 500 *B. coli* would not reduce the limit of what may be considered a reasonably safe effluent.

| Degree of Pollution in the Raw Water | Percentage of Bacteria Removed by Plant | Result |
|---|---|---|
| 500 B. coli per 100 c.c. | 98 | 10 B. coli per 100 c.c. |
| 500 B. coli per 100 c.c. | 99 | 5 B. coli per 100 c.c. |
| 500 B. coli per 100 c.c. | 99.5 | 2.5 B. coli per 100 c.c. |
| 200 B. coli per 100 c.c. | 98 | 4 B. coli per 100 c.c. |
| 200 B. coli per 100 c.c. | 99 | 2 B. coli per 100 c.c. |
| 100 B. coli per 100 c.c. | 98 | 2 B. coli per 100 c.c. |

A close study of water-supply statistics will show that if the raw water exceeds 500 *B. coli* per 100 c.c. the filter plant is likely to be overtaxed and produce an effluent with an average of more than 2 *B. coli* per 100 c.c., unless extraordinary assistance is given the plant in the way of large storage, preliminary filters and especially the liberal use of chlorin or hypochlorite. When the raw water averages less than 200 *B. coli* per 100 c.c. the plants seem able to reduce this count to less than 2 *B. coli* per 100 c.c. without extraordinary assistance.

The raw water should be of such character that after reasonable purification (not demanding extraordinary efficiency every hour of every day in the year) the effluent would show a satisfactory average.

Reasonable purification of drinking water is the degree of efficiency which may be expected of standard types of filtration plants, properly designed and constructed and efficiently operated. This may be rated as the removal of from 98 per cent. to 99.5 per cent. of the bacteria. This reasonable purification is not construed to include chlorination. In my opinion, raw water should be of such a character that a standard type of filtration plant properly designed, constructed and operated, could consistently produce therefrom a reasonably safe effluent without recourse to chlorination. I am further of the opinion that chlorination should be reserved to increase the necessary margin of safety in handling polluted water, to cope with fluctuations in the character of the raw water and to protect against accidents to the plant or interruptions in its ordinary efficiency.

The question becomes one of the size of the margin of safety. With water of 500 or more *B. coli* per 100 c.c. there is practically no margin of safety. With raw water of 100 *B. coli* or less per 100 c.c., there is an ample margin of safety, and by the use of chlorination an ideal drinking water with almost entire absence of *B. coli* may be expected. A standard of 500 *B. coli* per 100 c.c. for raw water would necessitate the use of chlorination or some other extraordinary assistance to filtration processes in order to secure an effluent of less than 2 *B. coli* per 100 c.c.

It is clear that the standard of 500 *B. coli* should only be considered as a maximum and not as an average. The exact limit of safety in raw water probably falls between the maximum of 500 *B. coli* and 100 *B. coli* per 100 c.c., but it is difficult to fix.

There is a strong tendency in America to accept any raw water, however bad, as a source of supply for a municipal filtration plant. This often imposes an unreasonable burden and responsibility on the water purification plant. Now, filter plants are not infallible. They are mechanisms which must be properly constructed and efficiently operated under careful bacteriologic control in order to secure a safe effluent. They are operated by human agency and subject to the results of human error. It is true that properly constructed and efficiently operated filter plants can produce safe water from a bad raw water, especially by the use of hypochlorite or liquid chlorin as an adjuvant. The responsibility of effecting such purification every hour of every day in the year is unreasonable and unfair. Many plants are now struggling with a raw water of such a character that a safe effluent is obtained only at the price of eternal vigilance, perfect operation every day in the year, and the free use of auxiliary chemicals. The raw water demanding such extraordinary treatment is like a sword of Damocles constantly threatening disaster. There is no margin of safety under such conditions.

I believe that a sufficient margin of safety should be given to all filter plants by reducing the pollution of the raw water to a point at which it would not impose an unreasonable burden or responsibility on the plant.

While prevention of all pollution is not feasible, control of pollution and its reduction in certain areas is imperatively necessary. In grossly polluted waterways used as sources of public-supply the reduction should be to a point somewhere between 500 and 100 *B. coli* per 100 c.c.

How far shall we go in providing a proper margin of safety? This depends largely on the cost.

The pollution, for example, of the Niagara and Detroit Rivers reaches to thousands of *B. coli* per 100 c.c. of water, as shown by the Progress Report of the International Joint Commission. The cost of the sewage treatment measures which would be necessary to reduce existing pollution to a standard of 500 *B. coli* per 100 c.c., would not be greatly increased if reduction to 100 *B. coli* were carried out. In other words, the cost of removing 75 per cent. of the *B. coli* in sewage is considerable, but the cost of removing an additional 15 per cent. or 20 per cent. would not be great. The removal of the additional 15 per cent. or 20 per cent. would be little more than the cost of the additional hypochlorite of lime necessary.

It is not deemed advisable to state definitely at this time what percentage of *B. coli* in the crude sewage of Detroit or Buffalo must be removed in order to bring the water in the lower river below 500 *B. coli* per 100 c.c. A study of the degree of pollution, however, will show that the reduction necessary will be at least 75 per cent. To provide a proper margin of safety the *B. coli* in the raw water should be reduced to a point somewhere between 500 and 100 per 100 c.c. Judging from the pollution found in the lower Detroit River this would correspond to an elimination of *B. coli* in Detroit sewage of from 75 per cent. to 95 per cent. As pointed out in a preceding paragraph the difference in cost between 75 per cent. removal of *B. coli* and the higher percentages up to 95 per cent. is relatively slight and well worth the expenditure in providing a proper margin of safety.

# THE LATE MANIFESTATIONS OF INHERITED SYPHILIS

## WITH ESPECIAL REFERENCE TO ARTERIAL DISEASE *

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Strictly speaking there is no inherited syphilis. Congenital syphilis better describes the condition, but even this does not convey the idea that the condition is in reality an acquired antenatal infection, the spirochetes being present in the placental blood. Many years of usage, however, have given these terms a permanent place in medical nomenclature.

It has long been known that syphilis is the most common cause of fetal death and that many of the children who do not succumb to its effects during the first few months carry its mark throughout life. But so vague and misleading are the symptoms of syphilis hereditaria tarda that except for the cases of interstitial keratitis, the diagnosis is one of the most uncommon in medicine. Yet the number of persons with an inherited infection perhaps equals those with acquired syphilis. The recognition of this condition is made more difficult by the frequent absence of the stigma we commonly associate with congenital syphilis. The key to the puzzle often lies in the family history. In addition to the points usually covered, inquiry should always be made as to the health of all living members. In no other class of patients does this part of the anamnesis attain such great importance. The history of paternal death from apoplexy or sudden heart-failure in early life means syphilis in the vast majority of cases, as does death from paresis, tabes or aneurysm, and in an obscure case we will do well to consider the possibility of congenital lues in our patient. Yet parental longevity is no guarantee against syphilis, as the grandmother of one of my patients was known to have been infected by her husband in middle life, and, though she subsequently gave birth to two imbecile children and had leg ulcers till the time of her death, she lived to be 93. I have recently obtained a strongly positive luetin test in a man of 91 who is recovering from a slight stroke of apoplexy. He had what was probably an urethral chancre fifty years ago.

Several times the first clue came from the statement that the mother had had several miscarriages and perhaps lost a number of infants in early life. In one instance it was ten years before it occurred to me that a frail little unmarried woman who was always ailing and seemed to have no resistance, might have had a congenital infection. She had a perfectly compensated mitral stenosis and aortic regurgitation, and gave a vague history of rheumatism when a child. Her mother had died suddenly at 46 and her father had also died young. Though there had been a large family, she was the only one living. Her luetin test was positive, one Wassermann weakly positive, and the improvement in her general condition after neosalvarsan and mercury was very gratifying. As she explained it she "felt like a real woman."

Fournier[1] states that congenital syphilis in a parent has the same effect on the fetus and infant that acquired syphilis has. He detected signs of active lues in 14 per cent. of the children of 116 families in which one parent had congenital syphilis. Of eighty-one pregnancies occurring in families in which one parent was an heredosyphilitic, death resulted before or soon after birth in 59 per cent.

As most of the statistics concerning congenital syphilis were made before the day of the Wassermann and luetin tests, it seemed desirable to apply them to a series of persons whose parents were either clinically syphilitic or had a positive Wassermann or luetin reaction.[2] Many of the cases belonged to the latter group and in a number of instances the parents were not conscious of ever having had lues. Tabes, paresis and aortic disease were considered as evidence of syphilis. A few observers have reported the results of the Wassermann test on whole families, but, so far as I know, the luetin test has not been used in conjunction with the Wassermann in any such series.

Luetin is the name given by Dr. Noguchi of the Rockefeller Institute to an emulsion of killed spirochetes prepared by him, which, when injected between the layers of the skin, produces a reaction in syphilis which is specific for the disease. Dr. Noguchi very kindly supplied the luetin for the tests.

In all, 68 persons—adults and children—were tested from 32 families. It so happened that no infants were included.

TABLE OF RESULTS OF TESTS IN THIRTY-TWO FAMILIES

| | No. of Individuals | No. Wassermann Tests | Per Cent. Wassermann Positive | No. Luetin Tests | Per Cent. Luetin Positive |
|---|---|---|---|---|---|
| Irrespective of health | 68 | 52 | 17 | 68 | 59 |
| Apparently healthy (robust) | 33 | 22 | 0 | 33 | 39 |
| Those with obvious ailment* | 35 | 30 | 43 | 35 | 77 |

* Either the Wassermann or luetin was positive in 31, 88 per cent.

It is seen from the accompanying table that 56 per cent., irrespective of their condition, had a positive luetin test and but 17 per cent. a positive Wassermann. Thirty-three appeared perfectly healthy and of this number 39 per cent. gave a positive luetin but in none was the Wassermann positive. The remaining thirty-five deviated more or less from our standards of health, but only a small minority would be classed with what we commonly think as congenital syphilis. For instance, the "Hutchinson triad" of deafness, interstitial keratitis and peg-shaped teeth, was uncommon, as were enlarged epitrochlear glands. Several had the "Olympic forehead" but the typical saddle-shaped nose was not seen. Anemia, malnutrition, extreme nervousness and disease of the aorta and its valves were the most common diagnoses. Very severe headache was the chief complaint in a number of instances, while others had vague pains, called "rheumatism." One patient, a man of 47, had an angioneural arthritis as described by Solis-Cohen,[3] another had Raynaud's disease. Of this group, 43 per cent. gave a positive Wassermann and 77 per cent. a positive luetin. In this latter group, however, there were four whose Wassermann reaction was strongly positive with a negative luetin test. If these be added to the twenty-seven in whom the luetin was positive, we find that 88 per cent. gave either a positive luetin or Wassermann reaction.

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* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Fournier: Treatment and Prophylaxis of Syphilis, New York, Rebman Company, 1907.

[2] Most of the Wassermanns were made at the laboratory of the State Board of Health under the direction of Professor Conn of Wesleyan University. I am indebted to Dr. Jessie W. Fisher for making a number of tests for me at the State Hospital for the Insane in Middletown, and to Dr. John A. Fordyce of New York for several tests made in his laboratory. A few were also made by Dr. H. C. Russ.

[3] Solis-Cohen: Am. Jour. Med. Sc., 1914, cxlvii, 228.

Six children from three families in which one or both parents had inherited syphilis were studied. Three, or 50 per cent., had a positive luetin test. Two grown sons in good health did not react to either test. One rather frail boy had a negative luetin and a doubtful Wassermann. Of the other three, one, an exceedingly nervous girl of 16 who had chorioidal scars in one eye, gave a positive luetin and a doubtful Wassermann. Her sister with dactylitis had a positive luetin and a weakly positive Wassermann. They were both premature babies, as were two others of that family. The third, a delicate boy with pyrexia, is of especial interest.

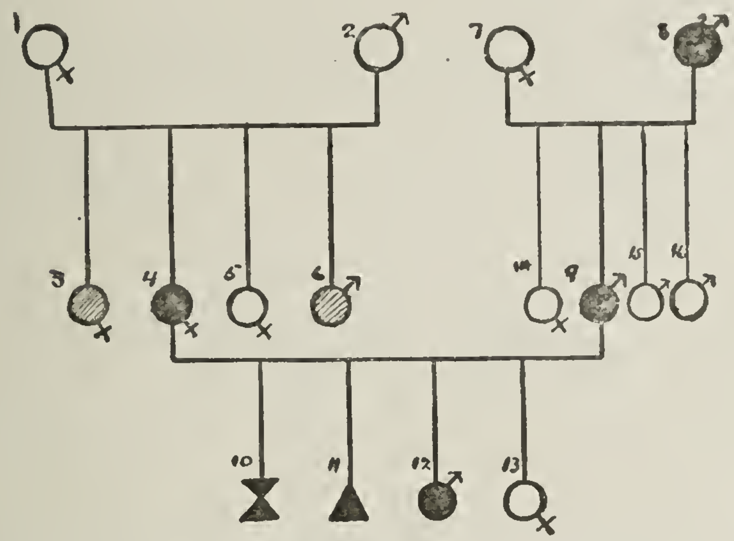

Chart 1.—Pedigree of family of Mr. X. In this and the following charts the circles indicate individuals, sex being shown by the regular signs (♂ for male, ♀ for female). Black circles represent persons known to have syphilis; shaded circles denote suspicious history or physical signs; black triangles indicate miscarriages, and double triangles stillbirths. 1 and 2. Living; not examined; said to be in good health. 3. Living, aged 42; malaria (?) as child; severe ulceration of throat; totally deaf. 4. Living, aged 40; very severe headaches all of life; Raynaud's disease; Wassermann —; luetin +. 5. Living, aged 38; many operations in girlhood for some "bone disease." 6. Living, aged 25; "Olympie head"; deafness about twentieth year; interstitial keratitis. 7. Died, aged 54; tumor of kidney. 8. Apoplexy at 42; paresis (?). 9. Living, aged 39; exceedingly nervous; laryngeal lesion improved by neosalvarsan and mercury; luetin +. 10. Stillbirth. 11. Miscarriage. 12. Living, aged 9; very frail; Wassermann ±; luetin +. 13. Living, aged 2; very prominent forehead; not tested. 14, 15 and 16. Not examined; said to be in good health.

Tuberculosis had been diagnosed in this boy, aged 9, because of a more or less constant pyrexia which was associated with weakness and anorexia. When he first came under my observation he showed signs suggestive of enlarged bronchial glands, and I concurred in the diagnosis. The heart was free from murmurs but showed a slight sinus arhythmia. Shortly thereafter the father (Mr. X) came to me for an examination of his lungs because an eminent laryngologist in New York strongly suspected laryngeal tuberculosis. No evidence of any pulmonary lesion was found. As the patient, who was a man of intelligence, not only denied any venereal disease, but stated he had never had intercourse with any one save his wife, syphilis seemed out of the question. Moreover, laryngologically, it was not the picture of syphilis. He stated that his father had died of paralysis at 56, but further questioning elicited the fact that he had had his first stroke of apoplexy when he was 42. (One may assume that apoplexy before 50 usually means syphilis, between 50 and 60 frequently syphilis and after 60 possibly syphilis.) His father also developed delusions—accused his wife of infidelity, etc.—that were suggestive of paresis. I thereupon gave Mr. X the luetin test and a positive reaction resulted. Under neosalvarsan and mercury injections Mr. X's throat improved markedly. As his father possibly had paresis it is of interest that he has always been exceedingly nervous, once having to give up business because of nervous prostration. His little son gave a negative reaction to the intradermic tuberculin test, but reacted strongly to luetin.

Mr. X.'s wife gave the following interesting history. Her parents are living and said to be well. She was never strong as a child and has always been subject to severe headaches which were not relieved by glasses. Her teeth were very poor. About six years ago she began to have typical attacks of Raynaud's disease. Her first pregnancy resulted in a still-born child at term, the second one miscarried at the third month, the next, the delicate boy whose history has been given, and the fourth a girl not as yet tested, has an "Olympic" forehead. Her family history contains the following noteworthy points.

Her oldest sister became deaf in early womanhood and had a severe ulceration of the throat of unknown origin. As a child she had some indefinite sickness, accompanied by pyrexia, which was called "malaria." Another sister had a number of operations for bone-disease thought to be tuberculous. A brother, aged 25, who has very marked frontal eminences, became deaf in his late teens, and at about 20 it is stated that a "film" appeared over both eyes and though he was almost blind for a time, he recovered under treatment. Mrs. X gave a negative Wassermann reaction but a very positive luetin test. It would seem that both Mr. and Mrs. X were heredosyphilitics.

The next family resembles the preceding one in several particulars.

Mr. Z, a man of 36, who knew of no venereal infection, complained of "weak feelings," pressure in his head, and of great nervous exhaustion. He had "doctored for uric acid" a great deal. Ten years previous to being seen he had to stop work for nearly a year, because he could not think clearly and easily. He was very easily exhausted. Once he had a weak spell and had to be taken to a hotel. He was fearful his heart was weak. He occasionally had a catch in the left side, and, as he expressed it, was "easily wilted." Eighteen months previously he had to stop work for three months. He found his duties, which were those of office work, arduous because of difficulty in concentrating. When the weak spells came on, the left side of the body felt numb and he experienced a drawing sensation to the left side. For the previous four years much of the time he has had intense headaches which are worse at night. His head always felt bad on waking in the morning. He also suffered much from hot flashes. The man was well nourished and looked the picture of health. The physical examination was absolutely negative, and from a purely clinical point of view was a case of neurasthenia. In his family history, however, it was found that his father, who died at the age of 68, had had locomotor ataxia for a number of years, and before his death two strokes of apoplexy. An elder brother has been extremely nervous and for that reason had to give up his

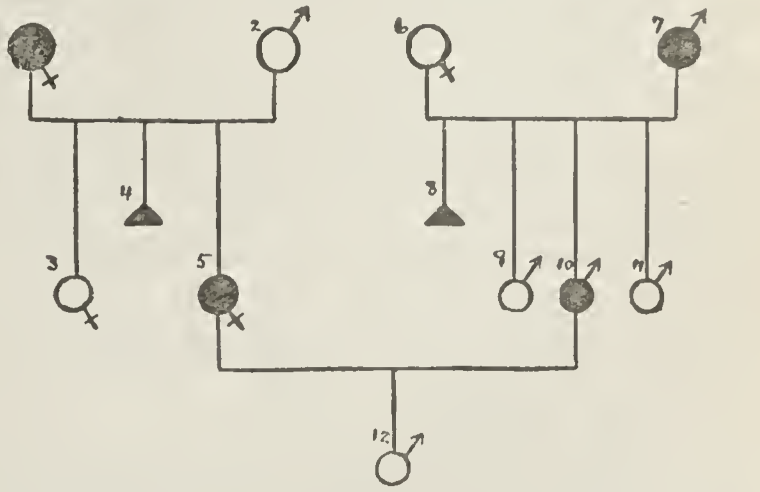

Chart 2.—Pedigree of family of Mr. Z. 1. Living, aged 64; hypertension; several slight strokes of apoplexy; luetin +. 2. Living, aged 70; angina pectoris; luetin —. 3. Living, aged 44; apparently well; Wassermann —; luetin —. 4. Living, aged 38; frail since girlhood; pulmonary tuberculosis; Wassermann —; luetin +. 6. Living, aged 70; good health. 7. Apoplexy at 68; had had tabes for several years. 8. Miscarriage. 9. Living, aged about 40; extremely nervous; not examined. 10. Living, aged 36; neurasthenia with severe headaches; Wassermann —; luetin +. 11. Living, aged 18; pleurisy; Wassermann —; luetin —. 12. Living, very robust, aged 14; Wassermann —; luetin —.

business. A younger brother had very severe headaches for a number of years in early life, occasionally so intense that he would fall to the ground. His mother had had two miscarriages. A number of Wassermann tests by two different laboratories were negative, but the luetin test was strongly positive before giving treatment and also at present. Following several injections of neosalvarsan and mercury he was completely relieved of all his symptoms. Unfortunately, the spinal fluid was not examined.

Mrs. Z has been very delicate since girlhood. Though ambitious, her strength fails her and she has always been a "weakling," but without obvious cause. Recently a very slight apical tuberculosis was discovered, but it hardly seemed enough to account for her marked loss of vitality. Nor did a course of tuberculin treatment benefit her. Two different serologists reported the Wassermann negative but the luetin was very strong. Her father has had angina for several years and her mother, though apparently well, has hypertension and has had several strokes of apoplexy. Mrs. Z's mother gave a positive luetin test, but in her husband it was negative. Mr. and Mrs. Z have one boy aged 14 who is healthy and in whom both tests were negative.

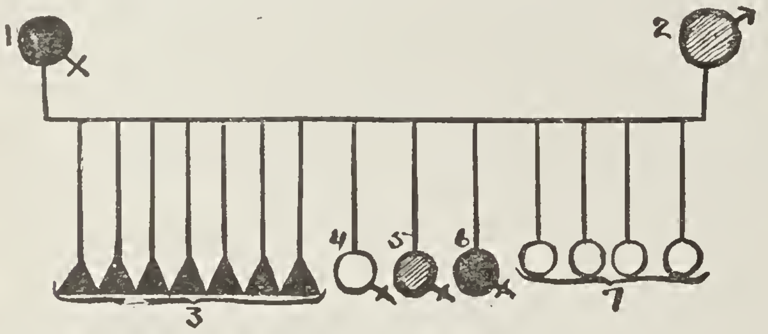

Chart 3.—Pedigree of family showing cardiac lesions. 1. Living, aged 65; aortitis; luetin +. 2. Husband died, aged 58; angina pectoris. 3. Severe miscarriages (sequence of pregnancies not known). 4. Died, aged 3 months. 5. Died, aged 30 +; decompensation following aortic regurgitation. 6. Living, aged 30; angina pectoris; aortitis (?); luetin +. 7. Not examined; one has precordial pain.

One of the most common effects of congenital syphilis is its interference with the normal development of some particular part of the body. It may be mental or physical. It may involve one organ or a group of organs. There are cases on record of the complete transformation of a thoroughly incorrigible and vicious child by specific treatment. In addition to this, Fournier calls attention to what he very happily terms the "fragility of the system" as evinced by the proneness to diseases of all sorts, but especially tuberculosis. This is a very important group, of which Mrs. Z just referred to is an excellent example. "They frequently die," Fournier says, "at an early age 'of nothing at all,' so to speak, without any definite disease, and in many of such cases the most careful autopsy does not reveal the cause."

In some of my patients the dystrophies which Fournier mentions were evident. In one family of which the father had acquired syphilis before marriage, each of two daughters had a short arm and a son with interstitial keratitis stammered badly and had bilateral hernia.

In another family in which the father, a congenital syphilitic, had angioneural arthritis, a son was a cryptorchid and a daughter suffered from vasomotor disturbances of the hands and feet similar to those of her father.

Hubner was the first to direct universal attention to the study of the relationship of specific disease to the blood-vessels, and to-day it is generally appreciated that the majority of the clinical symptoms of syphilis are caused by changes in the arteries with their secondary consequences.

It has long been known that acquired syphilis attacks the aortic arch with great frequency, but very little has been written concerning the rôle played by congenital syphilis in this respect. Rebaudi[4] found changes in the aorta similar to those observed in acquired syphilis in thirteen out of seventeen still-born children. Roch and Weisner[5] found similar changes in 59 per cent. of their cases. In five cases Rebaudi demonstrated the spirochetes.

In several of my cases there was a lesion at the aortic valve.

In four instances I was able to prove the presence of latent syphilis in one or both parents by the luetin or Wassermann test. In several others the absence of any venereal infection and the sudden death of a parent in early life suggested the inherited nature of their infection.

A frail lad of 24 was brought to me because it was feared that tuberculosis might be the cause of his weakness, dyspnea and chest pains. The lungs were normal but the usual signs of aortic insufficiency were present. The venereal history in both patient and his father was negative but he gave a positive luetin test as did his mother and one of two younger sisters. The father gave a negative luetin but a weak positive resulted when the test was repeated. In all, the Wassermann was negative. The only suspicious thing in the history was the fact that his mother had had several miscarriages.

Biermann[6] has reported an interesting case of arteritis of the peripheral vessels associated with dilatation of the aortic arch in a young woman of 19 with congenital lues. The lesion of the aorta was diagnosed roentgenographically. In two of my cases of congenital aortitis the Roentgen ray showed no dilatation of the arch. In a third, presumably congenital, a well marked dilatation was revealed.

Clinicians the world over have observed families in which many of the members succumbed to heart or arterial disease. This is commonly attributed to the fact that they have inherited poor material for their arterial wall and that as a result of the vicissitudes of life the artery gives way. So far as I know, it has not been suggested that syphilis might be an important factor in these cases, yet several of the families studied suggest this possibility.

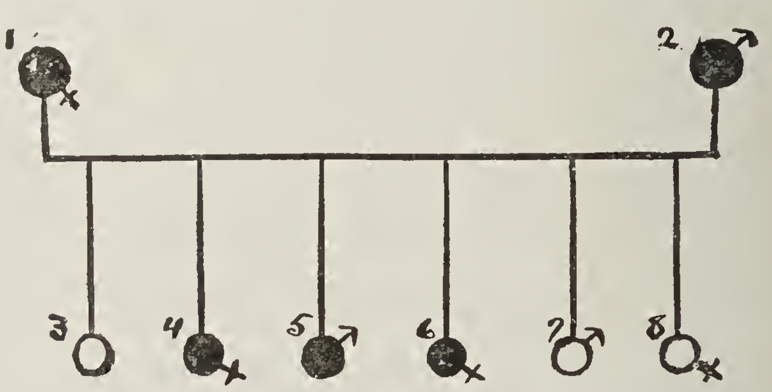

Chart 4.—Pedigree of family also showing cardiac lesions. 1. Mother living, aged 38; hypertension; Wassermann +; luetin ±. 2. Father died, "stroke," aged 35. 3. Died in infancy. 4. Living, aged 17; apparently well; Wassermann —; luetin +. 5. Living, aged 14; frail; aortitis; Wassermann +; luetin +. 6. Living, aged 8; internal strabismus; Wassermann +; luetin +. 7. Living, aged 6; frail; Wassermann ±; luetin —. 8. Living, aged 2½; apparently well; Wassermann not done; luetin —.

Attention has been drawn to the part played by syphilis in cardiac lesions, by Warthin[7] who concludes from his pathologic study "that syphilis, both congenital and acquired, is the most important etiologic factor in the production of cardiac disease, both myocardial and endocardial." From the clinical point of view, Schottmüller[8] reports a positive Wassermann reaction in over 40 per cent. of his cardiac cases taken as a whole, irrespective of the lesion.

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[4] Rebaudi: Monatschr. f. Geburtsh. u. Gynäk., 1912, xxxv, 681; abstr., The Journal A. M. A., Aug. 10, 1912, p. 490.

[5] Roch and Weisner, quoted by Longcope, W. T.: Arch. Int. Med., January, 1913, p. 15.

[6] Biermann, J.: Deutsch. med. Wchnschr., 1911, xxxvii, 1157.

[7] Warthin: Am. Jour. Med. Sc., 1914, cxlvii, 667.

A robust man of 35, who considered himself to be in perfect health, came to me as he had been refused life insurance because of heart-disease. He had a well-marked aortic regurgitation which had given no symptoms. He had had neither rheumatism nor venereal disease so far as he knew. Both the Wassermann and luetin tests were positive. His father had died of tetanus and his mother was living and in good health. Inquiry, however, developed that his father had had a slight "stroke" in his fiftieth year. His mother gave a very strong luetin reaction.

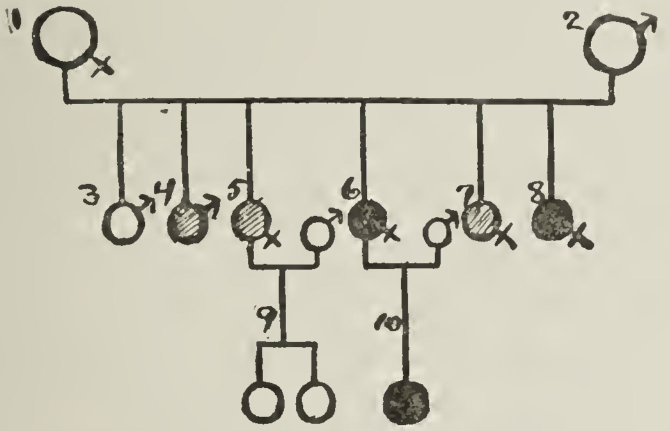

Chart 5.—Pedigree of family showing various disorders ascribable to syphilitic infections. 1. Died, aged 73; nephritis. 2. Died aged 50 +; nephritis. 3. Died in infancy. 4. Living, aged 50 +; hypertension. 5. Living, aged 50 +; hypertension; deafness in late teens. 6. Living, aged 48; neurasthenia; deafness in late teens; Wassermann —; luetin +; only daughter an epileptic (10), dying at 22. 7. Died, "withered kidney"; aged 28. 8. Living, aged 45; hypertension; neurasthenia; deafness in late teens; Wassermann ±; luetin +. 9. Apparently healthy twins.

The following family is of especial interest as one member had slight angina pectoris which, I believe, has not been ascribed to congenital syphilis.

A young woman, aged 27, whose husband had been in excellent health at the time of his death from an accident a few weeks after his marriage, consulted me in 1910, with a statement that she had been doctoring for the last six years for "rheumatism." This proved to be pain of a sudden character between the shoulder blades. Tuberculosis had been feared. The physical examination was practically negative, except for a very few râles over the right chest anteriorly at the border of the sternum, and a slight tenderness over the first sternochordal junction on the left side as well as over the midthoracic vertebrae. No definite diagnosis was made at that time. The patient seemed neurotic and not very ill. Eighteen months later she said "the rheumatism had been in the left shoulder and went through the heart." She complained of soreness through the upper left side of the chest and of a very slight cough. There were still a few râles in the secondary right space anteriorly near the sternum. (I was puzzled because the pain was on the left and the only abnormal sounds were on the opposite side.) About a year later she experienced some dyspnea in going upstairs and a soft systolic murmur was present in the second left interspace, but it was not accompanied by anemia. The upper outer border of the left trapezius muscle was found to be somewhat tender. Even at this time I did not appreciate what the condition was, as the murmur was present only in the second left space and I did not then know that an aortic systolic murmur may be heard only in the second or third left interspaces. On reviewing her family history I found, however, that her mother had had several miscarriages and that her father had had an enlarged heart and had died from angina pectoris at 58. The mother was apparently in good health, except for "rheumatism" through both shoulders and the upper part of the sternum. On examination it was found that she had a systolic murmur at the base of her heart. A sister had died from cardiac decompensation secondary to an aortic regurgitation. Both my patient and her mother gave a positive luetin test. The mother's "rheumatism" subsided after a course of inunctions, and the daughter's disappeared after neosalvarsan and mercury. Two other "heart families" were met with.

A man of 53, a policeman by occupation, complained of dyspnea on exertion. He knew of no venereal infection. His heart was enlarged and a systolic murmur was present which was loudest at the base. The systolic blood-pressure was 210; diastolic 110. His father had suddenly dropped dead in his forty-sixth year, and a brother had died from a "shock" when 48. Two Wassermanns were negative but the luetin test was strongly positive.

The perfect compatibility over a period of many years, of an occult lues and good health is here shown. This man had enjoyed excellent health for over fifty years, yet the disease which was to rob him of his rightful expectancy of life was slowly advancing but without sign or symptom. Had a Wassermann or luetin test been possible in his early life and thorough treatment instituted, he would be living to-day in all probability. The next family further demonstrates the importance of testing the children in all cases of sudden parental death in early life.

A boy aged 14, who is not anemic, has a well-marked systolic murmur over the base of his heart, loudest on the right and extending up to the clavicle. His father suddenly dropped dead when 35 years old. His mother, aged 38, has hypertension. The boy, his mother and one sister with internal strabismus, have very strong Wassermanns, and in a younger brother the test was doubtful. An older sister gave a negative Wassermann but a positive luetin.

It has long been recognized that syphilis may cause arterial hypertension, and because of the steady increase in the mortality from arterial and kidney diseases it is important to ascertain how important lues, and especially congenital lues, is in this condition.

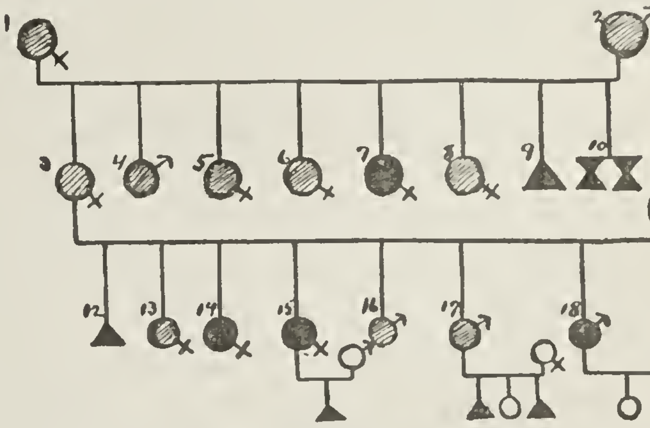

Chart 6.—Pedigree of family with cardiovascular disease in three generations. 1. Maternal grandmother died, aged 64; "apoplexy." 2. Her husband died of a "fatty heart," aged 64. 3. Died of acute dilatation of heart following pneumonia, aged 50. 4. Died, aged 17 "apoplexy." 5. Died, aged 38; "heart disease"; no rheumatism. 6. Living, aged 63; hypertension; several strokes of apoplexy; Wassermann —. 7. Living aged 60 +; apparently well; Wassermann —; luetin +. 8. Living, aged 58; was a 7-month baby; not examined; has much dyspnea. 9. Miscarriage. 10. Twins; stillborn seventh month. 11. Husband of No. 3; died of "tumor of throat." 12. Miscarriage. 13. Living, aged 45; hypertension; when a child had an ulcer of rectum very slow to heal; Wassermann —; luetin —. 14. Living, aged 43; hypertension (S. B. P. 270); Wassermann —; luetin +. 15. Living, aged 39; neurasthenia; Wassermann —; luetin +. 16. Died, aged 16; heart disease; no rheumatism. 17. Living, aged 37; not examined; has a chronic "sore" near anus. 18. Living, aged 36; apparently well; Wassermann —; luetin +. It is noteworthy that 60 per cent. of the pregnancies of the third generation resulted in miscarriages.

Hintzelmann,[9] whose original article I have not obtained, believes that congenital syphilis often causes chronic nephritis. Cassel[10] found renal changes in ten out of twelve syphilitic infants at necropsy and Murphy and Powers[11] state that the affection is, as a rule, a slow chronic nephritis, sometimes latent, sometimes showing acute periods.

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[8] Schottmüller: Therap. d. Gegenw., 1913, xv, 337.

[9] Hintzelmann: Ztschr. f. Kinderh., 1913, ix, No. 1.

Another interesting family is that shown in the following record:

The patient, an unmarried woman of good repute, aged 45, has suffered from extreme nervousness for a number of years and now has a systolic blood-pressure of 160. Her father died at about 58 of nephritis and the mother of the same malady at 73. One brother living has hypertension and an hypertrophied heart. Two sisters are married—both are extremely nervous. One had a child, an epileptic, who died at 22. The other sister has hypertension. A fourth sister died at 28 of a "withered kidney." All three living daughters became gradually deaf during their late teens. My patient had a doubtful Wassermann test and a very positive luetin. The sister, who was the mother of the epileptic child, gave a negative Wassermann but a positive luetin.

The next is the most remarkable family, as heart and arterial disease are present in three generations.

A little over a year ago I was called to attend an unmarried woman, aged 43, who was suffering from a greatly embarrassed heart-action and a systolic blood-pressure of about 270. She had lost a brother aged 16 from heart-disease, which was not secondary to rheumatism. Another brother, aged 37, is stated to have had some sort of ulcer at or near the rectum for several years, and periodically he "sheds" part of the skin from the soles of his feet. Two of his wife's three pregnancies have resulted in miscarriage. A sister, aged 45, also unmarried, has hypertension, and as a girl had an ulceration of the rectum which only healed after a very long course of treatment and was followed by a slight stricture. A married sister has suffered from headaches for years, in addition to a number of symptoms common to neurasthenia. A younger brother, aged 36, is apparently in good health. The three sisters and the apparently healthy brother all gave negative Wassermanns, but the sister with the highest blood-pressure, the neurasthenic, and the brother who seemed well, all gave positive luetin tests. The other brother has not been tested. The family history apparently gives the clue to the situation.

The father had died from a "tumor of the throat," the mother, from acute cardiac dilatation complicating pneumonia, at 52. Her first pregnancy resulted in a miscarriage. One of her brothers died of "apoplexy" at 17, and a sister who had not had rheumatism, of heart-disease at 38. Three of the mother's sisters—all unmarried—are still living. One appears to be in good health but gives a positive luetin test though her Wassermann is negative. Another, now past 60, has hypertension and several years ago had a slight stroke of apoplexy. A third, not as yet examined, was a 7-months baby and is stated to suffer severely from dyspnea on exertion. The maternal grandmother died of apoplexy at 64 and her husband at the same age of a "fatty heart."

It is especially fortunate that there were so many unmarried women in two generations, as this practically eliminates acquired infection.

This family suggests syphilis in three generations. There is no proof that the mother of the present generation, who died of cardiac dilatation after pneumonia, had lues, other than the presence of syphilis in her children. Of course it cannot be said that she might not have been infected by her husband, who may possibly have had syphilis. But the astonishingly large number of cardiovascular cases in her own generation and the positive luetin test in an unmarried sister makes the assumption that she had a congenital (myocardial) syphilis almost a certainty.

In this connection the statement might be made that an underlying and unsuspected syphilitic myocarditis is probably a more frequent cause of cardiac death in the course of other infections than we have hitherto supposed.

It would seem from this investigation that the luetin test is of more value in detecting congenital infection of long standing than the Wassermann test. This is especially true when the disease is dormant. Emory[12] has also noted this fact. Whenever possible both tests should be employed as neither is infallible. Nor does a positive Wassermann or luetin reaction guarantee that the presenting symptom is due to syphilis. In four cases the luetin test was negative, while the Wassermann was positive. In one, both tests were negative. Had cholesterinized antigens been generally employed, it is quite possible that the percentage of positive results would have been somewhat higher; but the luetin test was positive several times even when fortified antigens were used. The ideal method of procedure is first to obtain blood for a Wassermann and then either give mercury by mouth for a week, when the luetin test should be made, or the interval may be shortened by an injection of mercury at the time the luetin test is given.

The torpid reaction, coming on in from ten days to three weeks is common. Since using mercury in conjunction with the luetin test the indefinite reactions are rare, nearly all going on to pustule formation.

Time will not permit the discussion of the luetin test *per se* as an indication for therapeusis when occurring without obvious lesion. Nor can treatment be considered other than to say that relief of symptoms has been complete in a number of cases in which the Wassermann was persistently negative with the luetin positive. In a few there was a slight recurrence several months later, which usually promptly responded to further treatment. Whether a cure in its strictest sense is possible, only time will tell.

## CONCLUSIONS

1. We must accustom ourselves to think of syphilis as a family disease. But rarely is our patient the only one infected.
2. Over half of the children born of syphilitic parents, who survive infancy, give a positive luetin reaction. In nearly 90 per cent. of those with obvious ailment the Wassermann or luetin test is positive.
3. There is often nothing in the appearance to suggest lues and the symptoms are indefinite and often misleading.
4. Too much emphasis cannot be placed on the importance of a complete family history in every obscure case.
5. It seems probable that syphilis may be transmitted to the third generation.
6. Some cases of neurasthenia are due to congenital lues and can be promptly cured by specific treatment.
7. Syphilis appears to be an etiologic factor in certain of the families prone to heart and arterial disease.
8. Hypertension in middle life may be due to congenital lues.
9. Both the Wassermann and luetin tests should be employed as neither is infallible, the Wassermann being frequently negative in syphilis hereditaria tarda, the luetin occasionally so.

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[10] Cassel, quoted by Murphy and Powers (Footnote 11).

[11] Murphy and Powers: System of Syphilis, Oxford Univ. Press, 1908, i, 358.

[12] Emory: Lancet, London, 1914, i, 223.

10. The examination of all venereal sores for spirochetes and their prompt treatment, controlled by the Wassermann and luetin tests, would ultimately make congenital syphilis a medical curiosity.

It is with pleasure that I acknowledge a number of valuable suggestions in the preparation of this paper from both Dr. Noguchi and Dr. Ellis of the Rockefeller Institute.

75 Pratt Street.

## ABSTRACT OF DISCUSSION

Dr. Robert N. Willson, Philadelphia: Because of Dr. Cabot's challenge to the effect that "if I would show him a mitral stenosis with an etiology other than that of rheumatism he would believe in it" I present to the Section two hearts, both showing, as late manifestations of hereditary lues, a high-grade stenosis of the mitral valve in addition to other extensive involvement. In the one case the latter consisted of a ruptured aneurysm of the thoracic aorta in a child of 4 years, and, in a second, of considerable patchy atheromatous involvement of the first portion of the aorta, though the aortic valve leaflets were normal. In neither case was there at any time an indication of "rheumatic" involvement in any of its forms. In both cases (the child and adult), one parent and probably both were syphilitic. I think the final test as to the direct etiology of such cases could and should be successfully demonstrated in the post-mortem discovery of the spirochetes, as well as by the Wassermann test during life. There would, however, seem to be little need for such an ultimate study in the specimens presented at this time. Dr. Stoll's paper brings to our attention once more the growing need of assigning to syphilis a place equally as prominent as that of rheumatism in the causation of valvular lesions, and a far more significant influence in the etiology of arterial lesions and consequent secondary changes in the muscle of the heart. I have seen many little children with no other sign of syphilitic parentage than fibrous, whipcord vessels, those of little old men and women. In fact I have come to regard arteriosclerosis in the child as highly indicative of hereditary lues, even in the absence of all other symptoms. If such a heredoluetic survives and marries, his or her children are not unlikely to present congenital cardiac lesions which should be, though they often are not, attributed primarily to syphilis. Dr. Stoll has cited in his series an instance of mitral stenosis in a young adult female, presumptively luetic in origin. This case resembles closely in its clinical details the case in an adult represented by one of the specimens shown. One point seems to me well worth remembering in connection with these cases, namely, that many instances of arterial and cardiac disease are characterized as congenital or of unknown etiology, when a more thorough and painstaking study of the anamnesis would correctly label the lesions as heredosyphilitic or even acquired syphilis.

Dr. A. C. Griffith, Kansas City, Mo.: I have been using the luetin test for some time. When in New York a short time ago I asked Dr. Noguchi why it was that at times the luetin test was negative when we had a positive Wassermann? He answered that it was because the system was so saturated with the toxin or the poison from the spirochetes in the body that the luetin was rendered inert. If the patient was placed under treatment with mercury or salvarsan the tests all became positive.

**The Many Sidedness of Science.**—It is well that the sciences of nature hold out attractions to so many different types of mind, for the edifice of science is built of material which must be drawn from many sources. A quarry opened in the interest of one enriches all of these sciences. The deeper we can lay the foundations and penetrate into the nature of things, the closer are the workers drawn together, the clearer becomes their community of purpose, and the more significant to the welfare of mankind the upbuilding of natural knowledge.—Welch.

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# LATENT AND TERTIARY SYPHILIS IN DISEASES OF THE NOSE AND THROAT *

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The importance of the diagnosis of syphilis in any part of the body cannot be overestimated. In the primary and secondary stages, syphilis is a serious matter; in the tertiary stage of nerve lesions it is a calamity. Recent statistics state that 20 per cent. of treated patients and 40 per cent. of all afflicted with the disease later develop nerve lesions. Until recently, we were unaware that the spinal fluid in certain cases contained active manifestations of the disease when the blood was negative. To-day it is possible, not only to demonstrate spirochetes in the spinal fluid, but also to treat this important field with most promising results.

Tertiary lesions in the nose and throat require early diagnosis for two highly important reasons: first, because their presence demonstrates an active syphilitic process in functionally important organs, and, secondly, because the general systemic infection causing localized symptoms in the nose or throat may later develop still more serious lesions in the central nervous or arterial systems. Specific manifestations in the larynx, soft palate and nasal septum are rapidly destructive; thus it is highly important that they be recognized and properly treated before actual destruction takes place.

In certain virulent cases the destruction of these delicate organs is a matter of hours. From twenty-four to seventy-two hours may cause sufficient destruction to seriously impair their function for all time. Thus salvarsan, despite its marvelous rapidity and efficiency, can avail nothing if destruction has taken place before the diagnosis is made and the treatment given.

Symptoms of tertiary syphilis in diseases of the nose and throat include all manifestations of the disease which are of a destructive nature, and are not necessarily limited to the time of appearance with reference to the initial lesion. It is possible to have primary, secondary and tertiary syphilis at one and the same time. For example, an untreated chancre of the lip may develop into the malignant type and cause deep ulceration. When such a lesion is present, the delay in treatment allows a systemic infection which gives rise to secondary symptoms in the glands, skin, throat, etc. The moment an initial or secondary symptom becomes destructive to any serious amount of tissue, the lesion becomes a tertiary one. Thus, we have to all intents and purposes all three stages present at one time, that is, the original site of the infection as the primary stage, systemic manifestations in the glands, skin, throat, etc., as a secondary stage, and a beginning destructive process in the initial lesion as a tertiary stage. In this respect, also, so-called secondary lesions of the cartilaginous septum, which are not uncommon and are rapidly destructive in their action, are not secondary at all, but are true tertiary lesions despite the fact that they occur in the interval commonly regarded as the secondary period. Practically speaking, however, tertiary symptoms include all manifestations occurring after the commonly accepted secondary symptoms have passed.

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The ordinary tertiary symptoms in the field of the rhinologist and laryngologist are too well known to need further mention. In my opinion, they are far more common in diseases of the nose and throat than they are supposed to be. My experience and that of my friends has recently taught me to use great caution in making a diagnosis in a given case until syphilis has been eliminated as carefully as possible. To further this end, instructions have been given to do a Wassermann test on every patient admitted to the wards of the hospital on my service, and on every operative case in the outpatient department wherein syphilis might enter as a complication.

From a purely scientific standpoint, latent syphilis cannot exist. An individual either has the disease or he is entirely free from it. If spirochetes are present anywhere in the system, he has syphilis. If no spirochetes are present, the opposite condition is true. Symptomatically, however, there is often a quiescent period in the disease in which no active lesions are present, regardless as to whether the Wassermann test is negative or positive. For want of a better term, we may usefully and properly refer to this stage of the disease as "latent syphilis."

Latent syphilis is a particularly important matter in nose and throat practice inasmuch as operations in that field may rapidly change the latent disease into a very active one. This has happened to me in both private and hospital practice and has caused considerable distress to the patient and anxiety to the operator. To operate on a patient with latent syphilis without knowledge of its presence is a serious error and one which should be guarded against to the best of our ability. Judging from my experience and that of other Boston rhinologists, I strongly believe that we have no moral or legal right to perform a destructive operation of any magnitude on the nose or throat until a Wassermann test has been made. If doubt still exists in our minds as to the presence of syphilis because of an uncertain Wassermann test, we must proceed still further and make other tests which have proved to be valuable agents in the diagnosis of this disease. Operating on a patient with latent syphilis has exactly the same effect as the so-called "provocative test," but unlike that procedure, it has no power to overcome the mischief it has liberated. One of my cases, that of a catilaginous transplant into the nose, developed a tremendous syphilitic reaction within forty-eight hours. The patient had shown two negative Wassermann reactions, one six months and the other one week before the operation. Forty-eight hours after the operation, the wound showed evidences of infection. The inflammation was not especially active for the first few days, but then a marked redness and swelling developed, which extended to both orbits. It had every appearance for a short time of erysipelas. Ice compresses soon reduced the extreme swelling, however, and after several weeks of active inflammation the pus discharge ceased. Then the nose from the nasal bones to the tip became moderately swollen, with a shiny, fiery-red color which gave a most unhealthy appearance. Hot poultices were applied without the desired results. Several incisions were made with the hope of liberating confined pus. None was obtained. The shiny, red color and swelling persisted for over four weeks, then gradually subsided and never returned.

Young children who have inherited syphilis in either the secondary or tertiary stages are beginning to receive the proper attention which has previously been denied them. Many hospital clinics are now especially interested in this phase of the situation and astonishing results are being obtained. Of 111 cases admitted to the Children's Hospital in Boston, Lucas found 31 per cent. to have syphilis. Churchill, in Chicago, found over 30 per cent. These statistics led me to order a routine Wassermann test done on every child in my clinic who showed a tendency to chronic bone involvement, particularly of the mastoid variety. Since my connection with the Boston City Hospital, there have been many such cases and I am sanguine as to the results which may be obtained in this direction. In children, the Wassermann reaction is not at all to be depended on, particularly when bony tissue is involved. All the older symptoms in the skin, bones, teeth, eyes, etc., must be carefully sought for in case the Wassermann test is doubtful or negative. Nasal symptoms are not uncommon in children. Three cases of suspected foreign bodies in the nose have come to my attention, all of which proved to be specific disease and not foreign bodies. In all three cases there was a fetid odor and increased secretion, but there was little or no swelling of the soft parts of the nose. This is the opposite condition to what is found in the case of a foreign body, and is a strong point in the differential diagnosis. On the whole, children react well to treatment in this disease.

The value of the Wassermann reaction depends on the period of the disease at which it is taken. It has no value in the primary stage. As soon as the disease manifests itself in the general system, it develops its full strength. The effect of previous treatment with mercury is to give a negative Wassermann reaction; hence, a negative test is not positive evidence that syphilis is not present. The effects of previous treatment, moreover, may extend over a period of years and give a negative test in the tertiary period. The situation is still further complicated because in the latter stage of the disease lesions in bony tissue have a strong tendency to yield a negative Wassermann test even in untreated cases. This is an important point in tertiary lesions of the nose inasmuch as such lesions usually occur in the bony tissue. The Noguchi test is practically the same as the Wassermann. A large number of the two tests were carried on together by Dr. Sanborn in the Boston City Hospital, and the results were equal in every way. On the other hand, the luetin test is occasionally positive when the Wassermann test is negative. In such an event, the result of the luetin test may be given the preference.

In the event of a doubtful Wassermann reaction, another method of diagnosis is available which is a positive sign when present. The bones may show certain characteristics which are distinctly syphilitic

The pathologic changes exhibit a variety of forms which, in exaggerated cases, may be determined by the sense of touch. There may be a distinct area of softening due to a broken-down gumma, or a thickening or roughness which may be determined by the fingers. The Roentgen ray will determine less-apparent lesions in the bones to the expert who is able to read them accurately.

Periosteal thickening may be circumscribed, single or multiple, and the thickened periosteum may be on one or both sides. Endosteal thickening, while less common than periosteal, is occasionally seen and when present is strongly diagnostic of syphilis. Dactylitis in children may be looked on as a very possible symptom of the disease. Specific bone lesions are not limited to the long bones but may occur in any part of the osseous system. Specific infection in the ribs and rib cartilages is not infrequent.

In the cartilaginous rib transplant case previously mentioned, which Dr. Emerson and I performed together, the cartilage obtained from the sixth rib showed marked signs of having been diseased. We supposed at the time that it was sufficiently healthy for the purpose because of the negative Wassermann reaction. As a matter of fact, it did finally graft into place, but it required over three months to do so. I doubt, however, if the long inflammatory period was due to the cartilage, but to the extreme irritability of the tissues surrounding the cartilage when placed in its altered position.

Syphilitic bone lesions are particularly valuable guides in diagnosis for the reason that such infections are prone to give negative Wassermann tests. Expert syphilographers assert that perhaps not more than one case in three of bone syphilis exhibits a positive Wassermann. This phase of the situation is especially important to rhinologists, because a false diagnosis is easily possible if a Wassermann test alone be depended on.

A number of cases in the hospital which have given negative Wassermann tests have yielded quickly to salvarsan. One case of multiple sinusitis was negative to a provocation test, but immediately showed great improvement after the test was made, owing undoubtedly to the small dose of salvarsan given in the test. In fact, this particular patient was practically cured by a procedure which was instituted wholly for the purpose of diagnosis. From a diagnostic standpoint, it failed utterly to demonstrate a syphilitic process; but, for the time being, at least, it cured the patient's headaches and dried up a pus discharge which had been continuously present for many months. Another patient who had had several frontal-sinus operations (one of them a complete Killian) failed to respond to treatment for many months. The case occurred a year or more before salvarsan was known. Later it was one of the first cases of its kind treated with salvarsan in our hospital, and the results were most satisfactory.

The provocative test consists of giving a small dose of salvarsan and then making a Wassermann test. The theory is that the salvarsan breaks down the walled-off process and allows the spirochetes to enter the circulation. Bone lesions, in particular, respond to this test and it is an extremely important factor in nose and throat diseases for this reason. In my opinion, all chronic sinus cases should be given this test in the event of a negative Wassermann before any extensive operation is attempted. I know of two cases, which later proved to be specific, in which extensive and mutilating operations were performed on the nose and face. They occurred before the day of this test; but had it been available, both operations might have been unnecessary. In another recent case in which there are decided nasal symptoms, there was a negative Wassermann, but the history of the patient gave the father's death as due to locomotor ataxia. This clue to a possible specific taint was deemed sufficient to demand a provocative test. At the time of writing the result is unknown.

Acute postoperative reactions of a syphilitic nature are not as common as we might suppose. They do occur with sufficient frequency, however, to make them an important element in our work. I have actually seen but few such inflammations following septal operations. I have had two such reactions in private practice following sinus operations and two following cartilaginous transplants. In the latter, one patient previously mentioned had two negative Wassermanns before the operation. The other patient gave the cause of her nasal deformity as traumatic in its origin and we took her word for it. A violent reaction took place and persisted for many weeks. At first, we viewed the situation as an ordinary infection and treated it as such without relief. Finally, in desperation, we tried a Wasserman reaction and found it three plus positive. The case reacted well to salvarsan, but in spite of that treatment repeatedly given, combined with mercury, the Wassermann reaction is still positive though the wound has long since healed.

In the hospital clinic, a considerable number of sinus cases refused to clear up well after operation. The patients continued to have pus, granulation tissue and headaches in spite of continued operative treatment. Later, salvarsan was given with satisfactory results.

My attention was recently called by Dr. Sanborn to tonsil operations in syphilitic patients. It appears that a considerable number of such patients have been operated on with decidedly harmful results. Dr. Abner Post, who is known the world over as an authority in all matters pertaining to syphilis, informed me in a recent conversation that many children with hereditary syphilis are operated on for adenoids and the results of such operations are very injurious. Dr. Post further called attention to the fact that children with hereditary syphilis usually present the picture of adenoids and are thus liable to have such operations performed on them even if no adenoid tissue is present. I know of no special case of either adenoid or tonsil operation on a syphilitic subject. Doubtless such cases have occurred but I failed to recognize them.

Occasionally, for no apparent reason, an inflammatory process will follow operations on the nose or throat. We have previously supposed that such an acute reaction was due to an ordinary infection. Doubtless, some of them were syphilitic patients and that disease was the primary cause of the postoperative inflammation. Here arises another phase in the situation which is new to me.

It appears that postoperative inflammation, either acute or semiacute, is not alone due to syphilitic infection but to a double infection. In very destructive lesions, it is not the spirochetes alone which destroy the tissues, but other pus organisms which are also present acting in conjunction with them. For example, in the event of an ulceration of the larynx or the cartilaginous septum, the spirochetes attack the structures to the extent of greatly reducing their vitality. Into this fertile field come other germs of a virulent nature, and an exceedingly destructive inflammation results. This theory is proved by the evidence of systemic infection which is often present. If the case were one of the spirochetes alone being active, temperature and symptoms of septic absorption would not be present. Doubtless, when the inflammation is chronic and not especially active, either the spirochetes are acting alone, or with other bacteria of a low-grade variety. In chronic sinus cases, probably, both spirochetes and low-grade pus organisms work together, as the semiacute inflammation is too great for the spirochetes alone and too slow a process for organisms of the streptococcus variety.

Whenever a postoperative inflammation develops in our field, it is well to have a Wassermann test made immediately. If the seat of inflammation is in the soft palate, larynx or septum, the destruction is so rapid that permanent injury will result very quickly. Twenty-four hours' delay in accurate diagnosis may result in great deformity or loss of function before the proper treatment is given. I know of one case in which both sides of the mucous membrane sloughed away in twenty-four hours from a postoperative syphilitic inflammation following a septum operation. This was a case of latent syphilis presenting no evidence of the disease prior to the operation, but a very active process set in immediately afterward. Salvarsan speedily overcame the inflammatory reaction, but was given too late to prevent a large perforation.

The profession still has much to learn about syphilis. Many marvelous cures have been made, so far as symptoms are concerned, but who can tell of one patient who is cured for all time? Cases are known which after having been treated with salvarsan gave negative Wassermann reactions and the patients were supposedly cured, yet later developed most serious nerve lesions. At present, the question of cure is unknown. Expert syphilographers feel hopeful regarding patients in whom proper treatment has been given in the primary or early secondary stages. A number of such individuals have had reinoculations of the disease, which naturally is the best possible indication of a permanent cure. It is doubtful, however, if reinoculation ever occurred in the tertiary stage of the disease.

Salvarsan alone is not to be relied on. Mercury must be used in conjunction with it over a long period of time. A negative Wassermann reaction, after treatment, by no means indicates that a cure has been effected. Every syphilitic patient must be under observation for a longer period of time than salvarsan has existed as a specific remedy before any definite opinion may be given as to the final outcome of the case. The proper diagnosis and treatment of syphilis is a specialty by itself. The average physician, surgeon or specialist has too little experience with the disease to care for patients who are so afflicted, and it is far too important a matter for half-way measures in the hands of physicians of limited experience with this particular disease. The rhinologist and laryngologist should learn as much as possible of the syphilitic lesions which develop in his daily work; but very few specialists in this field are good syphilographers; consequently they should, if possible, refer such patients to other physicians whose experience has fitted them to be well versed in this very important branch of medicine.

In closing, I wish to express my sincere thanks to Drs. Post, Sanborn, Whitney, Nichols, Howard, Cotton and Herman, all Boston physicians and surgeons of wide reputation in their special fields of work, for the information given me pertaining to this subject.

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## ABSTRACT OF DISCUSSION

Dr. Joseph C. Beck, Chicago: The most important point, perhaps, is that there should be a routine Wassermann test on every patient we are going to operate on and I am thankful Dr. Borden brought up this question. It is not difficult to have a routine Wassermann reaction at this time and by it we may be spared a good many of the complications that Dr. Borden has mentioned. With regard to tertiary syphilis and gumma, being so early as mentioned by Dr. Borden, I think that is not to be expected, as these changes take considerable time; for instance, endarteritis. The aid of the Roentgen ray, as Hickey of Detroit brought out in connection with disease of the tibia, is important. Even in the presence of a negative Wassermann, thickening is frequently found on the anterior portion of the tibia. The provocative test has been a disappointment to me in a large measure, though in some cases it may be a help. Last year, in our discussion, the point was made that we should be criticized for a perforation in the septum after a submucous operation, and I know of an instance in which a statement of that kind resulted in considerable trouble to a physician when the result may have been due to syphilis and not to any fault of surgery. With regard to transplants, I have had the same thing happen that Dr. Borden mentions; not with cartilage, but with bone; I never use cartilage because it becomes absorbed; but using the rib I had a condition of that kind.

Dr. W. W. Carter, New York: I wish strongly to endorse the point made by Dr. Borden with reference to the operations on bone in syphilitic subjects. I have had much experience in the transplantation of bone in the correction of nasal deformities and I have always endeavored to be absolutely certain that no active syphilis was left in the patient who was to be operated on. I have had in nearly all my cases two Wassermann tests made; but on three occasions, even after two Wassermann tests had proved, as much as a Wassermann can prove, that syphilis was absent, I had failure in transplantation of the rib for nasal deformity. The failure was not due to extraneous infection but to the effect of the syphilis on the tissues in which the transplant was made. The effect is very distinctive of syphilis at the location where the bone was placed. It did not show a purulent infection, but the tissues were very much thickened, discolored in a peculiar way, a sort of bluish red, and at first a serous bloody discharge came from the area where the transplant was placed. Subsequently this became infected and the transplant had to be removed. In each of these cases there was evidence in the rib, when I cut down on it, that the patient had been thoroughly saturated with syphilis. The rib was almost entirely cancellous tissue, and you will find in the old syphilitic cases that the bone has this appearance; the amount of compact tissue in the rib is very much diminished. I split the rib and scraped out the cancellous tissue and in this case the compact bone left was almost as thin as tissue paper. We should not do any bone operation in a case in which we are not absolutely certain that there is no syphilitic infection.

Dr. John O. Roe, Rochester, N. Y.: I agree with Dr. Borden in every particular, excepting the necessity of making a Wassermann test before all nasal operations are undertaken, which he so strongly advises. Such a test should certainly be made in all cases of suspected lues, or in all sinus operations, in which the cause of the trouble might be in doubt, but to lay down the hard and fast rule that it should be made in all cases before all simple operations, when there is no history or suspicion of a specific complication or association, would be not only unnecessary, but also might often give a critical or designing patient an opportunity to make trouble for the surgeon, in case something happened to interfere with the success of the operation. By way of illustration, if a perforation followed a submucous operation, when the cause of the deviation was unquestionably traumatic, or if unexpected complications should arise, the omission to make the test in compliance with a fixed rule, would again give the patient an opportunity to make trouble for the surgeon. There is, however, one class of cases in which a Wassermann is of great assistance and usually a necessity for the surgeon to determine the presence or absence of any active manifestation of a specific nature. This is in those cases of nasal deformity, attended with more or less destruction of tissue, the result of specific causes. Before undertaking any plastic operation in these cases for the correction of the deformities, it is important to determine the presence or absence of any activity of the constitutional disease.

**Dr. John F. Barnhill**, Indianapolis: I wish especially to commend that portion of Dr. Borden's paper which tells us that we should be cautious to learn all there is to know about our patients before we operate. I have seen two patients in the last ten years who have been seriously injured by operative procedures having been carried out while a syphilitic condition was present. One young lady completely lost her nose as a result of such an operation. I saw recently a child 13 years old on whom some tonsil work had been done. The child had lost pretty nearly all of the soft palate and a portion of the hard palate as the result of the operation, which was unwarranted because of the condition of the child. As a rule laryngologists are not so cautious in the preparation and examination of their patients as the general surgeon is. It is pretty certain that a patient can drop into almost any laryngologist's office and get a septum operated on or the tonsils removed, or almost any other thing done in the nose and throat on the same day he comes, provided the laryngologist has the time to do it. Dr. Borden's paper, I think, warns us very decidedly against this procedure. We have perhaps seen where we might have been benefited had we followed the advice he has now given us. He goes rather far, perhaps, in stating that latent syphilis is always, if I understand him right, a contra-indication to any sort of operative work in the nose and throat. If such were the case I am sure that all of us would have had many more calamities than we have had, because all must have frequently operated on these patients without any knowledge of the presence of a latent syphilis. I recently saw a case of well-marked tertiary syphilis in which several physicians of repute had repeatedly examined the throat without discovering the presence of a latent lues of the soft palate. This patient had apparently been well for a long time. I think this must be quite a common experience.

**Dr. Otto T. Freer**, Chicago: I agree with Dr. Roe that to ask for a Wassermann test before every nose operation would be an excessive and unreasonable demand. We should, however, as heretofore, always be on the watch for syphilis. I wish to call attention to the deceptive nature of the frequent mild and very slowly destructive forms of tertiary syphilis found in the nasal cavity and which contradict the common belief that tertiary syphilis in the nose is always a rapidly destructive disease. A common type of mild tertiary nasal disease is smooth infiltration of one side of the septum which exaggerates existing ridges or slight deflections into the appearance of a pronounced septal deviation with occlusion of the affected naris. The mucosa over the swelling is smooth, pink and deceptively normal in appearance. Minute inspection after adrenalin shrinkage, however, almost invariably discloses a small shallow ulcer or granulating patch, while the absence of a concavity of septal deviation in the other naris excludes a true deflection of the septum from the diagnosis. Two such patients have been sent to me for a submucous resection. Another form of mild hypertrophic tertiary syphilis is syphilitic hyperplasia of the inferior turbinate. It may so strikingly resemble the ordinary finely nodular true hypertrophy that it may be mistaken for a catarrhal product. Here, too, the presence of slight ulceration somewhere is usual and gives the clue to the nature of the affection. A third type of non-destructive tertiary syphilis is indolent ulceration of the vault of the nasopharynx. There is no clean-cut destructive ulcer such as text-books describe as typical, but instead a granulating, ill-defined superficial one resembling degenerating adenoid remnants in the adult. I have seen grave cerebral syphilis with paralysis of the abducens and facial nerves of one side, headaches and symptoms of the syphilitic pachymeningitis follow a syphilitic infiltration of the pharyngeal vault of this kind, and think that the diseased area was continuous with gummatous products above it in the middle cranial fossa, communication taking place through the foramina at the base of the skull. The three conditions I have described are not rare and should be watched for.

**Dr. E. J. Bernstein**, Kalamazoo, Mich.: I think we should thank Dr. Borden for calling our attention to the fact that we ought to make a Wassermann test very frequently, but it seems to me to be going too far to say that we should have a Wassermann in every one of our nasal operations, for, if that were true, and we go on record that such should be done, a lot of disastrous results may happen if it is not done, and it is practically impossible in every case. If it were absolutely true that we run such a great risk, what in the name of common sense would account for our good results that we have been having in our operations for the past ten or fifteen years? I recall a case in point in an actively syphilitic patient, a man with an ulcerated nose. I had a Wassermann test which was negative. He had occlusion of the nares, which I thought might be the cause of the ulcer, in view of the negative Wassermann. I did a submucous resection of the septum and got a perfect result. I have no doubt many could recall similar experiences.

**Dr. Henry Horn**, San Francisco: An interesting thing about this discussion has been the extremely pessimistic way in which every one has spoken of the Wassermann reaction as an aid. A series of experiments has been carried out by a neurologist in San Francisco, who has found, as have many others, that the Wassermann reaction is a help when positive, but, when negative, absolutely not to be depended on in a great proportion of cases. Very recently, a Wassermann reaction was taken on a certain patient in which the blood was divided into two parts and both specimens were sent to the same laboratory; one came back with a negative report and the other positive. A point I would make is that we are too apt to depend on the Wassermann reaction. I simply sound a note of warning in this respect. I would call attention to three manifestations of tertiary lues: first, a peculiar, dry, postnasal catarrh, which is a latent syphilitic manifestation; a dry, shiny catarrh which doesn't respond to treatment. In these cases if we employ salvarsan we get rapid results. Secondly, a hypertrophic postnasal catarrh, like a pharyngitis granulosa. Thirdly, a peculiar type of antrum trouble, a non-infectious type in which the antrum is filled with a clear, non-purulent mass, of a gelatinous consistency that is easily overlooked in the washings.

**Dr. Hudson Makuen**, Philadelphia: I report a case illustrating the importance and the unreliability of the Wassermann test. The patient, a beautiful child of 4 years, came to me with an aphasic condition. He developed speech normally at 2 years; could say such words as automobile, elevator, etc., but gradually lost speech entirely and at the the age of 4 was aphasic. He had been examined previously by several physicians and one had diagnosed his case as of muscular dystrophy. Not only was there aphasia, but the condition simulated juvenile insanity; the child had no concentration; paid no attention to anything brought before him. His father and mother came to town and I found that the father was in the first stages of paresis; all his muscles were affected. He was referred to the neurologist and it was decided to use the Wassermann test. I was told that it had been used six months before with negative results, but at this time he showed a positive reaction and that gave us a clew to the child's condition. We then had a Wassermann test on the child, and also included the mother. She was a nervous woman with various vague complaints, and she gave a positive reaction also, while the child gave a negative one. Notwithstanding that fact, we all concluded we were dealing with a syphilitic child. I mention this case to show that the one in which we should have expected a positive reaction gave us a negative one, while the mother who had no very marked symptoms gave a positive reaction.

**Dr. P. Schoonmaker**, New York: The Wassermann test would be of far greater value if its findings were more definite. While the double positive reaction shows a syphilitic infection, a negative does not assure us that the disease is not present. Only recently I had an adult with nasal obstruction due to a badly deflected septum requiring an operation for its correction. He was rather pale and anemic, the functions of the body were normal, history negative, and no symptoms of a systemic infection. I considered his condition due to the deflected septum causing poor aeration. A submucous resection was done, the result being excellent, there being no perforations or lacerations. The coaptation of parts was perfect. The nares were packed with aseptic gauze holding the parts well together; packing was removed in forty-eight hours; parts looked healthy. The patient did well for four days, on the fifth day the septal wall looked bad, and a day or two later the entire septal wall in site of operative field sloughed, leaving a large perforation. At this time a swelling in the nasopharynx was discovered. I was at a loss to account for this condition. Suspecting that latent syphilis might be present I had a Wassermann test made, which was negative. Nevertheless I put him on a mixed treatment and asked for consultation. Two specialists in rhinology saw him with me, and notwithstanding the history and negative Wassermann concurred in the opinion that the condition was one of tertiary syphilis and advised appropriate treatment. Under full doses of mercuric iodid and potassium iodid saturated solution, in increasing doses, up to 35 grains three times a day, there was rapid improvement in his condition. Wound healed nicely, the general health was better and case soon cleared up. The patient gained in weight and strength and said he never felt better.

Dr. Norval Pierce, Chicago: I have operated on syphilitic noses and have had just as good results as in the nonsyphilitic cases. I do not mean that we should operate in the presence of active syphilis. I had one patient, a young woman, unmarried, anemic, undoubtedly virtuous, who had recurrent hemorrhages from the nose. The epistaxis was due, as I thought, to a deflection of the septum; there was an erosion of the septum on one side. After the deviation was corrected everything went all right until about a week after the operation when she had a violent hemorrhage from the nose which came from some point well back and was very profuse. The nose was packed, the hemorrhage ceased and the patient recovered. A short time after that she came into the hands of Dr. Webster suffering from menorrhagia. He eventually performed a hysterectomy and found, on section of the uterus, a marked endarteritis. He informed me that there had been two Wassermann tests, both positive. I believe hemorrhage from the nose in children is suspicious. I have had recently two cases of ordinary epistaxis, in one of which, knowing the father to be a man of very liberal habits in his youth, I had a Wassermann done, and while he had no symptoms of syphilis, there was a marked positive reaction in the child. May not these be cases of syphilitic endarteritis very often? I think, however, it should not go forth from this section as our opinion that we should have a Wassermann test before every nasal operation.

Dr. L. W. Jessaman, Framingham, Mass.: I reported a case in a colored woman with sinus trouble seen three years ago, in which no history of syphilis could be obtained. A few days later the patient developed a swelling at the inner canthus of the right eye and a diagnosis of ethmoiditis was made. She was operated on, the ethmoid cells cleared out and the patient did well until some time afterward when she returned with a swelling at the lower margin of the left orbit, and another on the right side of the nose below the lower margin of the orbit. A diagnosis was then made of gumma, and the condition was very quickly relieved with the administration of mercury and potassium iodid.

Dr. Dunbar Roy, Atlanta: In my clinic in the South I have a great many negroes, and syphilitic manifestations in the nose and throat in this class are very prevalent. The northern men hardly know what these manifestations are until they have seen these cases in the South. You can find the lesions from the nose down to the epiglottis, but I rarely ever see a gummatous condition in the larynx. I never find the epiglottis entirely ulcerated away. Another point I would call attention to is to have a Wassermann test made in the cases of vasomotor rhinitis that come to us. In three out of ten such cases of engorgement of the nose, I have found a late secondary manifestation of syphilis. I always have a Wassermann made in these cases and it is surprising how they will yield to antisyphilitic treatment. I believe in a large number of these cases there is a syphilitic basis.

Dr. Emil Mayer, New York City: A woman came to see me with the story that she had been under the care of some of our best physicians and that they had diagnosed a condition of gall-bladder trouble. She wanted me to give her the address of another man to consult, and said, incidentally, "I have a little sore in my nose. Would you look at it while I am here?" I made a nasal examination and said, "I think you will find the whole cause of your trouble due to this condition in the nose." I sent her for a Wassermann test and, as I suspected, it was positive.

Dr. Joseph C. Beck, Chicago: I hope I did not give the impression that I think it is necessary to have a Wassermann test in every case of nose or throat operation; only in suspicious cases in which the findings are not definite of lues.

Dr. C. R. C. Borden, Boston: Someone has taken the ground that I overestimate the importance of latent syphilis. Last week at the meeting of the Laryngological, Otological and Rhinological Society I was asked how I dared etherize a patient who had acute congestion of the kidneys. I would have much less fear of such a kidney complication than I would in operating on a patient with latent syphilis in a delicate organ of special sense. In answer to Dr. Bernstein, doubtless a great many nose and throat operations have been performed with splendid results with no trouble from active or latent syphilis. On the other hand, serious complications have been known to follow in a sufficient number of cases as a result of syphilis to make it worth while to use proper precautions in all serious cases. I hope I have not given the impression that I have much faith in the Wassermann reaction, for I have not. I went through a great deal of trouble to get the latest ideas of the leading Boston syphilographers on the subject under discussion in order that I might present the other methods of diagnosis which are available for syphilis. Taking the subject as a whole, I appreciate the fact that it is not possible to have a routine Wassermann in every case, but all the larger hospitals are rapidly coming to it. We must consider that syphilis is a wide-spread disease and one which is the real cause underlying many diseased conditions in every field of medicine. Of course, in private practice, it would be impossible to have a routine Wassermann in every case, but in operations which are very destructive or mutilating a Wassermann test should always be done first. In fact, in my own experience, the procedure of the Wassermann reaction has more than once made such operations unnecessary.

# A NEW METHOD OF REFLEX ELICITATION

## PRELIMINARY REPORT *

WALTER B. SWIFT, M.D.
BOSTON

After completing four or five researches on different phases of reflex action during which some two thousand observations were made, and after seeing several diagnoses made wrongly on what seemed to be misinterpreted or insufficient reflex data, I came to the conclusion that there was a crying need of a more efficient mode of reflex elicitation available for application in exceptional cases.

I tried first to improve present methods of elicitation. To that end I visited Jendrassik in Budapest and obtained personal instruction as to his method of applying the hand-grasp. I put this into practice in many cases at the Boston City Hospital and when I found his technic an improvement over our own I

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* From the Neurological Department of Boston City Hospital, Service of Prof. John Jenks Thomas.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

published the results.[1] Innumerable attempts to improve old methods met with failure. Then I began to search for some entirely new avenue of approach. I felt the need of another method not only for its worth in clinical routine examination, but also to enhance the value of my researches in reference to reflex frequency,[2] and other reflex propositions not as yet published.

Therefore a series of reflexes were tried during and after the passage of the electric currents—galvanic and faradic. My sincere appreciation is due to Dr. John J. Thomas for opportunity to carry on this research at the Boston City Hospital. Minutely the problem was as follows:

### THE PROBLEM

Galvanism and faradism, strong and weak currents, were passed in cases of normal, exaggerated, pathologic and absent reflexes. Although this research is still in process, sufficient positive data of value have been obtained to warrant the presentation at this time of several new facts in the form of a preliminary report.

A. I find that with weak faradic current, *normal reflexes* change as follows:

The Triceps: Unchanged in 3 cases. Made more pronounced in 3 cases.
Wrist: Unchanged in 2 cases. More pronounced 2 cases.
Radial: Unchanged 3 cases.
Biceps: Unchanged 1 case. More pronounced 2 cases.
Knee-Jerk: Unchanged in 4 cases. More pronounced in 2 cases.
Achilles: Unchanged 2 cases. More pronounced 2 cases.
Plantar: Unchanged 2 cases.

B. I find that with weak faradic current, exaggerated reflexes change as follows:

Triceps, Wrist, Radial, Biceps: Unchanged 1 case each.
Knee-Jerk: More pronounced exaggeration in 3 cases.
Achilles: Unchanged 1 case.

One case showed leg clonus on patella tap, when without electricity both knee-jerks were merely exaggerated.

C. With weak faradic current, not enough cases were tried to tabulate any pathologic reflexes.

D. I find that with mild faradic current, absent reflexes changed as follows:

In one case of multiple neuritis, knee-jerk pronounced absent by every other method of reenforcement clearly elicited with weak faradic current and just after the current had passed.

In one case of anterior poliomyelitis (?) right Achilles pronounced absent by Dr. Thomas with usual methods of reenforcement. Found later to be absent because tired out. Obtained, however, after being tired out during the passage of a mild faradic current. Came about every other trial. Also found occasionally present after the current had passed and was again cut off. (Dr. Daly's observation.)

In one case of paresthesia of hand, knee-jerk reported absent on both sides with all other methods of reenforcement but obtained in mild faradic current on both sides. In the same case the right Achilles pronounced absent but elicited with a mild faradic current, a mild galvanic current, and a strong galvanic current.

Had there been *but one positive case,* had electricity only once elicited a reflex not obtainable by any other method of elicitation, it would have been worth reporting. But here are several.

### CONCLUSIONS FROM THESE FINDINGS

From some 46 tests of the reflexes during the passage of the electric current, including normal, exaggerated, pathologic and absent reflexes, the phenomena show the following data:

1. Normal reflexes are made more active in about half the cases examined.
2. Exaggerated reflexes are unchanged in the arm, made more pronounced in the leg with exception of the Achilles.
3. Not enough pathologic reflexes were tried to warrant any conclusion.
4. Absent reflexes are generally unaffected but are sometimes elicited with this method when all other methods have failed. Applicable to the knee-jerk and Achilles.

### COMMENT

That the electric current enhances the normal knee-jerk has no clinical value; also that during the current exaggerated reflexes become more exaggerated is of no great value. Whatever changes may be found in pathologic reflexes, and I predict here an increase, may contribute little. The fact of indirect value that they contribute to the situation is the general effect of electricity on general reflex action—the action of enhancing them—a fact that makes the findings under absent reflexes of more weight than if the opposite had been true. For if no increase of reflex action had been found in normal and exaggerated reflexes, we would be inclined to doubt such findings under absent reflexes, but finding they are increased in action when normal, and when exaggerated, we are still more inclined to expect that same action when the reflexes are absent by usual methods.

This finding of enhancement of them among normal and exaggerated reflexes lends momentum to the findings while the current is passing through otherwise absent reflexes.

Among absent reflexes the current occasionally elicits a reflex otherwise unobtainable. This is surely of some clinical value as a new and improved method of reflex elicitation.

Granted, many absent reflexes are pathologically absent and then no current can elicit them—as for example I have found in tabes—but there exist *border-line cases*—even cases in which absent or present may turn a diagnosis or markedly change a prognosis—and it is in these latent reflexes (that occasionally are so important to find), that this new method plays a service to neurologic routine examination in succeeding in demonstrating their elicitation.

### SUMMARY AND CLINICAL VALUE

Examination of over forty cases of reflexes during and some after (Daly) the passage of the electric current demonstrates that the general effect of electricity on the reflexes is that of a reenforcement—which finds its special clinical value by elicitation of some of the absent reflexes unobtainable by any other method. I therefore claim a new method of reflex reenforcement of sufficient value to be included among other routine and neurologic examination methods in the following order: pendulum leg, diversion of mental attention, constant movement during stimulus, the Jendrassik hand-grasp, and finally, when all others fail, the electrical reenforcement.

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**Medical History.**—Old sciences are unraveled like old stockings, by beginning at the foot.—Swift.

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[1] Swift, Walter B.: Studies in Neurological Technique No. 1: The Points in Jendrassik's Method of Eliciting the Patella Reflex, Alienist and Neurologist, 1913, xxxiv, No. 3.

[2] Swift, Walter B.: Reflex Frequency and Its Clinical Value, Jour. Nerv. and Ment. Dis., 1913, xl, No. 9.

## ABSTRACT OF DISCUSSION

Dr. J. T. Fisher, Los Angeles: Dr. Swift is to be congratulated on discovering a method of eliciting a lost reflex. I would like to have him explain a little more in detail the technic of the procedure, and would ask, in addition, if we are to understand that when the knee-jerk is gone, lost forever, as we see in cases of well-advanced tabes, he can reproduce that reflex by the method which he uses, or whether he has reference merely to the lost reflex which sometimes does occur in functional cases due to overfatigue of the reflex arc by the ordinary method of taking a reflex.

Dr. William W. Graves, St. Louis: We need, of course, anything in clinical work which will aid in determining the functional activity of the nervous system, and among its activities, those pertaining to reflexes are of the first order. Until it is a uniform practice to guard against the pitfalls in the use of reflexes, we shall not be able to use all of the refinements in examinations. I did not understand whether it was during the attempt to elicit a given reflex—the knee-jerk, for instance—that the electric current was passed, and whether it was assumed that the stimulation served as a means of increasing the excitability of the reflex arcs, or whether the use of the current was merely a means of suddenly diverting the patient's attention. I would ask Dr. Swift to explain these points in closing.

Dr. Walter B. Swift, Boston: Dr. Fisher asked about the technic in eliciting the knee-jerk. I put one electrode under the leg of a sitting patient and the other one on the calf. In eliciting the Achilles tendon reflex I put one electrode on the calf and one on the sole of the foot. I find it does not make any difference which electrode is put above and which one below. Dr. Fisher also asked about the type of the reflex that I attempted to bring out. I agree with the suggestion made by Dr. Fisher that the absolute pathologically broken arc can not be revived in its function, and that the lost reflexes of tabes and other pathologic lesions when the arc, either of the motor side or of the sensory side, is entirely gone, cannot be brought out by this method. This will perhaps also answer Dr. Graves' question: It is applicable in border-line cases; that is, those in which other methods have failed to elicit a reflex, and in an arc that is intact. In cases in which our diagnosis turns more or less on the absence or presence of a reflex, and in which it is found impossible to elicit those reflexes by our usual methods of reinforcement, this is a final resort. I would not by any means propose that this should be a matter of usual routine in neurologic examinations. I think that is entirely out of the question; but I do think that it is of value in rare cases and in border-line cases when other methods of elicitation have failed, and that I have found in the clinic of the Boston City Hospital in these cases that I have reported. Dr. Graves asked about the effect of the electricity. The reflex is taken with the current on; that is, the current is started and the reflex is taken during the passage of the current. He also asked whether it was the effect of the current that elicited the reflex, or the diversion of the attention. From the fact that the reflex has also been obtained after the current has passed and after the electrodes have been removed I would be inclined to give the credit to the passage of the electricity, especially as these cases have failed to show reflexes when other methods of diversion of the attention have been employed.

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**The Duty of Research in the University.**—Wonderful as were the isolated achievements of the great discoverers in medicine in the early centuries, the great continuous advance in medicine during the past eighty years resulted from organized laboratory effort based on the principle of exact experimental methods; and it is the duty of the university so to organize its laboratories and hospitals that this advance of medicine by research may continue, side by side with teaching, as a university function of benefit to students and faculty as well as to the state and the general public welfare, and thus as an aid to the advancement of civilization.—Richard M. Pearce.

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# FOUR CASES OF SUDDEN DEATH IN A SILO

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AND
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In view of the constantly increasing importance of the silo for the preservation of fodder on the American farm, it seems proper to draw widespread attention to the danger of fatal asphyxia which may occur to workers in filling and emptying silos. There are no reported cases on record of fatalities under such circumstances so far as we have been able to learn after a careful search of the literature. Agricultural bulletins[1] warn of the danger of carbon dioxid asphyxia unless certain precautions are taken. A sudden death here and there has unquestionably been laid to heart failure, apoplexy and the like.

Since the first American silo was built by Dr. Manly Miles,[2] in 1875, the principle has undergone widespread development throughout the country so that the dangers herein cited are liable to beset a large number of persons. The danger from the accumulation of heavy gases in the old type of pit-silos dug in the ground can be easily appreciated, but the instances in question took place in a modern upground metal silo, built about 40 feet high, and free from surroundings which might interfere with ventilation.

At the Athens (Ohio) State Hospital, at about 7 o'clock on the morning of Sept. 19, 1914, four members of a squad of six men ascended the ladder on the outside of the silo in question to an open door about 12 feet from the top, and jumped in, one after the other, on the silage, the level of which was about 6 feet below the doorway. Within five minutes, as reported, the next two men who ascended shouted down that the first four looked as though they were dead. A large force of workers who were at hand immediately ascended the silo, and opening a lower door which was just above the level of the silage, hurriedly removed the unconscious forms, and, in spite of the immediate arrival of four or five physicians from the institution, all attempts at resuscitation failed.

The unfortunate ones, one of whom was 31 years old, and the others 56, 56 and 67, were "trusties" at the institution, and all had been engaged for several years on the institutional farm, and had helped in filling silos for the past two or three years. During the two weeks previous they had helped to fill two large wooden silos nearby, and during the three days previous had helped with the filling of the metal silo in question. Their work was to tramp down the ensilage as it was delivered from the blowpipe. On this morning the machine had not yet begun operations, and apparently the men sat down or lay down on the silage to wait.

To expedite the removal of the victims they had to be let down head first within the 3½-foot chute which surrounds the ladder. In this manner they were passed down from helper to helper to the brickpaved dairy-yard below. All were cyanotic, and respiratory movements had ceased, but it was thought that in three the heart action was still present when resuscitation efforts began. In a few minutes, however, all became pallid, and in spite of an hour's efforts on each one with artificial respiration and stimulants, none revived.

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[1] Babcock, S. M., and Russell, H. L.: Causes Operative in the Production of Silage, 17th Ann. Rep., Wisconsin Agric. Expt. Sta., 1900, p. 131. Crisp, H. L., and Patterson, H. J.: Silos and Silage in Maryland, Bull. 129, Maryland Agric. Expt. Sta., July, 1908, p. 10. Erf, Oscar: The Silo for the Dairy, Bull. Agric. Coll., Farmers' Reading Course, Vol. 2, No. 4, Ohio State Univ., p. 3.

[2] Year Book, U. S. Dept. Agric., 1899, p. 616.

On the evening of the same day we arrived at the institution and necropsies were performed on two of the bodies with significant anatomic findings (which were exactly similar in both cases) as follows: A black fluid condition of the blood which flowed persistently from practically all places of incision, there being an entire absence of clots; marked cyanosis of the lungs and mucous membranes of the tracheae and bronchi. The same was true of the livers and kidneys. There was also marked capillary injection of the brains and intestines. Aside from these findings the tissues of the bodies showed no recent changes worthy of comment; especially there were no pathologic conditions of the hearts or vessels to be noted.

The next morning about 7 o'clock we visited the silo in question, where conditions had been allowed to remain as on the previous morning, except that before orders could be issued a couple of feet more of silage had been added. This had apparently sunk 1 foot during the night, leaving about 5 feet up to the bottom of the door in question. However, according to the manner in which the gases are generated (see below), about 10 or 12 feet should have been added, more nearly to reproduce the amount of gas to which the workmen had undoubtedly been subjected. The weather on the two days was practically unchanged, being slightly cool at night and warm during the day. The silage consisted of fresh, rather finely cut, immature corn. Light within the silo was good, owing to open doorways above and in the roof. The temperature seemed about 10 F. higher than that of the atmosphere without. A more peaceful and inviting scene could not be imagined than the warm, pleasant smelling green silage within. With a few moments to spare, the most natural thing for workmen to do would be to sit down or lie down on the silage.

We dropped a guinea-pig within, which, in thirty seconds, toppled over unconscious after a brief exhibit of respiratory difficulty. A rabbit was next dropped down on the silage. It took a few steps, showed some dyspnea and dropped over on its side unconscious at the end of sixty seconds. Next a large, slender collie dog was lowered down and in just two and three quarter minutes it likewise fell over unconscious. The oncome of unconsciousness in all cases was very sudden. The animals, after unconsciousness, rapidly turned bluish about the nose, lips, tongue (and ears in the case of the rabbit). The guinea-pig was dead in ten minutes, the rabbit at the end of forty-two minutes, while the dog was removed at the end of thirty-three minutes, when abdominal and chest movements had ceased, although drawing back of the corners of the cheeks was still present. Within a few minutes on the outside, the dog, which had been let down by its tail, showed signs of reviving; at the end of six minutes it appeared partly conscious, and thereafter rapidly recovered without any efforts at resuscitation having been tried. Necropsies on the guinea-pig and rabbit revealed conditions entirely similar to those described above in the cases of the human subjects.

Next a bunch of matches, lowered on a pitchfork tine, snuffed out at a level of about 18 inches above the silage. A lantern behaved similarly, and the level of the gas could be estimated within half an inch by means of the effect on the lantern flame. At this point a gallon bottle of water was lowered, inverted, and a sample of the gas thus collected.

Another half-mongrel dog of medium size was dropped in, but unlike the collie, which sniffed around over the surface of the silage, this dog kept its nose well elevated and showed very few symptoms. At this point one of the investigators jumped in and lowered his head to the top of the silage. A most startling, rather pungent, warm and slightly alcoholic smelling gas caused the investigator to retreat hastily to the open door above. The lower door (just above the silage) was then opened, through which the second investigator detected the same gaseous odor, which irritated the mucous membranes and the throat considerably, and the effects of which could be felt for fifteen or twenty minutes afterward. There was no odor suggestive of bitter almonds, garlic or rotten eggs (hydrocyanic acid, hydrogen arsenid, or hydrogen sulphid). A few more experiences convinced the investigators, however, that one could rapidly become used to the at first unpleasant effects of the gas, and that to workers customarily employed about silos it might not be considered of any moment.

Experiments with animals and lights were made in the two neighboring silos, which had been filled with a riper and dryer corn fodder, but all resulted negatively.

The analyses of the gases collected, which were made by Prof. William L. Evans, of the Department of Chemistry, Ohio State University, showed as follows:

A. Sample from the silo in which the deaths occurred:

| Gas | First Estimate Per Cent. | Second Estimate Per Cent. |
|---|---|---|
| Carbon dioxid...... | 38.0 | 38.3 |
| Oxygen .............. | 13.5 | 14.0 |
| Nitrogen ........... | 48.5 | 47.7 |

No test could be obtained for carbon monoxid, ammonia, hydrocyanic acid or methane.

B. Sample from one of the neighboring silos (filled, however, the week before):

| Gas | First Estimate Per Cent. | Second Estimate Per Cent. |
|---|---|---|
| Carbon dioxid...... | .20 | 0.24 |
| Oxygen ........... | 20.5 | 20.7 |
| Nitrogen ........... | 79.39 | 79.06 |

Likewise no test could be obtained for ammonia; hydrocyanic acid or methane. (Nitrogen was determined by differences in both cases.

According to Rambousek,[3] 10 per cent. of carbon dioxid in the air causes asphyxia, which is usually sudden.

Some peculiar features obtain in silos. The initial *heating* of silage is described[4] as due to the direct respiration of plant cells, increased by the cutting of plant tissues, by intramolecular respiration of ensiled material (the chief factor), while (in a tight silo such as this was) the factor of bacterial and mold action is practically negligible.

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[3] Rambousek, J.: Industrial Poisoning, translated by T. M. Legge, 1913, p. 201.

[4] Babcock, S. M., and Russell, H. L.: Causes Operative in the Production of Silage, p. 130.

> The *composition*[1] of the air at time of filling is of course the same as the normal atmosphere, but immediately after the cut fodder is ensiled, absorption of oxygen by the plant tissues begins and continues until all of the free oxygen in the air spaces is consumed by the respiratory processes of the plant. This direct absorption of oxygen is nearly, but not quite, counterbalanced by the evolution of carbon dioxid, as a portion of the oxygen combines to form other by-products. An analysis of the air even within twenty-four hours often shows no free oxygen. The nitrogen of the air is unaffected by these plant processes.
>
> Within a short time gas begins to be given off, and continues at an increasing rate for a day or so, then gradually diminishes. The gas so evolved is largely $CO_2$, but is mixed with the residual nitrogen of the contained air. This $CO_2$ is the result of intramolecular rather than direct respiratory processes, and as the oxygen required for this change is derived from the tissues of the plant, the volume of gas in the silo is increased by the amount of $CO_2$ formed. The evolved $CO_2$ is therefore a measure of the intramolecular respiration. The evolution of this gas marks an actual and unavoidable loss in the organic matter of silage. This source is operative so long as life exists in the plant cells, but when the cells die, gas from this source is no longer given off. . . .
>
> When the gases of a silo are measured, either by volume or by absorption of the $CO_2$, the production of gas is found to be very rapid for the first few days, and then to diminish quickly in a manner somewhat comparable to the evolution of heat previously referred to. It soon reaches (two weeks or so) a rate that continues with slight fluctuations for some months. Such a rate of gas evolution can only be intelligently interpreted by assuming that most, at least, of the $CO_2$ evolved is the result of processes inherent to the plant cell, and not to fermentative action set up by organisms which must have developed subsequent to the ensiling of the fodder.

In fact, it is the presence[5] of this carbon dioxid gas which is the principal perserving agent in the silage. The escape of this gas from the silo will immediately start decay. Usually mold does not affect more than the mere surface of the silage and this acts as a seal to prevent the air from decaying the silage to a greater depth. The amount of carbon dioxid developed[6] in a silo filled with immature corn may reach 75 per cent. of the total gases present, the chief remaining gas being the nitrogen of the air.

"The conditions favorable for a maximum evolution of carbon dioxid is an immature corn cut into fine pieces and placed in the silo at intervals"[7] (as the daily filling with nightly interruptions).

Fatal asphyxia from carbon dioxid has been reported under the following somewhat similar conditions: among vintners, distillers, brewers, yeast makers, in the holds of grain vessels and in peat pits. But a very great danger exists also in every silo unless precautions are taken. These consist in keeping the doors immediately above the level of the silage open, or in having unhinged doors which fall in as the silage settles below them, while the absence of a roof (which is said not to be necessary) would permit prevailing winds to draw off gases by suction action. The gas can be driven out easily by using an open umbrella, bunch of hay, or leafy branch of a tree to promote diffusion. When any doubt exists, the effects on a lantern flame should be noted.

In case of accident, the Meltzer apparatus, recommended by the Committee on Resuscitation from Mine Gases,[8] would appear to be the best of the mechanical devices available.[9]

We desire to thank Dr. O. O. Fordyce, superintendent of the Athens State Hospital, his staff, and others for their kindly efforts in facilitating investigations. A complete report of this investigation including necropsy findings will be given in the *Monthly Bulletin* of the Ohio State Board of Health for October, 1914.

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# KALA-AZAR

## A CASE REPORT FROM CHINA

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The economic significance and pathologic and clinical course of kala-azar have been studied and described by many observers in Africa, India and the Mediterranean littoral. Its recognition in China, however, is of comparatively recent date, and data are yet insufficient to estimate its economic significance there. It is safe to assume that the disease will be found as serious a problem in China as in other countries where it is endemic. For the present it is most essential that complete and reliable data be secured on the question of prevalence and distribution of kala-azar in China. As the infective agent of the disease is known, and as it is transmitted by bedbugs, rats and perhaps other vermin, and finally as the endemic section of China corresponds in latitude and somewhat in climate to a considerable part of the United States, studies of kala-azar in China may prove to have a direct value in sanitary and quarantine administration of the United States in the future. It is not the purpose of this report to review the clinical or natural history of kala-azar, or to present descriptions which are easily accessible in standard texts. It is desired to report one case outside the endemic zone established for China by Cochran, and to call attention to a disease which in the future may be of practical as well as of academic interest to American physicians.

After as complete a survey as could be made, Cochran[1] mapped out as the endemic area for China the section bounded on the south by the Yangtze River, and including that part of the provinces of Kiangsu, Anhwei and Hupeh lying north of the river, the eastern half of Hupeh and Honan, the southern half of Chihli including Peking, and all of Shantung. Reference to a map will show the relation of this area in latitude to the United States. A considerable similarity also exists in the matter of climate. Outside of the area indicated, Cochran obtained but two positive reports, from Wuchang and Kiukiang, respectively, which are on the south bank of the Yangtze.

The present case is reported from Changsha, the capital of Hunan, 200 miles south and west from Hankow and Wuchang, on the Siang River, which is a tributary of the Yangtze.

The patient, an unmarried Chinese man of 28 years, was admitted to the medical service of the Red Cross Hospital, Feb. 26, 1914, where he remained until his death, April 20, 1914. He was a boatman by trade, a native of Yuen Kiang on the upper Yangtze River near Ichang. He came to Changsha less than a year before his admission to the hospital. His father, an opium addict, died of dysentery at the age of 42. His mother survived him. Of four brothers all were living and well. Two years before, one of his fellow boatmen developed a disease similar to his own and later a second boatman died with symptoms such as the patient presented on admission.

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[5] Erf, Oscar: The Silo for the Dairy, pp. 13 and 27.

[6] King, F. H.: Influence of Close Packing of Corn in the Silo, etc., 18th Ann. Rep., Wisconsin Agric. Sta., 1901, p. 202.

[7] Quoted from letter under date of Sept. 30, 1914, from R. H. Shaw, chemist, Bureau of Animal Husbandry, Dairy Division, Washington, D. C.

[8] Technical Paper No. 77, U. S. Bureau of Mines, August, 1914.

[9] Resuscitation from Mine Gases, editorial, The Journal A. M. A., Sept. 26, 1914, p. 1117.

[1] Cochran: Jour. London School Trop. Med., 1912, ii, Part 3, p. 179.

Except for measles in childhood, the patient was always in excellent health previous to the onset of the condition for which he sought hospital relief. This illness began five years before with severe abdominal pain, diarrhea and blood-streaked stools. The condition had persisted with periods of exacerbation and amelioration. His complaints on admission were anasarca, most marked in the peritoneum, shortness of breath and general debility. Physical examination showed a young man of medium height, very emaciated, markedly icteric, with a dry, elastic, hot skin. There were extreme abdominal distention and umbilical protrusion. The icterus was notably greenish and of universal distribution. The pulse was 100, soft, weak and regular. The fingers were somewhat clubbed and cyanosed, and the capillary circulation was poor. The conjunctivae were greenish-yellow.

The mouth and throat were normal. The deep cervical, axillary, inguinal and epitrochlear glands were easily palpable and of moderate hardness. The neck was severely emaciated and a venous pulse was observed in both external jugulars. In the lungs the left apex was dull, with high-pitched respiration, prolonged expiration, increased vocal fremitus, and crepitant râles. The right apex showed slight dulness, high-pitched respiration, prolonged expiration and crepitant râles after coughing. Elsewhere in the lungs the respiration inclined to the bronchial type. Breath-sounds were lost anteriorly and posteriorly at the level of the sixth rib. Below this point posteriorly there was flatness with deep tympany on heavy percussion.

The apex-beat was visible in the third left interspace, 3½ inches from the median line. In character it was heaving and diffuse. Palpation corroborated the location. A blowing, rather harsh systolic murmur was heard at the apex and transmitted to the axilla. A very harsh systolic murmur was heard also at the aortic and pulmonary areas. The valvular and muscular quality was fairly good.

The abdomen was enormously distended, tympanitic between the lineae semilunares, and flat outside these lines. The spleen was enlarged a hand's breadth below the costal margin. The liver was not enlarged. The lower extremities, especially the feet, were very edematous. Reflexes were normal.

The sexual organs showed a peculiar hermaphroditic arrangement, which is worthy of report, although it had no bearing on the disease in question. The penis was infantile, more resembling a hypertrophied clitoris. The urethra was patent to the extremity of the penis, but there was present also a hypospadias with a comparatively small aperture at the bulbous portion of the urethra. Urination took place both through the hypospadiac aperture and through the penile urethra, sometimes concurrently, sometimes interchangeably. A rudimentary vaginal pouch was present, with well-marked labia majora, rudimentary labia minora and with its floor slightly deeper than the normal location of the hymen. The testicles were small, soft, and retracted into the inguinal canals, from which they could be drawn down into the labia majora. The inability at the time the patient died to secure a necropsy prevented examination of the internal structure and histologic examination of the testicles. The pubic hair was not abundant and covered a triangular area. No hair was on the face or in the axillae. The mammae were typically masculine. The expression, voice and general demeanor were feminine.

Death occurred in toxemic coma after an illness of five years and after two months in the hospital. The icterus steadily increased and during the last month the splenic tumor enlarged and became markedly tender. At no time was hepatic enlargement observed. The ascites, icterus and lack of hepatic hypertrophy indicated rather a considerable degree of cirrhotic contraction. The temperature remained fairly normal with an occasional rise to 38 degrees. The pulse ranged between 70 and 90, and the respiration from 20 to 25.

Clinical laboratory reports were as follows: Examination of feces on admission showed a whitish semisolid specimen, with no mucus or blood. *Ankylostoma* ova were present. Subsequent examinations were the same with the addition at times of a small amount of blood. Except for an occasional trace of albumin, the urine was normal. Blood examination, March 10, six weeks before death, showed 3,800,000 red cells, 70 per cent. hemoglobin, (color index 0.94), white blood-cells 3,200. The ratio of white to red cells was 1:1,187. Smears stained by the Leishman modification of the Romanowski method, out of 200 cells counted, gave a differential white cell-count of polymorphonuclears 60 per cent., large lymphocytes 15 per cent., small lymphocytes 10 per cent., eosinophils 1 per cent., mononuclear and transitional forms 14 per cent. The stained red blood-cells were somewhat pale, and included many poikilocytes, macrocytes and microcytes. The *Leishmania donovani* was found, two in one leukocyte. A blood examination one month before death showed a further reduction of red cells to 2,300,000, hemoglobin 70 per cent., white cells 3,000. The differential count was unchanged. The red cells, however, showed a progressive anemia, having more macrocytes and microcytes, numerous poikilocytes and many normoblasts, as well as irregular staining and granular degeneration.

According to the method recommended by Cochran, superficial lymph-nodes were twice excised from the inguinal regions under local anesthesia, and smears from them examined for *Leishmania*. In both cases numerous suspicious and atypical bodies were found in the lymph-cells, but no clear-cut, positive picture was obtained. This is perhaps to be explained by the advanced stage which the disease had attained.

Treatment was symptomatic throughout, except that the *Ankylostoma* was eliminated with thymol. The peritoneum was tapped three times and 10,300, 10,000 and 10,500 c.c. of ascitic fluid, respectively, were withdrawn. Death occurred after thirty-six hours of delirium and coma, with extreme jaundice and myocardial failure.

The diagnosis of kala-azar in this case is based on the finding of two of the *Leishmania donovani* in a leukocyte of the peripheral blood, and is supported by the occurrence of numerous atypical bodies in lymphatic gland-cells obtained a few weeks before death, by the clinical history and appearance of the patient, by the blood-picture and by the elimination of other possible causative agents for the disease. The duration of the disease, the patient's age, and his knowledge of other similar cases are in correspondence to the diagnosis. It is to be noted that this case originated near Ichang on the Upper Yangtze River, and reached its development at Changsha, both points well out of the area which has to date been considered endemic for China. The pulmonary lesions represented an intercurrent affection due essentially to the patient's chronic illness with its depleting and exsanguinating course.

As already mentioned, kala-azar is found to flourish in China in an area corresponding in latitude and to a great degree in climate with a considerable portion of the United States. As the disease is carried by bedbugs and perhaps other vermin, its introduction into the United States might at any time prove serious, and its spread might be rapid. Suspicious cases are easily recognized clinically by the splenic tumor and blood-picture, and all such cases should be examined for the presence of the *Leishmania* on which valid diagnosis rests.

The Changsha Yale Hospital.

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**Caution.**—For truth itself has not the privilege to be spoken at all times and in all sorts.—Montaigne.

# THE HISTORY OF THE FIRST MILK DEPOT OR GOUTTES DE LAIT WITH CONSULTATIONS IN AMERICA*

HENRY KOPLIK, M.D.
NEW YORK

When I returned from my studies abroad in 1887 I was appointed attending physician to the Good Samaritan Dispensary, New York City. I had control of the service in diseases of children, and at this time there was an undercurrent of feeling that the treatment of children in dispensaries needed the introduction of new ideas as compared to what was then in vogue. In all dispensaries or outdoor clinics in children, then as now, the mass of cases have among them as a large quotient the disorders of the gastro-intestinal tract. It was customary then, as often now, to treat these cases in a most routine manner. The infant was prescribed some mixture, and the mother sent away with some instructions and allowed to find the best way she could of carrying out the directions given her. She might remember some and forget others which were of vital importance. It mattered very little. I felt that this was entirely unsatisfactory. As we believed, then as now, that the food of an infant was of first moment in its recovery, I determined to place the food at the disposal of the infant, leaving the administration of drugs to take a secondary place. With this idea in view there arose in 1889, the first milk depot or *gouttes de lait* in my dispensary. At first I put the milk up in separate bottles and sterilized it. The apparatus was exceedingly simple. After sterilization the milk was placed in the keeping of the apothecary of the dispensary, then the Eastern Dispensary, and was given to the patients only on prescription. The sick infant was first seen by me, and then the mother received her directions and milk, and was told how to use it—to give it whole or to dilute it with barley gruel in definite proportions. After having given this to the mother she was directed to bring the infant at regular intervals; it was weighed, watched and treated. This simple innovation seemed to create quite a stir among the mothers, and met with ridicule and opposition from the unthinking. The results, however, began to attract attention. The sterilized milk in separate bottles, each bottle to be given at certain intervals to the child, was looked on by my mother-patients as something short of marvelous. The mothers and babies flocked to my dispensary. In addition physicians came to watch the effect and the manner of this innovation in the treatment of gastro-intestinal disorders of infancy. So successful was this departure that in May, 1890, I was persuaded to show my methods and apparatus, and describe my milk depot, then a year in existence, before the New York County Medical Society. I remember well the rather distant and patronizing attitude of my audience. A well-known pediatrist at this meeting remarked that the milk depot could never become popular on account of the labor of washing the bottles, and therefore it must perforce be very limited in its application. I persevered, however, and Nov. 12, 1890, I made a communication[1] to the New York Academy of Medicine, Pediatric Section, of my work in establishing my idea of milk depots or dispensaries for the feeding and treatment of infant intestinal disorders. In this paper I pointed out that medical supervision must go hand in hand with the administration of milk and food. The milk which I utilized was the best I could obtain at the time, and being without means to supply milk from my own farm, and certified milk being unavailable, I went into the open market and bought the best bottled milk, sterilized it in separate portions, and thus did the very best I could for my patients. This work was not without results. I felt that the patients who came to be treated were so troubled and often so ignorant that the milk must be placed in their hands ready for the infant, and all they would have to do was to give it at proper intervals. Thus the first milk depot, *gouttes de lait,* in connection with medical advice (consultations) became an established fact in America. When the old Eastern Dispensary moved into new quarters and assumed the name of the Good Samaritan Dispensary, a lay committee furnished funds to enable me to extend the field of usefulness of this new idea of milk depots. I then devised new apparatus, and in a short time, with a large staff of helpers, we were enabled to extend our work materially, and feed large numbers, sometimes two hundred infants daily, with milk put up in formulas in separate nursing-portions. This was in 1891. The facilities of thus treating infants with intestinal disturbances was not limited to dispensary patients, but physicians were invited to send to the milk depot and have certain formulas prepared for their patients. During all this time the campaign to further this method of caring for sick and well infants received most decided opposition, as every new departure will, and also great encouragement. Infants in my service were weighed, watched, and fed; those from other physicians were not controlled. Thus the first milk depot, *gouttes de lait,* with medical control became the topic of interest in all quarters, and even the daily press found something of interest in this new departure.

At first the milk, as I have indicated, was given whole, sterilized, to the patients, and the patients directed to dilute it according to directions. It was soon found that this was not enough. The patients must have the finished formulas put into their hands ready to give to the infant. They could not be trusted to dilute it correctly. The milk became contaminated or spoiled in the handling of it. It was then decided to give each infant a definite formula and quantity according to its age, and thus each child was studied as to the best method of feeding. In a milk depot only a few formulas could be put up which would apply to the largest number of infants as an average application. Thus for the infant from birth to the third month the Meiggs formula was prepared. As is well known, the Meiggs formula contains 1 per cent. protein, 3 per cent. fat, and 6 per cent. milk sugar approximately. For infants older, from the third to the eighth month, the so-called Heubner-Soxhlet mixture was advised, and in addition whole milk in the sterilized or pasteurized state was furnished to mothers. All the apparatus, including that for sterilizing or pasteurizing the milk, the device for cleansing the bottles, and those for refilling, were of my own models. The great principle followed was not merely that our milk depot be regarded as a place where milk was sold, but where a carefully conducted daily clinic took care of the sick or even well infants, treated them individually, and gave each infant the food fitted for it. Infants were all systematically weighed once or more a week, and the Good Samaritan depot became the Mecca of mothers with sick babies, and of physicians who were interested in the advanced treatment of gastro-intestinal disorders and the feeding of sick and well infants and children. In the New York Medical Journal of Feb. 4, 1893, I described[2] the first two years' work of the milk depot under the enlarged and perfected plan. I there stated the origin of my milk depot idea in 1889 and its development. I had found as a matter of interest that the old form of sterilization at 100 C. was not as desirable as would be a lower degree of sterilization, and it was shown that in a public milk depot heating of the milk at from 65 to 68 or 70 C. was too low, as careless handling by the mothers soon allowed the milk to sour in twenty-four hours, whereas 85 to 90 C. was sufficiently high to trust them with the milk in the heated term, and the milk would keep quite well in a moderately cool place for twenty-four hours. In the previously mentioned article I also published the work of 1891 and 1892 with the improved facilities and new buildings of the former Eastern Dispensary, now the Good Samaritan. At that time "certified" milk was not generally obtainable so I obtained the best milk in the open market in cans or bottles, a much better milk than was accessible to my patients. The work done in this milk depot during the years 1891 and 1892 was as follows:

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* Read before the Association of Milk Commissions, Rochester, N. Y., June 19, 1914.

[1] Koplik, Henry: The Administration of Sterilized Milk in Dispensaries, New York Med. Jour., Jan. 31, 1891.

| | |
|---|---|
| Separate nursing-portions.................. | 101,482 |
| Infants and children supplied................ | 1,274 |

Inasmuch as these children all passed under my direct daily supervision and treatment it can be surmised that the work done was little short of herculean. In this article I calculated that the number of children who received the control of food and advice, for any length of time, was 539, for the two years. The following figures show the work done in the first year of the existence of the milk depot of the Good Samaritan Dispensary. It is still in existence, feeding, on an average, 130 children daily.

RECORD OF FIRST TEN YEARS' WORK OF MILK DEPOT OF GOOD SAMARITAN DISPENSARY*

| Year | Bottles Supplied | Children Supplied |
|---|---|---|
| 1889 .................. | 7,000 | 137 |
| 1891 .................. | 44,111 | 574 |
| 1892 .................. | 57,371 | 700 |
| 1893 .................. | 70,068 | 976 |
| 1894 .................. | 70,705 | 720 |
| 1895 .................. | 75,550 | 932 |
| 1896 .................. | 96,313 | 766 |
| 1897 .................. | 155,989 | 1,064 |
| 1898 .................. | 298,674 | 1,204 |
| | 875,781 | 7,073 |

* Records for 1890 lost.

In the first work on milk and its relation to public health, from the United States Hygienic Laboratories, this work escaped notice, but in a subsequent revision by Dr. J. W. Kerr of Washington, I had the satisfaction to see the work of this pioneer character mentioned.

I can say thus that the original idea of putting into operation the milk depot in direct connection with dispensary treatment originated in the United States, in the Eastern Dispensary, in the children's service of which I was chief, and was perfected in the present form in which it still exists in the Good Samaritan Dispensary, as I have shown. I remember well my insistence to students who visited my clinic and milk depot and laboratory that all feeding of babies from milk depots should be under direct medical control. I had occasion also to show later the harm done by giving patients, or selling them, milk without physicians' prescriptions. When some four years after the depot was started by me in my service, other milk depots arose in the effort to supply the poor with good milk, I found that some of my patients after exhausting the supply obtained in my clinic, would go elsewhere, and buy, without control, additional feedings. Such children would, of course, become very ill from excess of food. This could not happen were the depots under strict medical control. The good intended was in many cases thus overshadowed by the harm done. In any clinic for the treatment of infants and the feeding of the well and sick infants, there will always be a floating quantum of patients who drop out, but a certain percentage, as indicated, remain, especially if mothers see that the medical care is sincere, that the infant is watched and weighed. At this time when complicated mixtures were prescribed I would, if I thought the mother was earnest, send a nurse to the house, especially if the mother could not spare time from her work, to teach her the making of the food and the details of care of the infant. I feel now, as I felt and agitated at this time, that the milk depot alone is of very limited utility if not combined with actual, not nominal, medical treatment of the infant. To-day we have also this idea of quite general adoption in foreign countries and America. The milk depot with actual medical supervision of infants has come to be generally adopted, and will in time attain greater perfection of method, and will reach more infants as mothers become more educated in the care of their infants. The ideal method is that which I have first adopted and practiced. The physician first sees the infant, if the baby is well, and at the breast, the breast-nursing and addition of bottle-feeding is advised, if the breast is not sufficient. If the breast is not available after an examination of the mother then artificial feeding is given. If the infant is ill, it is first treated for the illness. An illness not involving the gastro-intestinal tract is rather aided to recovery by feeding properly. If the gastro-intestinal tract is involved, the physician first carefully guides the infant through severe illness to the proper food. This is the method, it seems to me, which should be introduced in all clinics. The first result of furnishing the proper food for the infants is to relieve the mother of an amount of time-consuming work, the next is to insure to the infants with mothers not so intelligent the proper food. The ultimate results show in decided reduction of morbidity if not mortality.

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**Adaptation to Environment.**—Surely that much-abused philosopher, Lamarck, was not far from the truth when he said, "The production of a new organ in an animal body results from a new requirement which continues to make itself felt, and from a new movement which this requirement begets and maintains." Is not this merely another way of saying that the individual makes adaptive responses to environmental stimuli? Where so many people fall foul of Lamarck is with regard to his belief in the inheritance of acquired characters. But in speaking of acquired characters Lamarck did not refer to such modifications as mutilations; he was obviously talking of the gradual self-adjustment of the organism to its environment.—Arthur Dendy, *Medical Journal of Australia.*

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[2] Koplik, Henry: The Sterilization of Milk at Low Temperatures and the Equipment of Milk Laboratories for Infant Feeding, New York Med. Jour., Feb. 4, 1893.

# END-RESULTS FOLLOWING THE YANKAUER OPERATION ON THE EUSTACHIAN TUBE *

JOHN L. LOUGEE, M.D.
Surgeon to the Otolaryngological Department of the Carney Hospital; Clinical Assistant to the Massachusetts Charitable Eye and Ear Infirmary
BOSTON

In 1910, Dr. Yankauer published a report of twenty-one cases in which the bony end of the eustachian tube had been curetted for the purpose of shutting off infection from the nasopharynx and thereby curing chronic suppuration of the middle ear. According to Dr. Yankauer, middle-ear structures were removed in only two cases. Polypoid tissue was removed only when it became necessary to allow room for operation.

Most of the patients were using drops or powder at the time of operation and were allowed to continue. Syringing the middle ear was also a part of the postoperative treatment. Granulations were touched with silver nitrate.

The average time required for healing was six months. Sixty per cent. of the patients were cured. No mention, however, was made as to the condition of the tube at the final examination of the patients.

In a later paper, read before the Otological Congress in 1912, Dr. Yankauer emphasized the necessity of treating pathologic conditions of the nose and throat, before a suppurative process of the middle ear could be cured. He also advised the removal of sloughing ossicles and polypi.

The following is a report of twenty-five cases in which the Yankauer operation was performed at the Massachusetts Charitable Eye and Ear Infirmary, during 1913, by courtesy of Drs. Crockett and Mosher.

The duration of discharge has ranged from two to thirty-five years, with an average of sixteen years. The Roentgen ray has shown nearly all of the mastoids sclerosed, the sclerosis varying in degree from a slight density to complete obliteration of the cells. Transillumination, with Dr. Mosher's transilluminator, showed little light passing through the mastoid.

All the patients were given a hearing test before operation. Most of them were suffering from some pathologic condition of the nose or throat, from which the ear trouble undoubtedly had its origin.

The operation consisted of denuding the bony eustachian tube as far as the isthmus. The ossicles were not removed, granulations were not disturbed, and no medication whatever was used. Postoperative treatment consisted in wiping the ear dry several times a day. Three patients complained of dizziness following the operation, one of whom was admitted to the hospital, and remained in bed about two weeks. Dizziness gradually disappeared.

The radical mastoid operation has been performed on four of the patients since the tube was curetted. Two of these had a very foul discharge containing flakes of cholesteatoma, with no apparent improvement from operation. The other two developed symptoms of acute mastoiditis about two months after curetting the tube. The mastoid operation disclosed a large antrum containing cholesterin and pus.

In three of the cases, the tube was curetted a second time, and the remaining ossicles and outer attic wall were removed. In two cases the nasal septum was straightened and the nasopharynx curetted.

Ten months have elapsed since the first operation, and about seven since the last, with an average of about eight and one-half months.

Many of the tubes have opened and closed several times since operation. Several cases in which the ear has been perfectly dry, at least once since operation, now show a profuse discharge.

Bands of adhesions extending from the anterior portion of the tympanic ring to the promontory were noted in three patients. In most cases the granulations showed a tendency to shrink down as the ear became dry, although the tube remained open.

A second hearing test was made on eleven patients. Five showed slight improvement in air conduction. The patient showing the most marked improvement increased from 8/35 to 2/25 voice sounds, and from 128 to 64 fork. There was no improvement in the remaining patients tested.

Recent examination of the above cases discloses the following condition:

| | |
|---|---|
| Tubes open with granulations and discharge | 11 cases |
| Tubes closed with ear discharging | 1 case |
| Tubes open with ears dry | 8 cases |
| Tubes closed with ears dry | 1 case |

Out of the twenty-five cases, in but one has the tube remained permanently closed with ear dry.

Of the tubes reported open with ears dry, three have been curetted a second time, and in two other cases the nasal septum has been straightened and adenoid tissue removed.

A certain percentage of chronic mastoids with cholesteatoma will eventually require a radical operation to bring about a cure. In this type of case curettage of the tube may, as a result of the reaction in the middle ear, cause an acute mastoiditis, as in the two cases noted above.

After eliminating cases of chronic suppuration, in which the radical operation is necessary, we have remaining a class of cases in which the former treatment has been the removal of sloughing ossicles and polypi, together with the correction of pathologic conditions of the nose and throat.

Does curettage of the eustachian tube add anything to this treatment? In my experience it is of very little value.

I do not believe that it is possible to close the eustachian tube permanently.

535 Beacon Street.

## ABSTRACT OF DISCUSSION

Dr. Harris P. Mosher, Boston: When Dr. Yankauer brought out his work, it seemed revolutionary to me and I could hardly believe it in all respects true. Very soon he modified his procedure. Dr. Lougee has taken the trouble in twenty-five cases to follow out Yankauer's procedure as given in his successive papers, and his conclusions, as you see, are just the opposite to those of Dr. Yankauer. Out of twenty-five cases he has had only one good result. In most cases I do not know whether we should attempt to close the tube or to regard the closure as not necessary and not attempt it. I rather feel now that the tube should be disregarded and attention paid entirely to the middle ear.

Dr. G. W. MacKenzie, Philadelphia: I favor the Yankauer operation in selected cases. I am afraid our failures are too often due to their improper selection. Dr. Yankauer's operation is particularly fitted to those cases in which we have done a radical operation for chronic middle-ear suppuration

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

and we feel sure that the spaces in and behind the attic are clear but the discharge persists with a patent tube. My results in about two-thirds of the cases have been very satisfactory, though in some the tube remained patulous. One criticism of Dr. Lougee might be offered concerning the cases in which on operation he found cholesteatoma. They should not be accepted as fair tests. To determine the presence of cholesteatoma by examining with the microscope for cholesterin crystals is very simple. Before we criticize the operation too severely, let us not forget that we want to find out whether or not the operation is really indicated. When the attic or mastoid is involved, of course the Yankauer operation is not indicated, but, in those cases in which we can exclude these regions and limit the pathologic process to the tube, the Yankauer operation will give good results, and, furthermore, if done thoroughly and effectually, it must succeed, for the single source of infection has been eliminated.

Dr. John L. Lougee, Boston: With regard to Dr. MacKenzie's remarks concerning the selection of cases, I admit that I did not examine the secretions microscopically for cholesteatoma. It would be difficult to select the cases that would be proper for operation. The time of duration of the discharge varied from two to thirty-five years. It is very hard to tell what is going on in the mastoid, even with the aid of the Roentgen ray. I think closing the tube temporarily may be a means of setting up a mastoiditiis by shutting off drainage.

## *New and Nonofficial Remedies*

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

**ANTIMENINGOCOCCUS SERUM** (See N. N. R., 1914, p. 239).

Lederle Antitoxin Laboratories, New York City (Schieffelin & Co., New York).

*Antimeningococcus Serum* (*Antimeningitis Serum*).—Marketed in one aseptic glass cylinder containing 30 Cc. with special sterile needle and stylet. Also in one 20 Cc. vial.

*Dose.*—Usually from 5 to 15 Cc. for infants and children and 30 Cc. or more for adults are given at each dose, which should be repeated at twenty-four hour intervals. The treatment of one case usually requires 120 Cc. or more.

**GONOCOCCUS VACCINE** (See N. N. R., 1914, p. 250).

Greeley Laboratories, Inc., Boston.

*Gonococcus Vaccine.*—Marketed in packages of six syringes each containing 500 million bacteria.

Lederle Antitoxin Laboratories, New York City (Schieffelin & Co., New York).

*Gonococcus Vaccine, Polyvalent.*—Marketed in separate syringe packages containing respectively 50, 100, 200, 400 and 1,200 million killed bacteria.

**PNEUMOCOCCUS VACCINE** (See N. N. R., 1914, p. 253).

Greeley Laboratories, Inc., Boston.

*Pneumococcus Vaccine.*—Marketed in packages of six syringes each containing 500 million bacteria.

**STAPHYLOCOCCUS VACCINES** (See N. N. R., 1914, p. 254).

Greeley Laboratories, Inc., Boston.

*Staphylococcus Albus Vaccine.*—Marketed in packages of six syringes each containing 1,000 million bacteria.

*Staphylococcus Aureus Vaccine.*—Marketed in packages of six syringes each containing 1,000 million bacteria.

**STREPTOCOCCUS VACCINE** (See N. N. R., 1914, p. 257).

The Abbott Laboratories, Chicago (The Abbott Alkaloidal Co., Chicago).

*Strepto-Bacterin* (*Human*) *Polyvalent.*—Marketed in packages of six ampules each containing 100 million killed bacteria; also in packages of six ampules each containing 200 million killed bacteria.

Greeley Laboratories, Inc., Boston.

*Streptococcus Vaccine.*—Marketed in packages of six syringes each containing 500 million bacteria.

Lederle Antitoxin Laboratories, New York City (Schieffelin & Co., New York).

*Scarlet Fever Treatment.*—Marketed in packages of four vials containing respectively 50, 100, 200 and 400 million killed bacteria.

**TYPHOID VACCINE** (See N. N. R., 1914, p. 259).

Greeley Laboratories, Inc., Boston.

*Typhoid Bacillus Vaccine.*—Marketed in packages of six syringes, each containing 1,000 million bacteria; also in packages of six syringes containing respectively 100, 200, 400, 600, 800 and 1,000 million bacteria.

## *Therapeutics*

### PREVENTION IS GREATER THAN CURE

(*Continued from page 1479*)

### VI

### VACCINATION AGAINST TYPHOID FEVER

The importance of the prevention of this disease is self-evident when it is stated that about 500,000 people are attacked by it and more than 35,000 deaths occur from it annually. Of these about 150,000 cases occur and about 25,000 die of it annually in the United States. The economic loss from expenses due to illness and to the loss of productive lives is simply enormous, and is stated by economists to represent, in the United States alone, a financial loss of about 300 million dollars a year.

The usual mortality of typhoid fever is about 10 per cent., while the protection from the recurrence of typhoid, the patient having once survived it, is represented by more than 95 per cent.; that is, less than 5 per cent. of persons attacked have a recurrence.

The most frequent cause of typhoid fever is infected water and infected milk. Washing uncooked vegetables and fruit with infected water may also more or less frequently cause the disease. As long ago as 1894 it was shown that oysters could become contaminated with water which received infected sewage, and when served uncooked could cause typhoid fever. The culpability of oysters under such conditions has been shown frequently, although some bacteriologic investigations indicate that the pathogenic bacteria from the human intestinal canal are rarely found in oysters. It has been demonstrated beyond controversy, however, that oysters fattened in fresh-water polluted streams may harbor pathogenic germs and, when served uncooked, transmit them to the human being. As it has been shown that oysters do not feed much in cold weather, the danger from their contamination in the cold months is less than in the warm months. Also, the danger of oysters becoming infected has been diminished by the decree by most boards of health that oysters must not be deposited in fresh water for fattening or in water near the shore that readily becomes contaminated with sewage.

For a long time it was not satisfactorily proved that round clams could become infected with typhoid bacilli. Hence the "little necks" have long been eaten raw by those who refused to eat raw oysters. It has been shown lately, however, that round clams may be suspiciously contaminated with sewage germs, although no positive decision that cases of typhoid have emanated from eating such raw clams is known. Long, soft-shelled clams are almost invariably eaten cooked, hence the danger of contamination from such shellfish is at a minimum.

Another source of danger from typhoid fever is that due to flies. These may carry on their feet typhoid as well as other germs and deposit them on foodstuffs in markets, in kitchens, and on the dining table. Consequently, flies are a serious menace to the health of a community. Possibly the greatest number of cases of typhoid fever occur in the early fall months because this is directly after the greatest fly period. Ninety-five per cent. of flies are born in manure heaps; therefore the most important method of exterminating the fly pest is to prevent their growth in manure heaps. The United States Department of Agriculture, in *Bulletin 118* states that a small amount of borax sprinkled daily on horse manure will prevent flies from breeding.

Borax should also be sprinkled over garbage (especially when not intended for feeding to pigs), over all refuse heaps and open toilets, and it may be sprinkled on the floors of markets. While borax will not kill the grown fly, it will prevent fly eggs from hatching. The cost of borax in Washington is between 5 and 6 cents per pound in 100 pound lots, and it is estimated that it would cost only 1 cent a day per horse for the borax treatment of stables.

Contaminated dust may infect food, and may occasionally be a cause of this disease.

Although the germ of typhoid fever always emanates from the discharges of persons sick with the disease, the danger from carriers who may for years continue to produce the living germs must never be forgotten. Therefore, every sewage system and every privy vault is open to suspicion. The water at seashores, or even fresh water not protected from contamination, should not be swallowed or taken into the mouth by bathers. Sanitary privies should be rapidly introduced, and when this is not immediately possible, means of killing the germs in human fecal matter should be constantly used. All toilets and privies should be screened from flies, and any stable or barn where milk is handled should be under suspicion if the place is dirty, dusty, and fly-infested. All foods should be under suspicion if exposed to dust and flies. The purification of water-supplies is a question for state and municipal boards of health, and failure on their part to supply to all communities pure, clean water is open to the criticism of negligence and incompetency. Great improvement, however, is being made in many communities in these respects.

In 1893, Fränkel first published his observations on the inoculation treatment of typhoid fever. In 1896, Wright published his first article on antityphoid inoculation. The British first introduced inoculation in the Indian army for the prevention of typhoid fever and demonstrated that the individual was protected by such inoculation for two and one-half years, and partially immunized for five years. In 1900, inoculation prevention was used by Germany, also, in her armies, and German and English military camps soon became almost free from typhoid fever by such protective vaccination.

The danger to an army from typhoid fever, especially during war times, when it is encamped in regions not previously equipped to care for large numbers of men in a sanitary manner, is well shown by the statement that one-fifth of the soldiers in a national encampment of our men in the Spanish-American war had typhoid fever, the actual figures being that out of 107,973 men, 20,728 had typhoid fever, of which number 1,580 died. It is also stated that in 90 per cent. of the volunteer regiments the disease broke out within eight weeks after going into camp.

In spite of all sanitary measures possible, typhoid fever will prevail until the preventive vaccination is inaugurated. With the inauguration of this measure in the United States Army typhoid fever became greatly diminished in frequency. Vaccination of our army was begun in 1909, and, in 1911, among 80,000 men only 11 cases of typhoid fever occurred, with one death. In 1912 there were 15 cases in the army, with 2 deaths. This shows that occasionally the typhoid inoculation does not protect, but the improvement shown by the diminution in the number of typhoid cases from 9.43 cases out of every thousand soldiers in 1901, to 0.26 for every thousand soldiers, in 1912, compels belief in its efficiency. The death-rate from this disease decreased, per thousand soldiers from 0.64 in 1901 to 0.03 in 1912.[1]

The incubation period of typhoid fever is about two weeks. Its duration, when there are no relapses, is about two months. This means two weeks of incubation, four weeks of more or less serious illness, and two weeks before the real convalescence. Young adults and youth are most likely to contract this disease, although it may occur at any age. This is the age, then, for the greatest effort to be made to give protective inoculations. All nurses and members of hospital staffs; students of colleges and seminaries; employees, and those who are interned in work houses, jails, prisons and asylums; men in lumber camps; and all those who travel and are therefore subjected to varying water, milk and food-supplies, such as "traveling" men, engineers, seamen, tourists, and vacationists, should receive typhoid preventive vaccination.

While it has been asserted that immunity is more positively conferred for a long period by vaccination with living bacteria (protection being similar to that produced by an attack of typhoid fever) still it is generally considered safest and best to vaccinate with dead bacteria. The vaccine slowly stimulates the production of antibodies, that is, in from five to eleven days, with an average of eight days. Some time later there is an increase in the opsonins and agglutinins. The blood generally shows the Widal reaction after the third inoculation. One case was found negative.[2]

Though it has been denied, it seems to be a fact that typhoid vaccine can cause a reaction similar to tuberculin in those infected with tuberculosis.

It has been shown that there is a skin typhoid reaction test similar to the von Pirquet tuberculosis skin test. Gay and Force found this test positive in 20 cases out of 21 (95 per cent.) patients who had recovered from typhoid fever. The same test was negative in 85 per cent. of 41 cases who had not had typhoid fever. This method may become valuable as a test for the continuation of typhoid immunity after typhoid inoculation.[3]

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[1] Russell, F. F.: House of Representatives Document 1404, Feb. 19, 1913.

[2] Maverick, Augustus: Typhoid Vaccination and the Widal Reaction, The Journal A. M. A., June 1, 1912, p. 1672.

With all the advantages to an individual and to a community conferred by protection against typhoid fever by vaccination, the physician must also carefully consider what constitutes contra-indications. It seems to be wise carefully to examine every individual to ascertain his condition of health before vaccination is done. It should not be done if he is suffering from any acute infection however simple, namely, a coryza, a pharyngitis, a tonsillitis, or any acute gastro-intestinal disturbance, gonorrhea, syphilis, albuminuria, glycosuria, or the more serious conditions of chronic nephritis or diabetes. The injections should be made in the afternoon, and the active symptoms will generally be gone by noon of the next day. Three injections should be given at weekly intervals.

There is a systemic reaction in about 7 per cent. of the cases, most frequently after the second dose, next in frequency after the first dose, and least frequently after the third injection. The temperature reaction varies, with an average of about 100 F., associated with malaise, rarely diarrhea and some nervousness and sleeplessness. Sometimes erythemas occur, and occasionally a herpes of the lips. Generally all active symptoms have disappeared in forty-eight hours. Every person inoculated with this vaccine should avoid alcohol and all stimulants, should not eat meat, should keep out of the sun, and should not take much exercise. While in the army the vaccinated men were allowed to do ordinary work, in private practice it is inadvisable to allow any exercise during a real reaction. If there is no reaction, the inoculated individual may do ordinary work on the following day.

It has been shown that paratyphoid fever may also be prevented by vaccination with the paratyphoid germs. It seems wise, therefore, in vaccinating against typhoid, to vaccinate with the combined vaccine of typhoid and paratyphoid. The ordinary adult doses for injection are as follows: The first dose may contain 500 millions of the killed typhoid bacilli, 250 millions of the killed "A" paratyphoid bacilli, and 250 millions of the killed "B" paratyphoid bacilli. The ordinary second dose is double this number of dead bacteria, respectively (1,000 millions of killed typhoid bacilli, 500 millions of killed "A" and 500 millions of killed "B" paratyphoid bacilli). The third injection represents the same number of killed bacilli as the second injection.

The method of injection is as follows: Paint with tincture of iodin an area about 15 mm. in diameter at the insertion of the deltoid muscle. Inject subcutaneously with sterile needles and the best vaccine the dose of killed bacteria decided on. Then paint the region with collodion and allow it to dry. If proper care is taken, no infection will occur, and, as above stated, a temperature reaction is rarely above 100 F., and perhaps never reaches as much as 102 F., even in exceptional instances. A severe reaction could only occur when there is some serious complication in the individual, as perhaps tuberculosis. All slight reactions are generally over in twelve hours and even severe ones are generally over in twenty-four hours.

The local reaction is greatest after the first dose, less after the second, and least after the third. Typically, there is an acutely inflamed area, varying in size, not hard and indurated like an incipient abscess. The arm may ache, and the axillary glands may become tender. The local reaction is generally at its height in about ten hours, and generally nearly gone in twenty-four hours. Any more severe reaction would be due to contamination.

The dosage for children should be based on the child's weight and not on its age. The recommended adult dose is based on a weight of 150 pounds. It seems to be necessary for continued protection to revaccinate children more frequently than adults, namely in about three years. The skin test above referred to may become a means of ascertaining whether, or not, the individual is still protected. It should be remembered that almost one-third of all typhoid deaths occur in persons under 20 years of age.

Typhoid vaccination as a treatment during the course of typhoid fever has not been much used. The theory against such vaccination is that it has seemed unwise, in any disease, to vaccinate and to stimulate an acute process, it being considered that the individual is utilizing all of his combative powers in fighting the infection that he already has. We must note, however, that cases are beginning to be placed on record in which it seems that relapses are prevented and that post-typhoid complications such as typhoid infection of the ears, kidneys, gall-bladder, etc., may be prevented by the judicious use of an antityphoid vaccine. Hospitals, which are the best prepared to carefully watch and judge of the advantages conferred by these injections, should investigate this subject. Until statistics are available, it may be well not to inject these bacilli until such time as the patient is shown to be a typhoid carrier. It is stated that stock vaccines in these instances are as valuable in preventing relapses as are autogenous vaccines.

About 4 per cent. of typhoid-cured patients become chronic carriers. As above urged, a most serious danger to any community is a typhoid carrier, and unfortunately it is difficult to discover such. As prevention is here also greater than cure, it is a question for the board of health to decide when a typhoid patient shall be released from quarantine, that is, allowed to deposit his urinary and fecal excretions in the sewers or privies without disinfection. Also a carrier may contaminate his hands with living typhoid bacilli, and thus spread the disease. This probably means that the feces and urine should be repeatedly examined by the board of health until typhoid bacilli are found to be absent. This would be a difficult problem, and would interfere more or less with individual freedom, but from an economic standpoint it would be the most money, health and life-saving work that a board of health could inaugurate.

A chronic typhoid bacillus carrier having been discovered (and such are only discovered by the attending physicians, hospitals, and boards of health being ever alert), he or she should be isolated and treated. Hexamethylenamin may cure a kidney infected with typhoid germs. Typhoid bacilli vaccines seem to offer the most successful treatment of these typhoid carriers. Whether they are best treated with stock vaccines or with autogenous vaccines is yet to be determined. Also, the frequency with which such cases are cured is not yet decided. If operative interference would remove the infection, it should be advised. This is especially true in cases in which either the gall-bladder or the ear is the suspected source of infection.

*(To be continued)*

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[3] The technic of this test will be found in Arch. Int. Med., March 15, 1914, p. 473.

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SATURDAY, OCTOBER 31, 1914

## THE BEGINNINGS OF PHYSICOCHEMICAL METHODS IN THE MEDICAL SCIENCES

The physician who has received his scientific training in recent years, and likewise he who, though schooled in an earlier era, has not allowed the progress of knowledge to leave him stranded on the shores of superseded ideas, is often prone to forget the beginnings of the learning which we call modern. Osmotic pressure, isotonic solutions and the ionic theory are familiar expressions. The brilliant contributions of van 't Hoff and Arrthenius have furnished the impetus for much in the more recent development of the medical sciences. To quote an eminent physiologist, it is impossible to-day to think of a scientific physiology or pathology in which the conception of osmotic pressure plays no part. It has furnished explanations for details of the chemistry of the circulation and the genesis of edema. The theories of narcosis and of disinfection have drawn heavily on it. Bacteriology and histology, with their problems of permeability and their technic of staining, have benefited by the present-day conceptions of osmotic pressures. Experimental embryology can point to the work of Loeb and his followers as a fruitful exemplification of the usefulness of the idea; for artificial parthenogenesis has long employed the physicochemical methods, and the newer culture of living tissues cannot neglect the theory of solutions.

In the light of the wide-spread importance of the subject—an importance that manifests itself in a practical way whenever a saline infusion is administered—it ought to interest those who have any concern whatever for the beginnings of scientific practices to hear something of the history of the idea of isotonic solutions and all that it carries with it. Fortunately the story has lately been told by one who took a most active part in its performances, namely, the well-known physiologist, H. J. Hamburger of the Dutch University at Groningen.[1]

It had long been known that many substances exhibit the property of "attracting water" to themselves. This force, *wasseranziehende Kraft,* as the Germans called it, is of great significance in the life of plants, in which it accounts for some of the movements of the sap and the unfolding of the parts. As early as 1844 Mitscherlich is said to have attempted to measure it in a quantitative way; but it was the botanist Hugo de Vries who described the first really successful methods at Amsterdam in 1882. By selecting solutions of various concentrations of the same substances he demonstrated that a definite strength always induced plasmolysis, that is, the beginning of shrinkage in the contents of plant-cells away from the walls of the latter. All solutions that just initiated this effect were termed isotonic by de Vries.

Hamburger relates how his laboratory chief, Donders, who had heard de Vries present his result to the Academy of Sciences, discussed them with the young assistant in physiology. The question at once was suggested whether similar osmotic phenomena would apply to animal cells. Thereupon Hamburger, then still a beginner in science, started the classic experiments on the behavior of red blood-corpuscles toward salt solutions, showing as early as 1883 that those concentrations of different salts in solution which just induce hemolysis show the same interrelations as those which de Vries had found isotonic in his plant experiments. The modern era of the application of physicochemical points of view to research in the medical sciences may be dated from these investigations, not from van 't Hoff's theory of osmotic pressures which was in reality developed somewhat later (1885) in its physiologic relations. Soon 0.9 per cent. sodium chlorid solution was ascertained to be isotonic with blood-serum, and its use to replace the older strength of 0.6 per cent. begun.

It would take us too far afield to recall the varied consequences of the early establishment of the principles of osmotic pressure. In passing, the significant studies on the bearing of this factor in lymph formation and movement, in absorption from the bowel and from serous cavities, and in the permeability of all kinds of cells, are brought to mind. It has been a period rich in suggestions and fruitful in results. We do well to present its beginnings in their true relations.

## PROBLEMS OF THE FEEBLE-MINDED

When legitimate methods of social inquiry and scientific investigation take the place of superficial observation, which is now becoming the case regarding the treatment of mentally defective children, it may be assumed that moot questions will be solved to the mutual satisfaction of all interested in the subject. It has been generally thought that an experienced observer can differentiate the feeble-minded from the normal by certain marked signs or tests. Thus, Barr has stated that "feeble-mindedness, including idiocy and imbecility, is a defect either mental or moral or both, usually associated with some physical stigmata of degeneration." In a recent study by Karl Pearson,[1] contrary evidence is offered by groups of photographs showing feeble-minded, normal or mixed types of children of the same age. The observer will have difficulty in determining which of the children shown are the mentally defective. There seem to be no obvious stigmata differentiating one from the other, and in view of new evidence, for example, that the palates of the mentally defectives do not differ from those of the normal, and that the retina of imbeciles is not more often pigmented than the normal, it must be concluded that though physical stigmata may exist, scientific evidence is lacking to prove that they are pathognomonic. On the other hand, considering the question of mental differentiation, the recent work of Jaederholm[2] is taken as a center point. Pearson and Jaederholm have shown that any classification of children as mentally defective, below four years of mental defect, must either depend on the personal equation of the investigator, or be settled by other factors such as moral or physical deficiency.

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[1] Hamburger, H. J.: Zur Geschichte und Entwicklung der physikalisch-chemischen Forschung in der Biologie, Internat. Ztschr. f. physik-chem. Biologie, 1914, i, 6.

Pearson takes issue with many other workers in the field of eugenics regarding the differentiation between the normal, feeble-minded or the mentally backward. The importance of a correct determination of these various classes for purposes of segregation and the protection of society can hardly be overestimated, and yet there are lacking truly scientific studies necessary to determine these problems. It is necessary to learn to what extent the mentally defective class is produced by inheritance, improper environment, or from poisoning of the parental system. Although there exist numerous casual investigations of the heredity of mental defects, there seem to be lacking adequate anthropometric measurements of the feeble-minded compared with controlled series of normal children, as well as psychometric studies and a purely scientific investigation of the factors of heredity and environment. The settlement of these questions cannot come from the physician alone, nor will the social investigator be able to determine it.

From our present knowledge we are not able to segregate all the feeble-minded. Although a mental test may strain off 20 or 30 per cent. of the so-called feeble-minded, beyond that point it is not reliable. What are needed are tests of self-control of emotions, of feelings and relation to social duties; in other words, tests of moral judgment. Until this type of investigation is adopted, segregation of the feeble-minded will be a matter of the personal equation of the investigator. These problems are vital and affect every community. They are not alone the care of the physician, but of all persons. The physician, however, must be able to determine early the need of help when it exists and be able to direct the proper procedure to better the conditions.

## THE CAMMIDGE REACTION IN THE URINE—DEXTRINURIA

In 1904 Cammidge described a reaction, easily carried out in urine, which he frequently observed in the case of persons suffering from pancreatic disease and regarded as a useful indication in the ofttimes difficult diagnosis of affections of the pancreatic gland. The test involves the production of characteristic osazone crystals with the phenylhydrazine reagents after boiling urine, free from protein and preformed sugar, with hydrochloric acid. Apparently some complex carbohydrate-like substance is present in the reacting urines; and by hydrolysis with the acid, osazone-yielding products are produced. The directions for the procedure, which can be found in text-books on clinical diagnosis, include certain analytic details that must be carefully followed.

The clinical study of the diagnostic value and physiologic significance of the new "test" was promptly and eagerly undertaken. The conclusions in reference thereto have been conflicting, as is usually the case when a diagnostic novelty is initiated with unbounded enthusiasm. The physiologic chemist has been particularly interested in the possible nature of the substance responsible for the Cammidge reaction. Obviously it is something present in minute quantity, if at all, in normal urine; and it is devoid of the reducing power and other properties of most preformed sugars, otherwise it would reveal itself even without preliminary hydrolysis. Sucrose, pentoses, conjugated glycuronates, dextrins or so-called animal gums—all have been drawn into consideration by the different investigators.

The latest contribution on the subject, from the Physiologic Laboratory and the Surgical Clinic at Utrecht,[1] has confirmed the fact that the urines of different persons show a great difference in their tendency to exhibit the Cammidge reaction. Recalling the older observations of Baisch[2] and Lemaire[3] on the occurrence of small amounts of dextrin-like substances in the urine of healthy individuals, Pekelharing and Van Hoogenhuyze renewed the investigation of these poorly defined products, despite the fact that Cammidge himself did not regard the urinary dextrin as responsible for his reaction. They found, as a result, that urines in which the Cammidge test is positive, yield a larger amount of the indefinite dextrins than does normal urine. Furthermore, they ascertained that after hydrolysis these substances yield the same types of osazones, with the characteristic shape, solubility, etc., as one obtains in the routine Cammidge test. The latter may thus be interpreted as the indication of a dextrinuria—or at least of an output of dextrin greater than is met with in ordinary experience.

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[1] Pearson, Karl: Mendelism and the Problem of Mental Defect. III. On the Graduated Character of Mental Defect and on the Need for Standardizing Judgments as to the Grade of Social Inefficiency which Shall Involve Segregation, London, 1914.

[2] Pearson, Karl and Jaederholm, J. A.: Mendelism and the Problem of Mental Defect. II. The Continuity of Mental Defect, London, 1914.

[1] Pekelharing, C. A., and Van Hoogenhuyze, C. J. C.: Ueber die Cammidgesche Pankreasreaktion, Ztschr. f. physiol. Chemie, 1914, xci, 151.

[2] Baisch, K.: Ztschr. f. physiol. Chem., xviii, 193; xix, 339; xx, 249.

[3] Lemaire: Ztschr. f. physiol Chem., xxi, 442.

Dextrinuria can be elicited in healthy persons by the excessive use of sugar. The Cammidge test has been obtained after ingestion of as little as 50 gm. (less than 2 ounces) of glucose or fructose. It has been observed within a few hours after eating 175 gm. of cane-sugar, although glycosuria was missed. The fact that the undue intake of sugar may occasion dextrinuria in healthy persons even before any glycosuria manifests itself may help to explain why the Cammidge reaction is reported to be positive in cases of pancreatic disease which have not yet progressed to the point at which true diabetic symptoms ensue. The study of dextrinuria, if it shall be established as a clinical entity, may furnish something of value in relation to carbohydrate metabolism. It is not unlikely that satisfactory quantitative methods of investigation—such as the estimation of the reducing power of the urine after hydrolysis—can be introduced into this field.

## THE RELATION OF SEWAGE DISPOSAL TO WATER SUPPLY

The future development of large public water-supplies in this country is likely to involve the purification of surface waters rather than the utilization of ground water sources. Useful as the latter are under many conditions, they, nevertheless, in many regions are inadequate to supply the enormous demands of American municipalities. It is well known that surface waters in general are more or less contaminated. In the practical treatment of the water-supply problem the degree of sewage pollution that is admissible in the water to be purified has become more and more of a definite issue. There is now a sufficient amount of evidence to show that a dangerous situation is created when a great burden is placed even on the best constructed and most skilfully operated filter. If the water to be treated is very highly polluted the likelihood of accident is increased many times.

A noteworthy attempt to establish some sort of working standard for the character of raw water has been made by McLaughlin in a paper published in this number of The Journal.[1] This writer believes that in order to allow for a proper margin of safety the number of *B. coli* in the raw water should not range over 100 to 500 per hundred c.c. With such a water it is supposed that proper filtration —slow sand or mechanical—constitutes a reliable safeguard against water-borne infection. It must be admitted that the data on which such considerations are based are not very extensive, but so far as they go, they appear to justify McLaughlin's position. If the establishment of such a standard finds acceptance among water experts, it would seem to be desirable, by the use of hypochlorite or other means, to reduce the number of *B. coli* in highly polluted waters to not more than 500 per hundred c.c. before reliance is placed on ordinary filtration methods.

One merit of such work as McLaughlin's, based as it is on large practical experience in the field and laboratory, is that it brings into the open a very important question for discussion and further investigation. No one knows better than the experienced student of water bacteriology that the establishing of any standard opens the road to abuse and misconception. But it is of great advantage to have a definite standard proposed which can be discussed, compared with the varying experiences of different observers, and serve as a guide for interpreting the routine analyses which are sometimes accumulated without much understanding of their true significance.

McLaughlin suggests further that a content of two *B. coli* per hundred c.c. be accepted tentatively as the limit permitted for a good drinking water. He points out that at present a number of filter plants dealing with a badly contaminated raw water are able to yield a water which comes up to this standard. Although the commission appointed by the Surgeon-General of the United States Public Health Service to consider this matter has not yet made its formal report, we understand that its recommendations coincide with the standard proposed by McLaughlin, who, perhaps, has based his own opinion somewhat on the discussions of the commission. While this is not so severe a requirement as that advocated by Houston, director of water examination of the London Metropolitan Water Board, it is, nevertheless, more rigorous than would have been advanced in this country a few years ago.

Sooner or later the question will arise in connection with such standards as to how far the community is willing to go in the matter of protecting itself against water-borne infection. It is idle to insist that absolutely no chances must be taken, since accident and death are being continually risked in many other directions. The question will eventually come down to the expenditure that will be deliberately made in order to escape a given degree of danger. It is physically possible to sterilize absolutely any city water-supply, but few cities are prepared to face the expense necessary for complete removal of bacteria, pathogenic and non-pathogenic. McLaughlin's very interesting and suggestive paper dealing with the degree of permissible sewage contamination of raw waters and the allowable minimum of purification will tend to form opinion on this practical problem.

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[1] McLaughlin, A. J.: The Necessity for Restriction and Control of Sewage Pollution of the Great Lakes System, The Journal A. M. A., this issue, p. 1555.

## THE DIFFUSION OF KNOWLEDGE OF THE MEDICAL SCIENCES

The science of medicine, like that of agriculture, has been the subject of extensive investigation and intensive study in the last half century, with the result that our fund of knowledge in both of these domains of interest has been greatly augmented. Even to-day, as in the past few decades, we are witnessing the continued organization of forces and institutions intended to promote not only medical and agricultural sciences, respectively, but likewise their practical application. Only he who is blind to what has been accomplished would deny the advantages which have accrued wherever intelligent use has been made of the contributions involved in the fundamental discoveries. The practice of medicine, like the art of agriculture, is more and more becoming transformed into a scientifically controlled performance.

We have been reminded of the similarity of experience in the realms of agriculture and medicine by reading a recent report from one of the leading agricultural experiment stations of the United States.[1] This document points out that whereas in the earlier years of the modern scientific movement in agriculture, much emphasis was laid on the study of the physical and biologic problems of production, there is now need of greater attention to the economic forces involved in distribution. It has become important for the farmer to learn when and how to market his produce, quite as well as what to produce and how to produce it most economically.

Precisely so, modern medicine must be judged in part by the practical advantages secured through its investigations. Medical research needs the help of some force or forces which will serve not only to spread broadcast the story of its beneficent discoveries, but also to teach where and how they may be applied. There is room for added agencies which will translate the findings of the laboratories into the requirements of practice. The new contributions of hemodynamics deserve speedier recognition in the clinic of diseases of the heart; the latest experiences with synthetic drugs should be made to suggest possible applications in bedside therapeutics; the progress of the modern study of nutrition might well be carried more freely into the domain of practical dietetics. There are, furthermore, aspects of medical science which the general public is entitled to know and to be instructed in.

Modern agriculture already has effective helps at hand to bring its scientific contributions forcibly to the attention of those who need to apply them. Medicine likewise has ways of spreading its propagandas; but are we not justified in calling for more talent and greater activities in teaching the lessons of the hour more promptly and effectively? The duty of the "diffusion of a knowledge of the medical science"—to quote the motto of the Harvey Society of New York—is worthy of serious consideration in the midst of the ceaseless investigations of the present day.

In his address as president to the Physiological Section of the British Association for the Advancement of Science at the meeting in Australia this summer, Prof. Benjamin Moore of Liverpool urged the campaign of education from a still different point of view. It is particularly important at the present moment, he said, when so much interest is being taken in national health, to point out the urgent necessity of allowing as little lagging behind as possible to ensue between the making of discoveries and the practical application of the results by organized national effort for the well-being of the whole community. And, again, Moore said that it is well worth while to consider our opportunities and responsibilities and raise the question whether our present system and organization are the most suitable for attaining one of the most sublime ambitions that ever appealed to any profession. By definition, our science studies the laws of health and the functions of the healthy body; therefore, it is ours to lead in the quest for health. Is this object best achieved, Moore asks, if we confine ourselves to research in our laboratories, and to the teaching of the principles of physiology to medical students, while we leave the community as a whole uninstructed as to the objects of our research and its value to every man, and trust the medical students whom we turn out to communicate, or not, as they choose, the results of their training and our research to the world?

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[1] Wisconsin Agric. Expt. Sta., Report of the Director for 1913.

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## Current Comment

### THE QUACKS' HOROSCOPE

If there were anything in astrology, we should have read something like this:

> October, 1914: This is a month in which Saturn rules strongly in favor of the public health, and while this configuration prevails, it augurs ill for quacks and charlatans. The horoscope of the medical faker presages danger, and those that are prudent will seek the cyclone cellar.

On October 7 "Professor" Samuels, the Wichita faker, was found guilty in the federal courts on eleven counts; the maximum penalty for each count is a fine of a thousand dollars and five years in prison. Samuels amassed wealth by swindling the sick and suffering by selling a mixture of sugar, salt and water as a cure for practically all diseases. His methods have been repeatedly exposed in The Journal.[1] On Oct. 22, 1914, Orlando Edgar Miller, late of Chicago and Denver, was sentenced to prison in London after being convicted of having caused the death of a woman by administering a drug while she was a patient in an alleged sanitarium he conducted. Miller will be remembered by readers of The Journal as the quack who exploited the so-called "International

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[1] "Nostrums and Quackery," pages 282 to 287; also in the pamphlet "Medical Mail-Order Frauds," price 10 cents.

Institute for the Treatment of Tuberculosis" in Chicago. The Journal investigated[2] Miller and his "institute"; showed up the quack's record; proved that over 80 per cent. of his victims died under treatment and in general turned the search-light on the scheme. The exposé brought two results: one, an action for libel against The Journal which never came into court; the other, the downfall of Miller's "institute." On Oct. 21, 1914, Dr. Richard C. Flower was arrested in Canada on a charge of grand larceny. Flower has been a fugitive from justice for some years and is said to have swindled the public out of more than a million dollars. He founded the "R. C. Flower Medicine Company," a mail-order medical fraud whose president was B. O. Flower,[3] president and one of the founders of the "National League for Medical Freedom." Altogether, the present month has proved a bad one for medical fakers.

## ALLEGED MODIFICATIONS OF THE GASTRIC JUICE

Not long ago we reviewed the evidence indicating that the acidity of the gastric juice of man is decidedly higher than is commonly believed; and an explanation was offered for the familiar figures found on analysis of gastric contents instead of the concentration of about 4 per thousand (0.4 per cent.) of hydrochloric acid indicated by a large number of examinations of pure human gastric secretion.[4] The deviations from this higher figure are, as it now appears, not due to variations in the concentration of the juice actually produced, but rather attributable to the neutralizing effect of substances like mucus, etc., with which the juice comes into contact in greater or lesser degree. This fact has raised new questions with respect to the interpretation of alleged cases of hyper- or hypoacidity. To what extent are high or low figures for hydrochloric acid due to variable admixture or hitherto unsuspected regurgitation of alkaline duodenal contents? The new point of view here presented has also occasioned some uncertainty regarding the experimental devices which have been described for initiating conditions comparable with those in human gastric pathology. It is generally admitted that the volume of the secretion can be profoundly influenced both by the character of the diet and by reflex stimuli which are initiated in the intestine beyond the stomach. Further than this, it has been asserted that the acid concentration of the gastric secretion is likewise affected. To cite a specific illustration, Cohnheim[5] believed that he could induce a true pathologic hypoacidity by the introduction of common salt into the duodenum; and correspondingly an abnormal hyperacidity was reported as the result of introduction of Epsom salt. Newer investigations in the pathologic institute of the University of Berlin[6] fail entirely to substantiate the foregoing. It is true that the quantity of gastric secretion can be decidedly modified by such procedures. Its volume is enhanced by magnesium sulphate and diminished by the presence of sodium chlorid in the bowel. The quality of the gastric juice, however, is not altered by these salts.

## STANDARDIZING COLLEGES OF LIBERAL ARTS

Following the remarkable improvements in medical education resulting from the inspection and classification of medical colleges, a decided movement has been started toward the standardization of colleges of liberal arts. Within the last year the Association of American Universities has published a list[1] of 119 colleges and universities the degrees of which are recommended to German universities as an acceptable qualification for entrance to courses for higher degrees. Another list of approved colleges has been published[2] by the North Central Association of Colleges and Secondary Schools, for the fifteen states under the jurisdiction of that organization. This list has seventy-two colleges, including thirty-five which are also on the list of the Association of American Universities. A third organization, the Association of Colleges and Secondary Schools of the Southern States, is also contemplating the publication of an approved list. The United States Commissioner of Education has issued invitations to fourteen different organizations, including the Council on Medical Education of the American Medical Association, to appoint representatives who will cooperate in the work of classifying colleges and universities. Since the entrance requirement for all medical colleges in classes A+ and A now include at least one year of collegiate work in addition to a standard high school education, such a classification will be of great service in deciding what credentials are acceptable.

## COLLOIDAL NITROGEN COMPOUNDS IN THE URINE

Not long ago we took occasion to record a controverted claim emanating from the clinical study of cancer and to point out how short-lived many of the hypotheses with respect to the metabolism in this disease have been.[3] The unfulfilled promise in the instance alluded to concerned the alleged augmentation of the so-called oxyproteic acid fraction of the urine as a characteristic of carcinoma. As early as 1905 Salkowski[4] called attention to the fact that the nondiffusible components of human urine appear to be increased in certain pathologic conditions. The substances represented by this fraction of the secretion of the kidneys correspond to what modern terminology would designate as colloids. Since this newest feature of physical chemistry has come into conspicuous prominence in recent years and colloid chemistry has lately gained a considerable vogue in biology and medicine, it is only natural that variations in the colloids of the urine should prove a popular topic for investigation whenever the application of a study thereof seemed likely to disclose something of a pathologic interest. The attempts to correlate apparently abnormal proportions of urinary colloids with specific diseased states have had their ups and downs in very recent times. Some investigators, in their enthusiasm for a new method of investigation, have overlooked the almost insuperable analytic difficulties attending a study of so indefinite a factor as urine colloid. It seems scarcely worth while to review the history of the subject further than to record the conclusion of the latest investigators in this field. Drs. de Bloeme, Swart and Terwen[3] of the pathologic laboratory at the University of Amsterdam have been unable to discover any higher values for the colloidal nitrogenous products in the urine in carcinoma than in other diseases; in fact, there has been no uniformity of results such as would permit any rational interpretation for diagnostic purposes. There are certain features of the problem which may merit renewed investigation; but these latest reports support the contention of "not proven" and call for conservatism in the valuation of the claims of chemical indications of malignant disease.

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[2] "Nostrums and Quackery," pages 115 to 130; also in the pamphlet "Consumption Cure Fakes," price 10 cents.

[3] For details send stamp for pamphlet "National League for Medical Freedom."

[4] The Induction of Gastric Secretion, editorial, The Journal A. M. A., March 21, 1914, p. 934.

[5] Cohnheim, O.: Ztschr. f. physiol. Chem., 1908, lviii; 1909, lxiii.

[6] Sato, S.: Direkter Beweis, dass es nach Kochsalz- und Magnesiumsulfat-Infusionen in den Darm keine pathologische Veränderungen in der prozentualen Säurekonzentration des reinen Magensaftes im Sinne O. Cohnheim's gibt., Ztschr. f. physiol Chem., 1914, xci, 1.

[1] Educational Review, December, 1913, p. 516.

[2] Proc. Ninth Annual Meeting of the North Central Association of Colleges and Secondary Schools, 1914, p. 43.

[3] The Urine in Carcinoma, editorial, The Journal A. M. A., Aug. 15, 1914, p. 585.

[4] Salkowski. E.: Berl. klin. Wchnschr., 1905, p. 1581.

## *Medical News*

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

### ALABAMA

**Sanatorium Dedicated.**—The Red Mountain Sanatorium of the Jefferson County Anti-tuberculosis Association was dedicated October 4.

**Personal.**—Drs. Walter S. Rountree, Wylam; Dyer F. Talley, Birmingham; John N. Furniss and James Kenan, Selma, have returned from abroad.——Dr. Arthur H. Montgomery, Montgomery, has been designated as physician for the federal prisoners in the Montgomery County Jail.——Dr. Milton C. Ragsdale, Jr., has been elected city physician for Bessemer.——Dr. Andrew M. Stovall, Jasper, was thrown from his buggy in a runaway accident recently, fracturing his right arm below the elbow.

**Health Conditions in Alabama.**—According to the monthly report, issued October 14, of Dr. Henry G. Perry of Montgomery, head of the state department of vital and mortuary statistics, twenty-one counties are infected with pellagra. There are thirty-six cases in one county alone. The Thompson-McFadden Commission, which is represented in Alabama by Dr. J. F. Siler of Birmingham, is investigating the condition. For the first time in several years the state is entirely free from cerebrospinal meningitis. There are mild cases of small-pox in Jefferson and Butler counties and cases of scarlet fever in Marengo and Lauderdale counties.

### CONNECTICUT

**Personal.**—Dr. Michael J. Sheahan, Derby, sailed for Europe, October 17.——Drs. Clifton M. Cooley, Waterman Lyon and George H. Dalton have been appointed school inspectors of New Britain.——Dr. Albert C. Thomas, superintendent of the New Haven Hospital, has been appointed superintendent of the Massachusetts State Hospital, Foxboro.

### DELAWARE

**State Society Officials.**—In addition to the officers of the Delaware State Medical Society noted in The Journal of October 24, page 1487, Dr. Albert Robin, Wilmington, was elected alternate delegate to the American Medical Association and Drs. Peter W. Tomlinson, Wilmington; George W. Marshall, Milford, and James Beebe, Lewes, were elected councilors.

### GEORGIA

**Personal.**—Drs. George R. White and Walter A. Norton, Savannah, have returned from abroad.——Dr. John S. McKenzie, Cordele, was thrown from his automobile recently, fracturing his right arm.

**Medical Board Election.**—At the meeting of the State Board of Medical Examiners in Atlanta, October 14. Dr. Nicholas Peterson, Tifton, was elected president, and Dr. Richard E. Hinman, Atlanta, vice-president, and Dr. Charles T. Nolan, Marietta, reelected secretary-treasurer.

### ILLINOIS

**Southern Illinois Physicians to Meet.**—The fortieth annual meeting of the Southern Illinois Medical Association will be held in Mt. Vernon, November 5 and 6.

**Personal.**—Dr. James F. Dixon, West Salem, has been appointed resident physician of the St. Charles' School for Boys, succeeding Dr. Charles A. Potter.——Dr. Catherine B. Slater, Aurora, has returned from abroad.

**Small-Pox, Scarlet Fever and Diphtheria.**—Twenty-one cases of small-pox are reported from Neponset and its vicinity and twelve cases from Zion City. In the latter locality forcible resistance to vaccination by the city authorities is advocated by the head of the Dowieite community, on religious grounds. As strict a quarantine as possible has been established by the State Board of Health.——Fifty-three cases of scarlet fever were reported in Peoria up to the middle of October. Schools were closed in Delavan on account of scarlet fever during the week of October 17.——Cases of diphtheria are reported from Monticello.

#### Chicago

**Clinics for Visiting Physicians.**—At Wesley Hospital, clinics for visiting physicians will be conducted throughout the year by Dr. W. E. Schroeder. The work, which is surgical, will be given on Thursdays and Saturdays from 10 to 12 o'clock.

**Tuberculosis Society Meeting.**—The fourteenth meeting of the Robert Koch Society for the Study of Tuberculosis, affiliated with the Chicago Tuberculosis Institute, was held October 29, the general topic for the meeting being "Tuberculosis of the Larynx."

**Mothers' Aid Pavilion Opened.**—The Mothers' Aid Pavilion of the Chicago Lying-In Hospital, was formally opened October 31. A special reception to doctors and nurses was held on the previous day. The pavilion has been erected at a cost of $85,000 and accommodates sixty patients.

**Tuberculosis Conference.**—The second general tuberculosis conference under the auspices of the Chicago Tuberculosis Institute will be held November 12 at the City Club, 315 Plymouth Court, following an informal dinner at 6 o'clock. The subject for discussion will be "The Cooperation of Public Health Nurses and Social Workers in the Early Detection and Control of Tuberculosis."

### IOWA

**Diphtheria.**—Sixty-eight cases of diphtheria are reported from Cincinnati, Iowa, where all churches, stores and schools are closed and the town is quarantined. Cases are also reported from Tipton, Clarion and Davenport.

**Hospital Addition Dedicated.**—The addition to the Mercy Hospital, Des Moines, was dedicated with impressive ceremonies, October 8. During the exercise, announcement was made of the establishment of a hospital memorial consisting of an endowment of two wards to perpetuate the memory of the late Mr. and Mrs. Jefferson S. Polk.

**Personal.**—Dr. Arthur L. Washburn, formerly of Boston, has been appointed health commissioner of Oskaloosa, succeeding Dr. Herbert L. Eisler, resigned.——Dr. Frank W. Porterfield, Waterloo, has been appointed division surgeon of the Illinois Central System.——Dr. Thomas J. Burke and family, De Witt, have returned from abroad.——Dr. Arthur J. Ross, Perry, who has been ill in the King's Daughters'

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[3] De Bloeme, P. L. J.; Swart, S. P., and Terwen, A. J. L.: Der kolloidale Stickstoff des Harns und seine Bedeutung für die klinische Carcinomdiagnostik, Biochem. Ztschr., 1914, lxv, 345.

Hospital for several weeks, is reported to be convalescent and has returned home.——Dr. Frank G. Murphy, Mason City, who has been ill in the hospital for eleven weeks, has recovered and resumed practice.

## KANSAS

**Personal.**—Dr. Oscar M. Owensby, Pittsburg, has started for Europe in the Red Cross service.——Dr. John B. Dykes, Lebanon, has been nominated for congress on the Republican ticket.——Dr. Matthaus H. Horn, Morrowville, has returned from Europe.

**Diphtheria Among "Holy Rollers."**—Diphtheria, which is said to have been prevalent for two weeks in Gas City, is now considered under control. The epidemic is said to have originated among a sect known as the "Holy Rollers." Instead of calling a doctor, the members of the settlement went to the house of the patient and prayed over him. Dr. John S. Sutcliffe, health officer of Allen County, has ordered the religious organization to cease both private and public meetings until further order.

## KENTUCKY

**Kelly in Lexington.**—Dr. Howard Kelly, Baltimore, visited Lexington, October 22, and delivered an address on "Social Hygiene."

**Personal.**—Dr. Charles H. Todd, Owensboro, is seriously ill at his home as the result of a cerebral hemorrhage.——Dr. John Todd has been reelected health officer of Newport.

**The Horse-Meat Scandal.**—The Louisville Health Department has been active in the last few weeks in an investigation and arrangement for the prosecution of certain butchers accused of selling horse-meat for beef. The publication of these reports has aroused all of the commercial organizations of the city, and efforts looking to a municipal abattoir have been inaugurated with every hope of success.

**Public Health Work.**—Drs. Joseph A. Stucky and Samuel B. Marks, Lexington; Dr. Louie E. V. Stegman, Battle Creek, Mich., and Dr. Isaac S. Manning, Manchester, together with trained nurses, visited Oneida recently, established a clinic at that place and opened the hospital which has just been completed. During this trip they examined the schoolchildren of the county, and made investigations regarding trachoma and other infectious diseases.

**Trachoma and Hookworm.**—At the suggestion of Dr. Arthur T. McCormack, Bowling Green, secretary of the State Board of Health, the Fiscal Court of Jefferson County appropriated $2,500 for fighting trachoma in the county and $2,000 additional for a sanitary survey of the county.——Dr. Martin W. Steele, Bowling Green, state sanitary inspector, reports having closed a three weeks' health campaign in Owsley County during which about one-half the entire population was examined for hookworm, and 42 per cent. found infected. All received treatment. Dr. Steele attributes the success of the work very largely to the splendid professional spirit among local doctors. Dr. Steele opened an eight weeks' campaign in Pipe County, October 16, and expects to answer an urgent request from Lee County with two or three weeks' work there. Dr. Isaac A. Shirley of Winchester is carrying on similar work in Letcher County.

## LOUISIANA

**School Inspection Volunteers.**—Twenty physicians connected with the School of Hygiene of the Tulane University, headed by Dr. William H. Seeman, have volunteered to assist Dr. Edmund Moss, medical inspector of public schools in New Orleans, in making a medical inspection of school children.

**State Tuberculosis Home.**—Dr. Oscar Dowling, president of the State Board of Health, went to Alexandria, October 17, to look over the proposed site for the State Tuberculosis Sanatorium. The state board announces that it has the prospect of a donation sufficient for the establishment of a laboratory for the production of diphtheria antitoxin and Dr. Dowling hopes that with this sum in his possession, he may be able to set aside a portion for the site of a tuberculosis hospital and serum farm and to produce there other serums for distribution to the poor of the State.

**Personal.**—Dr. Charles F. Gelbke, Gretna, has been appointed a member of the State Board of Health, vice Dr. Herman Oechsner, New Orleans, term expired.——Drs. Ludwig C. Heintz, Abita Springs; J. F. Buquoi and Henry E. Gautreaux, have resigned as members of the Board of Health of Covington, it is said on account of the opposition displayed by a large proportion of the citizens to the enforcement of sanitary regulations, especially regarding out-houses.——Dr. Otto Joachim, New Orleans, who has been treating the wounded in the Military Hospital at Landau, Bavaria, has started for home.——Dr. Joseph A. Danna has been honored by the king of Italy with the title of Chevalier in acknowledgment of the service Dr. Danna has rendered the Italians of New Orleans.

## MASSACHUSETTS

**New Health Commissioner Begins Work November 1.**—Surgeon Allan J. McLaughlin, U. S. P. H. S., the newly appointed health commissioner of Massachusetts, expects to assume the duties of his office November 1.

**Personal.**—Dr. Arthur J. White, executive assistant of the Boston City Hospital, has been appointed superintendent of the Consumptive Hospital to succeed Dr. Simon F. Cox, resigned.——Dr. William H. McBain, Malden, has been appointed associate medical examiner of Middlesex County.——Dr. Maurice L. Slutskin, Springfield, opened a new dispensary, October 13.

**Parental School for Isolation Hospital.**—The Boston City Hospital trustees have given up the plan for the erection of a new contagious disease building for which an appropriation of $297,000 has been made and will utilize for this purpose several buildings connected with the parental school, at an expenditure of about $150,000. The plans for the institution provide for the accommodation of 200 patients, each of whom will have a separate room in order to avert the possibility of cross infection.

## MICHIGAN

**Ottawa County Physician Honored.**—A banquet was given in Grand Haven recently in honor of Dr. William DeKleine, who after eight years of residence in the county, has gone to Ann Arbor to take up post-graduate work in the medical department of the state university.

**Personal.**—Dr. Perly W. Pearsall, Kalkaska, has been appointed division surgeon of the Pere Marquette System and has been transferred to Muskegon.——Dr. Carl C. McClelland has been elected secretary of the medical staff of the Grace Hospital, Detroit, vice Dr. Leonard F. C. Wendt, resigned.

**Baby Clinic Opened.**—The Detroit Board of Health opened a free clinic at 508 Wesson Avenue for diseases of children and tuberculosis. This institution, together with the health sanatorium recently established on Dubois Street, is under the supervision of the health department nurses, with Dr. Victor C. Vaughan, Jr., Detroit, in charge of the tuberculosis division.

**European Travelers.**—Dr. Charles H. Baker, Bay City, Dr. Ignatz Mayer and Dr. and Mrs. Max Ballin, Detroit, have returned from abroad.——Dr. Cedric P. Sibley, Detroit, is doing work as a volunteer medical officer in a Vienna military hospital.——Dr. Edward H. Moriarity, Mount Clemens, has started for Ireland to join the medical corps of the Irish contingent of the British army.

## MISSOURI

**Health Conference Called.**—A general conference on health measures has been called by the State Board of Health to convene at St. Joseph, November 27 and 28, to consider the advisability of permanent organization.

**Personal.**—Dr. Luther A. Todd has been appointed a member of the board of health of St. Joseph, vice Dr. Oliver C. Gebhart. At a meeting of the board of health October 13, Dr. Todd was elected president.——Dr. Hurel Perrie Hueyette, Kansas City, was shot and slightly injured by a patient from whom he was trying to collect a bill.——Dr. John Paul Owen, Kansas City, sailed for Europe October 15.

**Children's Building for Mount Vernon.**—At the annual meeting of the Missouri Association for the Relief and Control of Tuberculosis, the intention was announced to erect a childrens' building at the State Sanatorium, Mount Vernon, to cost $50,000. The association elected a legislative committee consisting of Dr. William S. Allee, Olean; Dr. Frank G. Harris, Columbia, and Dr. James Stewart, St. Louis. This committee will draw up and have presented to the state legislature, bills to enable the association to carry out a state-wide work in the movement against tuberculosis.

### St. Louis

**Home from Europe.**—Dr. Solomon A. Weintraub, Dr. and Mrs. Max A. Goldstein and Dr. James C. Whitley have returned from abroad.

**Personal.**—Dr. William Porter announces his removal this month from St. Louis to Ocean Springs, Miss. Dr. David R. Lamb will continue Dr. Porter's work in tuberculosis.——Dr. Joseph W. Charles, St. Louis, has been appointed a member of the board of managers for the Missouri School for the blind, succeeding the late Dr. M. Hayward Post.——Dr. David Schmalhorst suffered severe injuries in a collision between the motor car in which he was riding and a trolley car, October 14.

## MINNESOTA

**Sanatorium Site Decided.**—Worthington has been decided on as the site for the new Southwest Minnesota Tuberculosis Sanatorium.

**Personal.**—Dr. Delbert F. Dumas has been appointed health officer of Cass Lake to succeed Dr. Roydon B. Yoder. ——Dr. Thomas C. Clark, Stillwater, has taken up the duties of surgeon of the Soldiers' Home, Minnehaha.——Dr. Herbert G. Lampson, Rochester, has moved to Minneapolis, where he will do special work with the State Board of Health.

**Medical Fellowships.**—Three of the five teaching fellowships in medicine, established by the University of Minnesota, have been awarded. These are as follows: fellowship in diseases of the eye, ear, nose and throat, Dr. Henry E. Binger, Minneapolis; fellowship in surgery, Dr. Golder L. McWhorter, Algona, Ia., and fellowship in obstetrics, Dr. E. S. Moore, Washington, D. C.

## NEVADA

**State Society Meeting.**—At the annual meeting of the Nevada State Medical Association held in Reno, October 13 to 15, the following officers were elected: president, Dr. Patrick J. Mangan, Winnemucca; vice-presidents, Drs. James C. Ferrell, Fallon, and Arthur J. Hood, Elko; secretary-treasurer, Dr. M. A. Robison, Reno (reelected); delegate to the American Medical Association, Dr. M. Rollin Walker, Reno; and alternate, Dr. Arthur P. Lewis, Reno. The next meeting will probably be held in Reno, a week before the American Medical Association meeting in San Francisco. The *California State Journal of Medicine* was decided on as the official organ of the Association.

## NEW JERSEY

**Entertains Medical Society.**—Dr. Frank M. Donohue, New Brunswick, entertained the members of the Middlesex County Medical Society and guests, at his country home, Cedar Crest, October 7.

**Hospital Cornerstone Laid.**—The cornerstone of the medical building of the Mountainside Hospital, Montclair, was laid by Mrs. Franklin H. Hooper, president of the board of governors, October 10. The new building was made possible by a whirlwind campaign conducted one year ago in which $230,000 was raised.

## NEW YORK

**Personal.**—Dr. Barton McC. Cookingham, Red Hook, sailed for Europe October 17.——Dr. Joseph E. Clark, Yonkers, has been appointed by the State Commissioner of Health, sanitary supervisor of District E., which includes Oneida and Herkimer counties.——Dr. James S. Walton, Amsterdam, has been appointed sanitary supervisor of the district, including Montgomery, Fulton and Hamilton counties.

**Buffalo "Better Mothers" Contest.**—The city of Buffalo held a "Better Mothers" contest September 21 to 25, during which 540 entries were registered and 145 mothers, having received over 95 per cent. on the ratings of their babies, were awarded diplomas of efficient motherhood. The contest, which is said to have aroused interest in mothers of all classes, is intended to be the beginning of a continuous propaganda by which mothers will be encouraged to have their children thoroughly examined from time to time to discover any defects and to install measures for their correction.

**Error in Using "Typhoid" for "Typhus."**—Dr. Joseph J. O'Connell, Rosebank, health officer of the port of New York, calls attention to an error in the printing of a summary of the department's work in The Journal, October 17, p. 1402. The Journal stated that twenty cases of typhoid fever were removed from thirteen vessels with a record of eighteen recoveries and two deaths. The report actually stated that twenty cases of typhus fever were removed from these thirteen vessels and that 2,633 typhus fever contacts were removed and treated so successfully that there were no secondary cases among them.

**Harvey Society Lectures.**—The tenth course of Harvey Society lectures was inaugurated October 10. The lectures are given on alternate Saturday evenings at the New York Academy of Medicine. The following is the schedule for the course: October 10.—Prof. Frederick P. Gay, University of California, "Experimental Studies on Methods of Antityphoid Immunization." October 24.—Prof. Thomas Lewis, University of London, "The Excitatory Process in the Heart." November 7.—Prof. Arthur S. Loevenhart, University of Wisconsin, "Certain Aspects of Vital Oxidation." November 28.—Prof. Lafayette B. Mendel, Yale University, "Nutrition and Growth." December 12.—Prof. Lawrence J. Henderson, Harvard University, "The Excretion of Acid in Health and Disease." January 16.—Dr. Edward R. Baldwin, Adirondack Cottage Sanitarium, "Immunity in Tuberculosis with Special Reference to Racial and Clinical Manifestations." January 30.—Prof. Hans Zinsser, Columbia University, "The More Recent Developments in the Study of Anaphylactic Phenomena." February 13.—Prof. John A. Fordyce, Columbia University, "Some Problems in the Pathology of Syphilis." February 27.—Prof. Robert R. Bensley, University of Chicago, "Structure and Relationships of the Islets of Langerhans and Criteria of Histological Control in Experiments on the Pancreas." March 13.—Prof. Elliott P. Joslin, Harvard University, "Carbohydrate Utilization in Diabetes Based upon Studies of the Respiration, Urine and Blood."

### New York City

**Dermatologic Clinics.**—The New York Skin and Cancer Hospital announces the annual course of lectures by Dr. L. Duncan Bulkley. The lectures will be given Wednesday afternoons at 4 o'clock and will be preceded by a half-hour clinical demonstration of dermatologic cases.

**Lectures for Health Department Employees.**—The Bureau of Public Health Education of the Department of Health has organized a series of lectures which will constitute a sort of school of sanitary science for health department employees. The lectures will be held weekly at Hunter College and will continue through February, 1915. There are courses for physicians, for nurses, for hospital nurses and for field nurses, that is, for the nurses of the bureaus of infectious diseases and of child hygiene. Employees are expected to be prepared to pass an examination at the end of the course on the subjects presented.

**An Experiment in Local Health Administration.**—The *Weekly Bulletin* of the city department of health, October 10, reports the experimental establishment of a health district in the neighborhood of Gouverneur Hospital where the department intends to try out the experiment of local self-government in health matters. The new administrative feature consists of the government of the district from within the district itself instead of from the department headquarters and under the control of field workers in place of various bureau chiefs. The department does not commit itself to the wider adoption of the plan but wishes to study it in actual operation.

## NORTH CAROLINA

**County Hospital Nearly Ready.**—Wake County Hospital, erected at a cost of $75,000, is nearing completion and will be ready for occupancy early in January. The building is of fire-proof construction and is said to represent the last word in hospital construction.

**Personal.**—Dr. Charles F. Strosnider, Mount Olive, is taking postgraduate work in the East and expects to locate in Wilmington early in 1915.——Dr. Robert Vance Brawley, Salisbury, who has been taking postgraduate work in Baltimore, has returned and resumed practice.——Dr. John B. Wright, Lincolnton, has located in Raleigh where he has associated in practice with Drs. Richard H. Lewis and Kemp P. Battle, Jr.

## OKLAHOMA

**Society to Assume Charge of School Inspection.**—At a meeting of the Washington County Medical Association held in Bartlesville, recently, the president of the Board of Education, made a formal request to the members of the Society to take charge of the examination of the pupils of the district and the Association agreed to perform the work.

**Personal.**—Dr. Edward S. Gooch, Lawton, has returned from a trip to Canada.——Dr. Robert T. Kelleam, Sallisaw, recently sustained slight injuries in a runaway accident.——Dr. Luther W. Troutt, Afton, fractured his forearm recently while cranking his automobile.——Dr. George S. Barger, Wayne, is preparing to return to his old home in Illinois.

**State Health Board Exhibit.**—The State Board of Health, which has been making an educational campaign throughout the state in the interest of good health, in the past year, brought its exhibit to the State Fair, Oklahoma City. The exhibit is in charge of Dr. John C. Mahr, Shawnee, state health commissioner, and Dr. Curtis R. Day, dean of the State Medical School and Dr. Richard T. Edwards of the faculty of that school.

**Dr. Border Secures Conviction of Enemies.**—On October 14, the jury in Judge Thacker's court at Mangum, in the case of a number of defendants who were charged with "conspiring to produce an abortion on a pregnant woman," returned a verdict of guilty as to each of them. The trial was the outgrowth of a scheme which, it is alleged, was concocted to ruin the mayor of Mangum, Dr. Fowler Border, in a political way. He became apprised of the scheme and was able to turn the tables. It is alleged that the Mangum Electric Company was behind the conspiracy because it was against the voting of bonds to build a municipal light plant which the mayor favored. The secretary of the company was among those convicted. The convicted persons endeavored to induce Dr. Border to perform an abortion on a pregnant woman.

## PENNSYLVANIA

**Typhoid at Lehigh Traced.**—The investigation of the State Department of Health of the recent typhoid fever epidemic at Lehigh University where forty students were infected, has traced the source of infection to a kitchen employee who, though long since recovered from an attack of typhoid, still carried the germs.

### Philadelphia

**Personal.**—Dr. J. William White, emeritus professor of surgery at the University of Pennsylvania, and Dr. R. Tait McKensie, head of the department of physical education, have volunteered their professional service to the British government.——Dr. Elwood R. Kirby has been appointed chief consulting surgeon of the Masonic Home at Elizabethtown, Pa.

**Post-Graduate Clinics on the Heart and Lungs.**—Beginning with the first Friday afternoon in November and continuing throughout the winter on Friday afternoons from 5 to 6 p. m., Dr. Robert N. Willson will give in the amphitheatre of the Philadelphia General Hospital, Pine and Thirty-Fourth streets, a series of demonstrations on the diseases of the heart and lungs. These clinics will be informal and a cordial invitation is extended to physicians, as well as to undergraduate medical students, to attend. The subjects under discussion during November will be the anatomy and physiology of the heart and vessels.

## SOUTH CAROLINA

**District Society Organized.**—The Fifth District Medical Association, including the counties of Chester, York, Lancaster, Cherokee, Fairfield and Chesterfield, was organized at Chester, October 5, and the following officers were elected: president, Dr. Ebenezer W. Pressly, Clover; vice-presidents, Drs. Robert T. Ferguson, Gaffney; and Samuel Lindsay, Winnsboro; secretary-treasurer, Dr. George A. Hennies, Chester.

**Adopts Model Law.**—The State Board of Health at its meeting in Columbia, October 7, adopted the model vital statistics law, which was passed by the last general assembly and approved by the governor. The law is already in force in North Carolina and Virginia. Under the terms of the law, the state is divided into districts which are made up of cities, incorporated towns and townships.——Dr. James A. Hayne will be state registrar of vital statistics and will appoint local registrars who will be paid twenty-five cents for each death and birth reported to the state officials.

## TENNESSEE

**Wyeth in Chattanooga.**—Under the auspices of the Chattanooga College of Medicine and Hamilton County Medical Society, Dr. John A. Wyeth, New York City, lectured in Chattanooga, October 2, on "The Great Republic."

**Sanitary Inspection Service.**—The State Board of Health reports that during the quarter ended September 30, over 13,000 microscopic examinations for hookworm were made in the state. In the counties of Grainger, Polk, Sevier, Sumner and Union 2,657 cases of hookworm received free treatment in dispensaries. During the current quarter there will be free dispensaries established in Bedford, Scott and Unicoi counties.

**Personal.**—Dr. Thomas C. Holloway, Memphis, who has been seriously ill with uremia, is reported to be improving.——Drs. Roy Granbery, Memphis, and Edwin W. Cocke, Whiteville, have been appointed assistant physicians to the Weston State Hospital, Bolivar.——Dr. Samuel E. Grout, physician to the Tennessee Coal, Iron and Railroad Company, at Bessemer, Ala., for several years, has resigned and will move to Dyersburg.

## VIRGINIA

**Health Department to Exhibit.**—The Health Department of Richmond has decided to make an exhibit at the state fair. The exhibit includes graphic statements of the work accomplished by the department, the attitude of the department regarding small-pox and lessons in infant feeding.

**Plan to Establish Temporary Trachoma Hospital.**—Following the survey of Dickinson, Buchanan and nearby counties, which showed the prevalence of trachoma in the mountain sections, the State Board of Health and the United States Public Health Service have planned to cooperate to open a temporary hospital for the free treatment of trachoma, the United States government supplying surgeons, the State Board of Health to bear part of the expense and the building to be supplied by local authorities.

## WEST VIRGINIA

**Defer Work on Hospital Addition Till Spring.**—The work on the new tuberculosis ward which is to be added to the State Penitentiary Hospital, Moundsville, and for which $7,000 was appropriated, will not, it is announced, be commenced until spring.

**Personal.**—Dr. Andrew J. Noome, Wheeling, who was run down by an automobile October 10, is reported to be improving.——Dr. Ulysses M. Carwell, Hendricks, is reported to be ill at his home with tetanus due to an accidental gunshot wound of the ankle.

## WISCONSIN

**Deserved Honor to Dr. Sheldon.**—The physicians of Wisconsin, on the last day of the state society meeting in October, made a formal presentation to Dr. Charles S. Sheldon, Madison, retiring president and for many years secretary of the society. The address was made by Dr. Gilbert E. Seaman, Milwaukee, who expressed the love and reverence in which Dr. Sheldon is held in the medical profession of the state.

**Specialists Meet.**—The first annual state meeting of the Wisconsin eye, ear, nose and throat specialists, was held at Atheron Hotel and St. Mary's Hospital, Oshkosh, October 8 and 9, under the auspices of the Milwaukee Oto-Ophthalmic Society. Forty-five members were present and the program consisted of a scientific program on the first day and a clinic and operations at St. Mary's Hospital on the second day.

## CANADA

**Hospital News.**—The Sisters of St. Joseph at St. Thomas, Ontario, have purchased 5 acres of ground and the residence of Mr. John Farley, K. C., which will be remodeled into a hospital and sanitarium.

**Personal.**—Dr. Charles A. Hodgetts, Ottawa, medical advisor to the Canadian Conservation Commission, has been appointed commissioner for the Canadian Red Cross Society in Britain, to succeed the late Colonel Burland of Montreal.——Word has been received in Quebec that Hon. Dr. Beland, who was voluntarily attending Belgian wounded in hospital at Antwerp, is now in safety in Holland.

**Famine in Labrador.**—It is reported that on account of the short catch of cod during the season, the fishermen of Labrador are already suffering from lack of proper food. Beriberi has already appeared on the coast. Dr. John Mason Little, Jr., in charge of the Grenfell Hospital, St. Anthony, N. F., attributes the situation to the fact that the fishermen in every case eat little except white flour bread during the winter.

**Children's Hospital, Toronto.**—The Toronto Board of Health has recommended that the city of Toronto pay the Hospital for Sick Children 32 cents a day for all indigent outpatients treated at the hospital. The per capita cost of treating such patients in the past year has been to the hospital 42½ cents per day. During the past hospital year 31,970 patients received treatment at a cost of $31,630.40; and the hospital authorities stated that unless the city undertook the major portion of this burden the trustees of the hospital would be compelled to discontinue the outpatient departments. The Ontario government has promised to make a grant of 10 cents per head for such patients. Last year the hospital had a deficiency of $18,892.57. The new grant will cost the city about $10,000 per annum.

**Medical Inspection of Schools in Ontario.**—The education department of the province of Ontario has issued in book form a new code of regulations for the medical inspection of schools. Provision is made whereby school boards may undertake free medical treatment of pupils whose parents are unable to pay; and school boards may appoint a school medical inspection committee representing one or several conjoint boards. This committee must appoint a qualified medical inspector of not less than two years' experience in his profession; and power is given with the consent of the minister of education and the provincial secretary for the Ontario Board of Health to name the municipal health officer as this medical officer for inspection. Nurses are also to be employed of one or more year's experience. Medical inspectors and nurses are to be subject to the ordinary school inspector or principal. This act makes medical inspection compulsory in rural school sections once every three months, in villages once a month, in towns once every two weeks, and in cities once a week. A complete physical examination must be made of every pupil as soon after admittance to school as possible. The school medical officer will also be required to confer with school boards on sanitary matters.

## GENERAL

**General Medical Directors Elect Officers.**—At the annual meeting of the medical section of the American Life Convention, held in Dallas, Texas, October 7, the following officers were elected: chairman, Dr. Whitefield Harral, Dallas; vice-chairman, Dr. Frank W. Foxworthy, Indianapolis; secretary, Dr. Frank L. B. Jenney, Chicago (reelected), and member of the board of governors, Dr. J. P. Turner, Raleigh, N. C.

**Railway Surgeons Elect Officers.**—At the eleventh annual meeting of the American Association of Railway Surgeons held in Chicago, October 14 to 16, the following officers were elected: president, Dr. George F. Beasley, Lafayette, Ind.; vice-presidents, Drs. John P. Kaster, Topeka, Kan.; Clarence E. Case, Ashtabula, Ohio, and Eben N. Allen, Little Rock, Ark.; secretary and editor, Dr. Louis J. Mitchell, Chicago (reelected), and treasurer, Dr. Henry B. Jennings, Council Bluffs, Iowa. Safety first was the dominant note of the meeting.

**Bequests and Donations.**—The following bequests and donations have recently been reported:

Middlesex East District (Mass.), Medical Society, one fortieth of the residuary estate of Dr. John M. Harlow, Wilbur, amounting to about $4,000, to be held in trust, invested and the net income used toward paying the expenses of the society including the annual dinner.

St. Vincent's Hospital, Sanatorium Gabriel, Seton Hospital and the Society for the Relief of Incurable Cancer, all of New York City, each $5,000, by the will of Francis Higgins.

Presbyterian Hospital, for its Cathcart Home for Incurables, Devon, Pa., $6,000; Philadelphia Lying-in Hospital; and Philadelphia Home for Incurables, each one-ninth of the residuary estate of the late Francis T. Sully Darley.

To organize a corporation to maintain a hospital in Upland or Chester, $200,000, to pay the income and maintain a bed in the Woman's Hospital, Philadelphia, $5,000, and to maintain a bed in the Philadelphia Home for Incurables, $5,000, by the will of Robert H. Crozer.

Goldsboro, N. C., Hospital, $1,000, University of North Carolina, $1,000, and Jewish Orphanage of North Carolina, $2,500, by the will of Solomon Weill, Goldsboro, N. C.

**Commemoration Day at San Francisco.**—At the Atlantic City meeting the House of Delegates of the American Medical Association considered the recommendation of the Committee on Mode of Commemorating the Completion of the Panama Canal, to the effect that a day be set aside during the annual session at San Francisco next June to commemorate "the services of the men living or dead whose contributions to sanitary science and preventive medicine have made possible the construction of the Canal." The matter was referred to the Board of Trustees, which, at its meeting last week, October 23, adopted a resolution setting aside Wednesday (June 23) of the week of the annual session in San Francisco, for this commemoration day, and appointed a committee to make the necessary arrangements. The following is the committee: Dr. W. T. Councilman, Chairman of the Board of Trustees; Dr. Victor C. Vaughan, President of the American Medical Association; Dr. William L. Rodman, President-Elect, and Dr. George H. Simmons.

## WAR NOTES

**Chloroform Donations.**—A donation of $4,000 worth of chloroform has been received by the British Red Cross from an American donor.

**American Hospital in Petrograd.**—The American colony in Petrograd has just established a small hospital there and the American Red Cross is arranging to send it absorbent cotton, linens, blankets, etc.

**Dining Cars Placed at the Service of the Wounded.**—The company owning the dining car service in Germany has placed all their cars at the service of the troops so that the wounded can be given warm food en route.

**Motor Ambulances.**—The British Red Cross Society has already been promised 200 motor cars to be used as ambulances. The Sydney branch of the society has sent a donation of $25,000, of which $5,000 is allotted for ambulances.

**Cholera.**—The Berlin exchanges of October 4 state that a single case of cholera has been discovered at Brunn, in a soldier returning from the seat of war in the northeast, and isolated at once. Two similar imported cases have been recognized and isolated at Vienna and one at Prague.

**French Physicians at Erfurt.**—Seven French physicians are said to be at work in the prisoners' camp at Erfurt, Germany, but in accordance with the Geneva convention, they are not regarded as prisoners of war but are lodged in the barracks and allowed to go about at will. They still wear their French uniforms with the Red Cross band on the arm.

**Death of Professor König in the Field.**—The *Med. Klinik* brings word that the professor of surgery at the university of Marburg, Friedrich König, was killed recently while attending to the wounded on one of the battlefields at the eastern seat of war. He was the son of the late Professor Franz König of Berlin, and entered on the practice of his profession in 1890.

**No More Surgeons and Physicians Needed in the War Zone.**—The First Aid Department of the American Red Cross announces that it has on file 2,000 applications from reputable American physicians and surgeons in the European war zone. These are far more than can be utilized at present. It is suggested, therefore, that no more applications be submitted at present.

**The Iron Cross for German Members of the Profession.**—The iron cross for special bravery under action has been conferred on Kraus, Martens, Jolly and Hübener, all of Berlin, Sauerbruch of Zurich, now consulting surgeon of the fifteenth army corps, Drigalski of Halle, Jüttner, Kirschner and Wachsen. The son of the latter is in the regular army and has likewise received the iron cross. Other recipients are: Guttmann, Gralow, M. Mendelssohn, Vormann, Rhode and Langheld; the latter was in the campaign in China.

**French Wounded.**—In the *British Medical Journal* for October 17, there is reprinted a portion of a letter written by Dr. Alexis Carrel, from Lyons. Dr. Carrel states:

> "I am in my own city. Mobilized, naturally. I am in the Hotel-Dieu in the Department of Surgery. I have more than a thousand wounded to look after. My patients are the first who came under fire. They are those who in Haute Alsace completed with the bayonet the work of the mitrailleuse. Fortunately the wounds are not very serious. In all, the wounded in Lyons are about 12,000, distributed among forty-two hospitals; in the district there are 25,000 more. Having regard to the tremendous number of combatants, the number of wounded up to the present is not, so far as our army is concerned, very heavy, and the mortality is very low. In my hospital of 2,000 men hardly 20 have died of their wounds. Besides, our wounded go back in great numbers to the front, and thus our army goes on acquiring as time goes on soldiers who know what taking cover under fire means."

**Protest Against Repudiation of Scientific Honors.**—The senior of the medical faculty of the University of Berlin, Professor Waldeyer, has published a protest against the action of Roentgen, Behring and other German scientists in repudiating honors that had been conferred on them by scientific societies in Great Britain. He deplores their carrying the war into fields whose cultivation requires the concerted action and tranquil cooperation of all civilized peoples. This repudiation of honors conferred for scientific work done in time of peace does not seem to him right, and it is superfluous besides, he says, as all German scientists who are able to bear arms are at the front. This surely is strife enough. Besides, the repudiation will make but little impression amid the thunder of war. One's love for his fatherland and one's sense of honor can be satisfied better and more effectually in other ways. Other scientists have subscribed to his view, including Orth and A. Martin. On the other hand, still more scientists are publishing their repudiation of honorary membership in British, French and Russian scientific societies.

**Supplies Needed in the War Zone of Europe.**—The American Red Cross announces the following articles as specially needed for wounded soldiers and sailors in hospitals.. All garments should be new: outing flannel pajamas and nightshirts, size 17; convalescent gowns, like bathrobes, of outing flannel or warmer material; socks, underwear and ward slippers. Acceptable hospital supplies or pillowslips and sheets, single size only; rubber sheets, 54 inches wide, and towels. The following articles of clothing, which must be absolutely new, are needed for the homeless and destitute women and children in the war zone: woolen blouses, warm shirts, boots and shoes, stockings, untrimmed cotton chemises, knitted mufflers or scarfs to cover the head and shoulders and especially shawls knitted or woven, made of woolen material and large enough to cover the body and shoulders as well as the head; petticoats, simple warm dresses for children and knitted hoods with long ends to throw around the neck or short capes to cover the shoulders. Presents of yarn and knitting needles also would be acceptable. All donations of clothing should be sent to the following address and the contents of each package should be plainly written on the outside: American Red Cross, care Bush Terminal Company, Thirty-Ninth Street and Second Avenue, Brooklyn, N. Y. Shipments of hospital supplies are to be sent in a few days to Germany via Rotterdam to Petrograd and to Paris. The supplies requested for Petrograd include chloroform, opium, cocain, disinfectants and absorbent cotton. An appeal from France is for more starched gauze, absorbent cotton, iodin and blankets.

## LONDON LETTER

London, Oct. 16, 1914.

### The War

The British army fighting in France and Belgium is only an instalment of a much greater force which is being prepared. It has already been increased by Indian and colonial troops. Its growth involves corresponding increase in the medical service. The authorities have therefore decided to duplicate the office of Director General of the Army Medical Service. Sir Alfred Keogh, who was Director General from 1904 to 1909—a post which he attained not by seniority but by his reputation as an administrator—will be in charge of the office of Director General at home. Until recently he has been chief commissioner of the British Red Cross in France. Sir Arthur Sloggett will become Director General of the expeditionary force. This decision has been reached partly because of the enormous amount of work connected with the expeditionary force, on the one hand, and the home force of new recruits on the other, and partly because it is thought that the director in this country should have had personal experience of the local conditions with the expeditionary force, which Sir Alfred Keogh has. Sir Arthur Sloggett has been appointed chief commissioner in France both of the Red Cross and the St. John Ambulance Association. He will thus be able to coordinate the work of these two voluntary organizations with that of the Army Medical Corps. For these two organizations a fund has been raised by the *Times* and now amounts to nearly $2,000,000. A special appeal has been made for motor ambulances, of which 200 have been provided out of 400 asked for. Many owners are giving their private cars, which can be converted into an ambulance at a cost of about $200. A great advantage of the motor ambulance is that severe cases which cannot wait for conveyance to hospital by train and endure the often long and slow journey may be at once removed by car. The condition of the wounded brought back to this country is most satisfactory; their dressings are in a most cleanly condition and considerably less than 10 per cent. of the wounds are suppurated—a most satisfactory result considering the large proportion of shrapnel injuries. In many cases rapid healing has taken place. During the transport every possible opportunity is taken to change the dressings.

#### APPOINTMENT OF CONSULTING PHYSICIANS

In my last letter I announced the appointment of two eminent surgeons with previous military experience as consultants for the army in the field. Three consulting physicians have now been appointed—Sir John Rose Bradford, physician to University College Hospital, Sir Wilmot Herringham, physician to St. Bartholomew's Hospital, and Sir Almroth Wright, director of the Department of Therapeutic Inoculation, St. Mary's Hospital, London. They will have the rank of colonel with its pay and allowances and will be accompanied by three expert bacteriologists. The appointment of Sir Almroth Wright, who is the pioneer of modern vaccine therapy in general and of antityphoid inoculation in particular, shows that this branch of preventive medicine will receive ample attention in the field. It has been decided to appoint a special army sanitary committee to advise the army council on all matters connected with the health of the troops at home and abroad. It will be a mixed committee, presided over probably by a general officer of the engineers and comprising officers of the Army Medical Corps, and members of the civilian public health service.

#### ANTITYPHOID INOCULATION

Antityphoid inoculation is being performed on a large scale on troops about to leave for the front, but in keeping with the spirit of freedom of this country it is not compulsory. The following is the procedure adopted: The men are advised to take no alcohol for twelve hours before and twenty-four hours after inoculation. The men are paraded, and six of them are admitted into the room at once; a noncommissioned officer paints over a small area about 1 inch below the center of the left clavicle; the men then sit down on a seat beside a table on which a small sterilizer is kept boiling; three syringes are used. An assistant, not a physician, puts the syringe and needle into the sterilizer as it is used, and continues using the same needle until it becomes blunt; as a rule one needle is good for about fifty or sixty punctures. After inoculation the puncture is sponged and pressed with a small antiseptic pad, and only in very rare cases does any bleeding occur. It is found that making the injection in the breast causes much less discomfort and pain to the men. They are all right for duty in about twelve hours, with the exception of a few who may be off duty for two or three days. The second dose is given about ten days afterward in the right breast. Working in this way, about seventy to eighty can be done in an hour.

#### THE BELGIAN REFUGEES

The flood of refugees from Belgium to this country has increased since the capture of Antwerp, which was followed by a total exodus of the population. Many sought the friendly refuge of Holland, whence they were invited to return by the Germans. The large and fashionable seaside resort of Folkestone is the principal place of landing in this country and is given up almost entirely to Belgian refugees. As many as 10,000 have landed in the day and the total number in this country now exceeds 100,000. The destitute condition is most pathetic. Many, including a large number of children, are starving and some have been so long without food that they have to be treated medically before they can take it. A large number of wounded Belgian soldiers have also been landed and removed to various hospitals. As many as 8,000 arrived in two days. Numerous Red Cross workers, voluntary helpers and interpreters minister to the wants of the refugees and convey them to the homes which private and public beneficence have abundantly prepared for these innocent victims. After resting for a few days the refugees are drafted to homes prepared for them in London and various parts of the country.

## PARIS LETTER

Paris, Oct. 8, 1914.

### Antitetanus and Antidysentery Serums

The minister of war has just forbidden the Pasteur Institute to deliver any dose of antitetanic or antidysenteric serum since the whole supply of these serums should be centralized in the war department.

### Resumption of Courses at the University of Paris

The council of the Université de Paris met October 1 and made all arrangements for beginning courses in the various departments at the usual date. The council decided that at the end of hostilities special examinations should be held in all the departments for the benefit of the students whose service under the colors prevents them from being present at the ordinary October and November sessions and that all possible facilities be extended to them.

### Swiss Physicians and the Wounded

One of the most eminent Swiss surgeons, Dr. César Roux, professor of clinical surgery at the Faculté de médecine de Lausanne, has just set out for Besançon to offer his services to the hospitals in that city. The population of Switzerland shows a great desire to ameliorate the distresses of the war. A wish has been expressed that Swiss ambulances should be sent to the scenes of war. The head physician of the Swiss Red Cross replies that it is not certain that Switzerland may not need all her medical resources if only in the case that it is necessary to interne foreign troops. The belligerent countries, moreover, have not requested, either directly or indirectly, the sending of ambulances.

### The Improvement of the Conditions of the Transportation of the Wounded

The character of modern battles, which last for weeks, creates great difficulties in the transportation of the wounded. Removed incessantly from litters to carriages, from carriages to ambulances, from ambulances to wagons, from wagons to hospitals, laid on straw where hundreds of their comrades have lain, soiling their couches with dust, mud, blood and pus, these unfortunates at each stage run the risk, if not of infection, for most of them are infected already, at least of additional infection or of contracting some new infection which they might have escaped. One of the prime conditions of the safety of the wounded is the avoidance of contact with soiled straw and too numerous changes of position. Dr. Mosny, member of the Académie de médecine, recommends the use of strong washable canvas cases that can be filled with straw. At each corner of these mattresses, a long ear for convenience in handling permits the wounded man to be lifted from the litter to the carriage, wagon, ambulance or hospital without painful or dangerous shifting of position. A removable oilcloth would prevent the soiling of the mattress. A pillow-case, stuffed with hay or straw, under the head of the wounded man, would add to his comfort and allow him to eat or drink without sitting up or raising his head. The mattress case, oilcloth and pillow-case are easy to disinfect. In most cases, the oilcloth alone, which would be in immediate contact with the wounded man, would need disinfection after use. This improvement of the conditions of transportation of the wounded would be easy, rapid and inexpensive to effect. The Union des femmes de France, which has already furnished some ambulances with such mattresses and pillow-cases, has undertaken to supply them.

### Measures of Public Hygiene

The prefect of police has just sent to the mayors of the communes around Paris a circular containing various recommendations for the preservation of the public health. In regard to drinking-water, the circular recommends some simple procedures for the economical purification of water. The first is boiling. The second is to pour in fifteen or twenty drops of fresh iodin tincture per liter of water and after a quarter of an hour to add two or three little crystals of sodium hyposulphite and to agitate until decoloration is complete. The third is to dissolve crystals of potassium permanganate one by one in the water to be purified until the water is colored slightly pink. If the tint is too pronounced a little sugar is to be added. The prefect emphasizes the necessity of thoroughly cleaning and disinfecting buildings which have sheltered troops and of taking the greatest pains to see that such buildings and those housing sick or wounded soldiers are kept perfectly neat.

### Abuse of the Red Cross Insignia

It has been remarked that persons having no connection with our sanitary organizations wear the costume of ambulance attendants in public, especially at the railway stations through which trains bearing the wounded are passing. Such abuses are liable to harm the prestige of the Red Cross societies. The prefect of the police, therefore, has resolved to prosecute, in conformity with the law, every unauthorized use of the Red Cross brassard. The agents of the municipal police have received the order to demand authenticated proofs of identity, especially at the railway stations.

### The Red Cross Stamp

To secure resources for the societies for the aid of the wounded, it has been decided to print a special postage stamp of 15 centimes' (3 cents) value of which 10 centimes are to go to the post-office, the remaining 5 centimes being shared among the Red Cross societies. The post-office immediately printed temporary stamps by printing on the usual 10-centime stamps a red cross and charging 5 centimes additional for them. At present, the 15-centime stamp is on sale throughout France at all post-offices and tobacco shops. The stamp, the use of which is, of course, optional, is good only for use within France.

### An Offer from the University College of London

The Université de Paris has received from Mr. T. Gregory Foster, provost and president of the faculty of the University College of London, a letter offering the assistance of the University College to male or female students from Paris who wish to come to London to resume their studies. The members of the faculty offer hospitality to about sixty members of the Université de Paris, professors, teachers or students, whose present situation places them in need of such assistance.

### American Assistance for France

The New York Committee directed by Mrs. Whitney Warren and Mrs. Robert Bacon has cabled 50,000 francs ($10,000) to the Committee France-Amérique. This sum, raised by private subscriptions in the United States, will be turned over to the committee of national assistance presided over by M. Appell, dean of the Faculté des Sciences de Paris.

The minister of war has been authorized to accept in the name of the government a gift of 500,000 francs ($100,000) given by the Canadian government. The sum will be used for the organization and maintenance of a temporary hospital for sick and wounded soldiers which will be called the Hospice Canadien.

## Marriages

William P. Stuart Keating, M.D., Willimantic, Conn., to Miss Elsie W. Greene of Matteawan, N. Y., at Willimantic, October 12.

Charles Corr Gans, M.D., Point Marion, Pa., to Chelsea Trax Carroll of Uniontown, Pa., at Jacksonville, Fla., September 15.

Frederick William Wittich, M.D., Westminster, B. C., to Miss Jean Wetteran of Hazelton, Pa., at Westminster, October 24.

Grover Cleveland Otrich, M.D., Belleville, Ill., to Mrs. Margaret Zimmerman of Kansas City, Mo., at Chicago, October 14.

Lawrason Brown, M.D., Saranac Lake, N. Y., to Miss Martha Lewis Harris of Baltimore, at Midland, Va., October 8.

Passed Assistant Surgeon Harry E. Jenkins, U. S. N., to Miss Harriet Whiting Gatewood of Washington, D. C., October 7.

Isaac Donaldson Rawlings, M.D., Chicago, to Miss Eleanor Florence Cupp of Stevensville, Mich., October 17.

Rutherford B. Hayes Gradwohl, M.D., to Mrs. John E. Holman, both of St. Louis, at Manchester, Kan., July 12.

Burns Rush Eastman, M.D., Muskegon, Mich., to Miss Frances M. Scriver of Westmont, Montreal, August 6.

George M. Flanagan, M.D., New Britain, Conn., to Miss Mary E. Swartwood of Syracuse, N. Y., October 12.

Lee Viley Williams, M.D., Lexington, Ky., to Miss Margaret Clark Steele of Nicholasville, Ky., October 12.

Frederick Willard Brian, M.D., Bloomington, Ill., to Miss Virginia Hillabold of Syracuse, Ind., October 15.

Charles B. Barker, M.D., to Pauline Quillin, M.D., both of Guthrie, Okla., at Oklahoma City, October 17.

Cyrus Whitney Culver, M.D., Lowville, N. Y., to Miss Florence Mary Galley of Montreal, October 10.

Arthur McCarey, M.D., Chicago, to Miss Arleen Winnifred Joannes of Green Bay, Wis., October 1.

Seth Billington Sprague, M.D., to Miss Mildred A Miller, both of Jersey City, N. J., recently.

Willard K. Clark, M.D., Niobrara, Neb., to Miss Eunice Cornell, at Auburn, Neb., September 23.

Elmer E. Garrett, M.D., to Miss Lena M. Floyd, both of Troy, Ia., at Bloomfield, Ia., October 6.

# Deaths

**John N. McCutchan, M.D.** Louisville Medical College, 1896; a member and councilor of the State Medical Association of Texas; of Waco, Tex.; formerly president of the Central Texas District Medical Association and secretary of the Bell County Medical Society; health officer of Bell County and the city of Temple; assistant medical director of the Amicable Life Insurance Medical Association, Waco; died in the Providence Sanitarium in that city, October 9, from disease of the kidney for which an operation had been performed a week before, aged 41. At a meeting of the McLennan County Medical Society, October 10, resolutions of regret and sympathy were adopted.

**John W. Morris, M.D.** Albany (N. Y.) Medical College, 1881; attending consulting physician to the House of the Good Shepherd and physician to the Marshall Infirmary, Troy, N. Y.; for more than thirty years a practitioner of that city and once city physician and police surgeon; died at his home October 5, from angina pectoris, aged 55. At a special meeting of the Rensselaer County Medical Society, October 7, eulogistic addresses were delivered and resolutions of respect and regret were adopted.

**Ernest J. Waddey, M.D.** University of Maryland, Baltimore, 1891; of Waterloo, Ia., a Fellow of the American Medical Association; a charter member of the Waterloo Medical Society, and once president of the Black Hawk County Medical Society; district surgeon of the Illinois Central System and a member of the board of commissioners of insanity of Black Hawk County; died in St. Francis' Hospital, Waterloo, October 14, from organic nervous disease, aged 47.

**William James Lumsden, M.D.** University of Maryland, Baltimore, 1869; a Fellow of the American Medical Association; a Confederate veteran; formerly secretary of the Medical Association of the State of North Carolina; for more than forty years a practitioner of Elizabeth City, N. C.; one of the most beloved physicians of eastern North Carolina; died at his home, October 14, from cerebral hemorrhage, aged 68.

**Leon Gay Lewis, M.D.** Hahnemann Medical College, Chicago, 1910; of Milwaukee; formerly a member of the staff of the Ernest Wende Hospital, Buffalo, N. Y.; recently appointed a member of the house staff of the National Soldier's Home in Dayton, Ohio; died in Good Samaritan Hospital, Milwaukee, September 29, from typhoid fever, aged 27.

**Charles S. Rudolph Reed, M.D.** College of Physicians and Surgeons in the City of New York, 1879; of Utica, N. Y.; a specialist on diseases of the eye, ear, nose and throat; for twelve years consulting surgeon in his specialties in St. Elizabeth's Hospital, Utica; died in that institution, two days after a surgical operation, aged 62.

**Arthur C. Magill, M.D.** Michigan College of Medicine, Detroit, 1885; a member of the Medical Society of the State of Pennsylvania, and a practitioner of Pittsburgh, Pa.; once a member of the city council of Pittsburgh and board of trustees of the Carnegie Library; died in St. Francis' Hospital, Pittsburgh, October 17, aged 52.

**James H. Walker, M.D.** Iowa State University, Iowa City, 1898; a Fellow of the American Medical Association; once president of the Central District (Iowa) Medical Association and coroner of Boone County; one of the best known physicians of central Iowa; died at his home in Boone, September 25, from malignant disease, aged 44.

**James S. Fuller, M.D.** Kansas City (Mo.) Medical College, 1898; of Fort Gibson, Okla.; a member of the Oklahoma State Medical Association and a charter member of the Muskogee County Medical Society; died in Muskogee, August 30, from disease of the gall bladder and adnexa.

**Veda C. Chipperfield Murphy, M.D.** College of Physicians and Surgeons, Chicago, 1904; a Fellow of the American Medical Association and one of the most prominent woman physicians of Fulton County, Ill.; died at her home in Cuba, Ill., October 13, from carcinoma, aged 40.

**Robert White, M.D.** Durham (England) University, 1843; M.R.C.S., Eng., 1843; for forty-six years a practitioner of Boston; a member of the Massachusetts Medical Society; died at his home in Cambridge, Mass., September 27, aged 91.

**H. C. Ferguson, M.D.** Cincinnati College of Medicine and Surgery, 1876; a physician and pharmacist of Carter, Ky.; was found dead at the home of his son in Portsmouth, Ohio, October 6, aged 73.

**Henry R. Stout, M.D.** Hahnemann Medical College, Chicago, 1868; president of the Homeopathic Board of Medical Examiners of Florida; for forty-two years a practitioner of Jacksonville, Fla.; died at the home of his daughter in St. Augustine, Fla., October 14, aged 71.

**John C. Amis, M.D.** University of Louisville, Ky., 1883; a Fellow of the American Medical Association; attending physician to the Bell Point Hospital and physician-in-chief to the Fort Smith Orphan's Home; died at his home in Fort Smith, Ark., October 14, aged 54.

**William B. Walker, M.D.** Cincinnati College of Medicine and Surgery, 1876; a member of the Medical Society of the State of Pennsylvania and formerly vice-president of the Indiana County Medical Society; died at his home in Dayton, Pa., September 19, aged 63.

**Richard Lee Smith, M.D.** Beaumont Hospital Medical College, St. Louis, 1896; formerly mayor of Washougal, Wash.; died in his office in that place, September 12, from the effects of a gunshot wound of the head self-inflicted, it is believed with suicidal intent, aged 50.

**Linwood Shangar Corson, M.D.** Temple University, Philadelphia, 1907; chief of the Medical Dispensary of the Garrettson Hospital; a practitioner of Glenmoore, Pa.; died in the Samaritan Hospital, Philadelphia, September 26, from heart disease, aged 41.

**Joseph Edward Beatty, M.D.** University of Maryland, Baltimore, 1861; for forty years a practitioner of Baltimore; surgeon major of the Second Maryland Volunteer Infantry during the Civil War; died in a sanatorium near Baltimore, October 13, aged 75.

**Christopher S. Newbill, M.D.** College of Physicians and Surgeons, Baltimore, Md., 1875; for many years health officer of Norfolk, Va.; died suddenly September 26, from cerebral hemorrhage. while driving near his home in Tappahannock, Va., aged 63.

**Nicholas Z. Wagener, M.D.** Northwestern University Medical School, 1904; a member of the Wisconsin State Medical Society; of Sturgeon Bay, Wis.; died in a hospital in that city, October 3, a week after an operation for appendicitis, aged 41.

**William R. Hamilton, M.D.** New York University, New York City, 1864; a member of the Medical Society of the State of Pennsylvania, and one of the oldest practitioners of Pittsburgh; died at his home October 15, from senile debility, aged 86.

**Josiah T. Payne, M.D.** University of Maryland, Baltimore, 1868; a Confederate veteran and health officer of the Tenth District of Baltimore County, Md.; died at his home in Sunny Brook, Md., October 2, from cerebral hemorrhage, aged 75.

**Collier D. East, M.D.** College of Physicians and Surgeons, Baltimore, Md., 1876; a member of the South Carolina Medical Association, of Goldville, S. C.; died at the home of his sister in Clinton, S. C., September 20, from heart disease, aged 62.

**James Bachelder Bell, M.D.** Homeopathic Medical College of Pennsylvania, Philadelphia, 1869; for nearly thirty years a member of the staff of the Massachusetts Homeopathic Hospital; died at his home in Boston, September 27, aged 76.

**Harry C. Wakefield, M.D.** Beaumont Hospital Medical College, St. Louis, 1892; acting assistant surgeon, U. S. P. H. S., and on duty at the St. Louis Marine Hospital since 1895; died in that institution, October 6, from appendicitis, aged 44.

**John Francis Dustin, M.D.** National Medical University, Chicago, 1902; of Deadwood, S. Dak.; aged 54; died in St. Joseph's Hospital in that city, September 27, from injuries received sixteen hours before, by the overturning of his automobile.

**Benjamin F. Wyman, M.D.** Medical College of the State of South Carolina, Charleston, 1869; a practitioner of Aiken; died at the home of his granddaughter in Kitchings Mills, S. C.; September 30, from pneumonia, aged 75.

**Charles M. Van Dyke, M.D.** Starling Medical College, Columbus, Ohio, 1886; a member of the Medical Society of the State of New York; health officer for Milo; died at his home in Himrod, N. Y., September 29, aged 57.

**Nathaniel G. Morris, M.D.** University of Nashville, Tenn., 1873; a member of the Kentucky State Medical Association; of Fulton, Ky.; died suddenly at his farm near that place, September 25, from heart disease, aged 63.

**Elijah Leonard Bruen, M.D.** Long Island College Hospital, Brooklyn, 1899; a member of the medical staff of the Women's Hospital in the State of New York and the New York Polyclinic; died at his home in Brooklyn, October 3.

**Gustav Burton Turner, M.D.** Northwestern University, Chicago, 1912; assistant surgeon of the Western Pacific Railroad at San Francisco; died in Mount Sinai Hospital in that city, September 19, from diabetes, aged 27.

**Henry S. Baron, M.D.** Physio-Medical College of Indiana, Indianapolis, 1878; a Fellow of the American Medical Association; died at his home in Pella, Iowa, September 20, from carcinoma of the intestines, aged 62.

**Max H. Hartwig, M.D.** Detroit College of Medicine and Surgery, 1888; of Port Washington, Wis.; was instantly killed by the overturning of his automobile, 4 miles west of Port Washington, September 16, aged 49.

**Andrew A. Forsythe, M.D.** Tulane University, New Orleans, 1887; for nearly sixteen years mayor of Monroe, La.; died at his home in that city, September 29, from chronic interstitial nephritis, aged 52.

**Carl Kaufman, M.D.** University of Heidelburg, Germany, 1868; for several terms coroner of Sargent County, N. Dak.; died at his home in Gascoyne, N. Dak., about September 28, from cirrhosis of the liver, aged 70.

**Aaron Robert Wolfe, M.D.** New York University, New York City, 1882; of Paterson, N. J.; was thrown from his automobile September 26, by the simultaneous bursting of two tires, and instantly killed, aged 55.

**James Singleton Shoemaker, M.D.** Hahnemann Medical College, Philadelphia, 1888; a member of the teaching staff of his Alma Mater; died at his home in Philadelphia, October 7, from nephritis, aged 50.

**Abner McLean, M.D.** Medical College of the State of South Carolina, Charleston, 1861; surgeon in the Confederate service throughout the Civil War; died at his home in Dillon, S. C., October 1, aged 80.

**Alfred J. Perkins, M.D.** Eclectic Medical Institute, Cincinnati, 1865; at one time president of the Florida State Eclectic Medical Association; died at his home in Daytona, Fla., October 10, aged 80.

**James A. Toole, M.D.** Savannah, Georgia, Medical College, 1869; surgeon in the Confederate service during the Civil War; died at his home in Glenwood, near McRae, Ga., September 21, aged 73.

**James W. Fergus, M.D.** Memphis Hospital Medical College, Memphis, Tenn., 1891; a member of the Arkansas Medical Society; died at his home in Elm Springs, Ark., about September 17, aged 62.

**Cassius Marcellus Smick, M.D.** Miami Medical College, Cincinnati, 1881; a member of the medical staff of St. Luke's Hospital, Terre Haute, Ind.; died at his home in that city, September 12, aged 61.

**Simon P. Lester, M.D.** Jefferson Medical College, 1852; for more than sixty years a practitioner of Mississippi; died at his home in Batesville, September 28, from carcinoma of the stomach, aged 87.

**Joseph Glass Wilson, M.D.** College of Physicians and Surgeons, Keokuk, Ia., 1873; formerly of Attica, Kan.; died at his home in Portland, Ore., August 26, from valvular heart disease, aged 72.

**Hugh Lagan, M.D.** University of California, San Francisco, 1893; once surgeon of the San Francisco Fire Department; died at his home in San Francisco, October 13, from tuberculosis, aged 43.

**Alonzo M. W. Westfall** (license, years of practice, Illinois, 1877) a practitioner of Prairie City, Ill., for forty-four years; died at his home September 21, from acute dilatation of the heart, aged 70.

**J. P. Swentzel** (license, years of practice, West Virginia, 1881); for fifty-three years a practitioner of medicine; died at his home in Arnoldsburg, W. Va., early in August, aged 80.

**Louise Dodson Holmes, M.D.** Women's Medical College, of Cincinnati, Ohio, 1895; a member of the Massachusetts Medical Society; died at her home in Athol, Mass., recently, aged 46.

**Horace K. Regar, M.D.** University of Pennsylvania, Philadelphia, 1878; a Fellow of the American Medical Association; died at his home in Philadelphia, September 14, aged 59.

**Andrew B. Brookins, M.D.** University of Louisville, Ky., 1875; of Bartow, Fla.; formerly chief surgeon of the Hospital for Inebriates; died in Jacksonville, Fla., September 21, aged 81.

**Isaac Newton Willard, M.D.** Bellevue Hospital Medical College, New York City, 1875; of Utica, N. Y.; died suddenly in Syracuse, N. Y., September 25, from angina pectoris, aged 65.

**Harriet E. Turner, M.D.** Medical College of Indiana, Indianapolis, 1896; a Fellow of the American Medical Association; of Indianapolis; died in Boston, Mass., September 29, aged 49.

**John Whiting Niles, M.D.** New York University, New York City, 1876; for many years a practitioner of Chicago; died at his home in that city, October 17, from cerebral hemorrhage, aged 62.

**Claudius H. Morris, M.D.** Medical College of Indiana, Indianapolis, 1881; for twenty-five years a practitioner of Galveston, Tex.; died in San Antonio, Tex., October 7, aged 61.

**Jedediah Marcus Barton, M.D.** Hahnemann Medical College, Philadelphia, 1870; died at his home in Worcester, Mass., September 30, from cerebral hemorrhage, aged 69.

**William E. Henderson, M.D.** University of Louisville, Ky., 1873; a member of the Oklahoma State Medical Association; died at his home in Shawnee, Okla., October 11, aged 64.

**John W. Layfield, M.D.** University of the South, Sewanee, Tenn., 1899; for several years a practitioner of Alma, Ga.; died at a hospital in Savannah, Ga., October 3, aged 40.

**Harry Murray Jones, M.D.** University of North Carolina, Chapel Hill and Raleigh, 1906; died at his home in Nez Perce, Idaho, October 5, from pneumonia, aged 33.

**Samuel Hamilton Vredenburg** (license, years of practice, Illinois, 1878) for nearly sixty years a practitioner of Danville, Ill.; died at his home, September 24, aged 94.

**Jesse Portman Chesley, M.D.** Washington University, St. Louis, 1864; of St. Joseph, Mo.; died at the home of his daughter in Kansas City, Mo., October 10, aged 81.

**William Henry Davies, M.D.** University of Edinburgh, Scotland, 1857; of Monterey, Cal.; died in San Francisco, September 30, from senile debility, aged 80.

**Abram L. Small, M.D.** Rush Medical College, 1863; a pioneer practitioner of Kankakee County, Ill.; died at his home in Kankakee, October 6, aged 84.

**Herbert E. Bennett, M.D.** Starling Medical College, Columbus, Ohio, 1879; died at his home in Mentone, Ind., September 28, from heart disease, aged 50.

**David T. Hyatt, M.D.** Louisville Medical College, 1874; a practitioner and druggist of Monticello, Ark.; died at his home recently, aged 62.

**Honore P. Guilbeau, M.D.** University of Pennsylvania, Philadelphia, 1853; died at his home in Breaux Bridge, La., September 27, aged 82.

**Frank A. Hemenway** (license, Iowa, practitioner, 1886); died at his home in Clio, Iowa, September 19, from disease of the lungs, aged 68.

**John A. Hamilton** (license, Ind., 1897); for thirty-five years a practitioner of Advance, Ind.; died at his home September 28, aged 78.

**Harry David Belt, M.D.** Medical College of Ohio, Cincinnati, 1867; died in Chicago, September 30, from cerebrospinal meningitis, aged 40.

**David Lewis Taylor, M.D.** Albany, N. Y. Medical College, 1892; of New York City; died in Gilbertsville, N. Y., July 11, aged 46.

**Lafayette J. Poe, M.D.** Eclectic Medical Institute, Cincinnati, 1876; died at his home in Butler, Ky., September 18, aged 67.

**James Neil, M.D.** New York University, New York City, 1850; died at his home in New York City, September 26, aged 86.

**Josephine Alice Line, M.D.** Rush Medical College, 1903; of Hiram, Ohio; died suddenly in Troy, Ohio, August 17, aged 37.

**Alonzo G. Cook, M.D.** Hahnemann Medical College, Chicago, 1881; died at his home in Long Beach, Cal., August 15, aged 75.

**John L. Phillips** (license, Ind., 1897); of Linton, Ind.; died in Ann Arbor, Mich., August 30, from gastritis, aged 74.

# The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

## THE "BIG SIX"

### Six Reasons for the Perpetuation of the Proprietary Evil

"The Big Six" is the modest name assumed by the Associated Medical Publishers in describing the half-dozen medical journals that comprise their association. The Associated Medical Publishers is an organization evidently composed of the owners and publishers of the following journals:

*American Journal of Clinical Medicine*, Chicago: Essentially a house organ for the Abbott Alkaloidal Company. Was established in 1894, its original name being the *Alkaloidal Clinic*.

*American Journal of Surgery*, New York: Originally established in St. Louis, but when purchased by its present owner, was transferred to New York City. Its owner and managing editor was, previous to the time he purchased the *American Journal of Surgery*, advertising manager for another surgical journal. He still is, essentially, an advertising man, and is said to act as advertising director of a Massachusetts proprietary house.

*American Medicine*, Burlington, Vt.: Originally established as a weekly in Philadelphia. When purchased by its present owner, it was changed to a monthly, and the place of publication transferred to Burlington, Vt., although its principal offices are in New York City. Its present owner and managing editor conducts an advertising agency that handles a number of proprietary medicine accounts.

*Interstate Medical Journal*, St. Louis: Practically owned and controlled by a physician who conducts an advertising agency which handles, or has handled, a number of advertising accounts of proprietaries.

*Medical Council*, Philadelphia: Was established in 1895 and is at present owned and controlled by the widow of its founder.

*Therapeutic Gazette*, Detroit: Essentially a house organ for Parke, Davis & Company and is published by the general manager of this company.

The Associated Medical Publishers under the caption "Big Six" published the following advertisement early this year:

> "A banner year is ahead for those firms who plan to develop the patronage and support of the medical profession for their products. Never were the opportunities greater, or the prospects brighter, for enlisting the aid of medical men in the successful merchandising of pure foods, sanitary supplies for the home, school or public institution, hygienic clothing and foot wear, automobiles and automobile accessories, and high grade specialties in general appealing to the physician personally, or in his professional capacity.
>
> "Through the services of 'The Big Six' reputable firms can secure for products of established merit, the favorable attention of over 100,000 of the country's foremost physicians.
>
> "Certainly no other way of reaching the physician is so effective and economical as the use of advertising space in these recognized high-class journals. Owing to their standing and the fact that medical men preserve them indefinitely for repeated reference, they give a sustained service that is possible by no other class of publications.
>
> "If you have something of real merit to introduce to American doctors, do not fail to investigate 'The Big Six.' It has paid others and paid them well, it will pay you."

An advertisement for the *Interstate Medical Journal* says in part:

> "Here is a journal for the busy, thinking men of the profession who demand authoritative and timely journalistic service."

And the publishers of the *American Journal of Clinical Medicine:*

> "*Clinical Medicine* is the great therapeutic journal. It is not intended for specialists and theorists. It is intended for general practitioners. Every number, every page, every line is selected with that point in view, to give you all the help we possible can. You need it, let us show you why."

The owners of the *Therapeutic Gazette* tell the medical profession that they regard each subscription as a contract with the physician to furnish him monthly with 76 pages of the most reliable information that can possibly be collected on the subject of therapeutics.

> "Guarding your rights along these lines as carefully as we do, we beg of you to read the announcements of our advertisers, and favor them with inquiries and requests for samples; and when so doing, please be so kind as to mention having seen the advertisement in the *Therapeutic Gazette*."

Of the *Medical Council*, we learn that:

> "Its pages are filled with scientific material of that brief concise, practical character so easily assimilated and so very helpful in the physician's every day work. Especial attention is devoted to the business side of the physician's life. To the busiest, most prosperous physicians *Medical Council* has become indispensable. . . . No journal in America is more conscientious concerning the character of its advertising pages than *Medical Council*."

SOME NOSTRUMS ADVERTISED IN THE "BIG SIX"

| Nostrums | *Therapeutic Gazette* | *American Medicine* | *American Journal of Clinical Medicine* | *Interstate Medical Journal* | *Medical Council* | *American Journal of Surgery* |
|---|---|---|---|---|---|---|
| Aletris Cordial | | + | | + | + | + |
| Anasarcin | + | + | + | + | + | + |
| Angier's Petroleum Emulsion | | + | | + | + | |
| Antiphlogistine | + | + | | + | + | + |
| Betul-Ol | + | + | | | | + |
| Bromidia | + | | + | | | |
| Burnham's Soluble Iodine | | + | + | + | + | + |
| Cactina Pillets | + | + | | + | + | + |
| Campho-Phenique | + | + | | | + | + |
| Celerina | | + | | + | + | + |
| Chionia | + | + | | + | + | + |
| Citrolax | + | + | + | | + | + |
| Colchi-Sal | + | + | | | | + |
| Crotalin | | | + | + | | |
| Cystogen Aperient | + | + | + | + | + | + |
| Dermatone | + | | + | | | |
| Dioviburnia | | | + | | + | |
| Ergoapiol | + | + | + | + | + | + |
| Fellows' Syrup of the Hypophosphites | + | + | + | + | + | + |
| Formamint | | + | | | | + |
| Gastrogen Tablets | + | + | | | + | |
| Glyco-Heroin | + | + | + | + | + | + |
| Glyco-Thymoline | + | + | + | + | + | + |
| Gray's Glycerine Tonic | + | + | + | + | + | + |
| H-M-C (Abbott) | + | + | + | + | | |
| Hayden's Viburnum Compound | + | + | + | + | + | + |
| Micajah's Wafers | + | | | + | | + |
| Neurosine | + | + | + | + | + | + |
| Noitol | | | + | | | |
| Palpebrine | | | + | | + | |
| Papine | + | | + | | | |
| Pasadyne | + | | | | | |
| Peacock's Bromides | + | + | | + | + | + |
| Pepto-Mangan (Gude) | + | + | + | + | + | + |
| Phenalgin | + | + | + | + | | + |
| Protonuclein and Protonuclein Beta | | | | + | + | + |
| Prunoids | + | + | | + | + | + |
| Resinol | + | | | + | | |
| Respirazone | | | | + | + | + |
| Sanmetto | | + | | | | |
| Secretogen | | | | | + | |
| Sedobrol Roche | + | | + | + | + | |
| Seng | + | + | | + | | + |
| Three Chlorides (Henry) | | + | | + | | + |
| Tri-Iodides (Henry) | | + | | + | | + |
| Trophonine | | | | | + | |
| Unguentine | | | + | + | + | + |

In fairness to the *Medical Council* it should be said that this publication has, during the past six or eight months, purged its advertising pages of many of the more objectionable products. It is understood that further deletions are under consideration.

How careful the owners and editors of the "Big Six" journals are to present authoritative information in their advertising pages is evidenced by the accompanying list showing some of the medicinal articles advertised in recent, 1914, numbers of these six ostensibly high-principled medical journals. Many of the articles included in this list can safely be classed with the more obnoxious nostrums of the "patent medicine" type and like the latter class are, in many instances, simple frauds, the sale of which should not be tolerated.

How closely the method of advertising these several preparations simulates that adopted by the manufacturers of "patent medicines" is evidenced by the fact that within the past year the assertions made in many of the advertisements have materially changed and the statement that the preparation is "an efficient remedy" in place of "a positive cure" is now generally used. To be somewhat more impressive the manufacturers frequently utilize the assertion that their preparation "seems to exert an almost specific effect" or the equally misleading statement, "no remedy at the command of the profession is more valuable than" the preparation under discussion. Not infrequently the advertiser also adds the additional promise that his preparation "will not disappoint you."

A careful study of the accompanying list ought to convince the thoughtful practitioner that many if not all of the nostrums advertised in these several journals are fully as objectionable as those advertised in the daily press and will further convey the rather sorrowful conviction that until a distinct majority of the "100,000 of the country's foremost physicians," who are said to be subscribers to these journals, will devote themselves to the best that is in their profession, we have little or no right to expect that the public at large will believe us to be less gullible than the most unsophisticated layman or that our opinion regarding any one nostrum is not influenced by our interest, direct or indirect, in one or more of the other secret or semi-secret preparations that are equally bad.

## WHAT ONE PAPER THINKS OF THE "ASSOCIATED DOCTORS"

There is published in York, Neb., a "live" newspaper, the *New Teller*. We have referred to this paper before[1] and to the open letter it published declining an advertisement offered by a Kansas City quack. The *New Teller* of Oct. 14, 1914, publishes another open letter, this time to an advertising agency. The agency wrote to the York paper stating that it had recently sent the *New Teller* an advertisement of the "Associated Doctors" but had failed to receive marked copies of those issues of the paper that should have contained these advertisements. It asked that the *New Teller* please forward the issues containing the advertisements or state why it was not publishing them. The editor's reply begins:

> "*Dear Dakota Advertising Agency*:—We have been answering inquiries similar to yours, from various parts of the country, with an admirable patience for several years past. In this instance we have decided to come back with a few inquiries of our own.
>
> "Who are the Associated Doctors? Are they associated with anybody but each other? . . . Are they associated with any reputable medical institution anywhere, or endorsed by any resident physician of standing that you know of? Do you believe they are really capable of performing miraculous cures, or that they would have time enough to travel around the country if they could accomplish such cures? Wouldn't patients be flocking to them by the tens of thousands within a week after the first half dozen such cures?"

Then, after asking the advertising agency whether it would still handle the "Associated Doctors" advertising if it knew these "doctors" were fakes, the *New Teller* says:

> "Here in this little town of York, a new $50,000 hospital is to be completed within the next few months. If the 'Associated Doctors,' with whom you appear to be associated can make good on only a small part of the promises you expect us to make for them, they needn't suffer all the inconveniences of constant traveling—of stopping at country hotels—of riding jerkwater trains—a moment longer. We'll make them the staff of our new hospital by unanimous consent, and they'll make York the most famous town in the world within thirty days after they take the job."

Then the editor relates an instance that had come to his notice of a "poor devil not living far from York" who was "afflicted with a disease pronounced incurable, in his case, by some of the most notable specialists in the country." The hopeless sufferer fell into the hands of quacks who "fed him a little dope" and, after getting his confidence, "promised to complete the cure for what, to him, was a tremendously large sum of money." The poor fellow raised the money, though he had to mortgage his team of horses to do it—and then the inevitable happened. The editor continues:

> "A doctor who is not competent, or who is unreliable and dishonest can't stay in one town very long. If the Associated Doctors are what they pretend to be, they can stay in York as long as they like.
>
> "Anyway, dear Dakota Advertising Agency, this newspaper never has and never knowingly will endorse these fly-by-night specialiars such as the United Doctors, Associated Doctors, or any Hoboe Doctors, by printing their promises for them. We believe such promises are lies, and we don't care to go into business with the people who tell them. Furthermore, dear Dakota Advertising Agency, any advertising matter of any nature we publish for you in the future will be paid for in advance. We must make this request because of the company you keep.
>
> "We hope to see the time when the laws not only of Nebraska, but of the United States will not allow this sort of temptation to be placed in the way of advertising agencies and newspaper owners."

He closes by saying:

> "The grafter who used to work the shell game in the sideshow tent was cherubim and seraphim compared to the present day fake doctor, for he dealt with men who had ready money jingling in their jeans and who were enjoying life; while the victims of the fake doctor are quite generally from the poorer class and who are plunged in the depths of misery and despair.
>
> "So there, dear Dakota Advertising Agency, are a few of the reasons why you will not receive marked copies of Sept. 30 and Oct. 7, containing the ad. of the Associated Doctors. We await your answer to our inquiries with well-controlled curiosity."

## DR. A. R. LAW

### He Asks Wisconsin Druggists to Become Quacks

A Wisconsin druggist sends us a circular letter sent to him from Madison, Wis., dated "October, 1914," and signed "A. R. Law, M.D." Our correspondent says that the druggists of his state are receiving copies of this letter, and he asks for information regarding Dr. Law's professional standing as well as an opinion on Law's method of procedure. The circular letter reads:

> *Dear Sir*:—Do you know of someone who is suffering from rheumatism, erysipelas, or sexual impotence?
>
> Listen!
>
> I can place in your hands a remedy for each of these diseases that will effect an absolute cure. I guarantee it.
>
> With a large medical practice of over thirty years, I have had a splendid opportunity to study these diseases. I have specialized in them and the remedies I now offer you are the results of years of patient study and experimenting. I have used them in my regular practice and certain and positive cures have invariably resulted.
>
> These remedies are placed through druggists only. I do not advertise them as to do so would at once place me in a class with the many quacks and "so-called" doctors now imposing on the public.
>
> My prices are—for rheumatism, $10.00; for erysipelas, $25.00; for sexual impotence—men $10.00; women $5.00. All preparations sent free of expense to you to be paid for when disposed of less a commission of 20 per cent.
>
> Every druggist is, in a measure, the neighborhood doctor and will find my remedies of immense value to him. I want YOU to try them.
>
> Select someone you know and on whom you can rely and let him try one of my preparations. I will send it to you; the patient to pay for it, give it a fair trial, and if it fails to cure or he is not benefited more than the price of the medicine, refund his money. If satisfied remit to me less your commission of 20 per cent.
>
> References as to professional and social standing gladly furnished and all questions and correspondence answered immediately.
>
> Sincerely yours,
>
> A. R. LAW, M.D.

According to our records, in July, 1911, Dr. A. R. Law of Madison, Wis., was arrested on the charge of performing an illegal operation on a woman resulting in the death of the patient. In September, 1912, he was found guilty and sentenced to six years imprisonment in the Wisconsin State Penitentiary at Waupun. In March, 1914, Law's sentence was commuted from six years to three years. This made him eligible to parole, and in the latter part of May of this year Law was paroled. At the time he was sentenced to prison, Law's license was revoked and, according to the secretary of the State Board of Medical Examiners for Wisconsin, this license has never been restored. Law's present activities indicate that official clemency was misplaced.

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[1] "The Itinerant Quack," THE JOURNAL, Sept. 6, 1913.

## Correspondence

### Sterilization of Apparatus for Anesthesia

*To the Editor:*—The statement by Dr. A. H. Miller in The Journal, Oct. 24, 1914, p. 1474, that "no apparatus [for administering nitrous oxid-oxygen] previously described can be readily sterilized and in most, sterilization would be impossible without destroying the instrument," is so far from being correct that I cannot allow this sweeping statement to pass unnoted. Many, if not indeed quite all, of the different apparatus that have been described from time to time in The Journal, and in surgical literature in general, may be readily sterilized. In fact, if this were not the case it would be a sad comment on anesthetic technic. A distinction should be made between advertisements and literature.

R. C. Coburn, M.D., New York.

### Absence of Bony Pressure on Nervous Structures in Man

*To the Editor:*—My book, "The Intervertebral Foramen," was reviewed in The Journal, April 25, 1914, p. 1353. In this work I attempted to give an exhaustive description of the normal histology of an intervertebral foramen and its adjacent parts. The foramen described and photomicrographs shown were from the cat, as was stated in the text.

I have been in receipt of many letters and inquiries asking if these findings could be relied on to be identical with those of man. In order to answer this question scientifically I undertook a microscopic study of several different foramina and adjacent parts in man. These investigations corroborate those described in the original work. While no two intervertebral foramina have been found identical, they all appear to have a general structure very similar to the one described. However, the nervous structures in man, as a rule, occupy a smaller area of the foramina than was the case of the one shown of the cat. Therefore it would appear that they are even *better* protected from bony pressure than was the one from the cat.

Harold Swanberg, Chicago.

[Comment.—This scientific study shows on what a slender foundation are built up such cults as chiropractic, etc.—Ed.]

## Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

### KARELL TREATMENT — BARIUM SULPHID AND BARIUM SULPHYDRATE

*To the Editor:*—I shall consider it a great favor if you will kindly enlighten me through The Journal, of which I am a recipient, on the following questions:

1. Of what does the Karell course of dieting consist and where can I find any literature on the subject?

2. Barium sulphuratum splendidly removes the hair from the skin, but the odor of this chemical is bad. The after-effects are also terrible in so far that the skin becomes very irritated, inflamed and smarts. How can we improve on the odor and prevent the irritation?

We are on the eve of a great international catastrophe but I do not see why the scientific mind should be influenced thereby. There ought to be more science and less armaments!

D. A. R., St. Petersburg, Russia.

Answer.—1. The Karell treatment consists of rest in bed and a light diet of milk and eggs. The fluid is limited to 1½ pints per day. At first this is given, for two or three days, as milk only, 6 to 7 ounces at 8 a. m., and 4 and 8 p. m. This is the most trying part of the method. Then 1 egg is given at 10 a. m. and a biscuit at 6 p. m. for a couple of days. Then 2 eggs with bread, and a little minced meat are allowed. In twelve days the patient returns to a careful ordinary diet, the fluid being still kept down to 1½ pints but not necessarily milk only. This method is said to be indicated for weak hearts for which digitalis is less appropriate. About the third day diuresis sets in for a short time, the dyspnea is relieved, the pulse improves, and the edema subsides.

The following may be referred to:

Strauss, H.: The Karell Milk Cure in Obesity, Med. Klin., March 27, 1910; abstr., The Journal, May 7, 1910, p. 1585.

His, W.: The Karell Milk Diet in Heart Disease, Therap. Monatsh., January, 1912; abstr., The Journal, Feb. 17, 1912, p. 524.

Wittich: Karell's Method of Treating Cardiovascular Disturbance, Deutsch. Arch. f. klin. Med., 1913, cx; abstr., The Journal, May 30, 1913, p. 1501.

Armbrust, G.: Karell's Milk Cure in Asystole, Brazil-med., Dec. 8, 1913.

Kimmerle, A.: Treatment of Obesity, Therap. d. Gegenw., October, 1913; abstr., The Journal, Nov. 15, 1913, p. 1854.

2. Barium sulphuratum or barium sulphid may occur in two forms: (*a*) the barium sulphid which is a powder having only a very slight, not disagreeable odor of sulphur, and (*b*) barium sulphydrate containing barium sulphid in combination with hydrogen sulphid which it gives off very readily, and hence has a disagreeable odor. Barium sulphid is an efficient depilatory and if the sulphid and not the sulphydrate is used, there need be no complaint of the odor.

### VACCINE TREATMENT OF ARTHRITIS DEFORMANS—HIGH FREQUENCY CURRENT FROM PORTABLE COILS

*To the Editor:*—Please inform me: 1. Whether there is a serum or vaccine treatment for arthritis deformans. If so, what is its usefulness? 2. Do the portable coils primarily adapted to Roentgen-ray work also furnish a high-frequency current of value for treatment, as is claimed by every manufacturer of such coils?

O. R.

Answer.—1. There is no serum treatment for arthritis deformans. The etiology of the disease is only now being worked out. The relation of foci of infection to this disease has been emphasized especially by Billings and cannot easily be overestimated. The changes in the joints are probably not due to the absorption of toxins from the focus alone, but to actual localization of the bacteria themselves. The difficulty in obtaining the causative organism is great, owing to chronicity; but by improved methods Rosenow has succeeded in isolating peculiar streptococci from the excised lymph-glands draining the involved joints, from contracted and diseased adjacent muscles, and from excised portions of the diseased capsule of the joint itself, and recommends the use of the vaccine prepared from organisms thus isolated rather than from the streptococci in the focus. The use of even these vaccines, however, is quite futile unless the focus is removed. The peculiar character of the changes, in which there is a proliferation of endothelial cells in the blood-vessels about the involved joints with a consequent anemic necrosis, makes it clear that no matter what vaccine or other remedial agent is used, cure in advanced cases will be exceedingly difficult. Removal of the focus, the judicious use of autogenous vaccines in small doses prepared not from the focus but from the adjacent lymph-gland or tissue itself, together with rest, good air, passive motion and forced feeding comprise at present the rational procedures and are yielding substantial results. The streptococci isolated are quite different from those obtained in rheumatism; hence the uselessness of employing rheumatism vaccines.

2. Most of the portable coils—which are really step-up transformers—are quite as well adapted to furnish a high-frequency current as to do Roentgen-ray work.

### SIGNS OF DEATH FROM INSOLATION

*To the Editor:*—Please give in detail the usual post-mortem appearances in a person dying from insolation. Is there any essential difference between heat exhaustion and heat stroke? The texts on this subject are exceedingly limited. I should especially like to know the changes likely to occur in the kidneys after death from heat exhaustion.

F. L. Carson, M.D., Shawnee, Okla.

Answer.—Without going into minutiae, the following are the principal changes found in the bodies of persons recently dead from sunstroke: marked congestion of the internal organs, including the brain and its membranes; the blood largely fluid on account of diminished coagulability; cloudy swelling of the liver and kidneys. There is usually marked and early rigor, decomposition sets in early, and in some cases the swelling and congestion of the spleen are extreme. Leukocytosis and alterations in the red corpuscles are also described. The condition described as heat exhaustion and typical sunstroke may occur under the same conditions, but exhaustion is stated generally to follow prolonged exposure to high temperature combined with physical exertion in confined spaces, as in the stokerooms of steamships. There would seem to be some essential difference in the way in which heat exhaustion and sunstroke are caused, because in the former the distinguishing feature is depression of the body temperature far below normal and in the latter excessive elevation of the temperature; but it is possible that these changes in the temperature may be due to the same cause. No changes have been described in the kidneys as characteristic of heat exhaustion. There is an interesting discussion of the theories of sunstroke before the New York Academy of Medicine, reported in the *Medical Record*, 1900, lvii, 1130, in which the late Ira van Gieson points out that the symptoms indicate an intoxication due to changes in the blood, physical or chemical, and involving especially the nervous centers.

### HOSPITAL FOR SMALL TOWN

*To the Editor:*—Our little town is planning on building a 10-room hospital building and furnishing it, and I would like to get what information I can regarding the specifications and price on a building of this size. I saw a couple of articles in The Journal a few months back regarding this, but I cannot find those articles and so I am appealing to you for aid. X. Y. Z.

Answer.—In The Journal, Feb. 1, 1913, p. 390, there was published a list of articles on this subject. The following articles are supplementary and have been issued since that date:

Stevens, E. F.: The Ward Unit of the General Hospital, The Journal, Jan. 24, 1914, p. 270.
Lamoreaux, L. A.: Architecture of the Modern Hospital for Contagious Diseases, The Journal, Jan. 24, 1914, p. 274.
Schmidt, R. E.: Architecture of the Great Charity Hospital, The Journal, Jan. 24, 1914, p. 277.
Stevens, E. F.: Surgical Unit, European and American Architecture Compared—Description of Equipment, *Modern Hospital*, September, 1913. Abstracted in The Journal, Oct. 25, 1913, p. 1573.
Lambert, S. W.: Is Pavilion or Sky-Scraper Hospital Best? *Modern Hospital*, October, 1913.
Hornsby, J. A.: Equipment of a Small Hospital; Making over a Dwelling House, The Journal, Jan. 24, 1914, p. 267.
Greener, E. A.: Board, Staff and Special Departments of a Small Hospital, *Modern Hospital*, July, 1914.
Matteson, V. A.: Small Hospital of Low Cost, *Modern Hospital*, April, 1914.

### THE ARNETH FORMULA

*To the Editor:*—What is the Arneth formula?

J. R. DeVelling, Arbo, Miss.

Answer.—Arneth in 1904 suggested a classification of the polymorphonuclear neutrophils as a guide in the prognosis of infectious diseases. He classified polynuclears into five classes, depending on the number of the nuclei contained in a cell. He determined that in the normal person a fairly constant relative percentage of the cells was found in each of the five columns as shown in the following table:

THE ARNETH CLASSIFICATION

| Column | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Percentage | 5 | 35 | 41 | 17 | 2 |

For a recent discussion of this subject the following reference may be consulted:

Henson, Graham E.: "A Study of the Arneth Formula," The Journal A. M. A., Sept. 12, 1914, p. 922.

### QUESTION OF FUMIGATING SCHOOLHOUSES

*To the Editor:*—Would it be feasible to practice daily fumigation of schoolhouses with formaldehyd for the prevention of acute infections of the respiratory tract? Can you give a satisfactory method? If answered through The Journal, please omit name and address. S. D. N.

Answer.—It is, of course, physically possible to fumigate a schoolhouse daily with formaldehyd, but the advantage of such a procedure is questionable. It is now the general belief that the germs of the acute infections of the respiratory tract do not survive very long outside of the body. The trend of recent investigation has been to show that the main danger of infection is by direct transmission from convalescents, mild cases, and healthy carriers. Better results are likely to be obtained in preventing the spread of most infections by giving attention to the human sources of infection rather than by resorting to frequent fumigation with a germicidal gas.

# Medical Education and State Boards of Registration

## COMING EXAMINATIONS

Arkansas: Little Rock, November 10-11. Sec., Dr. W. S. Stewart, 404 Citizens Bank Bldg., Pine Bluff. Homeopathic, Little Rock, November 12. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic, Little Rock, November 10-11. Sec., Dr. C. E. Laws, Ft. Smith.

California: Los Angeles, December 8. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.

Connecticut: New Haven, November 10-11. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, New Haven, November 10. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Delaware: Dover and Wilmington, December 8-10. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

Florida: Palatka, December 2-3. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Maine: Portland, November 10-11. Sec. Dr. Frank W. Searle, 776 Congress St., Portland.

Maryland: Baltimore, December 8. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.

Nebraska: Lincoln, November 11-12. Sec., Dr. H. B. Cummins, Seward.

Nevada: Carson City, November 2. Sec., Dr. S. L. Lee, Carson City.

Ohio: Columbus, December 8-10. Sec., Dr. George H. Matson.

Pennsylvania: Philadelphia, December 1-3. Sec., Dr. N. C. Schaeffer, Harrisburg.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Waco, November 10-12. Sec., Dr. W. L. Crosthwait, Amicable Bldg., Waco.

### Connecticut Homeopathic July Report

Dr. E. C. M. Hall, secretary of the Connecticut Homeopathic Medical Examining Board, reports the written examination held at New Haven, July 14, 1914. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. One candidate was licensed by examination and three through reciprocity. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| New York Med. Coll. and Hosp. for Women | (1913) | 89 |

LICENSED THROUGH RECIPROCITY

| College | Year Grad. | Reciprocity with |
|---|---|---|
| Boston University | (1896) New Jersey; (1908) | Mass. |
| New York Homeo. Med. Coll. and Flower Hosp. | (1903) | New York |

### Connecticut Eclectic July Report

Dr. T. S. Hodge, secretary of the Connecticut State Board of Eclectic Medical Examiners, reports that one candidate, a graduate of the Eclectic Medical University, Kansas City, in 1912, was licensed through reciprocity with Arkansas, July 14, 1914.

### North Dakota July Report

Dr. G. M. Williamson, secretary of the North Dakota State Board of Medical Examiners, reports the oral, practical and written examination held at Grand Forks, July 7-10, 1914. The total number of subjects examined in was 13; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 6, all of whom passed. Six candidates were licensed through reciprocity. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| Chicago College of Medicine and Surgery | (1913) | 80.8 |
| Northwestern University | (1914) | 81 |
| Rush Medical College | (1914) | 85 |
| University of Illinois | (1913) | 83 |
| Marquette University | (1913) | 75 |
| Queens University, Kingston, Ontario | (1908) | 75 |

LICENSED THROUGH RECIPROCITY

| College | Year Grad. | Reciprocity with |
|---|---|---|
| Northwestern University | (1910) | Illinois |
| University of Illinois | (1912) | Illinois |
| Johns Hopkins University | (1907) | Minnesota |
| Washington University | (1907) | Illinois |
| Hahnemann Medical College and Hosp., Philadelphia | (1902) | Minnesota |
| Milwaukee Medical College | (1910) | Wisconsin |

# Book Notices

Die Lehre von okkulten Blutungen. Von Prof. Dr. I. Boas. Paper. Price, 5 marks. Pp., 149, with 5 illustrations. Leipsic: Georg Thieme, 1914.

In every obscure case of gastro-intestinal disease, as well as in many not obscure, an examination or repeated examinations should be made for occult blood in the contents of the stomach and feces. Boas describes the technic of these examinations, estimates the value of chemical and physical tests, considers the meaning of occult blood derived from the different parts of the gastro-intestinal tract, and lastly discusses prognosis and treatment. The chapters on the technic of a search for occult blood and its diagnostic significance are the ones most generally interesting. This necessitates the discussion of the differential diagnosis of all the lesions of the esophagus, stomach and intestines which may cause blood to appear in the contents of the stomach and intestines. Occult blood also sometimes appears in the feces because of disease of the liver, pancreas, heart, kidneys and infections, such as typhoid. Therefore the field of differential diagnosis is extensive, a consideration of which the presence of occult blood in the feces makes necessary. No one could discuss this with more authority than Boas. The book contains several illustrations and one colored plate of spectroscopic findings.

Auricular Flutter. By William Thomas Ritchie, M.D., F.R.C.P.E., F.R.S.E., Physician to the Deaconess Hospital, Edinburgh. Cloth. Price, 10 shillings 6 pence net. Pp., 144, with 107 illustrations. Edinburgh: W. Green & Son, 1914.

This book is well printed, and many of the illustrations are heavy paper reproductions of electrocardiograms. The subject of auricular flutter has been carefully studied by the author, who reviews the work of others and records the results of his own clinical and experimental research. The relation of flutter to auricular fibrillation, to block, and to other types of tachycardia is discussed. What is known of the pathology of the condition and its clinical manifestations is also detailed. An introductory chapter gives some of the salient points regarding the origin of the heart-beat and the conducting system of the heart, together with some of the commoner disturbances such as extrasystole and auricular fibrillation. Some of the elementary facts concerning the electrocardiogram are also set forth with unusual clearness. The monograph is in every sense a credit to British clinical research and is indispensable to one who desires to have an authoritative epitome of what is known concerning auricular flutter. It is particularly valuable to one who wishes to have under one cover the important contributions to this subject made by Ritchie.

Klinische Röntgendiagnostik des Dickdarms und ihre physiologischen Grundlagen. Von Privatdozent Dr. Gottwald Schwarz, Assistant und Leiter des Röntgeninstituts der K. K. I. Mediz. Universitätsklinik in Wien. Paper. Price, 10 marks. Pp., 153, with 108 illustrations. Berlin: Julius Springer, 1914.

This is a useful and practical monograph for those interested in the examination by Roentgen ray of the colon rendered opaque by shadow-casting substances. Special chapters are devoted to the anatomy and physiology of the colon and the technic of examination. The clinical value of the Roentgen-ray method is emphasized by carefully executed diagrams and by reproductions of well-selected plates. Due credit is given to the works of American actinologists and some of the plates credited to them.

Analytical Tables of the Anatomy and Physiology of the Fifth Cranial or Trigeminal Nerve and of Its Ganglia and Connections. Being a Compendium of the Map-Scheme of this Nerve. By Dr. L. Hemington Pegler, M.D., M.R.C.S., Senior Surgeon, Metropolitan Ear, Nose and Throat Hospital. Cloth, Price, $8. New York: Paul B. Hoeber, 1913.

This chart, accompanied by a thirty-page pamphlet of analytical tables of the peripheral distribution of the trigeminal nerve, is well designed, clearly printed and accurate. The Basel anatomic nomenclature is followed with, however, some modifications, which do not in all cases seem advantageous.

# Miscellany

## The Bacteriologic and Chemical Quality of Commercial Eggs

The scientific literature on the bacteriology and chemistry of eggs is surprisingly meager, considering the importance of this article as food. In a recent report (Pennington, M. E., and others: A Bacteriological and Chemical Study of Commercial Eggs in the Producing Districts of the Central West, Bull. 57, U. S. Dept. Agric., July 20, 1914), the Food Research Laboratory of the Bureau of Chemistry discusses the quality of eggs which go to the egg-packing establishments in the Middle West. The work done is part of an investigation of the preparation of frozen and dried eggs.

In eggs, as in other foodstuffs, bacteria may increase enormously before producing changes capable of detection. Fresh eggs (eggs not more than twenty-four hours old, which have been kept in a cool place) may contain a wide variety of bacteria, but in small numbers. *Bacillus coli* is practically never present. Bacterially "market fresh" eggs were found not to differ markedly from strictly fresh eggs.

The best and simplest index of the chemical stability of the egg is the amount of loosely bound nitrogen present. Most of this is contained in the yolk. Western summer eggs of highest quality gave an average of 0.0013 per cent. loosely bound nitrogen in the whole eggs, and 0.0023 per cent. in the yolk.

In this investigation, eggs of various grades were examined, samples of each being opened aseptically in the laboratory and compared with composite samples opened commercially in the packing-house. A large proportion of the eggs used in the frozen and desiccated egg industry are classed commercially as "seconds." In the spring, before the candling season begins, this grade consists of eggs sorted out as small, dirty or oversized. After June 1, when all incoming eggs are graded according to the condition of the contents, seconds also include shrunken eggs, "hatch spots," "weak eggs" (stale eggs in which the form and position of the air space change on candling), etc. Among the classes of eggs generally or always detected and rejected by the candlers are those with bloody whites, the "white rots" (eggs in which the whites and yolks are intermingled), the "heavy spots" or "spot rots" (eggs having the yolk adherent to the shell) and "black rots" (eggs in the last stages of decomposition). Of these classes of eggs, 100 per cent. of the "black rots" and the eggs with yolks heavily adherent to the shell, 83.2 per cent. of the "white rots"and 66.6 per cent. of these eggs with yolk slightly adherent to the shell were found to have bacterial counts of over 1,000,000 per gram. *B. coli* were present in most of the samples. The eggs with bloody whites showed less than 5,000 organisms per gram, though 40 per cent. of eggs with "blood rings" due to partial incubation were found to have over 1,000,000 organisms per gram.

Some other classes of deteriorated eggs are seldom distinguishable by candling. These cause much trouble in the frozen and dried egg industry. The majority are comprised in three groups: eggs which have a greenish tinge in the albumin; "sour eggs," which have a peculiar pungent odor when opened, and "musty eggs," which have a penetrating, persistent odor suggesting that of the common jimson weed. No conclusive investigation was made of the "musty eggs." These and the "sour eggs" are always rejected by the egg-breakers. Some establishments reject the eggs with the green whites if the breaker happened to detect them; others use them if odorless. Both the "sour eggs" and the eggs with greenish albumin are invariably found heavily infected with bacteria (over 1,000,000 to the gram). Most of the classes of eggs showing high bacterial counts would be rejected by the housewife or conscientious baker on inspection.

The average amount of ammoniacal nitrogen (wet basis) rises from 0.0013 per cent. in fresh eggs to 0.0017 per cent. in stale eggs, 0.0019 in dirty eggs, 0.0020 in eggs with yolk partially mixed with white, 0.0023 in eggs with yolk slightly adherent to the shell, 0.0036 in "white rots," 0.0040 in eggs with yolk heavily adherent to the shell, 0.0043 in "sour eggs," 0.0042 in eggs with a green white, and 0.0229 in "black rots." While a dirty shell is not positive evidence that the egg within is contaminated, such eggs do not keep well. Mold may appear in either clean or dirty eggs; it often appears directly beneath a spot of dirt on the shell.

It is suggested that there may be a connection between the moisture content of the egg and its keeping qualities. A study of the water content of fresh eggs from the middle of February to the first of November shows that in August and September, when the quality of the eggs is considered lowest, the water content is highest; in the early spring, when the eggs are of highest quality, the water content is lowest. This statement of the increased water content is not made authoritatively, but merely as suggesting a promising field for investigation.

A study such as this is the basis on which a more detailed inspection of the complete egg industry must be founded. The next report is to deal with commercial procedures in the packing-house, environment, etc. Later investigations will carry the research to the final use of the prepared egg by the baker or the housewife. The work is elementary and practical and the first report indicates a quality and thoroughness which prove still further its great value.

### Systematic Impairing of the Appetite in Treatment of Obesity

W. Sternberg has long been preaching that dietetics is the Cinderella of the medical sciences. In these days of what Rubner calls the "hypertrophy of chemistry," dietetics is made to serve as the slave of chemistry. Everything is estimated by weight and measures when, in reality, qualitative factors, rather than quantitative, are of predominant importance in nutrition. More use, he declares, should be made of drugs to reduce the appetite and prevent hunger in overhearty eaters, while medicines of any kind should be punctiliously avoided when it is a question of increasing and tempting the appetite. Even the healthiest would soon lose their appetite if they were taking medicines as systematically as are given to many patients in our sanatoriums.

In his recent protest against this, in the *Allgemeine medicinische Central-Zeitung,* he says that he has found preparations of iodin particularly useful to reduce the appetite; and also that by anesthetizing the stomach mucosa even the sensation of hunger is warded off. Even peppermint lozenges or menthol tablets reduce the sensibility of the esophagus and stomach, and minute doses of camphor have the same effect plus a sensation of satiety—all of which logically aid in treatment of obesity. THE JOURNAL has previously mentioned his endorsement of coffee, taken early in the meal, in treatment of obesity. Coffee, he reiterates, reduces the appetite for other food and is also liable to interfere with sleep—the overcorpulent are usually inclined to sleep too much.

### Pellagra Treated with Picric Acid

In thirty-five cases the eruption was treated by W. T. Wilson (Bulletin Harris County Medical Society, July, 1914) with picric-acid gauze official, or gauze soaked in a saturated solution of picric acid. For mucous membranes a 0.5 per cent. solution was used as a gargle. Internally most patients were given 25 drops of a 1 per cent. solution three times a day; some ¼ to ½ grain every three hours. Only three patients were put on a diet. All three were insane and were placed on milk and eggs for from seven to ten days and regular diet after that.

Improvement is first noted in the mucous membrane of the mouth, tongue and throat about the fourth day; in about five days intestinal symptoms improve, and in about seven days the skin begins to desquamate and assumes a natural appearance. A majority of these cases had the dry form, but four or five were of the moist form of erythema. The two types were equally amenable to treatment. There were no toxic effects from the drug in evidence in any case.

## Medicolegal

### Authorized Garbage Reduction Plant Not a Public Nuisance

(*Toledo Disposal Co. vs. State (Ohio), 106 N. E. R. 6*)

The Supreme Court of Ohio reverses a judgment imposing a fine of $300 on the disposal company for maintaining a public nuisance, and ordering it to abate the same. The court says that the mode of disposing of garbage and refuse matter is one of the difficult questions involved in municipal sanitation. Its great importance is not doubted. It is true that there has not yet been complete agreement as to the best and most appropriate method for the disposal of garbage and refuse material; but the testimony tendered and rejected in this case showed that the city of Toledo made every effort to proceed on the most modern and scientific plan. The city in the discharge of its duty to safeguard the health of its people pursued the course pointed out by the state. It would seem to be incontrovertible that the court would not construe that to be a crime punishable under one statute which was done in the exercise of powers specifically granted by another statute. Such a holding would be contrary to established rules of construction. It would, in effect, attribute to the legislature a disregard of wise public policy. The state cannot maintain a criminal prosecution against a defendant for conducting a plant and business located, constructed and operated under an express contract with a municipality, made under legislative authority, where the plant is conducted under municipal control and regulation, with care and skill, and in such manner as to produce the least possible annoyance, and where it is all done for the purpose of conserving the health and safety of the public. In the exercise of the police power, the state and municipal authorities may make all such provisions as are reasonable, necessary and appropriate for the protection of the public health and comfort, and when any such provision has a real and substantial relation to that object and does not interfere with the enjoyment of private rights beyond the necessities of the situation, every intendment is to be made in favor of its lawfulness.

### Failure to Invert Foot in Treatment of Pott's Fracture

(*Marchaud vs. Belin (Wis.), 147 N. W. R. 1033*)

The Supreme Court of Wisconsin affirms a judgment for the defendant, who was charged with malpractice in the treatment of a Pott's fracture. The court says that the evidence showed that the fracture was a severe one, in which the fibula was splintered and the ligaments of the ankle-joint were ruptured; that the foot was much swelled and discolored, and the skin was partly abraded in places at the time of the first treatment. As to the condition at that time, January 23, and from then until about February 13, there was no evidence other than that of the defendant, and if his evidence as to the conditions existing and the treatment given was true he was guilty of no malpractice. The plaintiff, aged 52, sustained the injury January 23, by falling from a ladder.

It was contended in the plaintiff's behalf that, since the evidence showed that the conditions testified to by the defendant did not usually obtain in ordinary Pott's fractures for so long a time, the jury had a right to find that they did not in this case. Hence, since it was shown that in cases of ordinary Pott's fractures the danger of gangrene was usually passed in from seven to ten days, and since bony union does not take place until the third week, the jury might find malpractice from failure to invert the foot after the danger of gangrene had passed and before bony union took place. The difficulty with this contention was that the plaintiff's fracture was not an ordinary Pott's fracture, but a severe and complicated one; that there was nothing inherently or obviously incredible about the defendant's testimony as to the conditions found the first day he examined the leg, or as to their continuance for the length of time shown. The trial court, therefore, properly held that such conditions must be held as verities, since there was no evidence to the contrary.

Another claim made was that the evidence of the defendant showed that he was ignorant of the practice of inverting the foot in cases of Pott's fractures, and therefore did not do it in this case. Conceding, for the sake of argument, that this was true, still, if the treatment he gave was the proper one under the conditions existing, his ignorance became immaterial. He said, however, that the reason he did not invert the foot up to about February 13 was because he feared gangrene, and that thereafter bony union began, and he did not deem it good practice then to invert it. The treatment given under the conditions as testified to by the defendant was practically sanctioned by all the physicians who testified as to what constituted good practice. It was therefore shown that the defendant exercised such care and skill and pursued such treatment as physicians and surgeons in good standing usually exercised and pursued in the same or similar localities under the same or similar circumstances. This measured the extent of his undertaking.

In an action for malpractice it is incumbent on the plaintiff to show wherein the defendant has been negligent or failed in his duty under the circumstances or conditions existing in the case that is tried. It is not enough to show that generally, or under other conditions, the conduct complained of might be found negligent.

### Residence and Failure to Register Authority Must be Alleged

(*Young vs. State (Tex.), 167 S. W. R. 1112*)

The Court of Criminal Appeals of Texas reverses a conviction of unlawfully practicing medicine, for want of allegations as to the defendant's residence and failure to register his authority for practicing medicine. The court says that very soon after the act of 1907 was passed it held that it was essential to allege the residence of the accused and that he had not registered his authority or license in the district clerk's office of the county of his residence. Several legislatures of the state have had sessions since then, and, in addition, the revised penal code was adopted, and at no time and in no way has the legislature changed the act as originally enacted. The court has again carefully considered this whole act and is of the opinion that, because of the language thereof, both of said allegations are necessary, and an indictment or complaint and information which omits them is fatally defective. It probably would be sufficient if the pleading should allege that the accused's residence is unknown, or that he is a non-resident of the state, as the case may be, and that he has not registered his certificate or authority in the county where it is alleged he has unlawfully practiced; but it is unnecessary for the court to decide that question in this case. This court erroneously held the information in Stiles vs. State, 148 S. W. R., 326, sufficient, when it omitted said allegations, and that case on that point is hereby expressly overruled.

### Death from Occupational Disease Not Accidental

(*Adams vs. Acme White Lead & Color Works (Mich.), 148 N. W. R. 485*)

The Supreme Court of Michigan reverses a judgment of the Industrial Accident Board, which awarded compensation for an occupational disease, or death, from lead poisoning. The court holds that the Michigan workmen's compensation act was not intended to provide compensation for industrial or occupational diseases, but for injuries arising from accidents alone. The board thought that the controlling provision of the statute on this point was, "If an employee . . . receives a personal injury arising out of and in the course of his employment," he shall be paid compensation, etc. But the court thinks that it should be held that the words "personal injury," as quoted by the board, refer to the kind of injury included in the title and other portions of the act, which plainly refer to "accidental injury to, and death of, employees." The court is not able to find a case in which an employee has recovered compensation for an occupational disease at common law.

# Society Proceedings

## COMING MEETINGS

Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
Amer. Public Health Association, Jacksonville, Fla., Nov. 30-Dec. 5.
Medical Association of the Southwest, Galveston, Nov. 10-11.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Southern Medical Association, Richmond, Nov. 9-11.
Southern Surgical and Gynecological Assn., Asheville, N. C., Dec. 15-17.
Western Surgical Association, Denver, Dec. 18-19.

## MINNESOTA STATE MEDICAL ASSOCIATION

*Annual Meeting held at St. Paul, October 1-2, 1914*

The President, Dr. A. E. Spalding, Luverne, in the Chair

### Prostatectomy

Dr. E. S. Judd, Rochester: The suprapubic operation insures a perfect functional result, but the opening into the bladder must be made through a loose cellular fat tissue in the space of Retzius. This tissue once infected is difficult to drain and, while the infection is not virulent, it may prove serious in a patient whose kidneys are already badly damaged. We have endeavored to develop a technic in performing the suprapubic operation which would minimize the possibilities of infection in this space. The bladder is cleansed and emptied and the catheter is left in place. There is less danger of infecting the suprapubic space by opening into a dry, clean bladder than into one distended with wash water. The hypertrophied prostate is enucleated in the usual way and the capsule immediately packed with gauze. The wound in the bladder is then retracted open by three Walker retractors. The catheter is drawn out of the suprapubic opening, caught by a clamp and held to one side. The gauze is removed from the prostatic capsule, and the bladder edge of the capsule is sutured with firm, plain catgut. No attempt is made to catch the torn off end of the urethra, but the needle is passed as deeply as possible into the prostatic tissue. By carefully sponging and placing the sutures at the bleeding points in many cases it is possible completely to control the oozing. The clamped end of the catheter is left out of the suprapubic opening in the bladder and the bladder closed tightly around it. A good sized hole is cut in the side of the catheter just above its entrance into the urethra. This method of leaving the catheter projecting through the suprapubic wound into the bladder is a safeguard against clotting and serious spasm. As soon as the urine is free from blood, the catheter is drawn into the bladder where it is left for a number of days. In many cases there is no urinary leakage at any time. In the few instances in which leakage occurs, the urine runs over a surface already granulated and these granulations prevent infection in this space.

#### DISCUSSION

Dr. Oscar Owre, Minneapolis: A short time ago I performed cystoscopy on a man, 50 years of age, who was complaining of some urinary obstruction and symptoms suggestive of stone in the bladder. The cystoscope slipped through a large urethra, and springing from the bladder and close to the vesical neck could be seen a small smooth adenomatous overgrowth from one of the glands, about the size of a hazelnut. This could be pushed from side to side into the bladder. It was removed and the patient recovered. There was no prostatic hypertrophy recognizable on palpation through the rectum and no impingement with the cystoscope in the bladder. By refined cystoscopic methods we may be able to ascertain the exact growth that is responsible for the obstruction and then direct our surgical procedure accordingly.

Dr. Robert Earl, St. Paul: The two lateral lobes of the prostate are histologically one, but physiologically they are separate. This is of great importance, especially in treating tuberculosis of the prostate, in which condition it would not be wise to try to enucleate the entire prostate but simply curet out and treat the diseased side in order that the tuberculous infection may not be spread to the other side.

### Suprapubic Cystotomy

Dr. Theodore Bratrud, Warren: The bladder can be opened suprapubically in the majority of cases by local anesthesia, our preference being for one-quarter of 1 per cent. novocain infiltrated in the line of incision. We have found that instillation of a 1 per cent. solution of quinin and urea hydrochlorid into the bladder one-half hour before operation is of material assistance in reducing the pain, which cannot be so well controlled by infiltration, and it lessens the discomfort after operation. It is preferable to use water dilatation of the bladder. In cases that are badly infected, it may be advisable to drain off the water as soon as the peritoneal fold overlapping the bladder is out of the way and guy sutures inserted into the bladder. This procedure is not so essential when one makes use of the method suggested by Rovzing to apply a 1 per cent. silver nitrate solution to all the exposed tissues before the bladder is opened. We have followed this method in all of our cases, and in no case have we had any signs pointing to infection of the space of Retzius. It is important to secure an opening as high on the bladder extraperitoneally as possible, if it is planned to allow the drainage opening to close. This technic is not possible in cases of contracted and hypertrophied bladders, as satisfactory distention of the bladder cannot be secured and the peritoneal fold must be lifted out of the way by dissection. In these cases local anesthesia will hardly suffice, but with a small amount of ether the operation can be accomplished readily. In these cases the use of a sound, when the bladder can be entered by the urethra, is essential. Patients who come with enormously distended bladders, which it is feared to empty at once, can be handled safely by introducing a small aspirating needle into the bladder and leaving it *in situ* for twenty-four hours or longer. As soon as the bladder is opened and its contents removed, the interior can be inspected and calculi removed if present, and the bladder closed around a Pezzer catheter. A small wick saturated with 1 per cent. silver nitrate solution is introduced into the space of Retzius and the hole is closed in the usual manner. Ordinarily a rubber bag connected to the catheter with a small glass tube furnishes a satisfactory receptacle for the urine.

#### DISCUSSION

Dr. Archibald MacLaren, St. Paul: Cystotomy, when found necessary, should be preceded by cystoscopy. After we have determined that a patient has an infected bladder, with prostatic obstruction, the thing to do is to establish drainage through the urethra, which will help these patients tremendously. The mortality unquestionably has been greatly reduced in the last few years since we began to drain these bladders and to relieve back pressure on the kidneys.

Dr. Arthur N. Collins, Duluth: In order to put a catheter in the bladder to get permanent drainage, do not stab the bladder, and if drainage is attempted, get plenty of room. After you have put in a drainage tube, see that it is in the bladder, and that it is anchored so that it will stay in the cavity.

Dr. Franklin R. Wright, Minneapolis: It may be advisable to use the cystoscope in early cases of enlarged prostate, but certainly in extreme cases, in which the urethra is bent at a right angle, it would be a mistake to undertake to pass a straight instrument through it. The suprapubic method for enlarged prostate in my opinion is the one which will be adopted as the standard.

Dr. James E. Moore, Minneapolis: Dr. J. E. Summers of Omaha a number of years ago called attention to the fact that many of the old men who die promptly after prostatectomy could undoubtedly have been saved if a suprapubic cystotomy had been done first, drainage established, getting the kidneys to work properly, and prostatectomy then performed.

Dr. R. E. Farr, Minneapolis: There is danger in emptying the distended bladder. It is my practice to introduce a small trocar. The bladder may be emptied the first time, or if completely emptied, it is immediately filled with saline solution or a mild boracic acid solution to prevent future trouble. Then a suprapubic cystotomy is done.

Dr. Charles H. Mayo, Rochester: There is great risk in suddenly and completely emptying a bladder that is enormously distended. I have seen unfortunate results from the use of the catheter in such cases, the men dying rapidly from a hemorrhagic condition of the kidneys. I have seen good results obtained by drainage for temporary purposes; with the catheter tied in the urethra one can get as good drainage as from suprapubic cystotomy. Thirty years ago Hunter McGuire brought out the simple method of opening the bladder for stone. He instituted suprapubic drainage and relieved old men for a time, then later he removed the real cause of the trouble—the enlarged prostate.

### Herter's Infantilism

Dr. Olin W. Rowe, Duluth: In a case of this kind I made use of a vaccine prepared rom a culture of the *Bacillus coli*. June 14 ten million were given. On the following day the child felt some better, and took 3 ounces of skimmed mother's milk without the stomach tube. A further loss in its weight was recorded. A slight desire to eat was observed on the day following. Two days later twice the original dose of vaccine was given. This was followed by a stay in the loss of weight. The child felt better, developed an appetite and did not lie in the semicomatose condition which had been such a prominent feature of the preceding week. From this time on the vaccine was given in rapidly increased doses, every third or fifth day, until the hundred million mark was reached, at which time there was a slight reaction. The dose was dropped to fifty million, and then increased rapidly to ninety million. Twenty-three doses were given in all, the last one September 24. During this period of improvement the weight increased from 40 to 65 grams a day. Whole mother's milk rapidly replaced the skimmed milk, and this was in turn replaced by whole cow's milk, to which was added dextrimaltose, meat, gelatin, fish, etc. Her fat tolerance improved from a condition in which skimmed mother's milk was handled with difficulty, to a state which permits of 24 ounces of whole cow's milk without bad effect. The stools show considerable fat soup, but no free fats or fatty acids. Her tolerance for starchy foods has increased over 400 per cent. in two months. In fact, a general diet consisting of whole milk, cereals, vegetables, meat and a small amount of fruit pulp, with a total caloric value considerably in excess of her requirements, is taken without appreciable difficulty. This case is the second one reported in which vaccine therapy has been given a trial.

#### DISCUSSION

Dr. J. P. Sedgwick, Minneapolis: General infantilism is represented by myxedema, which is really more common in Minnesota than is generally believed. I have an infant now in the third month with myxedema, which is improving rapidly under thyroid extract. Mongolian idiocy is seen quite frequently in Minnesota. These cases are mistaken, by those who have not seen them, for the myxedematous type. Almost every patient that comes into the clinic has been given thyroid.

Dr. W. R. Ramsey, St. Paul: I have one or two cases of infantilism that are extremely troublesome and long drawn out. Their recovery is slow. In several instances I have been able to determine that the origin of the trouble was overfeeding. Two of these cases were greatly overfed with fat, so that they would come under Czerny's primary cause of fat injury. These cases are intolerant to fat even in small amounts.

Dr. F. W. Schlutz, Minneapolis: Cases of infantilism are quite rare. During my service in the dispensary the past four years I have seen but two cases of the type described. Analogous to the condition we find in children who have fat disturbances after being fed with cow's milk, there is a loss of the element of calcium in the feces and urine. Experiments carried on at the Rockefeller Institute in three cases show that the loss of calcium does not necessarily have any connection with the amount of fat that these children lose in the feces. Even if large amounts of phosphates and fatty and volatile acids are present in the feces, the calcium loss of the organism is not necessarily large on that account.

So there was no definite connection between the fat metabolism and the loss of calcium as these cases show.

**Dr. E. J. Huenekens**, Minneapolis: I would like to report a case under observation which I think comes under the classification of Founder's hyperdystrophy, but which may be classed as Herter's infantilism. It is a baby, 21 months old, which only weighs 6,200 grams, less than the normal weight for an infant 1 year old. The baby has received the best of attention since birth. The mother took it from the breast and put it on different mixtures, but these mixtures did not agree with the child, and the minute the baby was put back on breast milk it recovered promptly. Since the ninth month different forms of cow's milk have been tried without success. I am now trying a buttermilk preparation.

*(To be continued)*

## INDIANA STATE MEDICAL SOCIETY

*Annual Meeting held at Lafayette, Sept. 24-25, 1914*

*(Continued from page 1501)*

### Diagnosis and Treatment of Simple Glaucoma

**Dr. Albert E. Bulson, Jr.**, Fort Wayne: Glaucoma simplex is a relatively common disease of middle or advanced life, and unattended by active inflammation. It is attended with increased intra-ocular tension, which, however, may be overlooked unless the examination is thorough. Its course is very insidious, and if unchecked terminates in blindness. Therefore, its early recognition and the adoption of appropriate treatment are of supreme importance. Among the early symptoms noted by the patient are transitory attacks of blurred vision, night blindness and the apparent necessity of changing glasses often. Considerable difference of opinion exists concerning treatment. Lowering the intra-ocular tension is the desired result. Of operations, there are several, including iridectomy, anterior and posterior sclerotomy, cyclodialysis and trephining. The last-named bids fair to supplant all other forms of operative treatment. The success of the trephine operation, however, depends almost entirely on a reasonably faultless technic. Medicinal treatment is confined to the use of the miotics, physostigmin or pilocarpin. Physostigmin is the more active. That miotic treatment does hold the disease in check for long periods of time cannot be doubted. In my own experience physostigmin in olive oil is less irritating than in aqueous solution, though there are some patients who do not tolerate physostigmin at all, and for whom pilocarpin must be prescribed. In my judgment, miotic treatment always should be the first treatment employed, and continued so long as effective. When it ceases to be effective, operative measures should be considered.

Inasmuch as arteriosclerosis, with its increased blood-pressure, chronic constipation, gouty and rheumatic diatheses are predisposing factors, it is incumbent on the physician to recommend appropriate treatment, and a proper regulation of the habits of life. Among operations, the trephine is to be preferred, and my results so far have been highly satisfactory. Though sufficient time has not elapsed to show what the ultimate outcome will be, several cases have shown for months a relatively normal intra-ocular tension and retention of the sight and fields of vision possessed at the time of operation. Preservation of the best vision for the longest period of time for the patient suffering from simple glaucoma necessitates discovery of the disease early in its progress, and the adoption of appropriate remedial measures.

#### DISCUSSION

**Dr. D. W. Stevenson**, Richmond: These patients are pessimists. A great many have peculiar mental symptoms, partly due to the eye trouble, but also associated with the general constitutional trouble. Of special importance is care in regard to the diet. The patients have gouty symptoms, arteriosclerosis, and high blood tension, and the treatment of these conditions often has a great deal to do in relieving the eye symptoms as well as the mental symptoms. I have done about eight trephine operations, and have had some excellent results with it. It is the most promising operation we have.

**Dr. L. D. Brose**, Evansville: The diagnosis of simple glaucoma is not always easy. Augmented tension and glaucoma are by no means identical conditions. It is rather a general experience to find the former, temporarily at least, during severe iritis, and yet the eye afterward remains free from glaucoma. A diagnosis of glaucoma should not rest on the disclosure of the ophthalmoscope; all other symptoms of the disease should be sought for. Progressive peripheral contraction of the nasal side of the visual field is highly indicative of glaucoma when found with unilateral cupping of the disk, or with bilateral excavation extending to the periphery of the nerve, with overhanging edges and recession of the lamina cribrosa. Misty vision and the appearances of halos are not of frequent occurrence in glaucoma simplex, but when present are corroborative evidence of its existence. Operative interference, even when done most skilfully, is only too often an uncertain means to an end, and we must remain content with having ameliorated some of the symptoms, while the disease per se is not cured. The patient's general condition should be studied carefully in all suspected cases.

**Dr. F. C. Heath**, Indianapolis: Glaucoma and cataract are both much more common in hot countries than elsewhere. The use of the tonometer is of much value and the regulation of the habits of the patient is very important. Nothing was said of internal treatment. It is of advantage to look after the elimination in these cases, and I attach some value to the use of the salicylates. In many cases I have seen advantage from the use of miotics. Regarding operative treatment: While iridectomy has served us well in acute glaucoma, we have been disappointed with its effects in chronic glaucoma. I have not yet had the opportunity to do a trephine operation, but have been led to believe that it is the operation to be done.

**Dr. W. A. Hollis**, Hartford City: I have injected subconjunctivally sodium citrate in 5 per cent. solution, as advocated by Fisher of Cincinnati, in connection with miotics, and its effect has been very gratifying, the tension subsiding somewhat in a very short while and the patient feeling much better.

**Dr. T. C. Hood**, Indianapolis: Trephining is a good operation.

**Dr. A. E. Bulson, Jr.**, Fort Wayne: I look on every case of simple glaucoma as eventually an operative case. For that reason I am opposed to the subconjunctival injections of anything that may possibly produce adhesions. Also, I have noticed that nearly all who have reported end-results from the subconjunctival injection also employed a miotic. I get the same results with the miotic without sodium citrate. Concerning the trephine operation: We must not lose sight of the fact that the patient has a disease that is going to end in blindness. We know there are certain risks attending the trephine operation, but they are not one-tenth so great as those attending iridectomy. The secret of success in most of these cases is in dissecting the conjunctival flap very much as Elliott does, and then making the opening partly in corneal tissue, partly in scleral tissue, after the cornea has been split. My principal plea, however, is for earlier recognition of these cases.

### Trachoma in Indiana

**Dr. Eldridge M. Shanklin**, Hammond: It is estimated that it costs the state $3,000 to educate a blind child. The greatest cost is not to the state, however, but to the county and the individual. Trachoma victims are rapidly appearing in the reports of many of our county asylums for the poor, and needlessly, too. In many cases intelligent, thorough and persistent treatment will get these people out of the poorhouse. Publicity is our greatest asset in fighting trachoma. We must assure the laity, and some physicians as well, that trachoma is a "dangerous, contagious disease," and that it is communicated chiefly through the use of a common towel, etc. Physicians should be urged to cease using the term "granulated eyelids" for any and all lid affections. This is a most pernicious habit. More publicity should be given to trachoma and its dangers; cases should be reported immediately, that the health authorities may be apprised of the real trachoma situation; committees on conservation of vision should urge those making public addresses on conservation to go into this subject thoroughly.

DISCUSSION

Dr. Albert E. Bulson, Jr., Fort Wayne: Children who have the disease should be segregated. Regarding the cases that become indigenous, much can be done for these patients in the way of operation. I am convinced that there is absolutely nothing in the way of treatment that will take the place of the old copper sulphate treatment for trachoma.

Dr. L. D. Brose, Evansville: The trouble with most of these trachoma patients is that we treat them for awhile and they get well. Then they stop treatment, and after awhile return in worse condition than before. Among children the condition is neglected.

Dr. W. F. Hughes, Indianapolis: Ten years ago three-quarters of the trachoma cases were in persons of foreign descent. At the present time fully one-half of the patients who apply in the clinics for treatment are American-born citizens. I agree with Dr. Bulson that copper sulphate is a valuable agent in treatment. However, I place my reliance chiefly on silver nitrate. It has the objection, of course, of producing a faint stain, but that is a small point when compared with retained vision. I am perfectly satisfied that constant treatment—it makes no difference what you use—under sanitary conditions will make it possible for vision to be retained in a very large proportion of the cases. Education is most important; quarantine is out of the question.

### Effects of Light on the Eye

Dr. W. F. Hughes, Indianapolis: The chief results of bad lighting systems are shown in a loss of efficiency, immediate and remote, and asthenopia. Proper diffuseness, with sufficient intensity to give maximum details, seems to be the goal, from the point of view of comfort and welfare of the eye. The increase of artificial illumination often producing distinctly harmful effects on the eyes demands a closer cooperation between lighting engineers and oculists, for the standardization of lighting systems, primarily on the basis of the effect on the eye.

DISCUSSION

Dr. Eldridge M. Shanklin, Hammond: The best proof of the fact that our present-day lighting systems are not meeting the requirements exactly is the fact that we are constantly being confronted by new systems. The most interesting side of this question is the traumatic effect of extreme light on the eyes. For example, the effect of the light coming from molten metal at different degrees. In the open hearth furnace steel process work the men all wear Cobalt blue glasses. The increasing use of the oxyacetylene process—whether in cutting or welding—has also increased the number of injuries to the eye from extreme light. Men doing this work should wear glasses made up of two layers of Cobalt blue, with an interposition of the red lens, and metal helmets.

### The Bronchoscopic Treatment of Spasmodic Asthma

Dr. George F. Keiper, Lafayette: The bronchoscope is to be used after all other means have failed. Some of the patients treated by this method have been reported cured by one application of the bronchoscope. The introduction of the tube releases considerable secretion from the lungs, which secretion no doubt acts as a decided irritant to the mucosa of the respiratory tract, causing the spasm of the bronchi and bronchioles. My experience with this treatment has been limited to one case, a very severe and stubborn one, which yielded to the treatment, the asthma not having returned to date.

DISCUSSION

Dr. George F. Spohn, Elkhart: Regarding the psychopathic part of the question: I think this has a great deal to do in the treatment of these cases. These patients become alarmed when they begin to become dyspneic, and breathe through the mouth. If you will compel them to breathe through the nose at once, the bronchioles will not become dry. A favorable effect is produced by quieting these patients, and giving them the proper mental suggestion.

Dr. Albert E. Bulson, Jr., Fort Wayne: While I have used the bronchoscope for the removal of foreign bodies, I have never felt justified in using it in the treatment of spasmodic asthma, because I have obtained the same result and more easily by intratracheal injections of cocain. These cases require careful study, for they arise from many causes.

Dr. P. R. Clapper, Lafayette: Ordinarily, for symptomatic relief, the injection of epinephrin chlorid, probably 10-drop doses, repeated daily, has a prophylactic value, and for immediate relief even as high as 15 drops would afford great relief, sometimes tiding the individual over the attack.

Dr. George F. Keiper: I wish to emphasize the fact that it is wise to exhaust every other means before resorting to a means of this kind, which is rather formidable. In passing the bronchoscope it is not necessary to use anesthesia. It can be passed quite easily by one accustomed to the introduction of such an instrument. Also, it is not necessary to use this method in every case, but it is certainly worth a trial in severe cases when all other means have failed.

### Treatment of Incipient Cataract with Subconjunctival Injections of Mercuric Cyanid

Dr. A. B. Knapp, Vincennes: In the treatment of incipient cataract with subconjunctival injections of mercuric cyanid we hope to benefit some patients by staying the progress of the opacity. We must take the cases before the opacity is well advanced. In all of our cases we gave a hypodermic of morphin half an hour before giving the injection. After anesthetizing the conjunctiva, I grasp it with a fixation forceps and plunge the needle deeply into the orbit midway between the external and superior recti muscles. The pain is considerable, but usually subsides in two or three hours. The chemosis is intense, and even the eyelids and face sometimes puff up, until it is impossible to open the lids wide enough to see the eyeball. This swelling subsides in the course of a few days, without harm to any of the tissues. The strength of the solution used is 1:4,000; 20 minims is the dose usually used. When the opacity is well advanced one fails to get results. In none of my cases has the opacity advanced in the eyes treated, while in the fellow eye vision has failed in all cases that were not already blind. In one case the eye seemed to become myopic as the results of the treatment, while in another case the myopia was increased.

DISCUSSION

Dr. Albert E. Bulson, Jr., Fort Wayne: I have never used subconjunctival injections of mercury in incipient cataract, and do not think I ever shall. Colonel Smith has been using the treatment in a class of cases different from those we see in this country. Persons in India develop cataract at a much earlier age, when their physical condition is much better, and they can stand pain better. Cataract is not an infective condition; it is a disturbance of the nutrition of the lens. I fail to see how the subconjunctival injections of mercuric cyanid will have any effect, because the principal effect of mercury is in its action on an infective process, although it does have a certain effect in stimulating, perhaps, the reparative process. Subconjunctival injections of dionin have a very decided effect on the absorption of various opacities of the vitreous, aqueous humor and lens. I am not in favor of the use of subconjunctival injections of mercuric cyanid in cases of incipient cataract.

Dr. A. B. Knapp: The reaction in some cases is, of course, much greater than in others. This treatment is entirely new and will bear further investigation, but I feel that it should be tried. There is no age limit to its use. I would not fear to use it in any case in which I would feel safe in giving a hypodermic of ¼ grain of morphin.

*(To be continued)*

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**The Unity of Progress.**—Remarkable achievements are never unique occurrences in nature. Even the greatest men rest on the shoulders of a large multitude of smaller ones who have preceded them; and epochal discoveries emerge out of a period of intellectual restlessness that affects many minds.—Flexner.

# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Medical Sciences, Philadelphia

*October, CXLVIII, No. 4, pp. 469-624*

1 *Clinical Value of Expectorants. J. L. Miller, Chicago.
2 *Relative Pulmonic Insufficiency. J. N. Hall, Denver.
3 Prevention and Treatment of Vulvovaginitis in Children. F. J. Taussig, St. Louis.
4 Direct Examination of Duodenal Contents (also Bile) as an Aid in Diagnosis of Gall-Bladder and Pancreatic Affections. M. Einhorn, New York.
5 *Disseminated Sclerosis. J. Collins, New York, and E. Baehr, Cincinnati.
6 Case of Sprengel's Deformity. G. Fetterolf and J. H. Arnett, Philadelphia.
7 Treatment of Amebic Dysentery, G. M. Niles, Atlanta, Ga.
8 Diagnosis of Tuberculosis in Early Life. H. R. M. Landis and I. Kaufmann, Philadelphia.
9 Difference in Morphology of Blood in Gastric Ulcer, Duodenal Ulcer and in Chronic Appendicitis. G. A. Friedman, New York.
10 *Myopathy: Eight Cases Comprising Various Types. T. J. Orbison, Los Angeles.
11 Use of Pituitary Extract in Control of Some of Associated Symptoms of Pneumonia Which Favor Hypotension. A. A. Howell, Philadelphia.
12 Traumatic Neurosis. T. A. Williams, Washington, D. C.
13 Granuloma Fungoides. M. G. Wohl, Philadelphia.

1. **Clinical Value of Expectorants.**—Ammonium carbonate and ammonium chlorid and the emetic group of expectorants, as apomorphin and ipecac, when given in sufficiently large doses to animals, Miller says, increase bronchial secretion. Ammonia salts per os in moderate doses equivalent to 2 mg. in an adult man, do not increase bronchial secretion in the dog. Apomorphin and emetin when given to dogs in doses considerably greater than the ordinary therapeutic dose for man do not excite increased bronchial secretion.

2. **Relative Pulmonic Insufficiency.**—Hall suggests that relative pulmonary insufficiency may be found in possibly 3 to 5 per cent. of cases of mitral stenosis. The diagnosis rests on the association of the following findings: 1. Some definite cause for increased pulmonary tension, notably mitral stenosis or fibroid phthisis in an advanced state. 2. The presence of increased precordial area of dulness, especially suggesting dilatation of the right ventricle. 3. The presence of a soft diastolic murmur heard at the region of the pulmonary valves, and transmitted downward from the second or third left intercostal space along the left side of the sternum. The murmur is exactly of the type found in aortic regurgitation, excepting that it is generally more soft and blowing. The most striking single feature is its inconstancy. After being present for days or weeks, with the regaining of a better condition of compensation the murmur disappears, to reappear with the next breakdown. It is absolutely essential to the diagnosis that the aortic valve sounds be clear and that no feature of aortic regurgitation be present. Fortunately, the insufficient filling of the left ventricle in mitral stenosis oftentimes renders the aortic second sound so notably feeble that the pulmonary signs are prominent by contrast.

4. Absence of thrill. This is not infrequent in the organic lesion, but is never found in relative insufficiency, and should therefore count against such a diagnosis. The presence of a systolic murmur at this orifice would militate against the diagnosis of relative leakage and be in favor of the organic type. 5. The murmur may be increased in intensity by expiration, especially with the closed glottis, the increased intrapulmonary pressure being the active agency in bringing about the exaggeration of the murmur. A similar increase may be noted after exertion. As is to be expected, the pulmonary second sound is commonly enfeebled by the failure of close apposition of the pulmonic leaflets.

5. **Disseminated Sclerosis.**—Disseminated sclerosis, according to Collins and Baehr, is encountered much less frequently in this country than abroad. This is due, in part only, to the fact that early and irregular cases frequently escape recognition here. The fully developed, classical Charcot type of the disease is rarely seen. Trauma, including occupation, injury, intoxications, biologic crises, mental shocks, etc., play only a contributing rôle in the development of the disorder. The disease is regarded by the authors to be a parenchymatous degeneration due to the action of a toxin circulating in the cerebrospinal fluid. There can be no rigid grouping of "types" of the disease. Nevertheless, three general groups can be assumed; a spastic-paretic, an ataxic and a hemiplegic group. The best single aid in the differential diagnosis is the condition of the cerebrospinal fluid. The Wassermann reaction is practically always negative. The number of lymphocytes is less than fifteen, and there is not excess of globulin. This is of special value in ruling out cerebrospinal syphilis. The remissions which sometimes occur are singularly characteristic of this disease. In their series, however, they were rarely encountered. The absence of the abdominal reflexes, upper and lower, is an important diagnostic sign.

10. **Myopathy.**—Among the eight cases cited by Orbison is one of myopathy in a colored person. In this case there has been an arrest of the condition for over a year. The electrical reactions in every case were a very much delayed response to the faradic interrupted current in the affected muscles. Two of the patients were brothers, but in no other case was the familial element present. In none of them was there a history of heredity. The exhibition of electricity was distinctly beneficial in at least one case. Little or nothing that was elicited in these cases could be considered in the light of an etiologic factor except muscle strain in one case and general exposure in another.

### American Journal of Physiology, Baltimore

*October, XXXV, No. 3, pp. 265-366*

14 Viscosity of Blood on Inhalation of Alcohol. R. Burton-Opitz, New York.
15 *Factors of Influence in Origin and Circulation of Cerebrospinal Fluid. C. H. Frazier and M. M. Peet, Philadelphia.
16 *Extirpation of Testes and Vasomotor Irritability. H. Wheelon, Chicago.
17 Cause of Phase Difference Frequently Between Homonymous Peaks of Electrocardiogram. H. B. Williams, New York.
18 Blood and Urinary Amylase. C. E. King, Chicago.
19 Effect of Filtration Through Berkefeld Filter on Coagulability of Oxalated Plasma. C. H. Goddard, Baltimore.
20 *Is Contraction of Smooth Muscle Accompanied by Heat Production? C. D. Snyder, Baltimore.
21 *Effect of Intramuscular Injection of Pituitary Extract on Secretion of Milk in Human Subjects. R. L. Hill and S. Simpson, Ithaca, N. Y.

15. **Origin and Circulation of Cerebrospinal Fluid.**—The problem of absorption and secretion has been elucidated somewhat by the production of artificial hydrocephalus, so that it can be demonstrated without question, Frazier and Peet state, that the cerebrospinal fluid is almost, if not entirely, secreted within the ventricles, and that absorption does not take place until the fluid has escaped. The lateral ventricle, therefore, is, as the bladder, merely a receptacle for the storage fluid. Comparing the results of phthalein injection with and without obstruction of the lateral ventricles, it has been possible to elaborate a method for the differentiation of different types of hydrocephalus from the point of view of etiology. The cerebrospinal pressure has been found to vary with the pressure of the venous sinuses and to be practically identical with it. Under normal conditions there are certain oscillations which are due to the effect of inspiration and expiration on venous pressure, but they may be arrested by slight increase of intracranial tension. Closure of the carotid circulation causes an immediate but only transitory fall of cerebrospinal pressure, but obstruction of the venous circulation is followed by an increase in pressure more or less constant.

The normal rate of secretion was found to vary widely under normal conditions and was practically uninfluenced by such profound circulatory disturbances as complete closure of both common carotid arteries. The propriety of ligation of the common carotid arteries, recommended and practiced in cases of hydrocephalus, has not been established by exact laboratory methods.

The absorption of cerebrospinal fluid is largely by the venous channels. Lymphatic absorption is roundabout, slow and relatively diminutive. By the phthalein test, it was proved that from 50 to 60 per cent. is absorbed within two hours. Within two minutes of an injection of phthalein into the lateral ventricles, the drug may be recovered from the blood in the torcular herophili. Absorption was found to be chiefly via the venous channels, so that obstruction to the venous outflow is immediately followed by a rise in venous pressure, by the accumulation of cerebrospinal fluid, and a resulting increase in intracranial tension.

16. **Influence of Testes on Blood-Pressure.**—Wheelon found by experimentation that removal of the testes is followed by a slight fall in blood-pressure, while vasomotor reactions to epinephrin remain unchanged. Blood-pressure reactions to nicotin are constantly lowered as a result of gonadectomy, therefore, the effects of castration are on the sympathetic nervous system proper. The lowered irritability of the sympathetic system may partially account for the dispositional changes in castrated dogs. Incomplete data indicate that irritability of the sympathetic nervous system is increased in castrated dogs by the presence of testicular transplants. It is, therefore, concluded by Wheelon that a relationship exists between the normal functioning testes and irritability of the sympathetic nervous system proper.

20. **Heat Production in Smooth Muscle.**—When stimulating smooth muscle indirectly the results obtained by Snyder were uniformly constant in the absence of any measurable amounts of heat production accompanying development of tension. When stimulating by the direct method, by the same apparatus, development of tension in smooth muscle was accompanied now with positive heat changes, now with negative heat changes. But the same apparatus when measuring heat changes in dead muscles (heated electrically), or in live cross-striated muscle stimulated directly gave quite uniform and positive results.

21. **Effect of Pituitary Extract on Secretion of Milk.**—In a young, healthy, married woman, nursing her second baby, in the fifth month of lactation, the injection of 1 c.c. of pituitrin, equivalent to 20 mg. of dried infundibular portion of the gland, was followed, in ten minutes, by a marked increase in the amount of milk secreted. After a latent period of from twenty to thirty seconds the mother could feel the milk "coming into the breasts," and a few minutes later abdominal pains were experienced, presumably due to increased intestinal peristalsis. The milk withdrawn after injection was rich in fat, the average figure for the three experiments being 5.5 per cent. as compared with 3.4 per cent. for three days when no pituitrin was administered. In the milk yielded twenty-four hours after injection the fat content was still somewhat above the normal. Although no quantitative estimations were made, judging from the mother's experience in nursing the child, Hill and Simpson believe that the quantity of milk obtainable by it on the morning after the injection was diminished.

### American Journal of Roentgenology, Detroit

*July, I, No. 9, pp. 331-360*

22 *New Applications of Artificial Pneumothorax as Therapeutic Measure. K. Dunham, Cincinnati.
23 *Indications Afforded by Roentgen Rays for and Against Operations on Stomach. Results Obtained from Such Operations. A. H. Pirie, Montreal.

22 and 23. Abstracted in The Journal, Nov. 8, 1913, pp. 1743 and 1744.

### Annals of Surgery, Philadelphia

*October, LX, No. 4, pp. 409-536*

24 Principles of Operative Treatment of Diseases of Large Intestine. W. A. Oppel, St. Petersburg.
25 Primary Sarcoma of Lower End of Femur Involving Synovial Membrane. S. F. Jones and R. C. Whitman, Denver.
26 Treatment (Fibrolysin) for Old Contracted Cicatrices. E. G. Alexander, Philadelphia.
27 *Laminectomy for Spinal Tumor. C. A. Elsberg, New York.
28 Aneurysm of Sciatic Artery. R. C. Bryan, Richmond, Va.
29 Case of Disappearance of Recurrent Mammary Carcinoma After Removal of Ovaries. F. Torek, New York.
30 Injuries of Great Toe Sesamoids. K. Speed, Chicago.
31 *Free Transplantation of Fascia Lata. A. T. Mann, Minneapolis.
32 Analysis of Treatment of Fracture of Neck of Femur. R. Whitman, New York.
33 Flashlight Autochrome Photography of Pathologic Subjects. H. H. Hart, Baltimore.

27. **Laminectomy for Spinal Tumor.**—In Elsberg's experience the danger of a laminectomy for spinal neoplasm is small; the results that may be expected from the removal of intramedullary tumors of the cord are fairly good, if the tumors are well localized and will extrude; the results from the removal of extramedullary growths are very satisfactory if only the patients come to operation early enough, before irreparable damage has been done to the cord.

31. **Free Transplantation of Fascia Lata.**—Mann urges the use of transplanted fascia in the routine of practical surgical work, to add strength and to supply defects in ventral and inguinal hernia. Plastic flaps in these cases can do much, but often they can be greatly strengthened or can be replaced by a strong fascial transplant such as may easily be taken from the iliotibial band of the fascia lata.

### Archives of Pediatrics, New York

*September, XXXI, No. 9, pp. 641-720*

34 Some Points of Contact Between Tuberculosis Work and Pediatrics. W. C. White, Pittsburgh.
35 *Endocarditis in Children. F. M. Crandall, New York.
36 Spasmophilia. H. Reye, Ann Arbor, Mich.
37 Psychopathic Child. F. J. Farnell, Providence, R. I.
38 Chronic Infective Endocarditis. E. C. Jones and B. M. Meine, Philadelphia.
39 *Caloric Value of Diets of Sick Infants. J. C. Gittings, Philadelphia.
40 Hemimelia Thoracica. F. L. Wachenheim, New York.

35. Abstracted in The Journal, June 20, p. 1989.

39. Abstracted in The Journal, July 4, p. 55.

### Boston Medical and Surgical Journal

*October 8, CLXXI, No. 15, pp. 545-580*

41 Epidemic of Paratyphoid at Boston State Hospital, 1910, M. M. Canavan, Boston.
42 Clinical Features of an Outbreak of Paratyphoid. M. E. Gill-Noble, Boston.
43 Blood-Cell Picture in Paratyphoid and After Vaccination with Bacillus Typhosus. M. M. Canavan, Boston.
44 Relation of Paratyphoid to Antityphoid Vaccination. M. M. Canavan, Boston.
45 Conclusions from Work on Paratyphoid Epidemic at Boston State Hospital, 1910. E. E. Southard, Boston.

*October 15, No. 16, pp. 581-620*

46 Roentgenologic Consideration of Relation of Individual Type to Intestinal Stasis. P. Brown, Boston.
47 Study of Cancer. S. W. Little, Rochester, N. Y.
48 Gunshot and Bayonet Wounds of Stomach. C. G. Cumston, Geneva, Switzerland.
49 Several Practical Features Associated with Management and Treatment of Obscure Arthritis. H. W. Marshall, Boston.
50 Thyroid Operations Under Local Anesthesia. F. H. Lahey, Boston.

### Canadian Medical Association Journal, Toronto

*October, IV, No. 10, pp. 853-948*

51 Vascular Crises and Angiospasm. A. Birt, Halifax, N. S.
52 *Paroxysmal Tachycardia. W. F. Hamilton, Montreal.
53 Investigations of Semicircular Canals and Their Clinical Applications. D. H. Ballon, Montreal.
54 Medical Profession of Alberta and Defense of Country. L. Drum, Ottawa.
55 National Defence and Medical Profession. S. W. Hewetson, Calgary, Alta.
56 Antityphoid Inoculation at Winnipeg General Hospital. S. J. S. Peirce, Winnipeg, Man.
57 Subtrochanteric Fracture of Femur. W. G. Anglin, Kingston.
58 Case of Tetanus. Treated by Phenol Injections. Recovery. J. T. Fotheringham, Toronto.

52. **Paroxysmal Tachycardia.**—While the 4 cases reported by Hamilton terminated fatally, one patient seems to have been helped by taking large doses of nux vomica. At all events the interval between attacks was lengthened during treatment. While the attacks were brief they seemed trifling; but with short intervals and protracted tachycardia, to say nothing of advancing age, the gravity increased. The treatment, Hamilton says, resolves itself, therefore, in many cases into the treatment of such conditions after the normal rate is approached or reached.

### Colorado Medicine, Denver

*September, XI, No. 9, pp. 327-360*

59 *Some of Professional Responsibilities of Physicians of Colorado. O. M. Gilbert, Boulder.
60 Some Recent Contributions in Field of Microbiology. H. Noguchi, New York.
61 Two Cases of Sphenoid Disease with Brain Symptoms. A. R. Solenberger, Colorado Springs.

59. Abstracted in The Journal, October 3, p. 1229.

### Delaware State Medical Journal, Wilmington

*August, V, No. 9, pp. 1-26*

62 Surgery for Handicapped Patient. W. E. Bird, Wilmington.

### Iowa State Medical Society Journal, Washington

*October, IV, No. 4, pp. 271-345*

63 Benign Tumors of Breast. O. J. Fay, Des Moines.
64 Malignant Tumors of Breast. D. C. Brockman, Ottumwa.
65 Elephantiasis. Report of Case. C. L. Campbell, Atlantic.
66 Pellagra. A. H. Jastram, Remsen.
67 Adhesive Complications of Right Abdomen. M. Emmert, Atlantic.
68 Brain Localization. E. M. Williams, Sioux City.
69 Cancer of Uterus. C. S. James, Centerville.

### Journal of Experimental Medicine, Lancaster, Pa.

*October, XX, No. 4, pp. 321-432*

70 *Relation of Bacteriolysis to Proteolysis. J. W. Jobling and W. Petersen, New York.
71 *Chemistry of Serous Effusions. A. A. Epstein, New York.
72 Pneumococcus Hemotoxin. R. Cole, New York.
73 *Production of Methemoglobin by Pneumococci. R. Cole, New York.
74 *Rôle of Spleen in Blood Formation. D. H. Morris, New York.
75 *Immunization of Animals with Bacterial Proteotoxins (Anaphylatoxins). H. Zinsser and J. G. Dwyer, New York.
76 *Rôle of Lymphoid Tissue in Resistance to Experimental Tuberculosis in Mice. J. B. Murphy and A. W. M. Ellis, New York.
77 *Cause of Localization of Secondary Tumors at Points of Injury. F. S. Jones and P. Rous, New York.
78 Greater Susceptibility of an Alien Variety of Host to an Avian Tumor. P. Rous and L. B. Lange, New York.
79 Immunity to Transplantable Chicken Tumors. P. Rous and J. B. Murphy, New York.

70. **Relation of Bacteriolysis to Proteolysis.**—According to Jobling and Petersen there is no demonstrable increase in non-coägulable nitrogen during bacteriolysis. Bacteria treated with immune serum and complement are so altered that they are more readily digested by trypsin. Bacteria treated with complement alone become more resistant to proteolysis. Bacteria treated with an excess of immune serum and complement become more resistant to proteolysis.

71. **Chemistry of Serous Effusions.**—The fluids subjected to analysis by Epstein are grouped according to the following scheme, which is based on clinical data: 1. Cutaneous effusions: (a) nephritic and (b) cardionephritic. 2. Pleural effusions: (a) inflammatory and (b) non-inflammatory including (1) nephritic, (2) cardiac, (3) cardionephritic and (4) new growth. 3. Abdominal effusions: (a) inflammatory, tuberculous and (b) non-inflammatory, including (1) new growth, (2) cirrhosis of the liver, (3) cardiac and (4) cardionephritic. 4. Hydrocele fluid. A comparison of the results obtained shows that the effusions vary, (1) according to location, and (2) according to the disease in which they are produced. Thus the subcutaneous effusions are totally different in their composition from the abdominal or pleuritic fluids; and again the abdominal fluid of nephritic origin is different from those of cardiac or other origin.

The cutaneous effusions are characterized by a low protein content and a small amount of incoagulable nitrogen. Of the protein present in these fluids, the globulin constitutes the greater portion. In the mixed cardionephritic fluids the ratio of globulin to albumin is lower than that in normal blood-serum; but when compared with the blood-serums of cardionephritic cases there appears to be a certain parallelism. The chlorid content of these fluids is considerably above that found in normal blood-serum, but is comparable with those of corresponding cases. The effusions occurring in serous cavities differ from the cutaneous ones by their higher protein content. The highest values are attained in the pleural fluids, in which the protein present is almost the same as that in normal blood-serum. The incoagulable nitrogen in these fluids is uniformly low. The chlorids vary in amount according to the nature of the case. In the effusions of inflammatory origin the values are lower than those found in the blood. In the pleural fluids of other than inflammatory origin the chlorid content is either the same or higher than that of blood-serum. The globulin-albumin ratio in all of these fluids is higher than that of normal blood-serum. The abdominal fluids in general are less rich in protein than the pleural effusions. Those of cardiac origin give the highest protein values, but the globulin-albumin ratios are lower than in the pleural fluids or in the blood-serums of corresponding cases. The results obtained in the analysis of abdominal fluids from cardionephritic cases approach very closely those obtained in purely cardiac cases.

73. **Production of Methemoglobin by Pneumococci.**—Cole found that living pneumococci in contact with hemoglobin transform this into methemoglobin. The reaction does not occur when hemoglobin is added to an emulsion of washed pneumococci in salt solution. However, if minute traces of dextrose be added to such a mixture, the reaction quickly occurs. The dextrose may be replaced by any one of a number of other sugars, and also by certain other organic substances, if the latter are added in large amounts. The reaction does not occur in the absence of oxygen. If the free oxygen be first removed, and then replaced, the reaction occurs more rapidly than if the oxygen had not been removed. The presence of free oxygen in excess slightly delays the reaction, possibly because of the inhibition of the reduction process which forms the first part of the reaction. The explanation of this phenomenon of methemoglobin production is not only of importance so far as this special reaction is concerned, but also because it suggests an explanation for the manner in which pathologic effects are produced by those bacteria which apparently produce no soluble toxin.

74. **Rôle of Spleen in Blood Formation.**—Morris examined carefully the blood entering the spleen and compared it with that emerging by the splenic vein. His results all point to the inevitable conclusion that the spleen is a blood-forming organ of prime importance in the animal metabolism. The fact that the organ can be extirpated without causing death or even considerable detriment to the animal organism does not militate against this conclusion. Other organs (hemolymph nodes, bone marrow, and adenoid tissues in general) may assume part of the rôle of the spleen when this is absent, but only the severity of the blood-destroying agent and the individual resistance can determine whether the body can stand the strain when deprived of the spleen. Cases of death from removal of the malarial spleen indicate this strongly.

75. **Immunization of Animals.**—The authors' experiments show that guinea-pigs, once injected with sublethal doses of bacterial proteotoxins (anaphylatoxins), acquire distinct tolerance to these poisons. The degree to which such resistance or tolerance is developed is never high, in no case exceeding the ability to withstand one and one-half to twice the fatal dose of the poisons. During the three or four days immediately following the first injection the animals appear to be slightly less resistant than are normal controls, this depending probably on the injury done by the administered poison. Tolerance begins to be evident after from four to seven days, seems to be most highly developed in about two weeks, but lasts in a diminishing degree for at least as long as sixty days.

76. **Resistance to Experimental Tuberculosis in Mice.**—Murphy and Ellis state that mice either normal or splenectomized after exposure to the Roentgen ray are markedly more susceptible to bovine tuberculosis than are normal animals. Animals splenectomized a short time prior to inoculation are also more susceptible than normal, while those splenectomized eight to ten days before inoculation have about the same resistance as normal. The mice splenectomized three to four weeks before inoculation have a resistance increased over the normal, as has already been shown by Lewis and Margot. As Roentgen ray in the doses used apparently affects only the lymphoid tissue and as the hypertrophy of the remaining lymphoid tissue after splenectomy is so rapid that the circulating lymphocytes may be much above the normal by the third week, it is concluded that this evidence, taken with the well-known association of the lymphocytes with tuberculous lesions, points strongly to the lymphocyte as an important agent in the defensive mechanism against tuberculosis.

77. **Localization of Secondary Tumors.**—Jones and Rous found that the injection of a suspension of mouse tumor into a healthy peritoneal cavity has little success as a rule compared with a similar injection into the subcutaneous tissue. They found that the resistance of the peritoneal lining thus

indicated can be abolished largely if not completely by the preliminary injection of a mechanical irritant (lycopodium). That the change thus brought about is independent of general immunity phenomena is shown by the fact that a local injury renders susceptible the part of the peritoneum immediately affected and that part only. Special tests show that the factor important in rendering the peritoneum more susceptible is the injury to the subendothelial connective tissue. Susceptibility persists after the endothelium has regenerated over the reacting connective tissue.

Schmidt found that the cells of tumor emboli in the pulmonary arterioles are able to penetrate the endothelium of the vessel only after they have been provided with a stroma from the subendothelial connective tissue. Jones and Rous claim that a connective tissue highly cellular and perhaps still proliferating as the result of injury may well elaborate the stroma for a tumor more rapidly than normal connective tissue. Tests of growth in vitro support this idea. Connective tissue reacting to an injury grows profusely and almost immediately when incubated in plasma, whereas normal tissue from the same region shows usually no growth whatever. Dead tumor fragments in contact with the peritoneum cause a change favorable to the lodgment and growth of later tumor fragments.

Jones and Rous suggest that it seems not improbable that the peritoneal dissemination of certain human neoplasms may be accomplished indirectly through the death of the first tumor fragments cast off. They conclude that the secondary localization of tumors at points of injury may be attributed with good reason to the presence at such points of an active connective tissue capable of elaborating a stroma rapidly and abundantly. For it is the proliferation of the subendothelial connective tissue to form a supporting stroma that determines the fate of free tumor cells, whether these lie on the peritoneum or within a vessel.

### Lancet-Clinic, Cincinnati

*October 10, CXII, No. 15, pp. 385-412*

80 Effects of Alcohol and Tobacco on Life Expectancy. T. D. Crothers, Hartford, Conn.
81 Recognition of Defensive Ferments in Urine. B. Holmes, Chicago.
82 Applied Physical Chemistry in Heart Disease. J. Aulde, Philadelphia.
83 Whitehead Operation for Hemorrhoids. C. E. Caldwell, Cincinnati.
84 Light: Its Use and Abuse. J. Ranly, Cincinnati.

### Medical Record, New York

*October 17, LXXXVI, No. 16, pp. 657-698*

85 Means by Which Infectious Diseases Are Transmitted and Disinfection. A. H. Doty, New York.
86 *Chronic Mucous and Membranous Colitis. G. M. Linthicum, Baltimore.
87 Roentgenographic Diagnosis of Enlargement of Thymus. D. B. Delavan, New York.
88 Alcoholism as Factor in Disease. D. Carter, New York.
89 Diagnosis of Typhoid. G. A. Rueck, New York.
90 Syringomyelia; Report of Case of Morvan's Type of Disease. H. V. Wildman, Jr., New York.
91 Rhinolith of Several Years' Duration in Child of Eight. B. Joseph, New York.

86. **Chronic Mucous and Membranous Colitis.**—The neurotic theory of these conditions is upheld by Linthicum. He has adopted a method of treatment which, he says, has given him very encouraging results in all cases in which there were no outside factors in the abdominal cavity which would keep up an irritation of the colon or rectum, or in which it was secondary to heart, liver or kidney involvement. The method used in treating these cases has been by fuming crystals of iodin, or one of its salts, forcing the fumes into the rectum and colon with slight pressure. The apparatus consists of an ordinary 500 c.c. Florence flask, with a double perforated rubber stopper connected with pressure tank or bulb on one side, the glass tube entering into and extending to about 2½ cm. from the bottom of the flask, an exit being provided by a right angle glass tube with its inside end close to the top. The exit is connected with a short glass tip by a rubber tube about 25 cm. long. The patient, if a man, is placed in the knee-chest position and, the proctoscope being introduced, the gas is blown through it into the bowels until the patient complains of cramps or too much distress. (If the patient is a woman she is placed in the Sims position.) The air is then allowed to escape and the insufflation is repeated, so that altogether the vapor from 2 gm. of iodin crystals or 1½ gm. of iodoform, is used. The iodin is fumed by means of a small electric stove, placed under the flask; a bunsen burner or an alcohol lamp can be used.

The glass tip inserted through the anus a few centimeters may be used without the use of the proctoscope in cases in which the patients grow weary of its insertion; but the proctoscope aids dilatation. In the early stages of the disease this treatment is given each day for a period of ten days, and then at less frequent intervals so that the treatment extends over a period of six to eight or twelve weeks. The result has been that the constipation was relieved and the patient had regular normal stools. The mucous membrane assumed a more nearly normal appearance, and the mucous secretion ceased. The preliminary treatment before the injection consists of the patient irrigating his bowels thoroughly, so that he presents a clean intestine each time before his regular treatment.

### New York Medical Journal

*October 10, C, No. 15, pp. 697-744*

92 Technic of Spinal Anesthesia. W. W. Babcock, Philadelphia.
93 *Continuous Uterine Drainage. A. E. Gallant, New York.
94 Cervical Adenitis. N. P. Stauffer, Philadelphia.
95 Present Status of Verumontanum in Deep Urethral Diseases. J. A. Hawkins, Pittsburgh.
96 Acquired Organic Hour-Glass Stomach. G. A. Humphreys, New York.
97 Modern Treatment of Bright's Disease. J. Herold, New York.
98 Substitution Reactions. C. P. Oberndorf, New York.
99 Gonorrheal Stomatitis. H. J. Farbach, Louisville, Ky.
100 Present Status of Functional Liver Tests. E. B. Krumbhaar, Philadelphia.

*October 17, No. 16, pp. 745-796*

101 Implantation of Generative Glands and Its Therapeutic Possibilities. G. F. Lydston, Chicago. (To be continued.)
102 Case of Heteroplastic Grafting of Testicle. R. T. Morris, New York.
103 Gunshot Wounds of Spine. C. G. Cumston, Geneva, Switzerland.
104 Median Bar Obstruction in Prostatic Disease. Report of Case. J. D. Whitall, Philadelphia.
105 Was the Engineer's Mind Impaired by Alcohol? T. D. Crothers, Hartford, Conn.
106 Localization of Brain Lesions. H. Crenshaw, Atlanta, Ga.
107 Nasopharyngoscope in Treatment. T. J. Harris, New York.
108 Alleged Tuberculosis Cures on the Market. F. P. Morgan, Washington, D. C.
109 Tropeolin as an Indicator for Gastric Acidity. F. W. Rolph, Toronto, Canada.
110 *Purpura Hemorrhagica Treated with Horse-Serum. J. M. Bodenheimer, Shreveport, La.

93. **Continuous Uterine Drainage.**—Normally, Gallant states, the menstrual blood condenses in the passive uterus, escapes drop by drop, or trickles from the os externum in a bright red, intermittent stream, without malaise, pain, headache, or any sort of reflex manifestation. Obstruction to the free outflow may be caused by fibrosis, cicatrization, flexure, neoplasm of any portion of the cervical canal or involving the lower uterine zone. Obstruction is primarily an intermenstrual condition, which (a) causes retention of mucus, etc., within the uterus; (b) retards the outflow of menstrual blood; and (c) shuts in the dangerous remnants after abortion, miscarriage, and labor, and the gonococcus. Obstruction excites the uterus to laborlike activity, brings about hypertrophy of its wall, enlargement of its cavity, increased weight, and an abnormal condition of its mucous membrane. Obstruction during menstruation causes colicky cramps, laborlike pains, backache, headache, and other reflex pains; (b) obstruction during labor causes serious dystocia; (c) obstruction after labor induces after-pains, facilitates infection, and favors subinvolution; (d) obstruction between periods, intermenstrual, forces infection into the tubes and peritoneum, and results in peritonitis, tubal gestation, hydrosalpingitis and pyosalpingitis, and, by thus obstructing the tubes, is the most common cause of sterility, and frequently is at the bottom of marital infelicity, leading to the divorce courts and the hospital, and if the woman escapes with her life, she will be compelled to live an aphoric life, subsisting on the alimony which the courts offer as her only means of redress. Obstruction in young or older women can be and should be remedied, by dilatation, drainage, replacement, pessary support, or suspension of the uterus.

Continuous efficient drainage can be secured only by the use of a drain which will permit the cervical mucus to pour into the drain, mingle with the secretions, and prevent clotting and plugging. To prevent recontracture of the internal os, reflexure of the anteflexion, the drain must be of rubber, fenestrated or perforated, sutured in the cervix and must remain *in situ* for six or more months. Experience teaches that, except for the removal of detached secundines or placenta, curettage is unwise and can therefore be dispensed with.

To secure uninterrupted drainage from the uterine cavity in acute cases, Gallant advises that a gauze roll wick should be placed in the vagina, with its upper end under the drain and the lower end projecting through the vulva so as to come in actual contact with the vulva pad, otherwise pus will collect in the vagina and sapremia will result.

110. **Purpura Hemorrhagica Treated with Horse Serum.**—In Bodenheimer's case good results were obtained from this treatment. Ten c.c. of horse serum were administered intramuscularly. Calcium lactate in 2 grain doses every two hours, and gelatin and orange juice freely, was administered by mouth. The hemorrhagic blisters in the mouth, which on close inspection proved to be gangrenous, showed a marked improvement in twenty-four hours after the administration of the horse serum; in fact, they acted as remarkably as the diphtheritic membrane does after the administration of diphtheria antitoxin. The epistaxis ceased, but the bloody stools continued. In forty-eight hours the blisters or gangrenous spots in the mouth, which had been at least $\frac{1}{25}$ of an inch in diameter, were practically well. The bloody stools continuing 10 c.c. more of horse serum was administered and the treatment by mouth continued.

The stools were markedly improved in the next twenty-four hours, and after two or three days were normal. The treatment by mouth was continued for a week and the child carefully nourished. She was watched for some time, but up to the present, three months having passed, there has been no return of symptoms.

She had the not unusual urticaria ten days after the serum administration, but outside of the usual parental alarm and discomfort to the patient, the recovery was uneventful.

### New York State Journal of Medicine

*October, XIV, No. 10, pp. 471-511*

111 Diagnosis of Nervous Diseases. C. L. Dana, New York.
112 Some Manifestations of Influenza in Young Children. L. E. Holt, New York.
113 Recurrent Bronchitis in Children. C. G. Kerley, New York.
114 Effect on Subsequent Labors of Operations for Uterine Displacements. G. W. Kosmak, New York.
115 Experimental Study of Ocular Anaphylaxis. M. J. Schoenberg, New York.
116 Effects of Sugars on Gastric Secretions in Infants. D. H. Sherman and H. R. Lohnes, Buffalo.

### Northwest Medicine, Seattle, Wash.

*October, VI, No. 10, pp. 291-324*

117 Sliding Hernia. P. Rockey, Portland, Ore.
118 Value of Nerve Blocking in Prevention of Surgical Shock. E. O. Jones, Seattle.
119 Conservation of Vision. J. L. McCool, Portland, Ore.
120 Extension Treatment of Fractures of Neck of Femur in Reference to Its Occurrence in Elderly Subjects. J. A. Pettit, Portland, Ore.
121 Appendicitis in Early Childhood. J. B. Manning, Seattle.
122 Diagnosis in Early Stages of Urinary Tuberculosis. G. S. Whiteside, Portland, Ore.

### Ohio State Medical Journal, Columbus

*October, X, No. 10, pp. 575-646*

123 Sex Hygiene an Educational Problem. H. Jones, Circleville.
124 Case of Abnormal Fetus. W. A. Cromley, Palestine.
125 Diagnosis and Prognosis of Insanities. E. E. Gaver, Columbus.
126 Mental Symptoms Due to Brain Tumor. W. B. Laffer, Cleveland.
127 Practical Value of Routine Bacteriologic Examinations of Conjunctiva. W. H. Snyder, Toledo.
128 Operative Aspects of Certain Static Foot Troubles. A. H. Freiberg, Cincinnati.
129 Atrophic Rhinitis with Ozena: Etiology and Surgical Treatment. H. B. Harris, Dayton.

### Oklahoma State Medical Association, Muskogee

*October, VII, No. 5, pp. 139-171*

130 Prognosis and Treatment of Injuries of Central Nervous System with Reference to Trauma. R. Grosshart, Tulsa.
131 Surgery and Prognosis of Gall-Bladder and Ducts. H. A. Lile, Aline.
132 Headache of Nasal Origin. E. F. Davis, Oklahoma City.
133 Early Diagnosis of Insanity. A. A. Thurlow, Norman.
134 Spinal and Local Anesthesia in Gynecologic and Obstetric Surgery. E. L. Gilcreest, Gainesville, Tex.

### Ophthalmic Record, Chicago

*October, XXIII, No. 10, pp. 487-540*

135 Case of "Squirrel Plague" Conjunctivitis in Man. D. T. Vail, Cincinnati.
136 Treatment of Earlier Stages of Senile Cataract. H. Smith, Amritsar, India.
137 Historic Data Concerning Glasses. E. Hill, Chicago.

### Surgery, Gynecology and Obstetrics, Chicago

*October, XIX, No. 4, pp. 427-554*

138 *Internal Derangements of Knee. R. Jones, England.
139 Operative Treatment of Ankylosis of Mandible. V. P. Blair, St. Louis.
140 Treatment of Inoperable Carcinoma of Uterus by Application of Heat. J. F. Percy, Galesburg.
141 Results of Radical Operative Treatment of Cancer of Uterus. T. Wilson, England.
142 *Ulcer of Stomach in Children Before Puberty. C. D. Lockwood, Pasadena, Cal.
143 *Postoperative Pleurisy with Effusion and Empyema. A. C. Burnham, New York.
144 Intestinal Obstruction Due to Cancer of Colon. A. McGlannan, Baltimore.
145 Strictures of Gall-Bladder. J. E. Else, Portland, Ore.
146 Inversion of Uterus. M. J. Buck, Pittsburgh.
147 Case of Sporotrichosis.* B. F. Davis, Chicago.
148 *Spinal Anesthesia in Gynecology. G. Gellhorn, St. Louis.
149 *Study of End-Results of Interposition of Uterus. J. O. Polak, Brooklyn.
150 Behavior of Abdominal Cutaneous Reflexes in Acute Conditions within Abdomen and Pelvis. R. R. Smith, Grand Rapids, Mich.
151 *Eruptions Following Operation. F. B. McCarty, Chicago.
152 *Can Surgery Be Eliminated in Treatment of Fibroid Tumors of Uterus? J. A. McGlinn, Philadelphia.
153 Strangulated Epigastric Hernia. A. V. Moschcowitz, New York.
154 *Untoward Results of Pyelography. M. Krotoszyner, San Francisco.
155 *Treatment by Cautery of Gastric Ulcer. D. C. Balfour, Toronto.
156 *Autoplastic Bone Grafting. J. F. Oechsner, New Orleans.
157 *Concerning Renal Lesions After Pyelography. L. Buerger, New York.
158 *Immediate Bone Transplantation in Compound Comminuted Fracture of Tibia and Fibula. W. S. Barnes, Chicago.
159 Uses of an Arm-Board in Surgery. G. G. Turner, England.
160 *Treatment of Cranial Defects by Bone-Grafts. R. L. Rhodes, Roanoke, Va.
161 Pulmonary Abscess. A. H. Pirie, Montreal.

138. **Internal Derangements of Knee.**—Also published in the London *Lancet*, August 1 and abstracted in THE JOURNAL, August 29, p. 808.

142. Abstracted in THE JOURNAL, January 31, p. 405.

143. **Postoperative Pleurisy with Empyema.**—Burnham claims that pleural effusion is not of uncommon occurrence after operations, and may occur at any time, but is most often seen before or shortly after the subsidence of the postoperative temperature. It is most frequently seen after septic abdominal conditions, and is usually on the right side. A clear serous exudate in the right chest is not necessarily a serious complication, such cases usually going on to recovery. In so far as they refer to postoperative conditions, Burnham says, that Gee and Harder's statement that "pleural effusion following abdominal infection is more often purulent than serous" is not borne out by case records. There is a distinct clinical type of empyema which may complicate abdominal infections either before or after operations, and the case mortality of this type is high. The relationship which exists between perforated gastric ulcer, subphrenic abscess, and empyema is exceedingly close; and the occurrence of one of these conditions, without apparent cause, should lead to a suspicion of one or both of the others. A turbid or purulent effusion occurring in the right chest, following laparotomy, requires immediate drainage, and should lead at once to the exploration of the subphrenic space.

148. Abstracted in THE JOURNAL, June 27, p. 2047.

149. Abstracted in THE JOURNAL, June 20, p. 1988.

151. **Eruptions Following Operation.**—Eruptions following operation were found by McCarty to be of comparatively frequent occurrence, particularly after operations on parts abundantly supplied with sympathetic nerve fibers, as the pelvic organs, in which they occurred in 4½ per cent. of a series of 1,000 cases. These eruptions occur after any of the

common anesthetics—ether, chloroform, or nitrous oxid. The condition is characterized by an interval between operation and onset of eruption, by lack of prodromata or of constitutional symptoms, by the presence of an erythematous or papular eruption with severe itching, and by the presence of an elevated temperature and moderate leukocytosis. The eruption often simulates scarlatina, measles, and the so-called drug exanthems. The exciting cause varies; drugs, enemata, anesthetics, and operative shock are included. The underlying cause is a vasomotor disturbance due probably to irritation of the sympathetic nervous system.

152. **Fibroids of Uterus.**—McGlinn says that surgery is the best treatment in fibroid tumors of the uterus and cannot be supplanted by any other known form of treatment, although roentgenotherapy has an important place in the treatment of these tumors. Surgeons and roentgenologists should not enter into competition with each other but should work hand in hand for the relief of womankind.

154. **Untoward Results of Pyelography.**—Krotoszyner would restrict pyelography to those comparatively rare cases in which the correct recognition of a renal lesion by a combination of all other exact methods of examination is impossible.

155. **Treatment by Cautery of Gastric Ulcer.**—The following technic described by Balfour has been employed in the cases thus far operated on in the Mayo clinic. The portion of the gastrohepatic omentum in the region of the ulcer is carefully dissected free from the lesser curvature. The ulcer is carefully palpated and with a Paquelin cautery maintained at a dull heat the point is slowly carried through the ulcer until an artificial perforation is produced. The moderate burning is continued until the actual area of the ulcer is entirely destroyed. Closure of the opening is then made by interrupted sutures of chromicized catgut reenforced by mattress sutures of silk. The reflected gastrohepatic omentum is then replaced over the site of the ulcer and fixed by superficial interrupted sutures of fine silk. In the application of this method the following facts are apparent: 1. The ulcer is destroyed and with it any early malignancy which may exist. 2. There is little sacrifice of sound gastric tissue, and secondary contraction is therefore minimized. 3. Hemorrhage, early or late, is with practical certainty prevented. 4. Its simplicity, speed of accomplishment and safety.

156. Abstracted in The Journal, May 30, p. 1748.

157. **Renal Lesions after Pyelography.**—In December, 1911, on examining a kidney removed two weeks after collargol pyelography, Buerger found distinct evidences of necrosis due to collargol in the renal parenchyma. Since then he used argyrol almost exclusively in this work, hoping that it might be less dangerous and less destructive of the renal tissue, even if it should penetrate into the renal parenchyma. A few months ago, a case was encountered in which extensive necrosis occurred in a hydronephrotic kidney after the injection of argyrol into its pelvis.

158. **Comminuted Fracture, Fragments Used for Transplant.**—Barnes cites a case, patient aged 59, of compound comminuted fracture of the left tibia and fibula about 2 inches above the ankle joint, with several spicula of bone protruding through the skin. The fibula was fractured about 2 inches above the tip of the malleolus. The upper fragment was overriding the lower fragment for a distance of about an inch. The tibia was comminuted about 2½ inches above its lower articular surface for a distance of about 5 inches. The bone was partially splintered, and the fragments were in malposition to the shaft of the bone as well as with each other. All the fragments were removed. One fragment, which measured 5½ inches in length and about the thickness of an ordinary sized man's little finger, was placed in sterile salt solution. It was sufficiently long to span the gap between the two tibia fragments. It was carefully trimmed so that all the ragged edges were smooth, and placed in the gap between the fragments, each end resting securely in the medullary canal of the fragment. Nothing was done with the fibula. The fragments were in good apposition.

Nine weeks after the operation the leg and foot were plumb, the fibular fragments had united firmly, the transplant was doing its work well and union had already taken place between the ends of the transplant and the tibia. Eighteen weeks after the operation the union between the tibia and the transplant was firm and complete and was still progressing. Seven months after the operation regeneration of bone was still taking place. The transplant is disappearing by absorption and new bone is taking its place.

160. **Treatment of Cranial Defects by Bone-Grafts.**—Rhodes cites four cases in which a rectangular piece of bone large enough to cover the cranial defect was in each case taken from the flat surface of the tibia along with the periosteum covering and slightly larger than the graft and placed over the defect and anchored in position by sewing the periosteum of the graft to that of the skull with chromic catgut.

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## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Medical Journal, London

*October 3, II, No. 2805, pp. 565-608*

1 *Surgical Treatment of Nephroptosis by Occlusion of Perinephric Fascial Sac (Capsular Occlusion). C. B. Lockwood.
2 Use of an Aperient before Roentgenoscopy of Intestine in Chronic Constipation. R. Gompertz and M. Scott.
3 Insects and War: Fleas. A. E. Shipley.
4 Bacilli and Bullets. W. Osler.
5 Case of Ruptured Ectopic Gestation Complicated by Splenomedullary Leukemia. L. E. Sutcliffe.
6 Thymus Gland in Its Clinical Aspects. A. E. Garrod.
7 Technic of Thymectomy. Report of Eight Cases. A. MacLennan.
8 Appendicitis and Status Lymphaticus. D. P. D. Wilkie.
9 Association of Fulminant Pneumonia and Scrofula with Status Lymphaticus. C. McNeil.
10 *Headache, Its Causes and Treatment. H. Campbell.
11 *Acute Atrophy of Thyroid. F. C. Eve.
12 Case of Anemia with Enlargement of Spleen; Splenectomy; Cure. J. S. McKendrick.
13 Urinary Diastase Test in Case of Ruptured Duodenum. A. H. Lister.

1. **Treatment of Nephroptosis by Capsular Occlusion.**—The perinephric fascia not only restrains the movements of the kidneys during ordinary respiration but also during respiratory efforts and during joltings and shakings of the body. When the kidney becomes loose the perinephric fascia does not yield at its attachments. Its sac becomes too capacious, and then the kidney begins to have a wide range of movement within it. On this basis Lockwood treats loose kidneys by occluding the loose and too capacious perinephric sac or bag. An oblique incision is made about an inch below the twelfth rib, in the direction of the fibers of the external oblique, beginning behind at the outer border of the erector spinae, and extending forward for 4 or 5 inches. No nerves are divided, and the bleeding is trifling. The fascia transversalis having been opened, the finger is passed over the kidney to separate the perinephric fascia from the colon and peritoneum, and the perinephric fascia is taken between the finger and thumb at the lower end of the kidney, which is squeezed upward within the sac. When the kidney has gone up as high as is judged necessary, the perinephric fascia is clamped at its lower end with pressure forceps and ligatures of No. 2 and 3 twisted silk are passed round it with a curved needle. The ends of these ligatures are left long and used to fix the perinephric fascia to the abdominal wall. Before applying the pressure forceps the perinephric fascia is felt between the finger and thumb to make sure that the ureter is not being taken in. When the perinephric fascia has been ligatured the lower end of the kidney is at about the level of the twelfth rib and moving a little with respiration. Lockwood says that unless it is necessary to explore the kidney it is better not to open the sac of the perinephric fascia. The operation is completed by bringing the abdominal muscles together with chromic gut sutures, and suturing the skin with silkworm gut.

10. **Headache, Its Causes and Treatment.**—The following classification for headache proposed by Campbell though not conforming to the strict requirements of logic, will be found a convenient one for practical purposes: 1. Organic disease of the cephalic structures—for example, meningitis, "rheumatic" effusion into the scalp. 2. External irritation of the cephalic structures—for example, pediculi, traction on the

hair. 3. Irritation in areas other than the cephalic—for example, eye-strain. 4. Circulatory disturbances in the cephalic structures, and morbid states of the blood, causing functional headache. 5. Causes not included under the previous headings—for example, mental causes, physical exercise, atmospheric conditions.

Campbell also suggests that physicians will get far more help by studying man's diet from the point of view of evolution than from laboratory experiments—certainly as regards the main truths, useful as such experiments doubtless are. Primitive man consumed an abundance of animal food; his supply of sugar was limited to wild honey, his starchy food to what he could obtain from the uncultivated animal kingdom; and observe that before the discovery of cookery all this had to be masticated laboriously. Hence it was that primitive man consumed comparatively little starch and such as he did consume was so thoroughly masticated that it was to a large extent predigested in the mouth. In the case of neocivilized man, on the other hand, not only is sugar abundantly consumed, but the stomach (especially during the first years of life) is literally deluged with undigested starch. Such considerations surely suggest that, as regards the diet of our neocivilized patients, we have more to apprehend from an excess of starch and sugar than from an excess of animal food.

11. **Acute Atrophy of Thyroid.**—Eve cites a case of exophthalmic goiter which showed complete disappearance of a rather large goiter during the two days preceding death. That is to say, no trace of it could be detected by the eye or fingers. A post-mortem dissection was unfortunately out of the question.

### Journal of Obstetrics and Gynecology of British Empire, London

*August, XXVI, No. 2, pp. 75-132*

14 *Subdivisions of Chronic Metritis. W. F. Shaw.
15 *Migratory Adenomyomata of Uterus. A. Leitch.
16 Case of Adenomyoma Uteri with Adenomyomata in Fallopian Tube and Sigmoid. W. Gough and C. E. Stewart.
17 Future of Roentgenology in Gynecologic Practice. C. Lockyer.
18 Accidental Hemorrhage with Free Blood in Abdominal Cavity. W. F. Shaw.
19 *An Unusual Complication of Fibroid Tumor in Pregnant Uterus. E. Reid.
20 Case of Superficial Atresia of Vulva in Patient Aged Twenty-Two. J. B. Hellier.
21 Case of Grape-Like Sarcoma of Cervix Uteri. J. B. Hellier.

14. **Subdivisions of Chronic Metritis.**—"Chronic metritis," Shaw states, is a clinical term which is used to designate uteri which are regularly enlarged, firm and cause hemorrhage, pain or leukorrhea. There are at least two classes of chronic metritis: (a) chronic subinvolution; (b) hypertrophy. These two classes can always be distinguished by the arrangement of the elastic tissue. Nulliparous and parous uteri can always be distinguished by the arrangement of the elastic tissue: (a) In a nulliparous uterus the elastic tissue is confined chiefly to the internal elastic lamina of blood-vessels with only thin fibrils in the media, adventitia, and between the muscle fasciculi of the mesometrium; (b) in a parous uterus some thick strands of elastic tissue can always be found surrounding some of the blood-vessels. In the hypertrophic form of chronic metritis the arrangement of the elastic tissue is the same as in a virgin uterus. In the subinvoluted form of chronic metritis large deposits of elastic tissue are found in the walls and around the blood-vessels. The hypertrophic form is primarily due to a hypertrophy of the endometrium which stimulates uterine contraction, and in course of time produces a "work-hypertrophy." The chronic subinvoluted form results after parturition when, from any cause, involution does not occur normally.

15. **Migratory Adenomyomata of Uterus.**—In a case cited by Leitch an adenomyoma having started from the endometrium migrated, or was extruded, through the wall posteriorly; owing to hemorrhage occurring during a menstrual period the serous surface was broken; the loaded and dependent sigmoid colon became adherent to this, the glandular constituents infiltrated the wall of the sigmoid; the adhesion became attenuated by movements of the intestine and at operation the slender adhesion was broken, leaving a discoid portion in the uterus and an abraded area in the colon.

19. **Fibroid Tumor in Pregnant Uterus.**—When about two months pregnant Reid's patient while helping to put down a carpet felt a sudden pain to the right of the pelvis; it was not very severe, but she had to rest awhile. Next day she still had pains, but she was able to take an active part in a whist drive and dance. The following day the pains were worse, and she sent for her physician. The pains increased in severity in spite of rest and palliative treatment; vomiting and inability to sleep added to her distress and her condition was fast becoming somewhat alarming.

On opening the peritoneal cavity 4 to 5 ounces of dark venous blood gushed out, and there were extensive but recent adhesions of parietal peritoneum, omentum and small gut around the tumor. On separating these Reid found a soft fibroid tumor about the size of a fetal head at full term, partially extruded from the uterine wall to the right of the fundus. The rent in the uterus was fully 5 inches long, the edges of the tear were ragged, and there was slight venous bleeding. The fibroid had burst through its capsule, and at least half of it lay external to the uterine wall. The body of the uterus was enlarged and suggested a pregnancy of two or three months' duration. The tumor was easily shelled out, and the bleeding stopped by deep chromic gut sutures inserted to close the rent in the uterus. The abdomen was closed without drainage. On examination after removal the fibroid gave the appearance of being in an early stage of red degeneration. The pain entirely ceased after the operation, and the patient made an excellent and rapid recovery.

### Lancet, London

*October 8, II, No. 4753, pp. 835-882*

22 *Application of Suturing to Vascular System. R. Warren.
23 *Value of Antistreptococcus Sera. J. W. McLeod.
24 Sclerocorneal Trephining. R. H. Elliot.
25 *Electrolytic Prevention of Lead Poisoning. K. Goadby.
26 *Electrolytic Treatment of Lead Poisoning. W. H. F. Oxley.
27 Improvisation of Apparatus in Treatment of Certain Fractures in Modern Warfare. (To be continued). J. H. Watson and T. Snowball.
28 Ambulance Work in France. J. Donelan.

22. **Application of Suturing to Vascular System.**—A case of stab wound of the right ventricle treated by suture is cited by Warren. A male, aged 48, fat and flabby in build, had been stabbed over the heart four hours previously. A small linear wound ¾ inch long (which did not appear to be deep) was found over the precordium, while external bleeding was minimal. The patient complained much of pain over the heart, was pale and anxious, with a small feeble pulse of 120; the area of cardiac dulness was perhaps slightly increased, and the heart sounds were feeble, but no adventitious sounds were heard. From the position of the wound and the amount of shock a diagnosis of hemopericardium was made. The pericardium was explored by turning up a flap of soft parts and removing the cartilages of the fourth and fifth left ribs with half the sternum opposite these. The intercostal and internal mammary vessels were tied and the triangularis sterni displaced. The pericardium was tense, dark in color, and the cardiac impulse obscured. The pericardium was freely opened, much blood escaping, and a wound 1¼ inches long in the anterior surface of the right ventricle was secured with catch forceps and sutured with five stitches of silk. The wound healed by first intention, and with the exception of slight left pneumothorax (due to tearing the pleura at the exploration) and a little femoral thrombosis, uneventfully. The patient was alive and active three years later.

23. **Value of Antistreptococcus Sera.**—McLeod studied this question experimentally and by reviewing the literature as a result he believes that a certain type of streptococcus exists, which is virulent for rabbits and capable, to a peculiar degree, of producing toxin in the body of an infected animal, against which rabbits cannot be readily immunized, and that the serum of a horse treated with injections of these streptococci is not capable even in large doses of conferring passive immunity on the rabbit. None of the serums available is likely to afford a supply of immune opsonin at once adequate in amount and sufficiently adapted to the strain

of streptococcus involved markedly to alter the course of streptococcal infection in man.

In the treatment of severe streptococcal infections normal heated horse-serum, which has been proved slightly superior in the experiments recorded by McLeod, and which would in any case be cheaper and more easily preserved, might if administered in large doses, be substituted with advantage for commercial antistreptococcal serum. McLeod believes that experimental work on the therapy of streptococcal infections which aims at finding some artificial antibody to streptococcal toxin is much more likely to be fruitful than any further efforts to amend and improve the methods of immunizing horses to this type of bacteria.

25. **Electrolytic Prevention of Lead Poisoning.**—Goadby's experiments in vivo and in vitro give no support to the contention that lead is eliminated from the animal body by the electrolytic methods tested; neither do they suggest any grounds for the adoption of electrolytic baths for the prevention or treatment of lead absorption or lead poisoning.

26. **Electrolytic Treatment of Lead Poisoning.**—Oxley claims that no practical good would result from the regular treatment of lead workers by electric baths as described by Sir Thomas Oliver. His experiments show a consistently negative result even under more favorable conditions for lead extraction than can be obtained in the human subject.

### Berliner klinische Wochenschrift

*September 21, LI, No. 38, pp. 1637-1656*

29 *Arteriomesenteric Occlusion of the Duodenum. E. Melchior. Concluded in No. 39.
30 *Supernumerary Kidneys. (Ueber Beinieren.) K. Neckarsulmer.
31 *Silver Nitrate Therapeutically Superior to All Other Silver Salts. (Silbernitrat oder Silbereiweiss.) W. Lublinski.

29. **Arteriomesenteric Occlusion.**—Melchior does not agree with Codman and others who think that the viscera are suspended by their ligaments or mesentery. The very structure of the suspending ligaments or mesentery speaks against this, as any substance intended to stand direct traction always contains strands of tendon fibers, while there is nothing of the kind in the mesentery, and it is absurd to suppose that the hepatogastric ligament, for example, is capable of sustaining the weight of the heavy, filled stomach. The organs in the abdominal cavity either float or rest on the organs below, and these on the floor of the pelvis and the abdominal wall. Attempts to correct the sagging of the viscera by strengthening their alleged supports are illogical and futile. He presents a number of arguments to sustain these views as bearing on the mechanism of the development of acute duodenal ileus or arteriomesenteric occlusion, as it is more generally called.

30. **Supernumerary Kidneys.**—Five cases of a well-formed extra kidney have been published, but without microscopic examination as to whether the supernumerary kidney was an actually functioning organ. Macroscopically they seemed to be such, and their independent location nearer the pelvis seemed to confirm that they were more or less perfect extra kidneys. Cases of a supernumerary rudimentary kidney are comparatively common, and Neckarsulmer reports one he recently encountered in the cadaver of a 9-months-girl baby. This third kidney was adherent to the left kidney but it had its own ureter. Its development had evidently been arrested in an embryonal stage. As its ureter was impermeable, it could never have secreted normally, but there were signs that its tissues had reacted to the measles and pneumonia toxins in the same way as the normal kidneys. These rudimentary organs have always been found clinging to the normal kidney.

31. **Silver Preparations.**—Lublinski admits the unpleasant taste and pain of application when silver nitrate is used on the mucosa of the upper air passages, but declares that all his attempts to find an effectual substitute for it have been fruitless. No other preparation of silver approaches it in therapeutic action, he says. The silver content does not seem to be the effectual factor. It is like salvarsan; the arsenic in salvarsan is not responsible for its efficacy—it is the special combination. Even the smallest dose is more effectual than large amounts of arsenic, and there seems to be something of the same special therapeutic efficacy in silver nitrate. It is true that silver nitrate coagulates the albumin and this has been assumed of late to be a barrier to its penetration into the depths. This has been the stock argument on which manufacturing chemists have based their claims for the superiority of their preparations. Lublinski's research has confirmed that under the action of silver nitrate on the mucosa the albuminate is precipitated. But it must not be forgotten that this precipitate, formed by the albumin under the influence of the silver nitrate, rapidly dissolves again in salt solution, which fact we utilize by gargling with salt solution after cauterization with the silver nitrate. The precipitate deposited then is of a different color, tending to violet, as it consists of silver chlorid. This is not soluble but it is possible that the drawing out of the chlorids from the tissues to make it may have some therapeutic action on the diseased tissues. There is no evidence to show that this silver chlorid precipitate opposes any barrier to penetration into the depths, and, on the other hand, there are many things that testify to penetration and decided action of the silver in the deeper tissues. For example, how otherwise can we explain the after-pain, the pain that is experienced ten or twenty minutes later than the pain of the primary superficial application. He thinks it must be due to the action of the caustic on the deeper tissues. Of course he does not refer to actual cauterization with painful destruction of tissue; this abuse of therapeutics he denounces, saying that it is not in this excessive use of silver nitrate that its therapeutic efficiency is displayed.

### Deutsche medizinische Wochenschrift, Berlin

*September 17, XL, No. 38, pp. 1753-1768*

32 *Cancer Problems. (Krebsprobleme.) D. v. Hansemann.
33 *Diagnosis of Small-Pox. (Blattern.) Risel.
34 *Salvarsan in Scarlet Fever. (Salvarsaninfusionen bei Scharlach.) F. Glaser.
35 *Deep Injections in Treatment of Sciatica. (Injektionsbehandlung der Ischias.) Lethaus.

32. **Cancer Problems.**—Hansemann's article was summarized in the Berlin Letter in The Journal, Sept. 5, 1914, p. 879.

33. **Diagnosis of Small-Pox.**—Risel states that his article is based almost entirely on Ricketts' work on this subject, published in 1908, and Wanklyn's in 1913. Ricketts had charge of the isolation hospitals in England, in which were treated 7,842 cases of small-pox in 1912, while there has been no opportunity to study small-pox in Germany of late years, as the strict enforcement of the vaccination law of April 8, 1874, stamped out the disease in Germany. He says that the distribution of the eruption seems to be the most important differential feature as it affects the regions exposed to weather and friction from clothes, the soles of the feet, etc., while the eruption in varicella seeks out the most sheltered regions.

34. **Salvarsan in Scarlet Fever.**—Glaser has used salvarsan in forty-two cases of scarlet fever in children and adults, and says that it often had a favorable influence on the fever and delirium and the throat symptoms rapidly subsided under it in many instances. But the toxic symptoms did not seem to be affected by the drug and complications were not warded off. In about half the cases the dose, calculated at 0.01 gm. per kilogram of weight, was followed by a chill, vomiting and diarrhea.

35. **Blocking the Nerve in Treatment of Sciatica.**—Lethaus does not venture to use alcohol to block the sciatic nerve as this is fraught with such danger for a nerve with both motor and sensory fibers. He injects 100 c.c. of a 1 per thousand solution of a mild anesthetic at the point where the sciatic nerve emerges from the great sciatic foramen, between the trochanter and the tuberosity of the ischium. The injection is made into the nerve itself when possible, but often it is merely a perineural injection. It is repeated after an interval of eight days; sometimes three or four injections are necessary to realize a complete cure. No untoward by-effects were observed in any instance in his experience. When repeated injections do not accomplish the purpose, he tries epidural injections, and has sometimes had good results.

For this he injects 10 or 20 c.c. of salt solution into the epidural sac through the sacral hiatus, the patient in the knee-elbow position. Sometimes three or four injections had to be made to cure the sciatica completely. In some cases both these measures failed, and recurrence was sometimes observed. This is not to be wondered at, he says, as persons subject to sciatica are usually those with a predisposition to nerve and joint derangement.

He emphasizes that in treatment of sciatica far too often the real cause is overlooked. This may be flat-foot, varices, tarsalgia, tumor in the pelvis, inflammation in the hip-joint, displacement of or inflammation in the internal genitals, obstinate constipation, disease of the lumbar vertebrae or sacrum, or disease of the spinal cord or its roots or meninges —any of these may simulate sciatica. He warns further that no attempt should be made to block the nerve when the sciatica is the result of some general disease, such as malaria, influenza, nephritis, diabetes, arteriosclerosis, or lead or alcohol poisoning, also the pains liable to occur in the hysteric and neurasthenic which masquerade as sciatica but are really of central origin. Oppenheim's "psychalgias" are likewise not suitable subjects for nerve blocking. But when the above can be excluded, Lethaus advocates prompt resort to injection treatment in chronic sciatica rebellious to other measures. He does not wait longer than from four to six weeks, during which time bed rest, sweat baths, packs of the limb affected, diathermia and the usual antineuralgic and antirheumatic measures are systematically applied.

### Medizinische Klinik, Berlin

*September 13, X, No. 37, pp. 1461-1480*

36 *Acute Overexertion of the Heart in the Field. (Die akute Ueberanstrengung des Herzens im Felde.) K. Brandenburg.
37 *Roentgen-Ray Work in the Field. (Feldröntgenwesen.) H. Strauss.
38 *By-Effects of Drugs. (Nebenwirkungen der Arzneien.) Grumme.
39 Ureter as Content of Hernial Sac. (Ureter als Bruchinhalt.) Pflücker.

*September 20, No. 38, pp. 1481-1502*

40 *The Diseases that Must Be Reckoned with During War. W. His. Commenced in No. 37.
41 The Surgeon on the Battle Field. A. Köhler. Concluded in No. 39.
42 Care of the Wounded in the Home Zone. (Kriegschirurgie im Heimatlazarett.) E. Heymann. Concluded in No. 39.
43 Hydrotherapy and Mechanotherapy for Wounded and Sick Soldiers. A. Laqueur.
44 Saline Infusion and Proctoclysis. (Die Infusion von physiologischer Kochsalzlösung.) O. Nordmann.

36. **Acute Overexertion of the Heart in the Field.**—Brandenburg comments on the reserve capacity and reserve muscular contractile force of the sound heart which enable it to stand sudden extreme strain without appreciable permanent injury, but the physical, psychic and nervous stress in war may strain the heart beyond its endurance. Extreme muscular exertion has been known to strain even a sound heart beyond its power to endure, as in the Marathon runner and in racehorses. In the collapse on the march known as heat-stroke, the overstrain of the heart is probably a factor superposed on the excitement and exhaustion from inadequate sleep and food. Treatment must include complete physical and mental repose; the patient must be put to bed, his clothes removed, with cold applications to the heart and venesection if there is venous congestion. The acute dyspnea and collapse require stimulants, brandy or coffee, hot baths and mustard pastes applied to chest and back of neck. An intravenous injection of some preparation of digitalis is often marvelous in its effects; it can be followed by subcutaneous injection of some digitalis preparation plus epinephrin. Even if the patient rapidly recuperates, complete rest should be enforced as long as possible. Signs of dilatation and a persistently rapid pulse call for extreme caution and avoidance of all physical exertion. The prognosis depends mainly on whether the heart was previously sound or not. Syphilis may have impaired the arteries of the left heart, or alcohol or immoderate eating. Men used to carrying heavy weights or other hard manual labor, and drinking much fluid, especially beer, are particularly liable to break down first on the march.

37. **Roentgen Work in the Field.**—Strauss says that to date Roentgen apparatus have been utilized in eight campaigns in the field. The Italians applied them first in their campaign in Abyssinia in 1896, and in the Spanish-American War seventeen sets of Roentgen apparatus were at the disposal of the force. But the ever growing disinclination to operate at the front has shown that Roentgen examination is useful only to disclose conditions in an infected wound or in a wound in the skull—both of these can be done only in the base hospitals or home zone, as rest is necessary after trephining, etc. The German army, he relates, is provided with Roentgen apparatus and camera, dynamo and benzine motor, all mounted in a wagon which four horses can draw over any kind of a road. No attempt was made to use an autotruck for the purpose as snow and bad roads might put it out of commission. Two roentgenologists and a man to run the motor accompany each apparatus.

38. **By-Effects of Drugs.**—Grumme defines the nature of idiosyncrasy, etc., in regard to drugs, recapitulating his views in the statement that the obligatory by-effects of drugs are characteristic for each. They develop gradually and are always alike when sufficient of the drug has been taken to induce the by-effects, and the by-effects can be arrested by suspending the drug. The idiosyncrasy, on the other hand, is a facultative by-effect; it usually comes on rapidly and suddenly, and its course is not under our control by suspending the drug. Iodism, bromism and mercurialism are obligatory by-effects.

40. **Diseases that Must Be Reckoned with During the War.**—"War and Pestilence"—these have always been coupled in popular parlance. His remarks, and with the present war, whose duration and extent no one can foresee, the pestilences of olden days may very soon loom up as a threatening reality. The troops at the front are set back centuries of hygienic training. Hundreds of thousands are crowded together in small spaces without provisions for water, cleanliness or sewerage, and exposed to the vicissitudes of weather. Civilization has given us knowledge of the causes and weapons with which to fight disease and the community has done this for us, but now the individual must take the weapons in his own unskilled hands and wield them himself. By comparison with statistics from recent campaigns, we can expect, he continues, that every second man in the army will be in the hospital sooner or later for a longer or shorter stay. Most of them will require treatment merely for sore feet or digestive disturbance. A somewhat more important rôle will be played by polyarthritis, pneumonia, bronchitis, etc., from getting chilled and overexerted. But the kind and extent of epidemic diseases will determine the fighting capacity of the troops in the long run. All depends on detection and isolation of the first cases, and he reviews each of the chief epidemic diseases in turn, portraying the clinical picture of the incipient stages, and outlining treatment. He pays tribute to the work of the profession in sanifying the Panama Canal Zone. The medical forces there were able to precede and prepare the isthmus for the workmen, but an active army cannot wait for this. In Russia, typhoid, typhus, small-pox and dysentery occur in about the same figures year after year, but cholera seemed to die out in 1913. About 145 cases have been reported already this year and 49 cases of bubonic plague. In India plague keeps up indefinitely, averaging 1,500 cases a week. The danger therefore is from the east. He says of typhoid that the contrast between the severe physical depression and the absence of any pathologic findings in any organs is the most characteristic warning signal; even the spleen does not become enlarged until the end of the first week. Herpes is of rare occurrence. Paratyphoid is seldom transmitted by contact; the incubation period is only from three to six days, and herpes is more common. As differentiation from typhoid is so difficult it is better to isolate as if for typhoid. Manchurian typhus begins suddenly; the spleen is enlarged the first day. The temperature runs up to 104 and keeps there for nine to fourteen days.

### Münchener medizinische Wochenschrift, Berlin

*September 15, LXI, No. 37, pp. 1929-1960*

45 *Action of Ferments Revealed in Histologic Sections. (Nachweis der Wirkung spezifischer Abwehrfermente im histologischen Schnitt.) H. Rollett.

46 Peptolytic Ferments in the Urine. II. W. Sagel.
47 *Luetin in Diagnosis of Syphilis. (Diagnostische Versuche mit Luetin-Noguchi.) M. Clausz.
48 *Prophylaxis of Diphtheria. K. Kassowitz.
49 Inflatable Bulb for Occlusion of Lower Esophagus when there is Danger of Aspiration of Vomit. (Eine Kardiaabschlusssonde.) A. T. Jurasz.
50 Progress in Diagnosis and Treatment of Surgical Tuberculosis. F. König. Commenced in No. 36.
51 The First Wounded Received at Munich. (Die ersten Kriegsverletzungen.) A. Krecke.
52 Arrow-Like Missile Flung from Airship. (Kriegschirurgische Erfahrungen über Pfeile als Wurfgeschosse.) J. Volkmann.
53 Surgical Impressions from the II Balkan Campaign. R. Klapp. Concluded in No. 38.
54 Intravenous Antitoxin Treatment of Traumatic Tetanus. (Wundstarrkrampf.) L. Kirchmayr.

*September 22, No. 38, pp. 1961-1992*

55 *Fever from Retention of Infected Masses. (Resorptionsfieber oder Retentionsfieber.) A. Hamm.
56 *Origin of Edema with Nephritis. E. Magnus-Alsleben.
57 Colorimetric Determination of Albumin. (Die kolorimetrische Eiweissbestimmung als exakte analytische Methode und ihre Verwendung für Autenrieths Kolorimeter.) M. Claudius.
58 *Sand Test for Bile Pigment and Hemoglobin in the Urine. (Einfache Probe zum Nachweis von Gallenfarbstoff und Hämoglobin im Harn.) H. Lipp.
59 Paratyphoid Simulating Typhoid; Two Cases. W. Glaser.
60 Vaccine Diagnosis and Therapy of Gonorrhea. (Wert intravenöser Arthigoninjektionen bei gonorrhoischen Prozessen.) A. Arnold and H. Hölzel. (Kollargol und Arthigon bei gonorrhoischen Komplikationen.) Renisch.
61 Date and Place of Birth, Instead of Names, to Preserve Secrecy in Notification of Venereal Disease. (Die Anzeigepflicht bei venerischen Krankheiten ist leicht durchführbar.) L. Merk.
62 Treatment of Typhoid. (Unterleibstyphus.) E. Romberg.
63 Differentiation of Dysentery. (Differentialdiagnose der Ruhr gegenüber anderen ähnlichen Darmkrankheiten.) A. Schmidt.
64 *Treatment of Prolapse of the Intestines in the Field. (Darmprolaps im Felde.) F. Riedinger.
65 Circular to be Distributed before Naval Battle. (Sanitätsmerkblatt für das Verhalten im Seegefecht.) M. zur Verth.
66 Ordinary Boiled Water Can Be Used for Saline for Intravenous Infusion in Emergencies. (Kochsalzlösungen.) F. Hercher.
67 Food of Civilian Population during the War. (Die Ernährung der deutschen Zivilbevölkerung im Krieg.) Hecht and Others.

45. **Microscopic Determination of Protective Ferments.**—Rollett left the specimen of serum from a pregnant woman in contact with scraps of placenta tissue for sixteen or twenty-four hours, with a control experiment with normal serum. The scraps of placenta were then embedded, sections made and stained. Under the microscope the sections from the pregnant serum then showed marked differences in the aspect of the specific placenta tissue. The test was positive only when the placenta scraps had not been subjected to pressure or the action of chemicals before the serum was poured over them. Similar tests with cancer serum have proved disappointing to date.

47. **Luetin in Diagnosis of Syphilis.**—Clausz applied luetin in 71 cases of syphilis; 10 suspects and 30 of non-syphilitic affections, comparing the findings with the Wassermann reaction. They show that a positive response is decisive; the luetin findings were sometimes positive when the Wassermann failed to elicit a response with known syphilis. The luetin reaction in the torpid cases may be two weeks in developing.

48. **Prophylaxis of Diphtheria in an Institution.**—Kassowitz has bacteriologic examination made of every person who has been in contact in any way with a case of diphtheria, and repeats it at the end of a week at latest. The persons giving positive findings are at once sent away and the institution is closed until thorough disinfection has been done. The bacilli carriers are given a test intracutaneous injection of toxin and those responding with a positive reaction are treated with antitoxin. All are kept under ambulatory observation, with repeated bacteriologic-serologic control. For local treatment he has found rinsing with 0.5 per cent. solution of hydrogen dioxid the most effectual measure. By these means he stamped out an epidemic in a kindergarten after there had been five cases and eight bacilli carriers were discovered among the fifty-two children. None of the bacilli carriers developed the disease under this treatment.

55. **Retention Fever.**—Hamm insists that the fever which results from retention of infected masses in the organism and which ceases when these masses are cleared out is the only type of "retention fever" which modern science should recognize; the old terms for it, "absorption fever," "putrid intoxication," "sapremia," "saprophytemia," "toxinemia," etc., should be discarded. The term "retention fever" includes all these various conceptions and points the way at once to effectual treatment. Infection and intoxication from bacterial products are always associated; he even goes so far as to assert that from the clinical point of view we may safely assume that there is no infection without intoxication and also no intoxication without infection.

56. **Factors of Edema with Nephritis.**—Alsleben was impressed by the fact that a patient with acute nephritis retained nearly all of a liter of tea while 800 c.c. of saline injected intravenously was nearly all voided in the urine. In another case there was a slight tendency to diffuse edema with contracted kidney. The patient then developed conjunctivitis and while it lasted there was extreme and extensive edema although the eye affection was very mild. As the latter subsided, the edema returned to its old, mild form. In some cases of scarlet-fever nephritis, likewise, water taken by the mouth was retained while fluid injected intravenously was promptly eliminated by the kidneys. These and analogous experiences related confirm, he says, the assumption that partial functions of the kidneys can be disturbed while others are unimpaired, and also that retention in nephritis must depend to a certain extent on factors outside of the kidneys. Inability to eliminate water by the kidneys does not entail dropsy but merely intravascular retention of the water, hydremia. Edema may also occur with intact kidneys.

58. **Sand Test for Bile Pigments and Hemoglobin in the Urine.**—Lipp spreads on a plate a layer of white sand, about 3 cm. thick. On this he pours some of the urine to be examined. If the urine contains pigments, a spot is left on the white sand which is brown with hemoglobin and with a greenish tinge in case of bile pigment. He has found this simple test extremely reliable.

64. **Management of Eventration in the Field.**—Riedinger has been experimenting with rabbits to learn how best to protect prolapsed intestines before the laparotomy is possible. The best results were obtained with liquid petrolatum poured over the exposed bowels; glycerin and vaselin also proved effectual in warding off peritonitis in some of the rabbits.

### Zentralblatt für Chirurgie, Leipsic

*September 19, XLI, No. 38, pp. 1489-1512*

68 *Surgery of the Cavity of the Greater Omentum. (Zur Chirurgie des grossen Netzbeutels.) G. Ziembicki.

68. **Surgery of the Cavity of the Omentum.**—Ziembicki reviews various pathologic conditions in the bursa omentalis which may require operative measures, such as hernia through the foramen of Winslow (twenty cases were on record in 1906); abscess in the liver perforating into the bursa omentalis; accumulation of lymph or of blood from hemorrhagic pancreatitis or rupture of splenic artery; involvement of the region in necrosis of the pancreas; and pseudocysts and invasion by cysts starting in the pancreas. Lymph is liable to accumulate in the bursa omentalis after contusions or other trauma, and it can be safely evacuated. The cavity of the omentum may be entirely filled with the effusion. Elter and Auvray each operated in a case of this kind and found no signs of connection with the pancreas. Still another pathologic condition possible is hernia of the gall-bladder into the cavity of the omentum. Ziembicki operated in a case of this kind, supposing that the tumor felt in the bursa omentalis was a cyst, probably originating in the pancreas. Puncture however brought bile, and the tumor proved to be the much enlarged gall-bladder which had slipped through the foramen of Winslow or some abnormal opening into the cavity of the omentum. The patient was a man of 42 who had complained for five years of pain in the stomach region gradually becoming unbearable during the last year. After draining the dislocated gall-bladder the fistula soon healed and the man has been entirely well since. In conclusion Ziembicki describes what he thinks

is the eighth case on record of a tumor developing primarily in the bursa omentalis. All were cancers, and they were distinguished by their very slow growth and absence of metastasis. His patient was a man of 32 who had had symptoms for four years, ascribed at first to a tumor in the liver.

### Zentralblatt für Gynäkologie, Leipsic

*September 19, XXXVIII, No. 38, pp. 1249-1264*

69 *Scopolamin. J. Fonyo.

69. **Scopolamin in Anesthesia.**—Fonyo thinks that he is justified in drawing the conclusion from his experiences with scopolamin in 154 cases that the scopolamin-morphin technic is not dangerous for vigorous and well-nourished patients. But when a not very strong patient has been purged for an operation and is not allowed or does not wish to eat and is not allowed to drink for fear of bringing on vomiting, the organism feels the effect of the drugs much more intensely. Disturbances are peculiarly liable if there is already some derangement in the respiratory apparatus, as morphin seems to act particularly on the respiration center. One of his patients with cancer of the rectum has been given regularly three times a day for weeks a subcutaneous injection of 0.0006 gm. scopolamin and 0.02 gm. morphin without any disturbance; she is able to eat and is well nourished. An older, demented woman suffering from hunger and thirst, was given a single dose like the above, fractioned, and fell into a deep sleep, and died with signs of paralysis of the respiration in forty-eight hours.

He relates the details further of two fatalities following operative delivery at term with contracted pelvis or extra-uterine pregnancy. Cesarean section was done in one case and pubiotomy in the other. Both succumbed to paralysis of the respiration one hour after the operation which had been done under chloroform preceded by 0.0012 gm. scopolamin and 0.03 gm. morphin. He thinks that the loss of blood and the lack of food as the patients were being prepared for the serious operations were responsible for the unusual toxic virulence of the drugs. He remarks that the mishaps from scopolamin are more numerous since pantopon has been substituted by some for the adjuvant morphin. Voit and others have calculated that during inanition the skin loses up to 97 per cent. of its fat, the liver 70 per cent. and the muscles 64 per cent., but the lipoid content of the brain increases. Consequently the brain is larger in proportion than when the organism is well nourished, and this gives greater play to the toxic action of the drugs.

### Gazzetta degli Ospedali e delle Cliniche, Milan

*September 17, XXXV, No. 109, pp. 1169-1184*

70 *Progressive Pernicious Anemia. (La malattia del Biermer.) E. Cavaglieri.

*September 20, No. 110, pp. 1185-1200*

71 True Pellagra in Southwestern Russia. G. Tizzoni.

*September 24, No. 111, pp. 1201-1216*

72 Occlusion from Adherent Mesocolon after Retrocolic Gastro-Enterostomy. G. Baroni.

70. **Biermer's Pernicious Anemia.**—Cavaglieri emphasizes the differences between the morbid entity described by Biermer and progressive pernicious anemia from other causes, and with a relatively different course. The true Biermer anemia develops insidiously, without known cause, but besides the destruction of the blood, pathologic conditions are found in the stomach and intestines, and various other organs show degeneration when the disease has run its inexorably fatal course. It is more common in the middle aged and he has found it more frequent in women. Its comparative rarity in Italy may be due, he remarks, to failure to differentiate it. In a case reported in detail in a woman of 35, extreme weakness and intestinal disturbances were the first symptoms. The intense pallor was in marked contrast to the well-nourished aspect. Bacteriologic examination was negative and no benefit was obtained from a tentative course of quinin. Death occurred in asystole the eighth month after the first signs of trouble. Treatment can be only symptomatic in such cases; remissions sometimes occur spontaneously but he is convinced that the few cases reported as recoveries were probably not true Addison-Biermer pernicious anemia; this is inevitably fatal, generally in from ten to fifteen months.

### Brazil Medico, Rio de Janeiro

*September 1, XXVIII, No. 33, pp. 317-324*

73 Lactose Plus Sodium Citrate in Infant Feeding. (Tratamento da dyspepsia infantil pelo leite adocicado.) A. A. S. Moreira.

74 The History of Parasitology in Brazil. A. C. de Sant Anna. Concluded.

*September 8, No. 34, pp. 325-332*

75 Strongylidae in Brazil. (Tricostrongylideos brazileiros. III.) L. Travassos.

### Russky Vrach, St. Petersburg

*XIII, No. 18, pp. 633-668*

76 *Management of Delivery with Contracted Pelvis. V. V. Stroganoff.

77 Morphology of Lymphosarcomas. N. V. Petroff.

78 *The Washing of Blood Outside the Body and the Vital Stability of Red Blood-Cells. V. A. Iurevich and W. R. Rosenberg.

79 *Plague among Camels in the Epidemic of Astrakhan Plague. N. N. Klodnitzky.

80 Technic for Examining the Isolated Kidney. M. I. Gramenitzky.

81 *Etiology and Treatment of Dysentery. G. I. Kopitko and V. E. Nagorskaia. Commenced in No. 15.

82 *Saline Infusion. M. V. Sokolova.

83 Coccobacillus Exanthematicus. N. A. Sokalsky.

*No. 19, pp. 669-704*

84 *Determination of the Viscosity of the Blood. V. S. Sadikoff and A. A. Lozinsky.

85 *The "Uremic Constant" in Nephritis. I. B. Studzinsky.

86 *Cutaneous Tuberculids in Young Children. S. Ostrovsky.

87 *Cholesterin Esters in the Urine in Connection with Deposits of Anisotropic Fat in the Organs. A. V. Lavrinovich.

88 *Hexamethylenamin in Acute Disease of the Lungs. P. I. Mikhailoff.

76. **Management of Contracted Pelvis.**—Stroganoff recommends cesarean section in an absolutely contracted pelvis (true conjugate 6.5 or 5.5 cm), even when the fetus is dead. With a conjugate of 6.5 to 7 cm. he advises either cesarean section, or craniotomy, according as the fetus is alive or dead and the mother is willing to undergo a serious operation. When the true conjugate is 7 or 8 cm., forceps or cesarean section or craniotomy are justified, and, in multiparas, also the history and course of the previous deliveries should be taken into consideration. The same course should be pursued when the true conjugate is 8 cm. or more, though in such cases he advises to wait for natural delivery. Besides the diameter of the conjugate, other circumstances are of importance, the size and shape of the child's head, the size of the pelvis, its ability to stretch, the mother's health, etc. As these factors cannot be as accurately determined as the conjugate diameters, these are still to be considered of paramount importance as the guide to management of labor with contracted pelvis.

78. **Blood Washed and Returned to the Body.**—Iurevich and Rosenberg experimented on rabbits and demonstrated that the blood can be removed from the body, thoroughly washed out and reintroduced into the animal's system without causing any appreciable morbid symptoms. The blood was taken from the carotid artery, drawn into test-tubes containing a 1.5 per cent. solution of sodium citrate to prevent coagulation, and up to one-half of the total amount of the animal's blood was thus withdrawn. It was then centrifuged for about ten minutes; the plasma was removed and replaced with normal salt solution, and the blood was again centrifuged, repeating these procedures three times if necessary. Then the thoroughly centrifuged and washed blood was warmed (to 38 or 40 C.) and injected back into the rabbits, through a vein in the ear. In some they immediately replaced the amount of the withdrawn blood by a corresponding amount of normal salt solution. They found that only a small proportion of the red blood-cells became destroyed, the majority remaining intact, even when the blood was kept outside the body for two or three hours. Thus the stability of the red blood-cells is very great, and in cases of toxemia, when the blood is saturated with toxic substances, blood-letting followed by reintroduction into the vascular system of the blood that had been removed and washed ought to be of great clinical value. Experiments along these lines are now being conducted.

79. **Plague among Camels and Its Etiologic Importance in the Epidemic in Astrakhan.**—Klodnitzky reports numerous facts showing that camels are not immune against plague, but are the chief cause of epidemics of this disease in some parts of southeastern Russia, among the Kirghiz tribes. The camel's meat is used as food by these people, especially when the animal gets sick, and it is thus a frequent cause of epidemics. The skins of camels are used for different purposes; this is another source of the plague. The disease in 1911 and 1913 occurred mostly in the form of winter pulmonic plague, which may be explained by the fact that the camels are butchered early in the winter in great numbers. The marmots (*Mus scitillus*) could not be held responsible for the infection as he says they burrow underground to stay by the end of July, and the epidemic in 1913 began in October and ended in December. There were 400 cases of the pneumonic form.

81. **Etiology and Treatment of Dysentery.**—Amebic dysentery does not occur in Russia except imported cases from tropical countries or in persons infected at home by the imported cases. Emetin proved wonderfully effectual in the cases of amebic dysentery reported here. The other form in which dysentery occurs in Russia is due to the Shiga-Kruse bacillus. The best treatment for this, according to Kopitko, seems to be ipecac in powder form (1 or 0.5 gm. once or twice a day), or Dover's powder (0.3 gm. three times a day) or a combination of ten drops of simple tincture of opium with five drops tincture of ipecac, three times a day.

82. **Saline Infusion.**—Sokolova has had extensive clinical experience with intravenous and subcutaneous injections of normal salt solution in various suppurative diseases, especially those of the peritoneum. Five or six liters of normal salt solution were often injected during the first twenty-four hours after the operation and then smaller amounts for seven or more days. The pulse remains full for a long time, diuresis was increased, and the urine was of low specific gravity, but the wounds were pale, showing poor granulations. At the end of the first week after the operation edema would develop in the feet, hands, skin of the trunk and sometimes of the face. Necropsy would show flabby tissue, especially of the heart, and eventually degeneration of the kidneys. These changes might be ascribed to the infusion or to the original suppurative disease.

To clear up this question Sokolova instituted experiments on normally fed and starving dogs, as patients with purulent peritonitis are in a condition of practical starvation. She made 200 injections intravenously or hypodermically, in amounts totaling one-thirteenth to one-sixth of the body weight. Dogs were kept ten days without food or drink and then the experiment was begun. Four dogs were not starved; these served as controls. It was found that in the starving dogs part of the injected fluid was retained, as the amount of voided urine was smaller than that of the fluid introduced, and edema developed unless the animals succumbed during the first three or four days; the amount of nitrogen excreted was smaller than in non-starving dogs. In the non-starving animals edema never developed, not even after profuse infusions. The edema does not depend so much on loss of nitrogen or phosphorus as on the incomplete elimination of the fluid from the body. The kidneys suffer more than any other organ (static hyperemia). Starving animals succumbed to the saline infusions quicker than the control animals. The practical conclusion is that large amounts of fluid may prove directly injurious for an exhausted body.

84. **Influence of Water, Saline, Etc., on the Viscosity of the Blood.**—Sadikoff and Lozinsky studied the changes in the viscosity of the blood in man, rabbits, sheep, guinea-pigs, cats and pigeons under the influence of water, salt solution, etc. Rabbit blood diluted with normal salt solution does not show any changes in the viscosity but when diluted with ten parts plain water the viscosity increases. In pigeon blood the plasma also shows increased viscosity when diluted with an equal volume of water. The same occurs in man; solutions of human blood with ten parts water, ammonia or normal salt solution give an increased blood viscosity, but saturated ammonia solution increases viscosity less than plain water. The plasma also shows increased viscosity with an isotonic normal salt solution. Hence normal salt solution is by no means an indifferent medium for the red blood-cells, because it increases the viscosity of the blood and causes swelling of the red blood-corpuscles even in weak solutions. Therefore, red blood-cells washed with large quantities of normal salt solution—such as are used for hemolysis experiments—are not normal cells, but artificial products. As the plasma and serum also show viscosity changes, it follows that the albuminoid substances in the plasma must undergo ultramicroscopic changes at least, which changes probably play a part in the phenomena of immunization.

85. **Ambard's "Uremic Constant" in Kidney Disease.**—This mathematical formula for estimating the functional capacity of the kidneys was described in The Journal, March 7, 1914, p. 813. Studzinsky cautions that the index may vary on account of different factors, such as infectious disease, liver disease, presence in the urine of albumin or sugar. In these conditions the uremic constant is abnormally low, while on the other hand salt-poor food and acute febrile diseases, edema and oliguria increase the index figure. For these and other reasons Studzinsky thinks that the formula is of little clinical value in a large proportion of cases.

86. **Cutaneous Manifestations of Tuberculosis.**—Ostrovsky's experience with two cases of tuberculosis of the skin in children in the Zurich clinic emphasizes the necessity for careful investigation of the skin of small children suspected of tuberculosis. Cutaneous tuberculids are a very important sign of tuberculosis, especially in breast-fed infants. He urges further the universal application of the Pirquet reaction in all children's homes or nurseries.

87. **Cholesterin Esters in the Urine.**—Lavrinovich discusses the presence in the urinary sediment of a peculiar anisotropic fat in the form of cholesterin esters. He examined the urine in 59 cases of kidney disease for the presence of these esters. Among these 59 cases there were 12 of acute nephritis and in none of these could he detect the cholesterin in the urine. In 21 cases of chronic parenchymatous nephritis, cholesterin abounded in the urine, especially when there was concomitant syphilis or tuberculosis. The findings were also positive in 3 cases of amyloid of the kidney and negative in 5 cases of venous congestion of the kidneys. At necropsy in 9 cases he found the same fat deposits in the kidney epithelium, especially in the convoluted tubules, also in the adrenals, aorta, spleen, bone marrow and liver. Such deposits indicate, Lavrinovich thinks, a long standing disease of the parenchyma of the kidneys. The discovery of cholesterin esters in the urine in doubtful cases testifies to chronic parenchymatous nephritis with a bad prognosis. As cholesterin is furnished by the food, it follows that in treatment of nephritis the yolk of eggs, brains, sweet cream and all kinds of fats had better be excluded from the diet, he remarks.

88. **Hexamethylenamin in Bronchitis and Pneumonia.**—Mikhailoff reports very favorable results of treatment of various affections of the air passages (acute purulent bronchitis, croupous pneumonia), with hexamethylenamin in 0.5 gm. doses three times a day. In his eight cases of purulent bronchitis improvement was evident in about one and one-half weeks to two weeks, with less cough, reduced output of sputum and speedy disappearance of the fetid odor, and gradual, sometimes immediate decline of the temperature. In thirty cases of croupous pneumonia, 10 per cent. of the patients died, a mortality of about the same as with other methods of treatment. No by-effects were noticed; complications, sweats, or heart weakness were rare, and the average stay in the hospital was shortened by twelve days. He thinks that this drug can be used freely in treatment of lung diseases, being a safe and a theoretically justified remedy.

### St. Petersburger medizinische Zeitschrift

*August, XXXIX, No. 15, pp. 185-196*

89 *Operative Measures in Acute Nephritis. R. v. Kügelgen.

89. **Operative Measures in Acute Nephritis.**—Kügelgen comments on the conflicting opinions as to the advantages of

decapsulation or nephrotomy in relief of acute nephritis. A question-blank circulated in Germany two years ago showed nine authorities in favor and eight decidedly against it. He regards nephrotomy or decapsulation as indicated in acute toxic nephritis, as after scarlet fever or in eclampsia, when it is impossible to put an end to the anuria in any other way. Also in acute infectious nephritis with suppuration, suggested by pain in the kidney, rigidity of that side of the abdominal wall, extreme tenderness of the swollen kidney, and severe general symptoms. In a case reported in detail a man of 51 had always been apparently healthy until he suddenly developed signs of acute nephritis; intense pain in the right kidney region came on in the night and radiated to the right costal arch, abdomen and penis. The last urine had been dark and turbid and this was followed by anuria for thirty hours, with extreme tenesmus. At the attempt to palpate the kidney, the pain started up anew, spreading to the bladder. Roentgenoscopy showed a small whitish spot above the tenth rib suggesting a possible calculus in the kidney, but none was found at the operation which was done at once. As it proved difficult to reach the kidney, the twelfth rib was resected and the kidney brought up. The surface was very pale but after slitting and loosening up the capsule the kidney became hyperemic. The left kidney was then exposed, and was found very small and studded with cysts and cheesy foci. The capsule was incised and the wound sutured. Prompt recovery followed, illustrating anew the remarkable benefit liable from such operative measures in acute nephritis.

The operation had been undertaken on a mistaken diagnosis as there had been nothing in the case to suggest that the left kidney was pathologic. In reality the anuria was undoubtedly a reflex phenomenon from this chronically pathologic left kidney. It had not been possible to obtain any urine for examination. The operation cleared up the case at once, revealing the large, entirely anemic kidney on the right side, free from calculi, while its mate was completely degenerated and absolutely non-functioning. The ischemic kidney recuperated at once after the decapsulation and slitting, resuming its functioning within a few hours. The success of the operation was thus due exclusively to the relief from pressure. In conclusion he cites from the literature nearly a dozen analogous cases, all emphasizing the great value of decapsulation or nephrotomy in acute nephritis with anuria or uremic symptoms, and even in chronic nephritis when there are uncontrollable uremic symptoms.

### Hygiea, Stockholm

*LXXVI, No. 14, pp. 801-864*

90 *Hydatidiform Mole with Ovarian Cysts. (Bidrag till frågan om mola hydatidosa och sämtidiga luteincystor i ovarierna.) F. Westermark.

91 *Arthrodesis of the Shoulder to Correct Deltoid Paralysis; Nine Cases. G. Asplund.

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92 *Improved Technic for Induced Artificial Pneumothorax. (En ny metod att avlägsna adherenser vid pneumothoraxbehandling av lungtuberkulos.) H. C. Jacobæus and H. Tideström.

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93 Fat in the Liver in Chronic Alcoholism. G. Engstrand.

94 Military Surgery in Sweden in the Eighteenth Century. G. Naumann.

90. **Hydatidiform Mole with Ovarian Cysts.**—Westermark reports two cases of this combination. In one the ovarian tumor was operated on two months after expulsion of the mole, but the ovarian trouble may have preceded the development of the mole. In the second case the ovarian tumor was removed without knowledge of the mole in the uterus and it was spontaneously expelled not long afterward. In both cases torsion of the cystic ovary was the immediate cause for the operation, and both patients were dismissed in good condition. Both ovaries were studded with large cysts but the least pathologic ovary was left in its place, after excision or puncture of the cysts, and one of the women was delivered of a healthy child a year and a half later. This patient was an unmarried girl of 16 who had menstruated regularly until the last eight months, following a single intercourse. The uterine hemorrhages returned every two weeks and were extremely irregular and accompanied with pains. Finally scraps of a mole were expelled with about a liter of blood and the whole mole was then delivered by expression after dilatation with an inflatable bag. Two months later she returned on account of symptoms from torsion of the cystic left ovary which was removed. The right ovary was twice the usual size and contained several cysts. There was secretion and considerable flow of milk from the breasts after expulsion of the mole, and the lactation kept up for more than six weeks.

In the second case the woman of 25 had borne a child four and a half years before. Menstruation had been regular until the last four months, and during the last two there had been almost constant uterine hemorrhage and occasional morning vomiting. Pregnancy plus torsion of a cystic ovary was the diagnosis. The ovary in question was resected and the cysts in the other were punctured. Two days later a large mole was expelled spontaneously and some scraps in the uterus had to be cleared out later. A month after expulsion of the mole the woman had epileptiform seizures—for the first time in her life.

There were thirty-eight seizures the first day and fourteen the next, with somnolency in the intervals. Under lumbar puncture, venesection, prolonged baths, morphin, chloroform, scopolamin, chloral and atropin, the tendency to convulsions was brought under control so that there were no further attacks, but artificial respiration was required for twenty minutes the second day as the patient collapsed during a bath at 33 C. The third day the patient was much agitated, with hallucinations; this condition persisted for six days, after which normal conditions were rapidly restored; the ovary that had been left rapidly returned to normal size. Westermark emphasizes the lesson from these cases as to the harmlessness of cysts in the ovaries in connection with a hydatidiform mole. He regards the cysts as the primary trouble, responsible for the development of the mole, but claims that after the mole has been expelled the cysts retrogress.

91. **Arthrodesis in Treatment of Paralysis of the Shoulder.**—Asplund gives an illustrated description of nine cases in which he restored more or less satisfactory function to the shoulder by inducing arthrodesis by fixation of the head of the humerus to the glenoid fossa, the acromion and coracoid process, after thoroughly freshening all the bony surfaces. The children were between 4 and 11 but the best results were obtained in the older children, as the after-treatment is easier with such. For those under 8 he advises immobilization for six or nine months. The more the paralysis is restricted to the deltoid region the better the functional outcome. Bony union was not realized in any of his cases. The paralysis in all was a relic of epidemic poliomyelitis.

92. **To Get Rid of Adhesions Interfering with Artificial Pneumothorax.**—Jacobæus and Tideström have been improving the technic for direct visual inspection of the interior of the chest and abdomen, so that now the pleural cavity can be thus inspected under local anesthesia, they say, without the least discomfort to the patient. They even found it possible to resect part of a tumor in the pleura after thus locating and inspecting it. A small actual cautery has been devised for minor operations in the pleural cavity under this technic, and with it they have succeeded in severing cord-like pleuritic adhesions which otherwise would have completely prevented effectual compression of the diseased lung under artificial pneumothorax. By thus severing one coarse band they succeeded in producing conditions favorable for inducing pneumothorax in a young woman with a large cavity in one lung. The prompt therapeutic effect of the artificial pneumothorax was remarkable, the general health rapidly improving as the output of sputum became reduced. It had previously been profuse, containing numerous tubercle bacilli, but ceased almost completely after the inflation. In two other cases also reported in detail similar minor intrapleural operations were done—all without discomfort or the slightest by-effects or danger, according to their account. Roentgenograms are given of the first case both before and after the adhesion had been severed with the cautery.

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## THE EDUCATION OF HEALTH OFFICERS *

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In looking over the field of preventive medicine and its future effect on this country the most striking necessity which confronts the observer is that of having trained leaders—not a few great men here and there, but leaders in cities and small communities throughout the land—men who through special training are capable of directing the formulation of health laws and of educating the public for their enforcement.

The day when the training which is given in the ordinary medical school leading to the degree of M.D. was held to qualify a man for the administration of public-health matters has passed. The field of medicine has become so broad that specialism is a necessity. In spite of this the average physician is regarded by the public as a competent authority on public-health matters, but this state of affairs is rapidly changing. It is defended by no one except those ignorant of the real necessities of the case. The magnificent work in preventive medicine which has been done by our Public Health Service and our army and navy medical services has excited the admiration and the attention of everyone, and throughout the land people are beginning to demand better-trained men as officers in the fight against disease. Ignorant and supine health officers can never excite enthusiasm in the rank and file. People demand leaders who know more than they themselves do. Our public is becoming rapidly educated, and every increase in knowledge fits it for further instruction.

Unfortunately, many of the old ideas concerning disease die hard. The public still feels, even if it does not believe, that there is something occult and supernatural about disease. There is a great reaching out after the unknown and the miraculous. Consequently, the mass of people, while ready and anxious for knowledge concerning the laws of health, absorb misinformation more readily perhaps than the truth. This is proved by the prosperity of advertising quacks and patent-medicine venders everywhere, which still persists in spite of the splendid work which has been led by The Journal of the American Medical Association, and followed by a limited number of enlightened editors elsewhere.

I feel that our medical schools, which should lead in such matters, have been slow to recognize the necessities of the situation. At present in this entire country the schools which educate men with particular reference to their duties as health officers can be counted on the fingers of one hand. It may be said with truth that owing to the multiplicity of medical schools they have had a hard time to make both ends meet, and have been unable to offer courses which would be taken by but a few men at best, and for which there has been no general demand among the members of the profession. Why has there been so little demand for such training?

This question brings us at once face to face with a condition of things existing throughout this country in regard to boards of health and health officers—a condition which has been in the past and is at present the greatest stumbling block to progress, and offers enormous difficulties which may well discourage all but the most optimistic. I refer to the domination of politics over health matters. The appointments of men to positions as health officers on merit are few and far between. States, cities, villages, and towns have their boards of health, the members of which are usually given their positions by appointment. The boards of health, or in some cases the city councils, elect the health officer. No special training is required. The man who can pull the greatest influence usually gets the position regardless of fitness. With changes constantly taking place in our city councils and boards of health, owing to our system of frequent elections, there is no certain tenure of office. The man who becomes health officer in a vast majority of cases knows that his term is to be a short one.

In addition to this there is no general feeling in this country that the prevention of disease puts dollars and cents into the treasury of a community and is a good commercial proposition. Consequently, with the exception of our large cities there is no adequate payment of men engaged in public-health work. The position of health officer is taken on as a side issue, too often only for the supposed glory it carries and the advantage it gives the practitioner in his private work. These facts are well known, but what is the outlook for their correction? I confess that the only hope I can see in the matter is a wide-spread educational campaign, which is always a slow process. Here and there encouraging signs are observed—several smaller communities banding together and appointing a whole time health officer, as has been done in the neighborhood of Chicago within the last year, though private philanthropy was the motive power.

What incentive is there for a man to give up one or two years after graduation in medicine to the further

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* Chairman's address, read before the Section on Preventive Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, June, 1914.

study of public health with its attendant expense when he might be building up a practice?

While the demand for trained health officers is increasing year by year, it is confined at the present time to large and medium-sized cities. The outlook for the small communities throughout our land, of which there are many, is decidedly bad. Each year our Public Health Service is calling for such men in greater numbers, some of them are employed by commercial firms, and some drift into public service here and there, but I have not been able myself to recognize any great demand for well-trained men in this line of work, and still less at salaries which are commensurate with the expense of education.

The matter of adequate salary is one of far-reaching importance. Not only does a good salary act as an incentive toward inducing capable men to spend money on education, but it enables a health officer to give his entire time to the work in hand. I can not lay too much emphasis on this point. The whole-time health officer is a necessity. "No man can serve two masters." When the salary is small the health officer is compelled to take up practice or other lines of work in order to support himself and his family, and it is only human nature for one to give attention to the development of the work for which a fixed salary is not paid. Except by combination, whole-time health officers for small communities seem difficult to obtain, but cities and states can well afford to pay good salaries and should require health officials to devote their time to the duties of their office. The position of health officer is a man's job, and if properly attended to requires undivided attention, and all the time one can give to it.

The question has been raised as to how much prevention of disease the medical profession will stand for. Within the last year I have heard it said several times that the rank and file of the profession could not be expected to do much more, or to stand much more, in the attempt to prevent disease. I have also heard it said a number of times that medical practice had been already injured as a business by the prevention of epidemic diseases. I have always felt and still feel that the medical profession will stand, as in the past it always has, for the best interests of the public as a whole, and that it can be counted on to foster any movement for the preservation of health. I can not bring myself to believe that the lack of interest shown in the study of preventive medicine is due to the reasons stated. If, however, there is any truth in the statements which have been made, it behooves the authorities of our medical schools not only to exercise a more strict supervision over the character of the men who are admitted as medical students and to whom diplomas are issued, but also during the course of study they must see to it that the idea of prevention is thoroughly inculcated so that it becomes in the mind of the medical man a habit of thought. The whole subject should be presented in the most attractive way possible, and the opportunities which such a career offers should constantly be set before the students.

The number of problems which every health officer must face is very great, and to reach the greatest efficiency he must have a wide range of knowledge and be a man of many parts. The prevention of contagious disease is believed to be the chief duty of a health officer by the public and unquestionably this is one of his greatest functions, but in the carrying out of this work many things are necessary which do not appear on the surface. One great task demanded of the health officer is the obtaining of proper appropriations to carry on health work. This requires not only thorough knowledge of every scientific fact involved, combined with ability to present the practical side quickly and succinctly to laymen, but demands also a vast amount of tact and patience. Since the health officer has the direction of work covering such a wide field, and in smaller communities must personally attend to it, it is necessary for him to have the training indicated in the following outline:

A good general education, including chemistry, physics, biology, and other natural sciences; bacteriology, general, medical, and as it applies to dairying and other commercial processes; infection and immunity; modes of transmission of disease; the rôle of insects; protozoology; the principles of veterinary medicine with especial attention to the diseases of animals which are transmissible to man; animal parasitology; pathology; physiology; diagnosis, especially as it applies to the eruptive and contagious diseases; examination of water-supplies, including sources, purification, storage, etc.; the analysis of sewage, its treatment and disposal; disinfectants; food and drug analysis, adulterations, etc.; engineering, including the principles of hydraulics, drainage, plumbing, heating, ventilation, lighting, etc.; rural sanitation; occupational diseases and injuries; the principles of climatology; applied hygiene, which includes actual work in public-health laboratories, the routine examination of specimens from cases of diphtheria, typhoid fever, tuberculosis, meningitis, rabies, glanders, anthrax, etc.; inspection of slaughter-houses, butcher shops, bakeries, groceries, dairy farms, milk-depots, ice-cream factories, and all places where food is prepared or distributed, hotels, barber shops, etc.; the application of preventive measures, the use of disinfectants, etc.; school and factory inspection.

In addition two other subjects must receive special attention:

1. Vital statistics, which is the bookkeeping of public health, including population, morbidity, mortality, etc. Special stress should be laid on this because it is so often neglected, and because it is so hard to make people see the importance of this branch. It is not spectacular and does not appeal to the general mind, yet is the foundation of progress in health administration.

2. Public-health administration, including the study of laws and ordinances. The importance of public-health work from the sociologic side is beginning to receive the attention it deserves. The health officer should know the foundations of sociologic science as it will enable him to carry out his work with greater satisfaction to himself and greatly increase his efficiency.

A much greater subdivision could be made, but already the list is a long one and the student approaching the subject may well be staggered at the knowledge he is expected to obtain before receiving his degree. Harvard and the Massachusetts Institute of Technology offer eighty-four courses arranged in nine groups, seventy-three of which pertain especially to public health.

In this outline I have included a large part of a medical training, and I hold strongly to the opinion that a medical education is the foundation of work in preventive medicine. The physician has created the profession and demonstrated its possibilities. He has been the pioneer, and often in spite of the lack of special training, physicians have made very efficient health officers. Failures by physicians have been due to the fact that the public has not recognized the importance of selecting the best-fitted men for such work, and has not generally been willing to pay attractive salaries.

A degree in medicine is not absolutely necessary, although desirable, but the training is essential. I do not at all agree with those who in the last few years have advocated the view that the training a sanitary engineer receives better fits a man for work as a health officer than the training given in medical schools. It is, however, evident that the medical schools must recognize the signs of the times and give a more complete training in preventive medicine than has been the rule in the past. The medical profession must also be alive to the necessity of demanding this training, as otherwise there is danger of seeing a calling, the necessity of which they have demonstrated, pass into other hands.

In looking over the courses offered in the United States at the present time I find a decided lack of uniformity. The University of Pennsylvania offers the degree, Doctor of Public Health, after a course of instruction requiring one academic year, but only those already holding the degree of Doctor of Medicine are eligible. The University of Michigan gives two degrees—Doctor of Public Health, and Master of Science in Public Health. To be eligible for either one of these degrees the applicant must be also an M.D. For the doctorate a two-year course after the degree of M.D. is obtained is required. The University of Wisconsin gives the degree, Doctor in Public Health, open only to those holding the degree of M.D. Harvard University gives the degree, Doctor in Public Health, and in its announcement states that the degree of Bachelor of Arts or its equivalent is required in addition to the degree Doctor of Medicine. In the circular of the school for health officers recently published by Harvard University and the Massachusetts Institute of Technology in conjunction, it is announced that after completing the courses outlined in these two institutions a Certificate of Public Health will be granted. Graduates in medicine in Harvard University and other recognized medical schools are admitted on their records as candidates for this certificate. Bachelors of Science in biology and public health of the Massachusetts Institute of Technology and other recognized institutions are likewise admitted and registered as candidates. The medical degree is not a prerequisite for this certificate, but candidates are advised to obtain it before specializing in public-health work. The statement is made, "Experience teaches that preferment for position and advancement to the higher offices comes more readily to those who have a medical degree."

I would be the last one to advise careless training for men undertaking public-health work yet it seems to me that the requirements for the degree of Doctor in Public Health have been placed too high in practically all institutions, especially with regard to the language requirements. Most of the schools put the doctorate in public health on a basis with the degree, Doctor of Philosophy.

As I see the situation, we need practical health officers more than we do research men or professors. The fundamentals are well known and we need men who are well grounded in these principles, and well versed in their practical application. We have excellent journals which give in each issue abstracts from a wide range of subjects, so that to-day there is little practical information given to the world in any language which is not soon abstracted in journals printed in English. The language requirement, therefore, which is often a difficult one to meet, does not seem to be as important as it was a few years ago.

If it seems desirable to protect the degree Doctor of Public Health by maintaining the standards set, another degree with less strict requirements should be offered, with the object of training men for practical work, reserving the degree Doctor of Public Health for those expecting to do research or to teach. The degree Doctor of Public Health should never be conferred on anyone who has not already earned a doctorate in medicine.

Practically every university in the country, as well as many other schools which are less pretentious, have on their faculties men capable of teaching the fundamental branches needed by the practical health officer, and courses which are easily accessible to the men wishing to undertake public-health work should be given at a large number of schools throughout the country.

In considering a plan for the betterment of conditions it seems to me that the following points are most important:

1. There should be practically uniform requirements as to preliminary education, the training offered, and the degree given.
2. The training offered and the examinations for these degrees should be easily accessible to persons in every part of the country.
3. There should be a combined effort to bring to the attention of the profession as well as of the general public the necessity of special training in public-health matters.

Most of these objects could be accomplished if we had a central authority with power to outline courses which should be given to fit one for public-health work. In our public-health service we have a well-organized body of sanitarians fully equipped for teaching both the scientific as well as the practical branches. This service has officers in every part of the United States, in countries under our authority, as well as in foreign sea-ports. It constantly has under way investigations in inspection, sanitation and epidemiology. The Immigrant-Inspection Service with its wealth of material is under its control. It has a well-equipped laboratory in Washington with thoroughly trained men in all branches. These facilities should be thrown open to students seeking training in Preventive Medicine, or wishing to fit themselves for positions as health officers. I would suggest that this service be given authority to fix standards, to hold examinations, and to grant diplomas to qualified men. These examinations should be open to students trained at any university or college, and held at stated intervals in different parts of the country, just as they are now given by this and other services for other purposes. In this way uniformity could be obtained and a decided stimulus to the study of preventive medicine would be obtained.

# TESTS OF VENTILATING PLANTS *

FREDERIC BASS
MINNEAPOLIS

The proper tests of any ventilating system designed for serving rooms of human occupancy depend ultimately on biologic facts. What qualities of the atmosphere are most conducive to the economy of the human organism? What are the ordinary variations from the ideal atmosphere and how does the organism react?

When the engineer designs a structure, he must know the forces that will tend to destroy or strain it, he must know their direction and intensity and he must know from tests the strength of the material which is to withstand the forces.

In the problem of ventilation we assume and, without doubt, correctly assume that the open air of the countryside or of the sea is the normal, most beneficial atmosphere. We know something of its characteristics in a chemical, electrical and physical sense, and we know somewhat less of the variations from the ideal atmosphere in so far as they are significant from the standpoint of the problem of ventilation.

When we attempt to study the structure, the human body, and the effects on it of varying conditions of atmosphere, we naturally find the problem of a most complex nature. I have been trying to study the ventilating problem from this standpoint during a part of the last year. It is a difficult thing for one with only a meager training in biology to attempt, but as a result of the trial, I am convinced that the ventilating engineer, in order to understand the principles underlying his work, must go beyond the mere mechanics of materials involved, and must have an appreciation of the relative biologic values which are fundamental.

In a very recent published article by one of the best known hospital architects of this country, I find the following statesment: *"Without doubt,* this unknown constituent which gives the obnoxious odor or smell to bad air, such as is evident in assemblies, most noticeable in warm rooms as in our nickel theaters, is a harmful factor." Also in the same article: "Let me impress upon you that dirty air kills more people than dirty water, dirty milk, and dirty food combined." In the discussion which followed, a prominent member of the Chicago Ventilation Commission emphasized the importance of the danger of infection from air.

The general impression that the acute communicable diseases can be greatly lessened by improved means of ventilation either by eliminating direct infection or by providing air in superlative quantity, distribution, and quality, is one which seems to me to be erroneous. Direct contact, mouth spray, uncleanly personal habits, are without doubt the most fruitful causes of these diseases. Resistance to infection is perhaps both general and specific. Specific resistance may be in some cases artificially produced, but as far as my observation goes, our knowledge of immunity is comparatively small. That there is such a thing as general resistance, often spoken of by the layman as vitality, that may be reduced by unfavorable environment, is also probably true.

The presence or absence of a ventilating system cannot affect the more effective defense of the body, the specific resistance, but it is possible that the general resistance to infection may be lowered in some cases by lack of ventilation. The demand for ventilation must be largely based on other grounds than that of the preservation of health, and it is perfectly proper that comfort and efficiency should be regarded as of sufficient importance to deserve the effort involved in providing ventilation.

There have been numerous laboratory experiments on individuals, well enough known to this audience, which indicate the relative unimportance to single individuals of the ordinary variations in carbon dioxid content or of air which may contain other substances derived from the presence of human beings in enclosed spaces.

The work of recent years by many experimenters has indicated that comfort may be secured to a great extent by a proper regulation of temperature and humidity, and that one of the proper criteria of a good ventilation system is its ability to furnish means for the maintenance of a correct bodily temperature. "Curves of comfort" have been constructed which indicate temperatures with their associated relative humidities for various occupations. The effect on comfort of air in motion is an important element.

The association of evil results with unpleasant odors is an assumption which is often unwarranted. Our sense of smell is, of all the senses, the least trained and the farthest from standardization, and the connection between offensiveness and toxicity is far from being established. It is, however, easily possible that trouble may result indirectly from offensive odors. The reflexes from such sensations as may be received from the olfactory nerves under ordinary room conditions may, of course, easily cause such irritation that a nearly normal person may feel unable to maintain his full mental efficiency. But such lack of efficiency probably comes from conscious irritation rather than from any direct toxic action. The psychologic factors in ventilation are real and important. It may be that in the ventilation of hospitals they are more important than in other buildings, for the effect of irritation of mind is more disturbing to subnormal than normal physical conditions. Prolonged exposure to irritation of this nature may result in physiologic disturbance.

During the last year I have conducted certain experiments under the direction of the New York Ventilation Commission on schoolchildren subjected to two systems of ventilation. In one room, air was supplied from outdoors, in another the air was recirculated, being continuously washed, lowered in temperature and returned to the room. Not all the characteristic odor of the occupants of the room was removed by the washing. Careful tests, both physical and psychologic, conducted by trained observers failed to show significant differences between the two groups, although the period of observation was four months. The teacher of the room in which the air was recirculated, however, complained that other teachers told her that she ought not to teach in a room in which "fresh air" was not supplied, and she said that her doctor told her it was making her ill. She did not believe that it was good for her, and she complained of feeling ill. The children were perfectly happy and entered no complaints; their physical and mental progress was satisfactory, but as they were but 9 years of age, they had not acquired the olfactory sensitiveness of the older person. The system was good so far as hygienic conditions were concerned, but it probably would not do for adults on account of the irritation resulting from odors.

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* Read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

The carbon dioxid content of the air of this room did not rise above 30 parts per ten thousand, showing a considerable leakage of air to and from the outside of the building. Air leakage is greater than is usually supposed.

While very humid air prevents the escape of bodily heat by evaporation, it is true that very dry air, especially when warm, may injuriously affect the mucous membranes, although I have no definite information on this point. The artificial humidification of air in cold climates is doubtless a most desirable part of a ventilating equipment. The washing of air to remove dust is of very great importance in certain cases.

If these conclusions are accepted, the requirements of a system of ventilation are that it supply air of proper temperature and humidity without offensive odors; that it supply it in sufficient quantity to maintain the temperatures and humidities within prescribed limits, and to remove offensive odors.

In order that this may be effectively done, the distribution of the inlets and outlets for the air must be carefully selected in accordance with the needs of the situation. Kitchens and toilet rooms should have outlets at the ceiling with accelerating coils as near the base of the vent duct as possible. No air should be forced into such rooms, as it might be expelled into the rest of the building through the doors.

The tests which should be made may be listed as follows: (1) temperatures; (2) humidities; (3) air currents; (4) odors; (5) carbon dioxid content, and (6) dust content.

No standardization has as yet been achieved. State and municipal legislation is almost entirely based on quantity of air, the requirements in many cases being excessive for well-designed systems of air distribution. It is of little value to pump 30 cubic feet of air per person into a room when the person can get but 3 of the 30 cubic feet on account of the lack of good distribution.

The temperatures and humidities should approximate those of the climate as nearly as possibly. In England 58 degrees with 60 per cent of relative humidity is common in the schools; this would be impossible in Winnipeg in winter.

Air currents are difficult to control, as they are extremely sensitive. The control of air currents may be said to be one of the arts of ventilation. In hospital construction, except in crowded city locations, in warm climates open window ventilation may be entirely practicable throughout the year for rooms and small wards. In such cases, only kitchens, toilets and possibly operating rooms need to be ventilated by special equipment such as fans, etc. The determination of air currents is, then, of little importance. The work of Shaw in England in the determination of air currents is perhaps the most worthy of note.

In small hospitals, I have seen excellent results by having vent registers at the ceilings of the rooms connected to ducts terminating at the roof, accelerating coils being inserted. Entering air is not controlled, coming entirely from leakage.

In large hospitals such a system is inadequate. While practicable, it is likely to be expensive in operation. As the building increases in size, the problems of ventilation increase still more rapidly.

The operation of the ventilation system must necessarily be left to the operator of the power plant. It is useless to expect good service from the average engine-room operator without the direction of some person who understands the object of the ventilating system. The operator must be under the direction of one person and not many. The system must be designed with a view to its successful operation, which should mean a careful analysis of demands which are to be made on it. These demands should rest on physiologic standards which are yet far from establishment, although their general nature seems to be well forecasted.

In conclusion, I would again emphasize the point that studies of ventilation system and ventilating equipment be made with their objects clearly in mind, namely: to secure proper temperature and humidity regulation, to keep the air in motion and properly distributed, and to prevent offensive odors from circulation.

# THE IMPORTANCE OF STUDYING THE ACTUAL CONDITION OF HOSPITAL AIR *

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Few questions in air conditioning have been more extensively and even acrimoniously discussed in recent years than that of hospital ventilation. We hear on the one hand that costly ventilating plants have altogether failed and that the only way to keep a hospital in good condition is to abandon fan ventilation and admit fresh air by way of the windows. On the other hand, there are signs of a reaction in certain quarters against this view and we hear whispers that even in the most advanced window ventilated hospitals conditions are by no means always ideal, particularly at night and when the superintendent is not in the wards.

Architects and engineers, to say nothing of hospital trustees, find themselves buffeted about in a most confusing manner between confident and contradictory disputants. Ventilating plants which cost many thousands of dollars are lying idle and new hospitals are being built without any artificial ventilation at all, which, if the advocates of fan ventilation should prove correct, means a far greater expenditure for the installation of some system of air conditioning in the future.

The extraordinary thing about it all to the sanitarian is that these sweeping conclusions and far-reaching changes in policy have as a rule been arrived at without any detailed and systematic study such as seems essential in order to establish a safe basis for action. No good physician would to-day diagnose a difficult case by glancing at the patient, without taking his pulse or using the modern methods of clinical diagnosis. Yet hospital superintendents condemn their ventilating plants because a room seems stuffy, without accurate observation of existing conditions, or study of the possible remedies which might be applied, short of a major operation.

The sling psychrometer and the anemometer are as essential to the student of ventilation as are the clinical thermometer and blood tests to the practicing physician. It has been clearly shown by the elaborate experiments of some of the most eminent physiologists in Germany, England and the United States that the discomfort and the physiologic disturbance experi-

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* Read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

enced in a badly ventilated room are primarily due not to chemical impurities in the air but to heat and humidity—not to respiratory phenomena, but to derangements of the vasomotor mechanism. It is therefore a first essential in studying air conditions to make careful records of temperature and humidity at various points and at various times under various conditions of occupancy. Air conditioning is, however, intimately bound up with air change and air movement, and the removal of stale odors is eminently desirable from an esthetic standpoint even if the organic compounds which produce them do not menace health. Carbon dioxid tests are therefore also of great value in determining accurately the amount of air change which is taking place, and under special conditions may well be supplemented by determinations of atmospheric dust and perhaps sometimes of bacteria.

If tests of the sort outlined above show that the air is clean and fresh and of a cool, equable temperature, one may rest satisfied. If, on the other hand, air conditions prove to be unsatisfactory, it is neither reasonable nor scientific to condemn the system in use, whether it be fan ventilation or window ventilation, without a further effort to find out the exact reason for the trouble. If rooms are overheated it may be because hand-controlled radiators have been left turned on or because thermostatic control valves have been allowed to get out of order. Or it may be because the janitor is overheating a plenum air supply. In one New York school an inspector working under my direction had a thermometer registering to 130 F. exploded by the heat of the air entering a room register. If there is too much carbon dioxid and a stuffy odor in a room, it may be because the ducts are insufficient or because the inlets and outlets are wrongly placed, or because the fans or motors are not being operated at their full capacity. Sometimes the trouble is practically irremediable without costly construction. Sometimes it can be eliminated at no cost at all with the application of a little technical skill in operation. It would seem in general wise before either installing or discarding a ventilating system to obtain scientific data as to the exact shortcomings which exist and the extent to which they could be remedied by minor alterations or more intelligent operation.

Prof. Charles Baskerville and I carried out a study of schoolroom ventilation in New York City in which our staff made over 1,800 observations of temperature and humidity, over 770 of carbon dioxid, over 680 counts of microbes and over 650 counts of dust particles, in addition to many hundreds of special tests of air distribution and a large number of measurements of air velocities. The result of this study was to show in the first place that the hectic accounts of New York schoolroom air which had been spread broadcast were, as Mark Twain said of his own premature obituary, "grossly exaggerated." Only 14 per cent. of the 1,854 temperature records obtained were over 71 F., and only 5 per cent. over 73. Of 773 carbon dioxid determinations, only 15 per cent. were over 10.5 parts and 6 per cent. over 12.5 parts. The average results for all fan-ventilated schools were about the same as for all window-ventilated schools, but individual schools showed marked deviations from the normal. The window-ventilated schools were all mediocre, but some of the fan-ventilated schools were admirable and some very poor, not apparently as a result of defective construction, but mainly from careless operation. In one school an automatic thermograph kept in operation for twenty days never but once fell below 60 F. and never rose as high as 70. In another school, fan-ventilated like the first, the temperature reached 75 on eighteen out of twenty-eight days, and reached 80 on six of them. Only by a detailed and exact study was it possible in the first place to clear the air conditions of the New York schools in general from unfair aspersions, and in the second place, to find out that in certain particular schools there were evils to be remedied, and in the third place to indicate the importance of janitorial supervision in remedying those evils.

I am at present conducting a somewhat similar study of air conditions in a commercial establishment employing about 4,000 clerks, in the course of which my inspectors have made 2,185 temperature and humidity records, 245 carbon dioxid determinations and over 300 measurements of air velocity. The results are not yet fully analyzed, but they have already shown clearly that the building is grossly overheated and that the fault lies in large part with the disrepair into which the thermostats have been allowed to fall. We are finding that in certain ducts designed for fan ventilation, no fans have ever been installed, while in others the fans are running at only a fraction of their efficient speed. In other ducts the register openings are so badly adjusted to the present population that while some rooms receive more air than they need, others receive much less. It is quite possible that somewhat radical improvements in ventilating construction may have to be made in this building, but it would be most unwise to undertake such improvements without first finding out what the present plant is actually doing and what it could be made to do with the best operation.

I cite these cases merely to show the method of approach to this scientific problem of air conditioning and to contrast what has been done by school authorities and industrialists with the scanty evidence on which hospital ventilating plants have been defended or condemned.

Two years ago I suggested to Miss Alice L. Lake, a graduate student of mine in the Department of Nursing and Health of Teachers' College, that she attempt to gain some idea of what air conditions in New York hospitals actually were. The results[1] are distinctly significant and, like the school results cited above, point to the factor of operation as one of prime significance. Miss Lake obtained seventy-five records of temperature and humidity in six different hospitals. The general wards in all the hospitals but one were free from overheating, forty-three records out of fifty-two being below 70 F. Two hospitals in particular showed all temperatures closely controlled between 60 and 69, and it is worthy of note that of these two good hospitals, one is ventilated on the plenum system and the other by windows. On the other hand, there is one hospital in New York which is notorious for its overheating, and here Miss Lake obtained three records between 70 and 74, and two of 75 and over.

The overheating of the children's wards was much more marked, five out of eleven records being over 70 F. In one hospital the children's ward was 76 in the daytime and 57 at night, which seems a needlessly violent contrast.

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[1] Lake, Alice L.: Journal of Home Economics, October, 1913.

The air of all the hospitals was very dry, irrespective of the method of ventilation, sixty-three out of seventy-five records being below 40 per cent. of saturation. In the operating rooms the temperature of course was very high (in six cases out of twelve, over 74 F.) and the humidity correspondingly low (in five out of twelve cases, 30 per cent. or below, in none over 40 per cent.). It seems to me a serious question whether such very dry air may not promote harmful evaporation from the exposed body cavity. Artificial humidification would not only lessen evaporation but would diminish the cooling effect and so make it possible to avoid the extremely high temperatures now generally considered necessary.

My aim in presenting this paper is merely to call attention to the fact that there are serious problems involved in hospital air conditioning and that there are recognized scientific methods of attacking such problems which have so far very rarely been applied. Physiologic studies have shown that air temperature and air humidity have profound effects on the human organism, and in hospitals, in which you are dealing with persons of subnormal vitality, these effects must be intensified. In schools and factories serious attempts have been made to find out what air conditions are being maintained and how they can be improved. In many hospitals the operation of the ventilating plant is left in unskilled hands with no supervision, until bad conditions force themselves on the senses, and then the whole system in force is discarded without an attempt to find out what is really wrong.

Is it not time that this problem should be recognized as one demanding the serious scientific study of those responsible for hospital control? In an institution devoted to healing, the atmospheric condition surrounding the patients is clearly one of the most important environmental variables involved. It should not be controlled by snap judgment or by the dogmas of a fan-ventilation cult or a window-ventilation cult. The particular hospital and the particular ward should be studied and its trouble diagnosed as you study your patients to diagnose their diseases. Automatic thermographs should be installed at typical locations and their hourly records watched by some one in authority, and supplemented by occasional observations with the sling psychrometer. Once a year or so a test should be made of the whole plan with carbon dioxid determinations and anemometer measurements to see if windows or ducts are supplying a requisite amount of air. Thermostats should be overhauled and fans rated and duct velocities measured. Only by such studies can it be determined whether fan ventilation or window ventilation is efficient in a given case, and if not, how results can be improved. Only by such studies can the best future policy in building new hospitals be wisely and safely determined.

**Medicine and Its Tributaries.**—I like to think of medicine in our day as an everbroadening and deepening river, fed by the limpid streams of pure science. The river at its borders has its eddies and currents, expressive of certain doubts and errors that fringe all progress; but it makes continuous advances on its way to the ocean of its destiny. Very gradual has been the progress of its widening and deepening, for it is a product of human ingenuity and artifice, and only skilled engineers could direct the isolated currents of science into the somewhat sluggish stream of medical utility.—Herter.

# HOSPITAL VENTILATION FROM THE POINT OF VIEW OF THE CLINICIAN *

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In general, it may be stated that the attitude of the clinician toward ventilation in hospitals consists, with a considerable degree of unanimity, in a reaction away from artificial systems of ventilation toward a system approximating as nearly as may be outdoor conditions, that is, open windows. An explanation of this attitude is not difficult to find. On the one hand, in the increasing popularity of the open-air method of treatment for many diseases, and on the other, in a diminishing confidence in the adequacy of artificial ventilating systems as usually installed and operated.

It may be worth our while to pause and examine more closely these rather far-reaching conclusions and the basis on which they rest. If as a result our confidence in these convictions is somewhat shaken, compensation may perhaps be found in a stimulus to more careful study of this whole important subject. Such a study would appear to be sorely needed.

We may accept with little fear of contradiction the clinical fact that the open air is most valuable in many diseased and abnormal conditions. Beginning with tuberculosis, this method of treatment has been successfully adopted for many other diseases, notably pneumonia, anemias, heart disease, various nervous disorders, sepsis, typhus and typhoid fever, etc. Does it therefore follow that the nearest possible approach to the open air represents the ideal condition of the hospital wards?

In certain other diseases we are accustomed to avoid the open air in our treatment, especially when any degree of exposure to cold or drafts is concerned. For example, in acute catarrhal inflammation of the respiratory tract such as laryngitis or bronchitis, or in acute kidney disease, arteriosclerosis, especially in elderly persons, acute rheumatism and the like. It is apparent, therefore, that as clinicians we wish to discriminate in the atmospheric environment of our patients.

It is this which makes the problem of ventilation in general hospitals housing patients with all varieties of disease more important than in almost any other kind of building and, moreover, more difficult. It is this also which has forced the demand for outside balconies for the use of certain patients and smaller wards to make intelligent grouping of others possible. This leaves us still, however, the problem of the general wards, to be ventilated in such a manner as to offer the most favorable conditions for the majority of patients and to do harm to none. Can this best be done by the open-window method? We hardly appear to be in a position to answer this question satisfactorily.

What, after all, is this open air on which we insist so strongly? Is it anything but the atmosphere with varying degrees of temperature, moisture and pressure in varying degrees of motion, together with certain impurities, chemical, bacterial or dust? Do not each of these factors vary with every climate or locality and in each locality with every day? If so, which factors are the important and active ones in producing the good effects of open air which are noted both in health and in disease?

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Recent observations would lead us to believe that the more important factors are the temperature, humidity and air movement.

Carbon dioxid would appear to be robbed of its former terrors, as also are the insidious so-called organic volatile poisons. Dust and bacteria in excess are always to be avoided, and certain varieties are harmful even in small amounts. In the open air as such, can we adequately control these factors, and if we could, do we know just the ideal combination we would have?

We have undoubtedly made distinct advance in the recognition that the effect of air is largely on the surface of the body as a whole and not simply due to the fact that the air is to be breathed; but do we know accurately just what this action on the body is or how it varies with the innumerable changes both in the air itself and in the human subject of different age and physical condition?

Some contributions to our knowledge we indeed have. The effect of atmospheric temperature, humidity and barometric pressure on the blood-pressure, pulse rate and body temperature both in health and in disease has been studied by several observers, notably Collis and Pembrey,[1] Leonard Hill, Howland and Hoobler,[2] Pomeroy,[3] Gardiner and Hoagland.[4] The results of these studies are not uniformly striking, but in general appear to show that the blood-pressure tends to rise in low temperatures and with increasing barometric pressure, and that it falls with increasing humidity and rising temperature, that the body temperature varies to a slight degree directly with air temperature and that the pulse rate is slightly but less uniformly affected by atmospheric changes. Hoobler[5] draws the conclusions from observations similar to the foregoing that "the method of ventilation best adapted to the maintenance of blood-pressure is that which most nearly approximates out-of-door conditions." This appears a sweeping assertion when one considers how variable such outdoor conditions are.

James[6] emphasizes the importance of marked alterations in the temperature of wards as opposed to the uniform temperature at any one level. His belief in the benefit of such alternations is based on general clinical observations and ascribed to action on the vasomotor system, but no definite evidence is presented. Both James and Thompson[7] lay great stress on the important quality of "freshness" in outside air which they suggest is lost in artificial systems of ventilation and which is not as yet capable of detection by physical or chemical means. Thompson particularly emphasizes the olfactory sense as the best-known test of this quality.

It is difficult to conceive of just what such a quality may be which is not measurable in terms of temperature, humidity, air quantities and movements or detectable impurities, and its existence is certainly questionable. Such assumptions are liable to divert attention from the important problem of attempting accurately to analyze atmospheric conditions as they affect the human body and to record these effects in definite terms of physiologic response.

The studies on temperature, blood-pressure and pulse rate already quoted are steps in this direction, but are not entirely satisfying.

I have attempted to duplicate the results obtained by Howland and Hoobler in children with whom change of blood-pressure followed promptly change from cold outdoors to warm indoors and vice versa. My observations were with adults with various diseases, and the changes of blood-pressure were far from being uniform or convincing. It is possible that the age of the patient is an important factor. In other observations in normal young adults made in collaboration with Prof. F. S. Lee for the New York State Ventilation Commission, the effect of high temperature (86 F.) and humidity (80 per cent. relative) over a period of four hours, was shown by a definite rise in pulse rate and less marked diminution of blood-pressure and little or no change in body temperature. Similar observations at moderate temperatures (68 F.) and low humidity (50 per cent. rel.) showed a distinct fall in pulse rate and temperature with little change in blood-pressure.

In another series of observations the subjects after the four-hour exposure to heat and humidity were quickly exposed to cold air (from 60 to 65 F.) and drafts from fans; as a result, pulse rate fell and blood-pressure rose. These observations go to corroborate those of Howland and Hoobler as well as others, and would suggest that the clinically good effect of cool and dry air may be measurable in terms of pulse rate, blood-pressure and body temperature.

Such studies, however, are mere beginnings and point the way to many unsolved problems before we can state with definiteness just how open or fresh air produces good effects and how we should differentiate to best advantage in the selection of cases and in the relative importance to be placed on the various factors in the air itself. We need some such data before we can say that all we need in ventilation is to open the windows and let in the air. The outside air may be cold when our patients need it warm, it may be dry when they need it moist and vice versa, and moreover, the dust problems of open windows cannot be overlooked.

Do we know just the optimum degree of heat, moisture or velocity of air movement? We have general ideas of the bad effect of very high temperatures and humidities, but do we know in reducing these when to stop to best advantage and do we know really very much about the drafts and their effect?

For years ventilating engineers have been asking us what condition of air we want, and we have no reply but "fresh air." This evidently may mean any variety of that very changeable article. It may well be that open windows are better than artificial systems, but we cannot say so definitely until we can state just what we are trying to accomplish. When this is stated the problem becomes one of engineering and economics.

But there are other problems involved than the mere air itself and its method of action. Important among these is that of air distribution. Recent advances in our knowledge tending to show that the action of the air is particularly on the surface of the body increases this importance. By open window ventilation are we

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1. Collis and Pembrey: Jour. Physiol., Nov. 20, 1911.
2. Howland and Hoobler: The Effect of Cold, Fresh Air on the Blood-Pressure in Penumonia of Children, Jour. Dis. Chil., May, 1912, p. 294
3. Pomeroy: Interstate Med. Jour., 1911, xviii, 731.
4. Gardiner and Hoagland: Tr. Am. Climatol. Assn., 1905.
5. Hoobler: Trans. Fifteenth Internat. Cong. Hyg., iii, 116.
6. James: Am. Jour. Med. Sc., November, 1906.
7. Thompson: Med. Rec., New York, Feb. 9, 1907.

not apt to get too much air for some patients and too little for others? Can we regulate the problem of drafts near the window and pockets of stagnant air in the corners?

I myself do not feel sure that the so-called drafts are as much to be dreaded as we are accustomed to think. Although our text-books ascribe some eighty odd diseases and conditions directly or indirectly to exposure to cold and drafts, yet recent studies tend to show that these conditions are usually due to bacterial infection in which exposure plays no or only a minor part. Chodounsky[8] and others have made very memorable investigations in this direction, and our own observations on young men exposed to chilling and drafts from fans after long-continued exposure to high temperatures demonstrated nothing but agreeable effects.

This whole question of the effect of low temperatures and drafts on the body needs more careful study.

Then again it is evident that open window ventilation can never be automatically regulated. In wards this regulation would naturally devolve on the nurses, although the physicians should of course supervise it. With the multitude of other duties can we trust physicians and nurses systematically to employ the care and intelligence necessary? This depends on a more definite knowledge of the conditions we really wish to obtain and on greater attention to the air conditions of the wards than we are at present accustomed to observe.

But with all the possible difficulties that we are able to perceive in window ventilation what are we to think of its alternative, the artificial system?

It is hardly too much to say that as these systems have usually been installed and operated they have been most unsatisfactory to the clinicians and hardly less so to the ventilating engineers themselves. As already stated, the fault is partly that we have not known just what conditions to demand, and consequently the physical basis of air conditioning has predominated. Moreover, intelligence in the operation of such systems has been too frequently noteworthy by its absence.

There can be no doubt that the strictures of Thompson, James and others are largely deserved; but can we entirely place the blame on the artificial system *per se?*

The physiologic method of studying ventilation must replace the purely physical, or the two must be used in conjunction and in intelligent harmony, if we are to obtain the best results, and all of this means much additional study, on which we have only just begun.

Certain it is, however, that even now the artificial system alone seems insufficient and that periodic flushing of wards with air from open windows seems reasonable and necessary. But on the other hand, it seems probable that open windows alone will be unsatisfactory.

That the open air with all its variations when directly admitted to the wards may by no means always prove of just the desired condition, and that its proper distribution to all points of the ward may be most difficult, seems very probable. It would appear, therefore, that at present a combination of these two so-called systems is desirable, especially when we remember that in winter a heating system is always necessary and that ventilation is a natural corollary of the heating problem.

After all, however, the whole question falls back on the unfortunate fact that really we do not know. It would therefore appear futile and foolish to argue dogmatically about ventilation until some of the fundamental problems involved in the effect of atmospheric air on the healthy and diseased human body are better understood.

The present discussion represents merely an effort to state the situation in the hopes of stimulating further research into this important branch of sanitation in its relation to our more strictly medical problems.

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# LABORATORY EXPERIMENTS WITH AIR*

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I take it that it is my part in the present symposium to present a summary of what laboratory investigation has contributed to our knowledge of air in its bearing on the problem of ventilation. In so far as the contributions of the laboratory are conclusive they may be expected to serve as a guide to the architect and the ventilating engineer in devising means to provide human beings, living within buildings, with air that is fitted for human use. Air may be rendered unfit by a great variety of agencies. For our present purpose it is desirable to limit our consideration to the unfitness that results from the immediate presence of human beings.

That human beings vitiate the air surrounding their bodies has been known from earliest times, and at different stages in the progress of investigation such vitiation has been ascribed to different factors. More than a century before the discovery of oxygen, Mayow[1] ascribed the death of animals confined within closed spaces to their consumption of the "nitro-aerial spirit" of the air. The presence in expired air of "noxious vapors" was also early recognized. Later, nitro-aerial spirit became oxygen, and noxious vapors carbon dioxid, and the idea early became prevalent that lack of the one constituent and accumulation of the other were together responsible for the bad effects of rebreathing air that had once been breathed by human beings. Throughout the nineteenth century, many laboratory experiments were performed relating to the relative rôles played by the deficiency of oxygen and the increased quantity of carbon dioxid, and there resulted much difference of opinion. But, notwithstanding the inadequacy of its proof, the belief became firmly established that both of these gases, but more especially the carbon dioxid, are the chief agents in producing the evil effects of the air of crowded assemblies, and this idea is even now widely prevalent.

Meanwhile, early in the nineteenth century, the notion arose that expired air contains a poisonous substance, other than carbon dioxid, which can be detected by the sense of smell. Gavarret[2] in 1851 seems to have been the first to subject this idea to the test of experiment, and his work seemed to establish its validity, since he found that animals confined within a closed space died, although oxygen was supplied as fast as it was consumed and carbon dioxid was removed as fast as it was formed. A few others obtained analogous results, notably William A. Hammond[3] in America in 1863. In 1887 Brown-Séquard and d'Arsonval[4] of Paris gave a great impetus to investigation of this theory by reporting confidently their experimental results in which the expired air of men and dogs, condensed and injected into animals, seemed to produce symptoms of intoxication, and they defended vigorously the presence of a toxic organic substance in such air. Although many subsequent researches by others contradicted their conclusions, the theory of the presence in expired air of poisonous, volatile, organic matter, probably protein in nature, came to be widely accepted, and doubtless is accepted still in many circles. Du Bois Reymond gave the name "anthropotoxin" to this substance.

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[8] Chodounsky: Erkältung als Krankheitsursache, Wien and Leipsic, 1911.

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[1] Mayow: Tractatus quinque medico-physici, Oxford, 1674.

It thus seemed to be firmly established, by what seemed to many persons accurate laboratory investigations, that the air problem involved was a problem of chemistry, that the physiologic problem was a problem of respiration, and that the ventilating problem was a problem of removing chemically impure, and supplying chemically pure air in sufficient quantities to supply the needs of the individual.

But this calm of supposed scientific certainty was never so universal throughout the laboratories, and in recent years it has become so disturbed that the subject of what constitutes purity in air and to what are due the evil effects of living in impure air has assumed a new aspect. In the first place, faith in the adequacy of lack of oxygen and accumulation of carbon dioxid has been practically abandoned in the laboratories. Even as early as 1842 Leblanc[5] found that in crowded assemblies the oxygen content of the air rarely falls below 20 per cent. and in 1849 Regnault and Reiset[6] proved experimentally that oxygen can be diminished to 10 per cent. in inspired air before respiration becomes quickened. Müller[7] in 1858, Bert[8] in 1870, Speck[9] in 1878, Friedländer and Herter[10] in 1879, and others obtained similar experimental results. As to carbon dioxid, too, Regnault and Reiset, Müller, Friedländer and Herter, and others demonstrated that large percentages of the gas, much larger percentages than exist in crowded rooms, can be inspired without marked effect. Von Pettenkofer,[11] too, in 1862, seems to have had a clear idea that neither the decrease of oxygen nor the increase of carbon dioxid that occurs in ill-ventilated places is sufficient to produce the symptoms observed in the occupants of the rooms. It was he, nevertheless, who contributed the thought, ever since potent, that the amount of carbon dioxid that is present may be regarded as a convenient index of the harmfulness of the air. However valuable this suggestion may have been at the time, in the light of present knowledge its usefulness has ceased and it ought, I believe, to be discarded. The later work of Hermans, Flügge, Paul, Hill and others now seems to eliminate oxygen and carbon dioxid wholly as factors in the situation except under very unusual circumstances.

Furthermore, a number of notable investigations have rendered the theory of an atmospheric, organic poison untenable. Here it is only necessary to mention a few of the prominent names of investigators, such as Hermans[12] in 1883, Haldane and Smith[13] in 1892, and Billings, Mitchell and Bergey[14] in 1895. In 1911 Rosenau and Amoss[15] attempted to revive the idea by experiments in which guinea-pigs were supposed to be sensitized anaphylactically by the injection of the residue of condensed expired air; but Weisman,[16] in a careful repetition and continuation of their experiments, has been unable to confirm their results. The matter may therefore, I think, be regarded as finally settled that expired air contains no volatile, toxic organic constituent.

Simultaneously with the abandonment of oxygen, carbon dioxid and anthropotoxin, a totally different way of looking at the physiologic problem has appeared. In 1883 Hermans[12] of the Hygienic Institute in Amsterdam, convinced of the inadequacy of the oxygen and carbon dioxid theory, finding by his own experiments no evidence of the existence of an organic poison and observing that his own bodily temperature in crowded theaters and churches rose from 0.3 to 0.6 C., put forward the suggestion that the evil effects of air that has been vitiated by human beings are due simply to the inability of the body to cool itself because of the surrounding elevated temperature and increased moisture. This suggestion was not discussed by him in great detail and was not supported by experimental evidence of his own, but it provided the much needed germinal thought that has since developed into the most rational of all proposed explanations of the observed facts.

Briefly stated, this explanation is as follows: Living beings constantly produce and give off to their environment an excess of bodily heat. This heat must be constantly carried away from the body and is carried away partly through the lungs in the expired air, but chiefly through the skin by the processes of radiation, conduction through the clothing and the evaporation of perspiration. It is obvious that to insure this necessary and healthful removal of heat there is needed an atmosphere about the body that is neither too hot nor too humid. If it is too hot radiation and conduction are prevented; if too humid, the evaporation of perspiration is interfered with; and if the two conditions exist simultaneously the result is a rise of bodily temperature with concomitant interference with the body's well-being. According to this conception the air problem involved is a problem of physics, and not of chemistry; the physiologic problem is a problem that begins with the skin and not the lungs; and the ventilating problem is a problem of maintaining the proper temperature, humidity and motion of the air.

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[2] Gavarret, Cited by Weisman (Footnote 16).

[3] Hammond: A Treatise on Hygiene with Special Reference to the Military Service, Philadelphia, 1863.

[4] Brown-Séquard and d'Arsonval: Compt. rend. Soc. de biol., 1887, iv, 814. This article was followed by several others by the same authors.

[5] Leblanc: Ann. de chim. et phys., 1842, v, 223.

[6] Regnault and Reiset: Ann. de chim. et phys., 1849, xxvi, 299.

[7] Müller: Liebig's Annalen, 1858, pp. 107, 257; Sitz. Ber. Wiener Akad., 1858, pp. 33, 99.

[8] Bert: Leçons sur la physiologie comparée de la respiration, Paris, 1870.

[9] Speck, quoted by Hill, Flack, McIntosh, Rowlands and Walker (Footnote 23).

[10] Friedländer and Herter: Ztschr. f. physiol. chem., 1879, iii, 19.

[11] Von Pettenkofer: Liebig's Annalen, 1862-1863. Suppl. Vol. 2, p. 1.

[12] Hermans: Arch. f. Hyg., 1883, p. 1.

[13] Haldane and Smith: Jour. Path. and Bacteriol., 1892, pp. 1, 168, 318.

[14] Billings, Mitchell and Bergey: The Composition of Expired Air, Smithsonian Contrib. to Knowl., Washington, 1895, p. 989.

[15] Rosenau and Amoss: Jour. Med. Research, 1911, pp. 25, 35.

[16] Weisman: Biochemical Studies of Expired Air in Relation to Ventilation, Inaug. diss. Columbia Univ., New York, 1913.

That this explanation of the matter in question is correct can, I think, hardly be doubted in view of the abundant evidence in its favor that has emanated from the laboratories. To speak the names of the chief contributors is to mention some of the prominent of the world's physiologists and hygienists. Rubner and von Lewaschew[17] of Berlin have contributed very exact data on the general action on the human body of moist air, the relation between the moisture and temperature of the air and the elimination of water and carbon dioxid from the body, and the adaptability of man to high and low temperatures.

The year 1905 was fruitful in contributions. Then began the many studies of Haldane[18] of Oxford and his pupils on the physiologic action of hot and humid air, which have been pursued partly in the laboratory and partly in industrial works, such as the tin mines of Cornwall and the British cotton-weaving sheds. Haldane has insisted, probably correctly, that the ill effects produced by the air of ill-ventilated places are dependent not simply on the temperature as indicated by the dry-bulb thermometer, or on the absolute or relative humidity alone, but on the temperature as indicated by the wet-bulb thermometer. "If this exceeds a certain point (about 78 F. or 25.5 C.)," he says, "continuous hard work becomes impracticable; and beyond about 88 F. or 31 C. it becomes impracticable for ordinary persons even to stay for long periods in such air, although practice may increase to some extent the limit which can be tolerated. In moving air, on the other hand, the limit is extended upward by several degrees." In ordinary living rooms a wet-bulb temperature of 60 F. is probably the most rational one.

In the year of Haldane's first article, 1905, there appeared also several very valuable and suggestive contributions by the hygienist Flügge[19] of Breslau, and his assistants, Heymann,[20] Paul[21] and Ercklentz.[22] The experiments of these investigators were conducted on human beings, some in health and others in various pathologic conditions, who were enclosed within a ventilation chamber and subjected to various conditions of temperature, moisture and movement of air. The results emphasize very strongly that the evil symptoms ensuing on confinement in closed rooms are due to the heat stagnation and the inability of the occupants to "unwarm" their bodies. More recently Leonard Hill[23] of the London Hospital and his colleagues, Flack, McIntosh, Rowlands and Walker, have performed similar experiments, also on human beings, and have obtained similar and striking results.

I have thus mentioned the more prominent of the many investigations that have emanated from the laboratories in this much-discussed field in which pure science and applied science meet. The main features of the laboratory contributions which may be regarded, I think, as now fairly established are that the evil effects of living in the air of crowded, ill-ventilated rooms are due, not to lack of oxygen, not to accumulation of carbon dioxid, not to the presence of a volatile organic poison, but to excessive heat, excessive humidity, and lack of adequate movement. Notwithstanding the fact that more than thirty years fruitful in experimental confirmation of it have now elapsed since this doctrine was first enunciated, it is strange how little it is yet known outside the laboratories and how prevalent are the notions that carbon dioxid and a mysterious organic poison are the evils to be guarded against.

If I were to criticize in general the laboratory investigations my criticisms would be three: first, that the investigations have been confined too much to the study of extreme conditions, in contrast to the conditions of ordinary life; secondly, that the individual experiments have been continued for too brief intervals; and thirdly, that they have not shown, beyond a few of the more easily demonstrated bodily functions, such as rise of bodily temperature, on what functions of the complex living mechanism the unfavorable air conditions act deleteriously.

The newest of all the many investigations in this field, that of the New York State Commission on Ventilation, is endeavoring to obviate such criticisms by making a more profound study of the matter than has yet been undertaken. We possess a ventilation chamber of a capacity of 1,150 cubic feet, which is provided with apparatus by which the air of the chamber may be confined and rebreathed, or renewed at any desired rate, may be maintained at any desired temperature and humidity, may be kept quiet or in motion, may be removed, washed and recirculated, and may be given a desired chemical composition. In this chamber from one to a half dozen persons may be confined for any desired number of hours. On certain days they engage in definite mental tasks, on other days they perform a definite amount of physical work, under a definite combination of air conditions. By the quantitative study of a considerable number of bodily functions, such as bodily temperature, the sensitivity of the skin, blood-pressure and pulse rate in the reclining and standing positions, the relation of oxyhemoglobin to oxygen, the respiratory exchange, the size of the dead space of the air passages, carbohydrate and protein metabolism, the production of heat, the duration of digestion, and various phenomena of the urine, an endeavor is being made to learn in what respects, if any, the physiologic functions and the mental and physical efficiency of the individual are altered by alterations in air conditions. This work is now being actively carried on, but the results are not yet ready for publication.

In this connection I may be permitted to mention a series of experiments which I have recently performed in my own laboratory in collaboration with Dr. E. L. Scott, and which are not yet completed. I have been interested to know whether the apparent physical inefficiency of the individual in an atmosphere of high temperature and high humidity can be objectively demonstrated as a muscular phenomenon. Because of the necessity of using isolated muscles, we have found it most convenient to use cats as the subjects of experimentation and have confined them within a small ventilation chamber for a period of six hours each. An abundant supply of outside air has been sent through the chamber and the only change in conditions has been that with certain animals the temperature has averaged 21 C. (69.8 F.) and the humidity 54 per cent. With

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others the temperature has been raised to 33 C. (91.4 F.) and the humidity to over 89 per cent.; that is, one group of animals has been kept under favorable conditions, the other group has been given the air of a hot and humid New York summer day. Under the latter conditions the animals' bodily temperature rises, on an average, 0.5 degree C. or nearly 1 degree F. At the end of the period of six hours the cat is taken from the chamber and killed, and certain of the muscles are removed, attached to levers and stimulated by regularly applied electric shocks. The contractions are recorded graphically and the total duration of the working period and the total amount of work done before the muscle becomes exhausted are determined. It is found that the three muscles studied, the diaphragm, the extensor longus digitorum and the sartorius, are capable of performing a total amount of work which is less by 14, 18 and 26 per cent., respectively, in the animals exposed to the high heat and humidity than in those that have been subjected to the more comfortable atmospheric conditions. It would thus appear that the inefficiency of an individual under such unfavorable air conditions is not a matter of the nervous system only as might be inferred, but a matter of the muscles as well. Furthermore, we find that along with the muscular effect, the sugar of the blood is diminished from 0.069 gm. per cent. to 0.060, a diminution of 13 per cent. The meaning of this is not yet clear, but it helps to indicate that the effect of unfavorable air conditions on the individual is more far-reaching than has heretofore been demonstrated.

It is by studies of this general nature that the laboratory is yet capable, I believe, of throwing much light on the general problem of the air in its physiologic relations. We must consent to a detailed analysis of the problem. To reiterate over and over again that air that has once been breathed is "bad" air and that "bad" air is "bad" air, without defining in what its badness consists, is a sin against not only scientific reasoning, but also common sense—and yet I have seen that sin committed. To urge, moreover, the great virtues of "fresh" air without making an effort to determine in what the virtues of "freshness" consist, is suggestive of a mind that has not yet reached the sophomoric stage of its development—and yet such minds exist. The opponents of the laboratory doctrine of fresh air sometimes add to the gaiety of nations by speaking of such air in England as "tinned" air and in America as "canned" air. They forget that a canned thing is a dead thing, something without the power of moving of itself or of stimulating others. But the fresh air that we advocate with its coolness, its comparative dryness, and its constant motion is anything but lifeless. Its qualities are those which conduce most to the efficiency of the individual. Constant monotony in air conditions should be avoided like monotony in other conditions of life. It is not my function here to advise regarding ventilating methods, but it is obvious, I think, that no ventilating method can be expected to be effective unless it is based on the facts regarding human well-being which the laboratory is able to supply.

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**The Catholicity of Medicine.**—The human being is a part of the whole of nature and cannot be understood without it. What is wanted is a satisfactory general view of the process of the universe. Possessing this, we shall find the key in our hands which will open the most secret recesses of the art of medicine.—Gomperz.

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# HOSPITAL VENTILATION FROM THE VENTILATING ENGINEER'S POINT OF VIEW *

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NEW YORK

Inscribed under the statue of Hygeia gracing the entrance of a foreign hospital are words with the following meaning:

> One names as the greatest earthly fortune, Health. I contradict; a greater one is Convalescence.

It is difficult to express more forcefully in a few words the noble purpose of the hospital, and the responsibilities of those who are most intimately connected with its management. It also implies to architects and engineers that there can be no building worthy of greater effort than a hospital. One of the important items in the construction and operation of a hospital is that of providing "ventilation" for its various rooms. Ventilation means to supply pure fresh air (from some source, no matter from where) and the removal of vitiated air, both in as simple, positive and inoffensive ways as possible.

There is, of course, no medical man who does not value "pure fresh air," who is not deeply interested in securing it, whether in the so-called "natural" way (by means of open windows) or in the so-called "artificial" way (by means of a ventilating system) and who would not treat this subject with an open mind, ready to hear arguments for and against either method. Similarly every architect and engineer should treat the subject with an open mind, ever realizing that by far the greater portion of humanity lives and remains happy and healthy in its homes, where only the so-called natural or window ventilation exists. The special object of this paper, however, will be to bring forth arguments of how far artificial ventilation might prove helpful in solving the problem of the positive, simple and effective supply of fresh air and the removal of vitiated air, irrespective of wind and weather, under every-varying conditions, in many different departments of a hospital.

Let us be frank and acknowledge that a number of persons in any enclosed space are rarely in perfect agreement as to the quality and freshness of the confined air, and that particularly in the cold season of the northern climate, whatever the reason, the most glaring disagreements exist. This condition is well known, and it makes no difference whether the fresh air enters a room through an open window or is introduced by an artificial ventilating apparatus. We must further acknowledge that it is difficult, nay, useless, to combat the idea that the best and purest air is not secured from and through open windows when surroundings are park-like—in other words, ideal; but that it is easily combated when windows face ill-smelling, dirty and dusty streets, courts or back yards.

It can therefore be easily proved that artificial ventilation is unnecessary in a spacious country home when inhabited by few persons, but on the other hand, it has been proved that humanity does wilt and waste away in overcrowded factories, schools, offices and laboratories unless artificial means for supplying fresh air and for removal of vitiated air, in addition to window ventilation, are provided.

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* Read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

With proper application of engineering data and skill, fixed quantities of air can be moved through long distances and heights, even though large and powerful machines may be required in the most difficult cases. As records of long distances we must think of the artificial ventilating systems required for the building of railroad tunnels, where air for the tunnel builders was driven to their working places through pipes frequently from 6,000 to 8,000 feet long.

As a record of height, we may mention the Woolworth building in New York City, covering an underground area of 225 by 292 feet. The vitiated air of the cellar (largely containing the engine and boiler rooms) and of the basement, containing underground safe-deposit vaults, swimming pools, restaurants, kitchen, etc., is collected, and thence, with an ordinary blower, requiring but little power, discharged above the roofs. In one case the horizontal distance is as much as 360 feet and the vertical distance up to the fiftieth floor about 710 feet, making a total air travel of 1,070 feet.

For over ten summers an artificial cooling, humidifying and ventilating plant has been in operation in the New York Stock Exchange, where 1,500 persons are busily engaged with closed windows, as is necessary where cooling is desired. Of course, this room is not cooled to the constant winter temperature of 68. The room temperature best liked by the average person seems to bear a fixed relation to the outside temperature and the vapor contents. The most suitable inside temperatures with corresponding outside temperatures at about 60 per cent. humidity are as follows:

| | |
|---|---|
| 68 outside | 68 inside |
| 75 outside | 72 inside |
| 80 outside | 74 inside |
| 85 outside | 76 inside |
| 90 outside | 78 inside |

Many banking rooms having very large windows are located on the street level of lower New York City, but have, nevertheless, artificial ventilating plants. While windows in large banking rooms can be but seldom opened in the winter months because the quietly sitting bank people complain of unbearable drafts, it is even preferred in many cases to keep them closed in the summer months. The reason for this is that the dust from the streets, the cinders from smoke flues, and the latest nuisance of gases from the motors of automobiles and trucks will come into the rooms with the "fresh air" as secured by the windows. Noise from street traffic is also found most objectionable for rooms of this kind.

It would, finally, be extremely simple to cite many theaters, factories, laboratories, toilets, etc., to impress further the importance of artificial ventilation in our advanced civilization, with its ever increasing indoor life.

As to the air supplied by a well-designed ventilating apparatus, proper operating conditions taken for granted, it may be worse or better than that secured from the windows for reasons already stated. It is simple to temper the air with our common steam and hot water heating systems and their common heating surfaces without taking away any of its life-giving qualities. Air can be introduced or taken out near the top or near the bottom of a room. In the greatest part of the United States it is best to supply air at the top, because a larger amount can be introduced for the greater part of the time with the least draft; but in the summer months it is frequently found that the best results are secured in "reversing" the air currents, that is, introducing the air at the bottom and removing it at the top. The reversing of the air currents can be easily, cheaply and positively accomplished by the operation of a single damper.

Dusty air can be easily cleaned of its larger mechanical impurities without undue expense by means of air washers and air filters. When air washers are used there is, in case of non-operation, always the possibility and danger of water becoming stagnant. Dry filters of the cheese-cloth kind are, therefore, more "fool proof" from this point of view, but not so effective as far as dust removal is concerned. The use of air washers for filtering purposes will at the same time moisten the air, and will also cool the air at such times as the outside air is relatively dry. Under what conditions air moistening is important to health has as yet not been scientifically settled, but it mainly depends on whether the climate is ordinarily dry or moist. With dry filters, air-moistening pans may be used, and again there is the danger of stagnant water in case of non-operation, if the pans are not drained out properly.

Artificial cooling with dehumidifying, while probably important in warm and moist climates, is on account of the usually high operating expenses, very seldom done, but cooling effects by means of desk fans, due to rapidly moving air currents, may be secured at little cost.

Finally, we may add ozone to the air at little expense for "bacteria removal," etc. While again the researches of the good of this treatment of air are not conclusive, it seems, nevertheless, to be the consensus of opinion of doctors who have given the matter consideration that as much harm may be done to the human beings as to the elusive microbe.

We are, therefore, quite positive in making the statement that we can "condition" the air supply of an artificial ventilating plant to almost any extent. On the other hand, the less "conditioning" necessary, with the exception of the heating and cooling of air and of adding moisture (which depend entirely on the climatic conditions), the better usually the ventilating apparatus is. Air for any artificial ventilating apparatus should preferably be taken from a point that is so pure and clean as to make any other "air conditioning" unnecessary, which, unfortunately, is but seldom possible in our crowded cities.

As to the heat required for warming the cold air coming into the windows or as supplied by the artificial ventilating apparatus, only two heat mediums need be considered at the present time, and they are steam and water.

Steam is usually at low pressure, and with the ordinary commercial heating surfaces the air can be warmed to about 140 F. If water is the heat carrying medium it may be circulated by gravity actions or by pumps, and in either case it is with commercial heating surfaces difficult to heat the air to more than 130 F. Steam (as well as water, if its circulation is forced by pumps) has been carried great distances from one central point, and a distance of a mile is not unusual any more.

After these few, necessarily short, general remarks on ventilation and ventilating systems for different kinds of buildings, the question now arises, Where does the hospital stand in relation to ventilation, and where does it materially differ from other buildings so far as ventilation is concerned? Consider first of all that any large hospital contains many different rooms, serving may different purposes. For the greater part of this country, active air supply and exhaust ventilation are usually required in operating rooms, operating theaters, bathing and therapeutic departments, dispensaries and underground boiler and engine rooms, kitchens, laundries, etc. Practice has also proved that the air supply must be warmed to different temperatures. A low temperature is necessary in cases in which a heat removal is desired, and a high temperature must naturally be carried for rooms having persons with scant or no clothing.

Exhaust ventilation for all rooms in which odors, gases and vapors are created is absolutely necessary. Among these rooms we may mention toilets, utility rooms, slop and specimen closets, laboratories, store rooms, animal rooms, etherizing and sterilizing rooms. It is of course realized that there may be conditions in any climate in which in each instance any room may be built of such large area and height as to make artificial ventilation unnecessary. If it were attempted it would probably be found that building and operating costs would be greater, provided as good conditions were to be secured in these rooms without artificial ventilation as with artificial ventilation.

Bedrooms for doctors and nurses should be so well located as not to require any artificial ventilation.

At present, however, when the necessity of artificial ventilation of a hospital is considered, the ward seems to be the one point on which the entire discussion centers; and frequently if the wards have no artificial ventilation, but many of the rooms mentioned above have, it is simply stated that the hospital has "no artificial ventilation."

As to the wards, it must be said that they usually occupy the choicest location of the site. Furthermore, most hospital sites are naturally well chosen as far as sun exposure and prevailing winds are concerned, and regulations as to unnecessary and objectionable noises are enforced in all large cities. In addition, the rooms are large, figures showing that the cubic contents per bed in a ward are usually four times that provided per person in good offices and eight times that in a schoolroom. Again, most wards have windows on two or three sides, making through draft possible. Admitting that conditions are in every way ideal, what, then, are the possibilities of securing in all kinds of climatic wind and weather conditions the much-wanted air renewal by the windows?

The opening of windows is ordinarily not objected to by anybody when the inside and outside temperatures are substantially the same, or when the outside temperature is higher. If it is some degrees cooler outside than inside and the cold air enters through windows, it mixes but exceedingly slowly with the warm room air, and consequently it sinks to the floor, thus creating a difference of temperature between floor and height of head, and chilling of the occupant may take place. In addition, excessive drafts are also occasionally created under careless openings of windows on gusty, windy days. Of course the doctor, busily engaged or walking through the room, or a patient in bed covered well with blankets, will but seldom find drafts and unequal temperatures objectionable. Still, drafts exist, as we all know, and any heating engineer can quote many experiences where even the downdrafts due to heat transmission from tightly closed large windows in business and amusement places, or in churches and halls, are found annoying by most persons. If the same persons do not object to in-drafts from open windows in a hospital, it is because of the usual uncomplaining ways which practically all persons pursue in dealing with any arrangement the "doctor" makes, the great and good man in the time of need and distress. His word is law, and it is but right that it should be—in the ward and sickroom.

It is not in the province of the ventilating engineer to decide whether or not, and how far, unequal temperatures and cold drafts may be harmful to the human body, all the more to the ailing human body. From my own observations in other rooms the habit and disposition of each individual should be taken into account. Consider also that there are wards for bodily and mentally sick patients, for quiet and restless feverish patients, for patients with external and internal sicknesses, for patients that require and do not require bed treatment, for patients with contagious diseases, etc. The matter is still more complicated when we consider that there are wards with all these different kinds of patients for adults, children and babies.

As a final consideration, may it not be proper to point out that hospitals, and with them wards, are necessary on the Panama Canal as well as in Alaska? It is questionable that there is a ventilating engineer who would advocate the closing of windows in a ward in the former place, with perhaps 110 in the shade, and rely for the best air conditions on the artificial ventilation without cooling, or that there is a doctor who would maintain that it is best for securing ventilation to open windows in—50 F. and let—50 air directly enter a window instead of warming it first over steam coils. It is evident that climate conditions form an important part in deciding whether or not artificial means of supplying air in a ward are necessary and valuable.

Generally speaking, it is, of course, but right for the ventilating engineer to presume that if certain methods of ventilation in a certain climate are appreciated by healthy persons, such methods ought to be also appreciated by sick persons! Indeed, who will question the correctness of the Samaritan view that if at all possible sick persons should be still better taken care of?

If, therefore, the men in charge of the best bank, business and commercial houses, department stores, insurance offices, theaters, lecture rooms, etc., find it so often profitable to provide artificial ventilation for the same, why should it not be good for a ward? These and similar questions the designing engineer seeks in vain to answer to himself when he sees his ventilating plants in other buildings usually operating successfully, even though for obvious reasons not pleasing to every one, but finds his work in one department of the hospital lying idle for no specific or scientific reasons. If as a reason an undue high operating expense is given, or questions are dismissed with such familiar answers as "no artificial" ventilation is necessary in "our climate" for "our wards" with "their large windows," "fine exposure," "special bed arrangement," with our "carefully instructed nurses manipulating the windows and window ventilators," no particular harm is done. If, however, the non-operation is put on the score that all artificial ventilation is wrong, much harm is done to those who perforce have to be in places less fortunately located than most wards in hospitals.

That the operating expenses should present no insurmountable obstacles, the accompanying table may prove.

In looking over the schedule it will be noted that the installation expenses are considerably higher for an artificial ventilating apparatus than those of merely making provision for heating by radiators an equal amount of air entering the windows. It will increase the building expenses all the way from $12.20 to $19.80 per bed, according to the apparatus selected. While this would seem considerable, still, it cannot be called excessive when one considers that the entire cost of building construction and equipment of a hospital is frequently from $4,000 to $5,000 per bed; in other words, the building expenses are increased approximately 0.5 per cent. No allowance, however, has been made for the possible increased cost of providing the required space conditions of blowers and flues. There are cases in which the additional cost is neglible, whereas in other cases the additional cost is considerable.

AVERAGE THEORETICAL COSTS OF INSTALLING AND OPERATING WINDOW AND ARTIFICIAL VENTILATION *

| | | | |
|---|---|---|---|
| Temperature of average winter | 45° | 35° | 25° |
| Number of days on which the air supply must be heated | 150 | 180 | 210 |
| Neighborhood of assumed condition | Norfolk | Cleveland | Min'polis |
| Cost of installation per bed: | | | |
| Window ventilation with increased radiators, piping, also increase of boiler capacity | $ 9.60 | $11.70 | $14.20 |
| Artificial ventilation with tempering coil, motor, duct work, fans, and cloth filters. | 26.60 | 27.00 | 27.40 |
| Artificial ventilation with tempering coil, motor, duct work, fans, air-washers and pumps | 29.40 | 29.80 | 30.20 |
| Cost of operation per bed at 4,000 cubic feet per hour: | | | |
| Cost of steam at 35 cents per thousand pounds, which includes cost of coal and water, removal of ashes, also cost of labor, rental value of space occupied, and interest, depreciation and maintenance on cost of boiler plant. Per bed for time stated | 2.21 | 3.78 | 5.83 |
| Totals: | | | |
| Window Ventilation: | | | |
| Cost of steam | 2.21 | 3.78 | 5.83 |
| 10 per cent. interest, depreciation and maintenance of plant | .96 | 1.17 | 1.42 |
| Total per bed | $3.17 | $4.95 | $7.25 |
| Artificial ventilation (air filters only): | | | |
| Cost of steam for heating air as above. | 2.21 | 3.78 | 5.83 |
| Cost of electricity at 2 cents per kilowatt hour driving fans | 3.36 | 3.26 | 3.16 |
| 10 per cent. for interest, depreciation and maintenance on investment | 2.66 | 2.70 | 2.74 |
| Total per bed | 8.23 | 9.74 | 11.73 |
| Artificial ventilation (air washer and humidifying air): | | | |
| Cost of steam for heating air as above | 2.21 | 3.78 | 5.83 |
| Cost of steam for humidifying air (approximate) | .60 | .80 | 1.00 |
| Cost of electricity at 2 cents per kilowatt hour for driving fans and pumps | 6.28 | 6.00 | 5.80 |
| 10 per cent. for interest, depreciation and maintenance on investment | 2.94 | 2.98 | 3.02 |
| Total per bed | $12.03 | $13.56 | $15.65 |

The results are average conditions for hospitals of say 500 patients in which coal and labor is of average cost. Operating expenses will be more for hospitals not having their own power plant. No cost and operating expenses for heating of any kind are included in these figures.

* At 4,000 cubic feet per bed, per hour, under various climatic conditions; twenty-four-hour service for running blowers, exhaust fans, pumps, etc., and 365 days per year.

It should also be noted that the cost for electric current appears rather high, but the artificial ventilation has been figured to run all the time (twenty-four hours per day and 365 days per year), and air is to be supplied under pressure by a blower and exhausted by an exhauster.

Similarly the cost in operating expenses under the same climatic conditions are approximately increased from $4 to $8 per bed per year, according to the apparatus installed. Hospitals seem to expend not less than $800 per bed per year for the maintenance and operation, interest charges, etc. Consequently on this basis the operating expenses would be increased by the artificial ventilation from 0.5 to 1 per cent. If we were to reduce the operating expenses for artificial ventilation to a daily basis we would find that they would amount to the small sum of from 1 to 2 cents per day per bed over the window ventilation.

These figures are based on heating the air by a steam-heating apparatus, and the difference in expense for hot water heating will be slightly less.

In conclusion, may I be permitted to express the hope that the efforts of this symposium may at least result in obviating the oftentimes reckless criticism of all artificial ventilation by the medical profession when discussing ward ventilation? If not, the prediction would seem in order that there will be retrogression instead of progress in the ultimate solution of proper ventilation of some of our subways and tunnels, of some of our factories with poisonous dust and gases floating in the air and inhaled by the workmen, of dingy offices, of ill-smelling moving picture show places, of some of our stuffy hot engine and boiler rooms, our schools and lecture rooms, our hot kitchens and laundries, etc. Living and healthful conditions depend in thousands of these places on artificial ventilation, and if it were altogether discarded, more institutions for taking care of sick and maimed must be built in the future than ever before. On the other hand, it is also realized that it is best not to have air conditions depend solely on artificial means, and that all the so-called "air conditioning" never has to most people, if indeed to any at all, the same effect as at times an open window, which is particularly true in the warmer weather. In our city and manufacturing life, however, ideal air conditions do not now, and probably never will exist, and therefore artificial ventilation will always be called on to do its share in overcoming the shortcomings of window ventilation in many of the hundreds of different confined spaces required by our complex civilization.

# A COMPARISON OF THE HOSPITAL OF OLD WITH THE MODERN STRUCTURE *

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Unreliable history only can tell us about the hospital of long ago. We are not well informed as to how the first hospitals were built, and thus it is difficult to make a fair comparison between the old and the new. Very little data can be depended on. A few plans have come to us, which, together with some stories of perhaps the worst type of old hospitals, have given us a little light. Altogether, our information is very insufficient, very scant, and unreliable. We may consider it as certain that the church — the Christian church — is responsible for the earliest hospitals. Whatever did exist in Greece and Rome in the shape of shelters and lodging houses, which at times were also used for the care of the sick, were only the forerunners of the real hospital.

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* Read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

As far as I have been able to gather from historical descriptions, the erection of the early hospitals, which began in the first centuries of the Christian era, is credited to the charitable spirit of the times. This, to my mind, seems hardly possible. In no other direction can be observed in these early ages the least idea of charity or humanity. Life, and especially life of the poor, was considered of no value. The higher classes showed absolute indifference to the intense sufferings of the lower classes. How then could there be a question of charitable or humanitarian principles?

More probably, it seems, that the first hospitals became a social necessity. During the early centuries of Christianity, when political and religious disturbances were continuous, when the misery of the masses was of such gigantic and threatening proportions that the fortunate classes became anxious about their own health and safety, the latter began to take care of the sick poor as a protection to themselves. Not charity, but self defense, self protection and egotism originated the first hospitals. Here and there we may find an isolated example in which the original cause of the hospital construction was real charity, but these cases are very rare exceptions.

It was natural that the Church took the initiative in hospital building. The rich, the nobles, the rulers had other matters to trouble themselves with. It was in the interest of the Church to erect and manage the hospitals, to have them under their strict rules, and they were built as additions or parts of their churches, cloisters and monasteries. Only the servants of the Church had sufficient knowledge to give the sick some good treatment, and they were the only ones who could afford the time. The ordinary people had to work from early to late in order to eke out a miserable existence. They could not spare their time, nor could they give financial support to the construction. Only those who did not have to work for a living, and to whom the struggle for life was unknown, those who to a great extent were supported by the labor of the poor—those had abundance of time. They were the worldly rulers and the servants of the Church, and it was fortunate for the benefit of science and arts that this condition existed, that convents and monasteries would take care of those who wished to give their lives to deep studies and develop their artistic abilities without having to worry about their daily bread. Through their poorly paid, or unpaid labor, the very poorest, however, did contribute to the construction of the early hospital.

The very early hospitals of these times were far from being as objectionable as the later ones, and this was mainly due to their utmost simplicity and to the absence of many objectionable features which were added later. A simple large ward with windows, although very small, on two or three sides, at one end of the room an altar, and some connection to a service building formed practically the entire establishment. A combination of two wards, with an altar in the center, or three wards in T shape, four wards in cross shape, built on the same principle, and with practically no service rooms, was all, and if not overcrowded, these hospitals could not be called so very bad. The building material was practically the same as what we use now, except the interior finish. Before glass was known, the windows had to be very small to protect against the cold. Italy had hospitals in the early centuries in which marble, mosaic and tile floors were used. This was not done on account of sanitary principles, but as a protection against the unconquerable flea pest and other vermin, which was considered annoying, but not known to be dangerous or infectious.

The hospital of the early centuries underwent during the following centuries up to the beginning of the ninteenth century considerable change, but real improvements from a sanitary point of view were not made. A great many which had been built early were spoiled by additions at a later date. Overcrowding became customary. Individual beds were soon unknown, and from the beginning of the middle ages to the end of the eighteenth century the condition of the hospitals was so terrible that they were considered not better than slaughter houses. Even in the enormous hospital Hôtel Dieu, in Paris, very often 5,000 patients were taken care of, three to four hundred in a ward, four to six adults in one bed, or six to eight children in one bed. This will give an idea how far the inhuman treatment of the sick went.

Before the Middle Ages, hospitals could be considered at least as places where some people were cured, but during the latter times the number of cases cured must have been exceptionally small. Of the number of those who left the hospital, the standardized rule being that they had to leave when they were able to walk. the greatest percentage returned very soon as hopeless cases. The great epidemics of pest and leprosy may have been to blame to a great extent for this cruel and inhuman treatment of the sick. A few exceptions may be found in Germany, Italy and especially England. A great improvement, however, was made only after fire destroyed, in 1772, a part of the Hôtel Dieu, and it was then planned to build a better hospital than existed before. The Academy of Sciences nominated in 1786 a committee to investigate the mistakes made in the old Hôtel Dieu, and to prepare recommendations for the new building. The suggestions made by this committee, who made a very careful investigation of all defects of the old hospital, who went to Germany and England for new ideas, were carried out only in part. One of the principal recommendations was that every patient should have his own bed, which made an end to the former fearful condition of overcrowding. Objection was made to arched ceilings from a constructional as well as a sanitary point of view. Windows on two sides of the rooms were suggested, and the wards running from east to west exposed to the north and south. A staircase entirely open for free air circulation was also suggested.

The report had a great many good points which were entirely ignored in the reconstruction of the hospital, but the greater part of the recommendations were carried out as given in the first report of 1786, or the later report of 1788. The principles laid down by these reports brought about an enormous improvement in hospital construction. The great overcrowding of patients was forever done away with. A warning was issued against closed courts and crowding of buildings, separation and classification of patients was recommended and many other methods, which, as yet, are considered the foundation for the hygienic hospital construction. But not until 1829 did this bear fruit, and the first good results were then obtained with the erection of the first pavilion hospital in the city of Bordeaux, which soon was followed by many others.

The recommendations of the foregoing reports were carried out to practically the full extent only in the Lariboisiere Hospital, 1846 to 1854, and this institution became the model for many new hospitals throughout France and England. The English hospitals followed even more closely the original recommendations, for instance, in strictly avoiding closed courts, which were seriously neglected in the French institutions. The English hospitals, therefore, show better isolated buildings and many more proper hygienic features.

Besides several hospitals erected in France after the example of the Lariboisiere, closely following the same, one very poor imitation was built and opened in 1878, namely, the new Hôtel Dieu in Paris. During the process of building, this hospital was criticized in such strong terms that numerous changes were made during its construction. The final result, however, was full of flagrant mistakes against the main hygienic principles then recognized.

Only thirty-six years have passed since then, and during those few years the progress in different directions has been enormous.

It took practically fifteen hundred years before it was generally considered as necessary to build hospitals according to certain hygienic principles. It took about fifty years more properly to digest these newly discovered laws of sanitary building and to prepare for the execution of these laws in part, but it took only thirty years after that to carry these principles into every part of hospital construction and management.

In all factors contributing to the care of the sick, the greatest progress has been made between the last half of the nineteenth century and to-day — sanitary building, medical and surgical science, hospital administration, lighting, heating and ventilating, sanitary plumbing and last, but not least, proper nursing.

This brings us up to the present day, after what may seem to you the most superficial review of hospital history. It was not my intention to give you any hospital history. Members of this assembly know more about it than I ever will know and can give me more details and more principles than I can give them; but my few references to hospital history will point out just what I wish to call to your attention in comparing the old and new hospitals. We may feel satisfied to-day and praise our present age of discoveries and look down on the construction, or attempts at construction, of former times, and only admire the work of to-day.

It is certainly true that a great many hospitals have been built during the last decade, each following as closely as possible the main teachings of the present-day medical science and hygiene. There is a limit to everything, and the absolute carrying through of all these details and principles is, as yet, not possible. Financial restrictions or difference in local conditions will prevent this.

However, I would like to ask any member of your association here present to name offhand half a dozen of the new hospitals which do not come in for a great amount of criticism and where a great number of hygienic principles — let me call them hospital building rules — have not been neglected.

From 1788 to 1878 the medical world possessed a most magnificent set of rules compiled by a committee of eminent, wise and careful men after a thorough investigation. Not one out of every ten hospitals built during that century followed or carried out the majority of these recommendations. Not a single one carried them out to the letter. In this connection we must not forget that the architects in those days had very little to say. It is a well-established fact that then the architects carried out orders, and that their words, their opinions or their recommendations were entirely ignored — never received any consideration.

What, then, is the reason that the established principles were ignored in hospital building during that century?

The answer we may give as soon as we know the answer to another question. Why do we find in the great majority of the present-day hospitals numerous flagrant violations of the same early sanitary principles and of the many new teachings brought about by the scientific progress of the last fifty years?

1. The use of absorbent building material in the interior of hospitals is unsanitary.

Notwithstanding this, wood floors are used in many hospitals of to-day, and by preference, even by many who know the objections to them.

2. Cracks in floors are insanitary.

They fill in with dirt — the dirt consisting often of dangerous material which cannot be removed.

Why, then, do so many new hospitals use wood floors which have the greatest number of joints — eventually cracks?

There are in existence numerous other materials which may have some objectionable features in other directions, but not from the hygienic point of view. Still, wood floors are used and not for reasons of economy.

Where is our great progress?

Wood floors were used in hospitals more than one thousand years ago. The report on floors of the Virchow Hospital in Berlin condemned the floors which were already installed and they were subsequently removed. This report should be sufficient to any one and finally settle the question as to the objectionable quality of wood floors. But I can safely say that unless something is done by some organization or association of men of influence in the medical profession, wood floors will continue to be used in many more hospitals yet to be built until the misuse or the abuse of our forests makes wood prohibited through high cost.

A third example:

3. Closed courts and crowded hospital buildings were condemned in the report of 1788.

Why then do we see the greatest overcrowding of buildings on small city blocks in so many of the new German hospitals, and also in some in the United States?

4. Cross-ventilation of wards is considered essential.

How then can we excuse hospital wards with windows on one side only? How can we allow hospitals to exist where wards have no windows, but only secondary, or let us call it second-hand exposure? I have visited hospitals in the great cities of the United States in which several patients occupied rooms which received light and air through one or more rooms in front of them, and in those hospitals not even forced ventilation was used. It may be that such extremes are rare cases, but still they exist, and in my opinion such conditions are as fatal as the plural occupancy of beds in the old Hôtel Dieu.

These few examples are enough. They are only of those principles which we know. How many mistakes are made against sanitary principles in such cases where we do not, as yet, know?

Is it not time that some attempts were made to prevent these mistakes which have been recognized as such, and also is it not time for investigations to be made, in order to answer numerous questions relating to hospital construction?

This paper was not prepared to obtain a lengthy discussion. A subject of this magnitude cannot be scientifically covered in a paper to be read in fifteen minutes. I have only stated a few facts, pointed out a few mistakes and shortcomings of the hospitals of to-day, while there are hundreds and more to be considered. It is of no benefit to our hospitals if we indulge here in long arguments and discussions about where to lay the blame for the existing conditions.

I am of the sincere opinion that your Association has it within its power to do an everlasting good work of direct benefit and immediate influence on the present hospital construction.

The committee of 1786 of the Paris Academy of Sciences laid down the first laws for hospital construction and by its reports did such splendid work that it is still of the greatest influence to-day. Is it not possible to continue this good work and bring it up to date?

Could not a committee be nominated by your Association, consisting of prominent and able men who would carefully prepare a program, a complete set of rules for good hospital construction?

This program should be as liberal as possible in its limits and its scope, in order to avoid conflicts with either shortness of funds or difficulties of location. Good hospital construction could be, to a great extent, standardized.

A list of the absolute requirements and a list of positively forbidden methods could be given as a nucleus. This list could eventually, through your combined efforts, be enacted into law in every state, thus forever banishing most flagrant violations of hygienic principles. This committee could go further still. A great many points in hospital planning and construction need investigation and study, in order to state positively what is to be forbidden or what is to be recommended.

Your committee could, therefore, in its report point the way how to obtain the proper solution and how to decide the unanswered, unsolved problems. The limitation and scope of mechanical ventilation is only one question out of many, although a very important one.

There are, however, many others, for instance, limitation of hospital equipment; the extent and limitation of ward service rooms; the standards for sanitary floor and wall construction; a list of the most desirable materials and of such materials which under certain circumstances may be allowed, although not desirable, etc.

In each of these problems cost is the main factor. Structural or mechanical difficulties play the next important part. The entire world would be benefited by the work of such a committee, and if this Association were willing to take up this work, praise and credit would be given to it in later history.

With an open mind as to the importance of the hospital of to-day, every one of you will have a clear understanding of the importance of the hospital of the future. In order to combat disease successfully, the importance and influence of the hospital will increase from year to year, not on account of charitable principles, but from the point of view of self-defense and self-protection, which, as I have stated before, in my opinion have been the true origin of the first hospital.

## ABSTRACT OF DISCUSSION OF SYMPOSIUM ON AIR PROBLEMS IN HOSPITALS

ON PAPERS OF BASS, WINSLOW, MILLER, LEE, OHMES AND VAN DER BENT

Mr. Edward F. Stevens, Boston: I have given a great deal of thought to the subjects of heating and ventilation, although I also found no absolute and definite solution of the problem. When planning for my hospitals I try to bear in mind what my old professor once told me, that the ideal temperature—he being a New Englander—is that of a pine forest in some of our New England towns on a beautiful June day. If we can gain some such temperature for our hospital wards we are, perhaps, approaching a solution. The ideal June day would not have an exact temperature of 68 or 70, but it would be fluctuating, with occasional movements of air. Is it not reasonable to suppose that if our patients in the wards should have the condition which nature has given us on ideal days in June we should be getting somewhere near the ideal condition? Of course, as has been brought out, the different sections of the country demand entirely different treatment as to the conditions of the air. I have not found it necessary in New England and the middle South, for instance, to use forced air. I have been able to accomplish good results by taking the air in at either the windows or doors, but always by exhausting the air from the room. The most important thing is to get the foul air out, for if we give the outside air a good chance it will come in. If we have a forced ventilation we should also have a duplicate natural ventilation. I have been in many hospitals where the air did not seem to be good. The superintendent would say that the fan did not seem to be working. The engineer apparently had not provided any natural ventilation. It is most important to get the air out of the toilets, utility rooms, sink rooms and everything of that sort, making the fans for that sufficient in volume, or perhaps putting the rooms on separate fans so as to be sure that the foul air is taken care of without being forced into any other part of the building. I believe the operating suite should have a separate system from the other part of the hospital. Mr. Van der Bent's history of hospitals suggests a standard which might be met. He speaks of the use of wooden floors and such things as many years ago were condemned. Why should not the hospital people be guided by a specialist just as we go to a specialist in the medical profession? He diagnoses the case and gives us a prescription. If we do not follow it, it is our fault if we do not get relief. Shouldn't we insist on advising our clients what we consider are the best materials and leave it to them? If they do not care to follow our advice the results may not be so satisfactory as they might otherwise.

Mr. C. E. A. Winslow, New York: The work of the New York State Commission on Ventilation is largely devoted to general and fundamental mechanical and physiologic problems. Such a committee as was just suggested on the special practical problems of hospital ventilation would be of great value. Such a committee and the New York State Commission might cooperate to great advantage. Possibly the conclusion might be drawn that Professor Lee and I were in disagreement as to two points in which we are really in complete accord. Professor Lee spoke of the fact that carbon dioxid does not indicate poison in the air, which is of course quite true. I use the carbon dioxid test merely to see how much air change there has been. It is a valuable test for this purpose to show how far the air in the room has been changed. The other point is with regard to the question of a constant as opposed to a variable temperature. I spoke of it as an achievement to maintain the temperature of a school between 69 and 70. This is desirable in order to prevent overheating, but a change to a lower temperature can at any time be obtained by throwing open the windows. It is perfectly simple to get these variations, which I think are very desirable. I hope those concerned with hospital management will give thorough consideration to the question of cooling. So far as we know the heat of summer is far more harmful than the cold of winter. We have much more evidence of the pathologic effects of heat than of cold. It is as practicable to be cool in summer as to be warm in winter, although somewhat more expensive. Mount Sinai Hospital has taken the lead in providing a cool room for the children in summer. I think that ought to be developed. I hope we shall ultimately have central points in the great cities where cool-day nurseries will be located.

Mr. Arthur K. Ohmes, New York: My experience in various buildings would show that there is no "constant temperature" and that the most suitable temperature depends to a certain extent on the outside temperature. The best inside temperature in the winter months is from about 68 to 70 degrees, but the best inside temperatures in the summer months are considerably above this temperature, as has been given for the New York Stock Exchange and which inside temperatures are best liked by most of the members. We have had cases in factories when with 65 degrees inside temperature and 85 degrees outside temperature the workingmen spoke of going on strike because it was too cold. They considered that their health was being impaired. We have also seen cases in which people have fainted away in working-rooms maintained at 60 degrees when 90 degrees prevailed outside. In my opinion there is no such thing as a "constant inside temperature," and when a man may be perfectly healthy and happy in 65 or 60 degrees temperature in the winter months he may be most unhappy in the same temperature when it is 90 degrees outside. There are physical reasons for this which physicians should know.

Mr. T. J. Van der Bent, New York: Several years ago I visited the Belfast Fever Hospital, where the wards practically have no windows, only small windows and a door opening on a balcony at the rear end of the ward. No side windows existed. This hospital has existed for ten or more years. The patients get only forced ventilation, air being supplied by mechanical means. Is there on record any information about that place? Does that hospital stand out as an unsatisfactory or bad hospital? In the doctors' and nurses' section the windows can be opened; in the patients' rooms windows cannot be opened.

Dr. Byam Hollings, Boston: From time to time the question comes up with us as to how to overcome the foul air. One solution has been to open the windows. Whether the fans and the ducts were the cause of our foul air I cannot say, neither can I say whether the engineer was backward in his care of these things. These papers have brought these matters to a focus so that those of us who are not thoroughly skilled in the mechanical side of ventilation may be guided to meet the trouble.

Dr. Charles H. Cook, Natick, Mass.: I am not an expert but I know how many times excellent reports and papers are simply embalmed in the secretary's records. An excellent idea would be to appoint a committee to embody these ideas, to standardize them, to get legislation, or attempt to do something. I do not expect to live to see this movement materialize in anything very definite, but I would like to see it begin. I would like to see these papers and the discussion serve as the foundation of a movement that would be far-reaching. I would not favor the appointment of a committee from the floor. A report might be made at some future meeting as to the line of work. I know it takes time, but only in that way can results be obtained.

Dr. H. M. Bracken, Minneapolis, Minn.: I happened to speak to Dr. Hornsby just now on a matter that has a bearing on this last suggestion, namely, a committee. There is no reason why a committee should die. If good work is to be done a permanent committee is needed. This can be appointed by the Council on Health and Public Instruction. There is a commission with which Mr. Winslow is quite familiar working along this line. This commission is quite liberally supplied with money, I believe. I would suggest that the Council on Health and Public Instruction be requested to take up this hospital question. It could appoint a committee that would give the subject special attention.

Dr. T. A. Shallon, Philadelphia: With reference to the natural method of ventilating, especially for certain cases, we, in the Jefferson Hospital, tried the experiment of a glass solarium. This has been an absolute failure. We had it constructed in three divisions, so that the glass could be partially or totally removed. We found on hot days, even though the sun was not shining the glass would absorb a certain amount of heat, making it practically unbearable for the children. For that reason we have had to construct stands for ice in the center of the room and to cause the air to circulate around the ice to make it habitable for the children.

Dr. John A. Hornsby, Chicago: Sears, Roebuck and Company, in Chicago, employ a good many thousand clerks, and the working-room windows cannot be opened. They have mechanical ventilation. The Swift and Company packing plant depends wholly on mechanical ventilation. They are really putting into practice Professor Winslow's suggestion as to keeping cool. Under the rules of the Association the scientific sections exist solely for the the purpose of discussing scientific matters. So, when I took up the question of the study of air problems with the secretary of the Association and the secretary of the Council on Public Health it was agreed that we should make some sort of recommendation to the Council at this meeting. Dr. Baldwin unwittingly violated the fundamental rules of this Association. He appointed a committee composed of Messrs. Van der Bent, Winslow, Lee, Bass, Ohmes and Miller. The appointment meant simply the creation of some sort of nucleus, and it grew into this symposium, the intention being to ask the Council for the appointment of a mixed permanent commission to study not only the air problems in hospitals, but also air problems of a nature similar to those operating in hospitals. It was not to interfere with Mr. Winslow's commission working in New York, and not to duplicate any of the work being satisfactorily done in Chicago by the commission on ventilation. I would like to have this commission that Dr. Baldwin appointed maintained. I think the gentlemen who are members of that committee should add to their number such men as Ransdell of the Navy, who has done that brilliant piece of work on air problems in battleships, and Kerr of the public health service, and then that these men should go to the Council on Health and Public Instruction and ask for recognition or appointment at the hands of the Council with a view to giving weight to its proceedings so far as the medical profession of the country is concerned. Added to that list should be such men as Hoover of Cleveland, Joseph L. Miller, Chicago, Dr. Bracken, in public health work up in his country, and George B. Young, health commissioner of Chicago. There are phenomena that we realize and that we cannot explain at all, and, as a sort of side line to the other men's studies in this problem, if such men as Miller, Hoover and Goldwalter could coordinate their observations it would be helpful to such men as Professors Lee, Bass and the others.

Mr. C. E. A. Winslow: I did not understand that there was any committee as yet. We were simply asked to take part in a symposium. I should not feel that this group would have the right to ask the Council to appoint them. I think the matter had better be taken up freshly, without reference to the contributors to this symposium.

Dr. Hornsby: Dr. Baldwin's conspiracy included the members of the symposium. The work would have a little better standing, coming from the American Medical Association than if it were an independent body. I think the thing to do is to make representations to the Council. Perhaps it would be better for the officers of the section to ask for a continuation of this commission.

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**The Prerequisites for the Study of Medicine.**—He who purposes to study medicine should have in high degree three gifts, not one of which is common among mankind, yet all of which he must have: the power of reliable observation, intellectual endurance; loyalty.—Minot.

# CHRONIC FOCAL INFECTION OF THE NOSE, THROAT, MOUTH AND EAR *

JOSEPH C. BECK, M.D.
CHICAGO

Chronic focal infection may be located anywhere in the body, but there are certain anatomic structures which are most frequently affected. These are the structures which possess recessions or pockets and which communicate with the external world. There are, however, some that do not have these characteristics and still may be the seat of focal infection with the whole train of symptoms of chronic toxemia and changes in consequence thereof. The most frequent sites of chronic focal infection may be divided into groups as follows:

1. Recessions or Terminal Pockets: meibomian glands; lacrimal glands; nasal accessory sinuses and mastoid cells; tonsils and adenoids; salivary glands and ducts; pulmonary alveoli and bronchi; gall-bladder and ducts; pancreas and ducts; appendix; uterus and fallopian tubes; prostate and seminal vesicles; pelvis of kidney, ureter, bladder and urethra; skin-glands, as sweat and sebaceous; mucous glands.
2. Tubular Structures or Ducts: gastro-intestinal tract; tear-duct.
3. Glandular or Parenchymal Tissue: lymphatic glands; compound lymph-glands, as Peyer's patches, lingual tonsil; liver, pancreas, spleen, muscles; ductless glands, as thyroid, adrenals, thymus and hypophysis.
4. Endovascular Tissue: endocardium and intimas of arteries and veins; lymph-vessels and lymph-spaces.
5. Serous Membranes: peritoneum; pleura; pericardium; synovia; perineurium; dura.
6. Pathologic Tissue: cavities in teeth; alveolar or apical necroses, and death of pulp, with or without alveolar fistulas; recession of gums, as pyorrhea; abscess or necrosis elsewhere in the body; infection about nails, and hair follicles.

While the subject can not be considered complete and comprehensive without considering all the groups, as mentioned above, it shall be my aim to devote myself to the chronic focal infections of the mouth, nose, throat and ear only, first, in so far as they may influence the other focal points of infection, secondly, the secondary toxemia and changes in the tissues and fluids of the body.

Before taking up the subject of infection one should study the question of body resistance and immunity, in other words the normal condition.

## RESISTANCE

When is one in perfect health, and how may this condition be recognized?

In my opinion, perfect health is that state of the organism in which all the functions of the body are carried on without hindrance, and the body-weight is normal and remains so. Exposure to infection and other forms of disease (barring accident and senility) do not readily develop in such individuals. Health is further characterized by a normal mental state, there being no anger or worry manifested. With these qualifications one has the proper energy to work, in other words, the individual enjoys life. Besides this, the normal standards of anatomy and physiology will be of value in determining any deviation from the normal, and a thorough blood and physical examination will show the resistance of the body to disease.

The commonest factors in undermining the health are chronic diseases and chronic focal infection, particularly infection with pyogenic organisms. These reduce the vitality and resistance to acute or intercurrent diseases. Of course it is recognized that immoderate or excessive use of stimulants, such as alcohol, and overeating and overwork contribute a great deal in lowering the vitality and resistance of the body.

Body resistance may be measured amperically by the standard of 100. Focal infection may also be amperically measured as to its ability to reduce body resistance. There is perhaps no one who may boast of a condition of body resistance of 100, and indeed this may not be necessary in order to possess perfect health. If, however, the resistance goes below, say, one-half, there will undoubtedly be manifested symptoms of disease.

## IMMUNITY

According to Vaughan, immunity to any infection is due to the inability of the infecting agent to grow in the animal body. Immunity may be normal or acquired.

This immunity is not common, in fact it is absent, in the cases of most chronic focal infection, and only the best of attention to all the functions of the body, the use of bacterins or vaccines and other dietetic medical and hygienic measures may prevent acute outbreaks. It is plain, therefore, that chronic focal infections must be completely eradicated in order to obtain a cure, or to prevent the occurrence of acute or intercurrent disease. Some focal points of infection are spoken of by Billings as embolic and these, he says, cannot be reached very well by vaccines. In some locations where these embolic processes are located I believe that in addition to vaccines one may employ Bier's hyperemia; this would have a tendency to bring more blood to the parts, such blood being loaded with the introduced vaccines.

## ORGANISMS

The various organisms that are most frequently concerned in the causation of chronic focal infection are mixtures of the following: The staphylococci and streptococci of various forms, pneumococcus, *Bacillus coli communis* and *B. tuberculosis.*

Syphilis, sarcoma, carcinoma and other diseases manifest at times symptoms of chronic focal infection; in such case, secondary infections of bacterial type are present.

These organisms may with a few exceptions be located in any one of the above-mentioned locations and in several at the same time. There may be a variety of organisms in the different locations and a mixture in any one of them; for example, there may be a chronic focal infection of staphylococcus and streptococcus in the tonsils, a pneumococcus infection in the gall-bladder and a *B. coli* infection in the appendix.

The toxins, however, as was shown by Vaughan, are of the same deleterious action, no matter from what organism they emanate; he calls them the protein poisons. The study of the protein poisons, toxins and anaphylatoxin are essential in the management of chronic focal infection but can not be discussed in this paper. The recent experiments by Dick and Burmeister on the injection of triturated tonsillar tissue into animals are very interesting and may prove of marked practical value.

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

### GENERAL DIAGNOSIS

As mentioned before, a patient with a chronic focal infection may manifest no other symptoms than a general inability to do good work, expressed as "not feeling well;" such an individual is subject to frequent acute attacks of rhinitis, pharyngitis, laryngitis, tracheitis, bronchitis, and tonsillitis with all the possible local as well as general complications. The accessory sinuses, middle ear and mastoid, the lungs, gastro-intestinal tract, lymph-glands and blood with the typical rheumatic affections are some of the commoner sequels well known to every one.

### LOCAL DIAGNOSIS

The finding of the focal point by the presence of the pus, be it ever so minute in amount, is most important.

*The Mouth.*—The teeth should be examined by a competent dentist and death of the pulp, apical infections, carious cavities of teeth with alveolar-necrosis and fistulas are among the commonest forms of disease, and pyorrhea alveolaris is looked on as a specific cause of focal infection. It is imperative to employ the Roentgen ray in diagnosis of some of the hidden conditions of the alveolar process. A markedly coated tongue and a diffused chronic stomatitis are not infrequently found with markedly diseased teeth in persons with no knowledge of oral hygiene. In these cases, one will frequently find a chronic infection of the salivary glands with markedly altered salivary secretion. Forcing some saliva out of Steno's duct will demonstrate many pus microbes.

*The Nose.*—Every one is familiar with the method of detection of pus from the sinuses by nasal examination, and suction, and roentgenograms are important additional diagnostic measures.

*The Throat.*—The nasopharynx in which the adenoids are located and which are subject to retentions of purulent secretions within their folds and pockets can be examined by the Hayes pharyngoscope, Gargai's direct method by the Brunnunges handle and spatula, Holmes' nasopharyngoscope, and postnasal mirrors, but I have been employing a direct method of exposing the postnasal space by means of a rubber catheter. Focal infections in the tonsils can very easily be diagnosed by pressure against the anterior pillar of the fauces, when either liquid pus or caseous masses will be expressed. Tenderness and redness are additional factors. The size of the tonsil has nothing particularly to do with the amount of infection that may be within it, and a small tonsil may be more injurious to the individual than a large one.

Of chronic focal infection of the larynx tuberculosis, secondary manifestations of syphilis and malignant growths may be mentioned, but these are not very *a propos* to the subject. There is, however, a form of chronic focal infection of the larynx, trachea and bronchi known as the chronic purulent tracheobronchitis of the aged, which produces a condition of chronic focal infection. Often such conditions of the larynx, trachea and bronchi are secondary to sinus infection, or foreign bodies of the bronchi.

*The Ear.*—There may be so little evidence of pus in a chronic suppuration of the ear as to be barely demonstrable, and yet the entire mastoid may be infected, causing chronic intoxication. The roentgenogram and suction will aid in the diagnosis.

The general physical examination with the aid of all the possible laboratory findings will conclude the diagnosis. One particular diagnostic feature I would like to mention is the opsonic index according to Wright; this has been very much neglected in the management of these conditions. Yet if one wishes to know the absolute resistance of the patient to a particular micro-organism that has been isolated from one of the focal points of infection, it will be found indispensable.

### TREATMENT

Aside from the eradication of the focal point of infection one should employ aids that will increase body resistance.

Formula as to the degree of chronic focal infection:

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|---|---|
| From tonsils | 20 per cent. |
| From gastro-intestinal tract | 10 per cent. |
| From appendix | 10 per cent. |
| From gall-bladder and several other recesses | 10 per cent. |
| Total degree of infection | 50 per cent. |
| Resistance | 50 per cent. |

Removal of the chronic tonsillar infection by complete tonsillectomy will leave only about 30 per cent. of chronic focal infection which, with the addition of autogenous vaccination and other medicinal hygienic and dietetic measures, will be rapidly eliminated by the increase of antibodies, and so establish nearly normal health and resistance.

I now come to the question: Why are the tonsils and adenoids most frequently mentioned as the source of chronic focal infection and why should they in preference to any other chronic focal infected point be attacked, unless that other focal point is more manifestly possible the cause of the general condition? It has been definitely proved by Weichselbaum, Groeber, Wood and many others that the tonsils and adenoid tissue in the Waldeyer ring has the greatest power of retaining infectious material and that the lymphatic distribution to and from these structures is very great. It has been further noted by every laryngologist, as well as by many general practitioners who have had considerable experience with removal of tonsils and adenoids, that marked gain in weight and general well-being, with disappearance of the local as well as the general condition in the majority of instances, follows such a procedure. In many instances of focal infections other than the tonsils and adenoids, as for example, chronic suppurative otitis media or chronic purulent sinusitis, the latter condition cleared up or markedly improved following removal of the tonsils and adenoids. Of course it must be borne in mind that if such pathologic conditions as necrosis of the bones and cholesteatoma are present that the removal of tonsils and adenoids will not effect a cure.

Not alone will a suppurative ear or nose condition often be cured by the removal of tonsils and adenoids, because that may be due to the removal of pathologic structures which would have extended by continuity, but a suppuration quite distant from the tonsils as, for instance in the bladder or uterus, will be markedly improved or cured. The essential point I wish to make in this paper is that by removing a definite focal point of chronic infection (tonsils) the resistance and healing power of the patient is given opportunity to recuperate, and the individual thus is enabled to destroy other focal points of chronic infection, and put the system in a condition to ward off acute attacks. I called attention to this fact before this Section four years ago[1] in the following words:

> I should like to present a theory as to the raising of the opsonic index of the blood to all infections when the tonsils are enucleated. If, for instance, there exists some pathologic condition of the body, near to or distant from the tonsils, which refuses to yield to the treatment applied to the said condition, if there exists merely a lack of healing power, due, most probably, to the constant absorption of toxic matter from the diseased tonsils, and if this toxic absorption is done away with by the complete enucleation of the tonsils and the pathologic condition heals, is it not reasonable to assume that the drain on the system has thus been stopped and the blood given a chance to become powerful enough to cure the disease in question because of the enucleation of the tonsil? For example, operation is performed several times for osteoperiostitis of the zygoma, but the tissues refuse to heal in spite of all treatment, medical as well as surgical. The tonsils, which are diseased, are enucleated and the disease of the zygoma promptly heals, while every other evidence of marked improvement in the general health is presented. We all recognize the increase in weight and improvement in general health, especially in children, after removal of the tonsils and adenoids.
>
> This theory, moreover, applies not only to the tonsil but to other structures as well; for instance, a man has tuberculosis of the kidney, with an external fistula and a hip-joint tuberculosis; if the latter is arrested the patient gains in weight and strength and the fistula and tuberculous kidney promptly heal.
>
> Such results as these are more than mere coincidences and, to my mind, can best be explained by this theory.

That is one reason why the chronic infected tonsils and adenoids should be removed. The second reason why they should be removed in preference to any other structure is because with properly carried out technic there is less danger and inconvenience to the patient, without losing or interfering with some functioning structure. In addition to removing the structures containing the focal point of infection, or evacuating the infected material, we also obtain the predominating organism or organisms in culture and make therefrom an autogenous vaccine or bacterin. Just as soon as the patient has completely recovered from the operation we employ this vaccine in the full dose and continue to do so for an indefinite but prolonged period. This is done to insure complete neutralization of the toxins or elimination of all the trouble.

### CONCLUSION

In conclusion I wish to say that all those who believe that chronic focal infection is a hobby would do well to adopt it, rather than remain on the outside making unjust and severe criticism without really giving the subject a fair trial. I well remember a discussion at the Chicago session, in which I strongly advocated the complete enucleation of the tonsil on account of the possible cardiac complication from rheumatism, and one of the speakers stated that he saw no reason why all the tonsil must be removed because, as he put it, it was not cancerous. This same member is now one of the warmest advocates of the complete removal of the tonsil, and an enthusiast on the subject of chronic focal infection.

From my experience I am sure that I have done very little if any harm by the removal of tonsils and adenoids for this purpose and I am sure that I have done considerable good.

108 North State Street.

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1. Beck, Joseph C.: Conditions Demanding Enucleation of the Faucial Tonsils, The Journal A. M. A., Oct. 29, 1910, p. 1523.

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# THE FAUCIAL TONSILS AS A GATEWAY TO GENERAL INFECTIONS *

NORTON L. WILSON, M.D.
ELIZABETH, N. J.

Attention is directed to this important subject, not because physicians are not familiar with it, but because they do not emphasize sufficiently the seriousness of tonsillar infections. It may seem like presumption on my part to present to this Section a paper on this subject on which so much has been written. If, however, we can prevent some child from going through a short life with a damaged heart or kidney or can curtail the many swollen joints and the intense pain which accompanies them, we have in a measure fulfilled our mission on earth.

There are many good general practitioners and, I may add, a few laryngologists, who have not yet realized that cases of so-called acute articular rheumatism, acute nephritis, acute endocarditis, pneumonia, appendicitis, orchitis and many other acute infections may be the result of acute cryptogenic infection of the tonsils. I do not wish, however, to convey the idea that the tonsils are the only source of infections. I have seen acute articular rheumatism and acute nephritis follow acute otitis media, and it is an established fact that typhoid fever enters through the lymphatics of the intestines, and severe toxemia may follow acute inflammation of the lymphatics of the pharynx and epipharynx.

In my opinion, however, the faucial tonsils are the most frequent sources of infection. There is abundant evidence in the literature to show that many general infections take place through the tonsils, pharynx and nasopharynx with its adenoid tissue, the peritonsillar tissue, the lymph-nodes and lymphatic tissue of the retropharynx, the lingual tonsils, the middle ear, the teeth, gums and urethra. The ring of Waldeyer is the most vulnerable part of the body and the faucial tonsils the most frequent seat of inflammatory attacks. In 1885 I read a paper before our county medical society calling attention to the close relationship between tonsillitis and rheumatism, but just what that relationship was was not definitely established at that time. It is now known that the streptococcus or other germs can enter the blood through the medium of the tonsils and attack the joints or heart or kidneys. The specialist is not active enough in spreading this belief, and when I say specialist I include the pediatrist, because he probably sees more of these cases than the laryngologist.

In 1910 Loeb[1] cited four cases, and said: "Acute nephritis results from acute tonsillitis far oftener than is generally believed."

In 1912 our former chairman, Dr. George E. Shambaugh,[2] said: "As regards the appearance of the faucial tonsil which is a focus for systemic infection, it is quite clear that the size of the tonsil is no index of the menace this structure may be to the individual."

With this statement I think we are all in accord.

In 1907, Dr. Philip K. Brown[3] gave a very wide range of diseases which may gain entrance into the

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Loeb, W. H.: Acute Nephritis Following Acute Tonsillitis, read before the American Laryngological, Rhinological and Otological Society, 1910.

2. Shambaugh, G. E.: Paper read before the American Laryngological Association, 1912.

3. Brown, P. K.: Remote Effects of Tonsillar Infection, The Journal A. M. A., June 15, 1907, p. 2024.

body through the tonsils; he mentioned pericarditis, myocarditis, endocarditis, arthritis, chorea, neuritis, pleurisy, tuberculosis, iritis, phlebitis, osteomyelitis, Hodgkin's disease and possibly certain forms of leukemia.

Dick and Burmeister,[4] speak of the toxicity of the human tonsils. They are of the opinion that such conditions as asthma, convulsions and even true epilepsy may be produced through the agency of the tonsils.

W. P. S. Branson,[5] gives us the result of an examination of a patient with Sydenham's chorea. His belief is that Sydenham's chorea and rheumatic fever are due to one and the same infecting agent, and he has shown that the commonest avenue of rheumatic infection is the tonsil and next to it the nose.

D. J. Davis,[6] reported the result of his observations of forty-two cases of chronic streptococcus arthritis; in all of these cases the source of infection was in diseased tonsils.

F. Theisen,[7] reports six cases of acute thyroiditis following tonsillitis.

Dr. Ben Witt Key,[8] speaks of absorption from tonsillar infection as a causative agent in phlyctenular conjunctivitis.

There have come under my care eight cases of infection which in my opinion had their origin in the tonsils.

Case 1.—Nephritis. A young man, aged 18, had acute lacunar tonsillitis, ten years ago. Urine was normal. Three weeks after I first saw him it was noticed that his face and hands were edematous. Examination of the urine showed he had acute nephritis. The nephritis followed so closely on the tonsillitis it made me wonder if I had not been mistaken about the tonsillitis and had really had scarlet fever to deal with. There was no desquamation and no other cases of scarlatina in the house and I was forced to conclude that the nephritis was due to tonsillitis. He made a good recovery in five weeks.

Case 2.—Rheumatism. A woman, aged about 30, consulted me for a sore throat. The follicles of the pharynx were found to be enlarged and red with the crypts of a moderate sized tonsil inflamed and filled with cheesy débris. She complained not only of sore throat, but of pains in the chest. A careful examination by most competent physicians showed the chest pains to be muscular. They were in my opinion due to infection from the tonsils. The removal of the tonsils was advised but the patient would not consent to operation. The crypts were cleaned out and painted. She consulted me several times each year for the same trouble. The method adopted gave her temporary relief as did sodium salicylate or aspirin. In 1908 she submitted to enucleation of the tonsils. From that time until the present she has not suffered from sore throat nor have her chest pains returned.

Case 3.—Nephritis. In June, 1910, I was called by Dr. Grier to see a case of quinsy in a young man aged 22. The abscess was opened. The urine was examined and found to be normal. One week following, his eyelids were puffy and examination of the urine showed acute nephritis with albumin, casts and blood-cells. He made a good recovery in a month.

Case 4.—Nephritis. In 1912 a young woman of 18 was treated by her family physician for acute tonsillitis. She had had several attacks of tonsillitis and wanted the tonsils removed. About ten days after the attack of tonsillitis, I arranged to remove the tonsils. When I arrived at the hospital I was told the urine was normal. She was etherized and one tonsil enucleated, when the house physician rushed into the operating-room and informed me there had been a mistake, the urine from this patient showed considerable albumin, casts and some blood-cells. The other tonsil was removed, she was put to bed in the hospital and kept on milk diet for two weeks; in five weeks all evidence of nephritis had disappeared, notwithstanding the fact that she had been thoroughly etherized.

Case 5.—Rheumatism. A physician, aged 51, was attacked with a lacunar tonsillitis. Temperature did not go beyond 101; in fact, he kept about the office much of the time. In five days his right big toe-joint became red, swollen and painful and two physicians who saw him pronounced it gout. The urine was negative throughout the entire attack. After a week the toe-joint became normal. Three days after the joint became well, the left ankle became swollen, red and painful. The throat remained somewhat sore throughout the attack. The joint affection was then diagnosed by four physicians as a streptococcus infection from the tonsils. The tonsillar crypts were curetted and painted with a solution of iodin and phenol (carbolic acid). The ankle-joint became normal in a week's time. One week later the tonsils were enucleated, and a long chain streptococcus recovered from the crypts of the tonsils, notwithstanding the curetting and painting with iodin and phenol solution. In order to control hemorrhage he was given 40 grains of calcium lactate on Wednesday, 45 grains on Thursday and 20 grains on Friday morning, making a total of 105 grains. The tonsils were enucleated under local anesthesia Friday afternoon, and there was very little hemorrhage. His blood-clotting time before taking the calcium was seven minutes; Friday morning after he had taken 105 grains it was two minutes.

Just a word regarding the administration of calcium salts. We have proved conclusively by the aid of the Biffi-Brooks coagulometer that the normal blood-clotting time with this instrument is seven minutes in the adult. We have reduced the blood-clotting time to one minute after the administration of 120 grains of calcium lactate. It must be given in from 10 to 15-grain doses three times a day for three days before operation to decrease the blood-clotting time.

If a general anesthetic is given there may be just as much bleeding at the time of the operation as there would be without administration of the calcium, but the bleeding is much easier to control, and once controlled is not apt to recur. Slight pressure will plug up the end of the vessel and in this way the hemorrhage may be controlled.

Case 5 has almost its counterpart in that of another physician, but he still has his tonsils and it will be interesting to see which of the two doctors will enjoy the better health.

Case 6.—Keratitis. Mr. B., student, Jan. 23, 1914, had a sharp attack of tonsillitis. The crypts contained the usual inflammatory exudate, but unfortunately no bacteriologic examination was made. One week later his right eye became sore and it was found he had a severe attack of central interstitial keratitis. He denied lues and a Wassermann examination was negative. I desire to call attention to this case as I have seen no similar report.

Case 7.—Rheumatism. K. M., aged 18. Twelve years ago I removed this patient's tonsils after the manner of the operation at that time, which was not enucleation. He never had another attack of tonsillitis until this winter, when he had a severe one, which was soon followed by an affection in his right knee and right thumb. He never had rheumatism before. I enucleated the tonsillar stumps last April.

Case 8.—Rheumatism. H. C. C., male, aged 18, has had several attacks of tonsillitis but never had rheumatism until last August, when one week after an attack of tonsillitis his ankle-joints became swollen and painful. He was taken to Mount Clemens for treatment. Last October a pair of buried tonsils were enucleated, since which time he has had neither tonsillitis nor rheumatism.

My associate, Dr. Keefe, reports to me four interesting cases of a similar nature, one of which was in a child 6 years old, who had double mastoiditis and pleurisy following an attack of tonsillitis.

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[4] Dick and Burmeister: Jour. Inf. Dis., September, 1913.

[5] Branson, W. P. S.: Brit. Med. Jour., Nov. 23, 1912.

[6] Davis, D. J.: Chronic Streptococcus Arthritis, The Journal A. M. A., Sept. 6, 1913, p. 724.

[7] Theisen, F.: Albany Med. Ann., 1913, xxxiv.

[8] Key, B. W.: Ophth. Rec., June, 1914, p. 273.

Through the courtesy of my associate, Dr. Schlichter, I am able to report the following case:

> Miss K. K., aged 25, a domestic, had an attack of lacunar tonsillitis, followed in one week by acute nephritis. She was sent to the hospital, March 7, at which time she had no heart lesion. The kidney lesion had almost subsided when, March 19, about eighteen days after she was first attacked with tonsillitis, she was stricken with acute septic endocarditis and died the next day.

We have abundant clinical evidence of infection from the tonsils, and it may be profitable to spend a few minutes reviewing the laboratory evidence.

Dr. MacLachlan of the University of Pittsburgh, in a histopathologic study of 350 pairs of tonsils, makes the following statement:

> We have observed that when symptoms of acute tonsillitis are present there is always a pathologic basis as shown by ulceration of the lining of the crypt. We therefore feel that a similar lesion is present in the tonsillitis preceding rheumatism and as far as we know, this lesion differs in no way from that of acute lacunar tonsillitis. We regard the ulceration of the lining of the crypts as being the vulnerable point of entry of organisms from the mouth. It matters little apparently what bacteria have produced the lesion, for once the ulcer has formed, it is possible for any type of organism to gain access to the deeper tissues.
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> Such is the probable origin of acute rheumatic fever following tonsillitis. The tonsillitis is not rheumatic but pyogenic in origin and the development of rheumatism is in all probability due to an overwhelming invasion of the rheumatic infection the nature of which is not definitely known.

At the meeting of the Eastern section of the Triological Society held in New York during January, 1914, Dr. George B. Wood of Philadelphia demonstrated on the screen the presence of bacteria in the tonsil of the hog which had penetrated the cryptal epithelium into the interfollicular tissue.

The late Dr. LeFevre in discussing the paper was thoroughly in accord with the view that rheumatism is an infection which gains entrance into the body through the tonsil.

Dr. Wood in his article on tonsillar infection in the hog says:

> The anthrax bacillus penetrates through the cryptal and not the surface epithelium. It probably always gains access to the parenchyma of the tonsil by passing through the living unaltered cryptal epithelium, and having gained access to the superficial layers of this epithelium, it tends to multiply in the deeper layers and thus pass into the interfollicular tissue.
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> The rapidity of the invasion is influenced both by the virulence of the organisms and by the susceptibility of the individual animal. In some of the sections examined the bacilli were found penetrating the blood-vessel walls and a few were seen in the blood-current.

From the laboratory and clinical studies we are forced to conclude that infection does take place through the tonsils.

410 Westminster Avenue.

## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. BECK AND WILSON

Dr. George E. Shambaugh, Chicago: One of the most important contributions to medicine during the past decade has been the elucidation of this relation between focal infection and serious systemic diseases. The most important focus in the causation of chronic systemic infection, appears to be the faucial tonsils, which cause, as Dr. Beck has stated, more trouble than all the other foci together. The reason is not difficult to find. The faucial tonsils are more frequently the seat of severe, acute infection than is any other organ in the body. It is rare to find an adult who has not experienced one or more attacks of acute follicular tonsillitis. The tonsils with their deep pockets are admirably suited to retain latent foci of infection capable of causing the most serious systemic trouble. The etiologic relation between an attack of acute tonsillitis and one of rheumatism, nephritis or neuritis which immediately follows the acute infection, is easily recognized. Not all the cases in which this relation of cause and effect exist are so readily recognized. A patient recovers from the acute tonsillitis with latent unsuspected foci remaining in the tonsils, and only after the lapse of some months or even years, does the evidence of systemic infection appear. It is in the recognition of these chronic cases that the chief difficulty presents itself. In such cases an examination of the tonsils will often disclose such positive evidence of foci of infection as pockets of pus. In other cases no pus can be expressed from the tonsils but their congested edematous appearance indicates distinctly that they are the seat of inflammatory reaction. At other times the history of recurring attacks of tonsillitis in previous years leads one to suspect the tonsils as the possible focus for the systemic infection. Not infrequently no distinct evidence of infection in the faucial tonsils can be demonstrated, nor will the patient recall ever having had an attack of tonsillitis, and yet when the tonsils are removed abscesses of varying size will be disclosed in them. It is evident to all that in the proper handling of these cases of systemic focal infection it is of great importance that our work should cooperate with that of the internist, the dentist, etc. The specialist working in isolation is likely to overlook the tonsil as the possible cause of the trouble because he fails to detect palpable evidence of infection in it, or he may remove tonsils when other foci, which the internist would readily detect, are really causing the systemic trouble.

Dr. Robert Levy, Denver: Year after year the importance of the tonsils in relation to general infections is repeated in this Section. We ought to emphasize the importance of these facts to our friends in other branches of medicine. It is true some of our internists and pediatrists are awakening to the importance of this subject, but it is often astonishing how many there are who do not as yet realize it. The previous history of every case in which the patient is suffering from recurring attacks of tonsillitis is worthy of much consideration. Dr. Shambaugh states that previous attacks of tonsillitis pass out of the memory of the patients. Perhaps we must go back to the first attack in early childhood. In many cases the most careful investigation fails to reveal any previous attack of this affection, but on careful investigation we find that during childhood attacks of sore throat occurred which had been forgotten. In childhood we often find a history of attacks of indisposition with more or less fever and nondescript symptoms which were attributed to disordered stomach. No local affection of the throat was recognized. Very frequently one can determine that these attacks were really due to tonsillar infection and in our subsequent management of the case should be so considered.

Dr. George L. Richards, Fall River, Mass.: I agree with what Drs. Beck and Wilson have said concerning the danger of focal infection, but one point they have not referred to. Nearly every city now has school inspectors who examine the throats of children and, as a result of these examinations, we have a great many children brought to us, especially in the clinics, with the statement that "this child has enlarged tonsils," or "he has adenoids." All the history they bring is that the inspector has said that they have enlarged tonsils or adenoids. The child complains of nothing, but the inspector says he has enlarged tonsils. Now, shall we take out all these tonsils or shall we wait for definite symptoms? We are still about as much in the dark with regard to the physiology of the tonsil as we ever were. If we say that these patients don't need to be operated on, we find later that some other doctor has done the operation. I call attention to the fact, based on a chance to observe a great many children whose tonsils have not been taken out but from whom the adenoids have been removed, that these children are frequently brought back for a tonsil operation. Often after tonsils are removed there is a reproduction of granulation or follicular tissue along the posterior pillar and sometimes between the pillars, as though nature endeavored to protect herself in some way with this new tissue.

DR. OTTO T. FREER, Chicago: The list of diseases serving as an excuse for tonsillectomy has been growing at an astonishing rate and such ailments as muscular rheumatism, neuritis, palpitation, goiter, chronic Bright's disease, laryngitis, nervous cough and vasomotor rhinitis have been included as unquestioned proof of some supposed but not evident focus in the tonsils. In fact the path of sound pathologic research has been left for vague speculation, based, as such speculation usually is, on some truth. The view that chronic tonsillar focal infection is frequent is not in accord with common clinical experience which, while it long ago recognized the tonsils as a source of such acute systemic infections as articular rheumatism, nephritis, endocarditis, pyemia, etc., is supposed in the long ages to have overlooked what the investigators have claimed to be so obvious, chronic focal infection. This overlooking, concerning what is asserted to be a sequence of great frequency, seems incredible considering how carefully etiology has always been studied, and the sequence, that many grave and obstinate diseases depend on a mysterious tonsillar focus which does not even locally indicate its presence, is not in harmony with the daily experience of laryngologists to whom most of the diseased tonsils with obvious foci come, not as causes of systemic disease, but on account of the local inflammations caused by them, for the patients bearing these tonsils are not rheumatic nor do they seem to be afflicted with more chronic ailments than other people. On the focal-infection theory we should, at least, have many rheumatic cripples coming to us, while the fact is that in the intervals between attacks of tonsillitis or peritonsillitis our tonsil patients are quite well. Many apparently normal tonsils, in patients with chronic ailments, are removed as sources of infection without improvement of the patient's condition and should have been left untouched.

DR. W. W. CARTER, New York: I treated a little girl four years ago who had an acute tonsillitis and on examination I found that she had chronic endocarditis. Two days later she had an acute attack of endocarditis and I ascertained on getting a fuller history of the case, that she had had three or four attacks of tonsillitis. When she had recovered from this attack I tried to get permission to remove her tonsils but the parents objected on the ground that she had heart trouble. I saw that child in three subsequent attacks of tonsillitis and in from twenty-four to forty-eight hours after the beginning of each attack she had an acute endocarditis. About two years after I first saw her she died. As has been said, the size of the tonsil has nothing to do with the question. The dangerous tonsil is the submerged one and the one that has had several previous infections. Pathologic changes have occurred in the crypts, drainage is interfered with, and then we get absorption. We must conclude from our clinical experience that the tonsil is the real source of most of our focal infections and that, therefore, we must remove the tonsil. At present that is the only solution of the problem, unless there is some other obvious source of the infection. I wish to emphasize the fact that we seldom have focal infection following the first attack of tonsillitis. It is only after several attacks when these pathologic changes have occurred in the crypts that we get the general infections.

DR. JOHN F. BARNHILL, Indianapolis: The whole question is one of diagnosis, and physicians who practice laryngology ought to be as careful here in the matter of accurate diagnosis as in other branches of medicine. That it is wrong to remove the tonsils in every case is not questioned. Dr. Beck's paper brought out much that ought to be included in every history sheet. It is wrong, in a large majority of cases, to remove tonsils until one has gone into all the points concerning focal infection. Our history sheets should ask questions concerning rheumatism, nephritis, arthritis, heart-disease, etc.; and may show that the general infection has been entirely due to some other cause than the tonsils. There can be no question, however, concerning the correctness of Dr. Wilson's contentions. There are such cases as he speaks of and we should be more active in removing such tonsils. We should be better teachers in what concerns the public welfare. It has been alleged here that the general practitioner has been slow in appreciating these things. My own experience is that they have often been quicker than we have. The first cases I ever saw and had clearly brought to my attention, of focal infection due to the tonsils, were brought to my notice by a general practitioner. A certain professor had been so ill with heart-disease for a long time that he could not carry on his work. He came into the hands of Dr. Osler who went over him again and again and finally said, "Your tonsils are the cause of all your trouble." He advised that the patient be operated on thoroughly but the tonsils were only clipped. The illness continued over a period of two years. Osler had gone abroad and the patient came into the hands of Dr. Janeway, who after careful examination told him the same thing. Then the patient's tonsils were completely enucleated and ever since, or until his death from pneumonia some time ago, this patient remained well. Another instance was that of a child, very ill with endocarditis, following an acute tonsillitis. The family physician requested me to examine the tonsils. I did not see much there but on the insistence of the physician, the tonsils were removed, and to my surprise, in one of them a deep abscess existed containing a teaspoonful of fluid pus, which evidently had been there since the acute attack of tonsillitis two years previously.

DR. DENNIS J. McDONALD, New York: The important thing is, as Dr. Barnhill said, the question of diagnosis. We should know what tonsils to remove. As to the question of school inspectors, considered from an economic point of view, it is well worth the tax payer's money to have these matters taken up in a proper systematic way, and the important thing is to have proper inspection and to know what cases are to be operated on. This Section ought to draw up a memorial advising that all cities of 50,000 or over should have one or more specialists make a proper survey of the situation. In larger cities the committee should consist of four physicians; two nose and throat specialists, one pediatrist and one orthopedist. In this way we could arrive at some proper working knowledge.

DR. THOMAS E. CARMODY, Denver: Dr. Wilson gives credit to calcium lactate when, possibly, it should not be credited. I have taken the coagulation time in a number of cases and for some reason or other was unable to operate at the time planned, and a few days later found coagulation time to be from one to two minutes longer or shorter. The normal time of coagulation with the Boggs instrument, which I use, is four minutes, but there may be variations in the same person. With regard to focal infection it begins in the tonsils often because the tonsillar crypts cannot empty themselves on account of lack of muscular fiber in the tonsils, or hypertrophy of muscular tissue in the pillars covering the tonsils. We have examined about one hundred tonsils and found various conditions. We find in a number a lack of epithelium and infection can so gain access. The probabilities are that we never get infection through the intact epithelium. Another reason why the crypts become filled with secretion is because of loss of this epithelium. The secretions cling to the surface devoid of epithelium in the crypts, like scabs on the surface of the body, or on the walls of the nasal cavity. It was stated that these children do not complain of throat symptoms. I have seen a number of cases in which, on examination, the patients were found to have tonsillitis although nothing could be learned on questioning the child.

DR. STANTON A. FRIEDBERG, Chicago: I have been associated with Dr. Shambaugh in a good deal of the same kind of work he mentioned and can endorse what he said with regard to focal infections. One criticism has been offered concerning the results of treatment. In the chronic arthritic cases I think it is sufficient if we are able to limit the process of the infection. We cannot expect a loosening up of the joints to a normal state. In these patients, some of them 60 years or more of age, if we can limit the progress of the disease we have accomplished a great deal. One point that has not been brought out is the possibility that the ear may be the seat of focal infection. Dr. Borden, a year ago, presented this theory. At a meeting of the Laryngological, Otological and Rhinological Society he cited a number of cases of nephritis in conjunction with otitis media, in which after the mastoid operation had been performed, there was a rapid clearing up of the nephritic condition. I have had the same experience.

Dr. Emil Mayer, New York: One condition that we frequently encounter in our patients and that has not been mentioned here, perhaps because we have been speaking of more serious complications, endocarditis, nephritis and things of that sort, is that patients will come with a complaint, that for want of a better name they call a rheumatic condition of the throat—a feeling of fulness and soreness. In these cases I have been able to express, by means of compressed air, some decayed material from the crypts which has caused this trouble. It is not a bad suggestion to treat some of these cases in that way. While I have not seen Dr. Wilson's bibliography, I called attention to these focal infections a considerable while ago. We have all spoken of the good results from our tonsillectomies, but what about the bad results, about the cicatricial conditions after bad operations? If we want to teach the general practitioner to appreciate our work, we must be sure that our work is good. If not, you will see what I have seen, cicatricial tissue in the postpharyngeal wall, an appearance as though there has been a syphilitic process.

Dr. W. E. Dixon, Oklahoma City: History tells us that Celsus in the year 10 A.D. advocated the removal of tonsils. Celsus didn't say why, but he used the same method that Dr. Richards employs, removing them with the finger, and he did not stop there, but adopted Ballinger's method, with the scalpel. As to the matter of making a diagnosis of tonsillar infection, do we know that the removal of diseased tonsils is going to stop the rheumatism when we know that there are other sources of infection, as the accessory nasal sinuses? If these are not looked after, we may still have a continuance of the infection after removal of the tonsils.

Dr. A. I. Weil, New Orleans: The matter of further education of the profession and of the laity is one which is well worth considering. Patients have come to us not through their own physicians, but independently, and the poorer classes come in the clinics. Even the negroes will say "This child has tonsils and adenoids," and if you refuse to operate they are disappointed and go elsewhere. They have learned that these things are the cause of innumerable troubles. Many of these tonsils are normal and require no interference, but it is difficult to tell always which tonsil is causing infection. That is well illustrated by a case in my own family; a child of 4 or 5 years who had been subject to such indispositions, as have been referred to by Dr. Levy—periodic attacks of fever and mild illness, the tonsils apparently perfectly normal; no previous attacks of tonsillitis; some enlarged glands in the neck. I got the reluctant consent of the parents to remove the tonsils and after they were removed these periodic attacks of mild illness disappeared. The child has taken on weight and is apparently much improved, although the tonsils were apparently normal. I had my attention called to the toxicity of these infections some years ago when doing work on tuberculosis of the tonsils. In the course of my work it was my practice to inject titrates of tonsils into guinea-pigs and it was surprising how promptly they died from general infection. These tonsils were loaded with organisms of all kinds.

Dr. E. B. Gleason, Philadelphia: In connection with Dr. Wilson's paper, it would be interesting to inquire what are the more common sources of infection of the tonsils themselves? When we remember how frequently alveolar abscesses occur, our attention is directed to them as a source of tonsil infection. A case in point will show how important this matter is; a gentleman between 50 and 60 years of age, with perfectly normal tonsils, for some years had recurrent tenderness of the right first and second molars of his lower jaw. The last attack commenced with tenderness in these teeth, then the tonsil on the same side became infected; he had a temperature of 102 or 103 F.; the other tonsil became infected and later a purulent rhinitis started up. Culture of the secretions from the nose showed a nearly pure culture of *Streptococcus brevis*. The extraction of the teeth brought about an abrupt cessation of the attack. The roots of both teeth below the gums were carious and the alveolar abscess swarmed with streptococci. Before attacking the tonsils it would be a good plan, in the majority of cases, carefully to examine the nose, accessory sinuses, and more especially the condition of the jaws, because latent foci of pus in the jaw is much more common than in the tonsils. If patients with acute articular rheumatism in our hospitals are questioned, some curious phenomena will be noted. Very few of them have had previous attacks of tonsillitis. I remember a number of patients that I questioned in this way in the Medico-Chirurgical Hospital and some of them had had recurrent attacks of tonsillitis when they were young, none of which were followed by rheumatism. After these attacks of recurrent peritonsillar abscess ceased to occur and the tonsils became normal, the attacks of acute articular rheumatism occurred, and were evidently from some other source than the tonsils. The tonsils are usually swollen during the time the 6 and 12-year molars are erupting and sometimes during the "cutting" of other teeth.

Dr. Hudson Makuen, Philadelphia: No one will deny the theory of focal infection, and few of us will question that the tonsil is one of the sources of systematic infection, but is there not a possible danger in the frequent reiteration of this fact? The tonsil operation, in my opinion, is already too popular. I should not be surprised if some of us have done the operation for the simple reason given by Dr. Richards, namely, that "if we didn't do it some other fellow would." Another thing that makes the operation too popular is the teaching that the removal of the tonsil does no harm. Now the removal of the tonsil may and sometimes does do harm. In a recent paper on the subject, I made the statement that an extracapsular tonsillectomized pharynx is always a damaged pharynx, and I believe this to be a demonstrable fact. I think we ought to insist on a fuller investigation of the conditions before we operate. We should try to be sure in every case whether or not the tonsil happens to be the cause of the infection, and if it is, let us remove it and if it is necessary to do an extracapsular operation, let us do that, but remember that is is possible, in many cases, to remove the source of infection without doing this radical operation.

Dr. Harold Hays, New York: It seems to be really a question as to whether or not the tonsil is responsible for every acute infection that the body is heir to. The same thing has been said of the appendix. In the New York Eye and Ear Infirmary in the last five years something like five thousand tonsillectomies have been done. They are removed to prevent infection. Many of these children that are suffering from malnutrition are found to have some focal infection as the cause. I think a great many of these cases in children who do not develop properly are due, not to infection from the tonsils, but to obstruction or chronic irritation of the throat. In many patients we find no evidence of tonsillar trouble. In a few weeks the patient has acute rheumatism. He doesn't return to us and we cannot say whether or not the tonsil is infected, but, in the majority of cases of acute articular rheumatism, I believe we would find that very few of the patients have had acute tonsillitis. Of course there is no doubt that patients with nephritis or rheumatism may have enlarged tonsils. It is important to consider that there are possibly some other sources by which infection may get into the system. A great deal of this work has been done as a result of having cases sent to us for more or less promiscuous reasons. The majority of us are looking for trouble in the throat. A great many tonsils are removed perhaps without doing any harm but also without doing any good.

Dr. C. E. Cooper, Denver: In connection with the question of diagnosis and operation, I have found it helpful to ascertain whether or not the tonsil is infected. If a needle is plunged into the deep tonsillar structure and a sufficient number of small punctures are made, enough fluid and blood for examination will exude. A culture made from this will give the bacterial flora of the substance of the tonsil. If it is a streptococcic infection, it is an indication for operation. I have seen several cases of acute and chronic nephritis associated with infected tonsils and consider it an indication rather than a contra-indication for operation.

Dr. Rufus B. Scarlett, Trenton, N. J.: The trend of the discussion seems to be toward the tonsils as a source of general infection. No doubt at present dentistry is being better done than it was ten or fifteen years ago when decayed teeth, as a rule, were not filled to the roots as they are to-day. Some of these teeth filled in this incomplete way are now causing trouble through the pulps infected at the time of the decay. I speak of this because during the past year I sought information as to the cause of an infection and consulted the best men I could find. Only recently a roentgenogram located an abscess at the root of a tooth. Very often a systemic infection may be attributed to the tonsils by a process of elimination when it may really be due to a pocket of pus at the root of a tooth.

Dr. Burt R. Shurly, Detroit: One point we have as yet not mentioned. Those of us who have practiced internal medicine know how frequently in cardiac disease two or more murmurs may be heard in the heart, and often, as we narrow down and become more and more concentrated in one line, we fail to look further after finding one explanation for a trouble, one particular focus of infection. If we find it in the tonsil we are satisfied and look no further. It would be unfortunate not to emphasize this fact. Internists are not satisfied with diagnosing one cardiac murmur when there may be more, and we should constantly bear in mind that there are frequently two or more locations for our focal infections. If we happen to be the first to investigate the case, we must consider this possibility, and if necessary have the internist aid us in our search.

Dr. John J. Sullivan, Scranton, Pa.: We are having a dress reform, a religious reform, and a half dozen other reforms all over the country and I suppose now we must have a tonsil reform. It is simply a matter of more accurate diagnosis whether or not the tonsils shall be removed.

Dr. Joseph C. Beck, Chicago: Concerning Dr. Freer's remarks with regard to exophthalmic goiter as caused by infection from the tonsils, he can find plenty of evidence that this is so; not directly from the tonsils to the thyroid, but due to changes in the glands of internal secretion brought about by toxicity. The tonsil is a frequent cause of that toxicity and hence is the most important structure for us to study in that connection, not that there are not other foci too. By removing a certain percentage of chronic focal infections, we enable nature to take care of and eradicate the other foci.

Dr. Norton L. Wilson, Elizabeth, N. J.: Every time I have tonsils to remove I ask for what reason they are to be removed. I, too, have had cases sent in by the school inspectors but would not remove the tonsils without some specific reason. I took it for granted that every throat surgeon was possessed of a certain amount of common sense and such a man doesn't remove every tonsil he sees any more than an abdominal surgeon would remove every appendix that comes his way. With regard to the remark that the coagulation time is four minutes, I stated that the normal coagulation time with the particular instrument I used was seven minutes. Of course, each variety of instrument has its own clotting time.

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**Empiricism.**—Empiricism assumes the existence of a fact even though it cannot be traced to any known law of wide application. Every general synthesis which is not fully established, must, at least provisionally, be characterized as empirical.—Lugaro, Problems in Psychiatry.

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# THE PRESENT TEACHING OF PSYCHIATRY IN AMERICAN MEDICAL SCHOOLS*

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In order that Dr. Singer's paper might receive the best possible consideration and discussion in this symposium, it seemed wise that present conditions in the departments of psychiatry of our American medical schools should be presented to you to-day.

To that end I sent out the following questions to seventy of the Class A+, Class A and Class B schools:

1. How many hours are given to the teaching of psychiatry in your school?
2. How many hours would you like to have for it?
3. Does your course correlate psychology with psychiatry in a definite manner?
4. What faults have you noted in present teaching methods?
5. Outline your ideal course in psychiatry.

About forty replies were received. In character they ranged from uninterested, categorical and monosyllabic answers, to four-page letters written at the cost of time and much thought.

On the whole, they showed that the majority of the men teaching this subject are entirely dissatisfied with the situation.

A calculation based on all the answers to Question 1 shows that American medical schools average 33.4 hours of combined clinical and didactic work in psychiatry. Leaving out two schools, one of which gives 140 and the other 69 hours to the subject, I find that the average is but 28.6 hours. This includes not only the psychiatry but also the psychology which is given in a number of institutions.

In examining the answers received to Question 2, "How many hours would you like to have?" the average is found to be 50.3. Again leaving out the two schools having a very high number of allotted hours, the average is found to be 40.7. The desired increase is 33 per cent. in the former calculation and 49 per cent. in the latter. In other words, the consensus of opinion is that American medical schools give from one-third to one-half less time to this subject than is proper and right.

Several Class A+ schools have a course well thought out and balanced. Indiana University leads all other American medical schools in number of hours given to the subject. In analyzing the course in this institution the impression is obtained that it is more a collection of a number of isolated series of lectures and clinics than a well-thought-out whole. The dean intimated to me in his letter that it was rather a haphazard growth than a constructed course.

At the other end of the list of A+ schools is found Western Reserve University, my own alma mater, whose psychiatrist wrote me with immense disgust that the faculty would allow him no definite hours whatever for the teaching of mental diseases, but that he had succeeded in getting twenty-five for this work in spite of the snub of the curriculum committee.

The smallest number of hours given to the subject is at Tulane University, where there are but eight.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

The answers to my third question, "Does your course correlate psychology with psychiatry in any definite manner?" were most varied. Some were categorical and some explanatory, while the question was left unanswered by many. I should say that a number of those writing these answers did not realize what I meant by the question. Twelve were answered, "No." One said that psychiatry was correlated with brain physiology in his course. Another made the statement that his course did not correlate with college psychology because there would be nothing gained by so doing. Another answered "No," and gave as a reason that psychology is a preparatory study. Many men said that they made attempts to do this in the first few lectures of the course. A number of those who said, "No" intimated that the time is too short to take up psychology even though it is introductory to psychiatry. A very interesting fact noted in this connection is that a number of the teachers who are most handicaped by short hours are most alive to the need of a proper correlation between psychology and psychiatry. Several said that this correlation is to be done thoroughly in the near future in their institutions.

On the whole, the answers to this question seem to indicate that a good many men are doing quite a lot of thinking about teaching this relationship between the mind in its normal and its pathologic state. On the other hand, these answers show that there is still a definite percentage of teachers of psychiatry who are inclined to adhere to the old way of giving set lectures and descriptions of terminal or chronic mental diseases to the exclusion of the borderline states and preinsane conditions. Or, putting it another way, the department of psychiatry in a good number of American medical schools is still being conducted on the "lecture and run" principle which characterized most of the teaching work in medical schools of twenty-five years ago.

My fourth question was, "What faults have you noted in the present teaching methods?" That question certainly stirred up the animals. Some men wrote pages on it. Almost everybody had a grievance. The conservatives found fault with the radicals for trying to make every medical graduate an expert psychiatrist. The radicals intimated that the general trend of all modern thought makes it obligatory on medical schools to raise psychiatry to the dignity of a major subject. From Detroit College of Medicine comes the statement that "much of the teaching of psychiatry is too speculative for average students to understand." This is but another way of saying that psychology and psychiatry are too poorly correlated in our courses. In fact, most of the faults pointed out in these replies clustered about this matter of inadequate correlation and preparation for the study of psychiatry, and the second fact that clinical facilities for teaching a working knowledge of mental disease other than that found in asylums is almost entirely lacking. Many men showed their impatience at having to confine their clinical demonstrations to old, fully-developed psychoses. The feeling was that students get wrong ideas thereby.

To my request for an ideal outline for the psychiatric course came many earnest and thoughtful replies. The University of Pennsylvania sent this succinct statement:

> The ideal course is one that will teach the average man how to get a sane opinion of mental disease.

The University of Virginia sent this rather original outline:

1. A review of the fundamental principles of modern psychology.
2. An exposition of gradual defections from normal mentality.
3. Neuropsychoses.
4. Psychoses.
5. Demonstration of typical and atypical cases.
6. Asylum service.

Cornell University Medical School says:

> The ideal course is one that will teach more thoroughly those diseases which are amenable to therapeutics.

To sum it all up, I may say that American teachers of psychiatry demand an increase of from 33 to 50 per cent. in time allotted to this subject by curriculum committees. The subject is so irregularly taught that while one Class A+ school is found to be giving 179 hours to it, another is found to schedule no hours at all. The chief fault with the present course is the almost universal lack of a psychiatric clinic where other than asylum cases can be studied.

705 Fay Building.

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# THE IDEAL COURSE IN PSYCHIATRY FOR MEDICAL SCHOOLS *

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Probably the greatest modern advance which has been made by the medical profession is the realization that the physician's duties are not limited to the treatment of disease. The older system of teaching was concerned only with the particular remedies to be applied under any given condition. To-day the problems of etiology and prevention are steadily becoming more prominent and the blind symptomatic administration of drugs and other remedies is slowly disappearing. Psychiatry has been one of the most neglected branches of medicine and even to-day the vast majority of graduates are not only ignorant of, but are indifferent to, this subject. It may not be unwise, therefore, briefly to mention some of the reasons which render the teaching of psychiatry essential in the training of a physician.

It is true that the treatment of the disorders grouped under this heading is a special subject carried out almost entirely in special institutions and hence enters but little into the province of the general practitioner. But the original recognition of the need for such treatment must be his duty. To fulfil this he must be able to recognize evidences of mental disorder even before they become obvious to the ordinary layman. If he is to carry out the higher ideals of prevention he must furthermore know something of etiology and be able to grasp and to heed the warning signals before the outbreak of the disorder. Here as in other branches of medicine prevention is paramount and the problems of etiology come first. When it is realized that at least one in three hundred of the total population becomes certifiably insane the magnitude of even this question is obvious.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

But there are certain further points which need especial emphasis. The one feature which characterizes man as the highest type of living organism is his adaptability. This adaptation is rendered possible by the complexity of his nervous system through which the various effector organs are regulated and rendered more flexible. It then necessarily follows that in order reasonably to understand and rationally to treat disorders and disease of the body generally it is absolutely essential that the physician have some knowledge of these coordinating mechanisms. It would be impossible even to guess at the proportion of the cases treated by the general practitioner and specialist in every branch of medicine which depend on some failure in nervous control, including therein the activities of the highest (conscious) activities of the brain. It is only necessary to mention the recognized neuroses of organs, as they are called, and the cases of nervousness, chronic constipation, indigestion, insomnia, etc., to demonstrate their wide extent. The study of psychiatry is the study of Nature's experiments with these mechanisms from which, to a very large extent, our knowledge concerning them has been acquired.

The teaching of psychiatry is, therefore, not of special but of fundamental and general interest, and the particular directions in which it should be pushed are those which throw light on (1) the highest cerebral mechanisms and the adjustments they subserve, that is, psychology, and (2) the etiology of disorders in this sphere.

To what extent the present system falls short of these ideals should be obvious from the results achieved. But before entering on the question of a more ideal method it would be well to discuss briefly the reasons for this failure in order to lay the foundation for the recommendations to be made.

The main factor, as it appears to me, is the struggle between the older dualist hypotheses of "mind and body" and the present-day violent reaction to them which is fully as unreasonable and harmful.

It may at once be conceded that the older psychology is of little practical value for the reason that it has been mainly restricted to a study of consciousness and has given but little heed to the biologic purpose or dynamics of the mechanisms involved. Consciousness has thus been regarded as the master instead of the servant. Because reactions to given situations are selected with the aid of conscious mechanisms it has been tacitly assumed that there is a directing and guiding "mind" or "will" acting under separate and individual laws which are not only different from those governing the activities of the lower levels in the hierarchy of the nervous system but are even more or less autonomous and unintelligible. In the most recent text-book of Kraepelin, for instance, we still read of "independent disorder of the will." There naturally follows from such views a wealth of more or less fantastic and mystical dogmatism concerning "the influence of mind over body" and of body on mind which has resulted in a wholesale condemnation by many of everything psychologic. While we still hear of "mental disease," a term which can mean nothing but disease of a hypothetic entity, mind, yet any attempt at a psychologic explanation of the phenomena of "insanity" arouses a storm of protest and ridicule. The present-day teaching that all mental disorder is a result of disease or intoxication of the brain must, in spite of the severe materialism on which its exponents pride themselves, by this very attitude of negation tend to emphasize and maintain a line of separation between "physical" and "mental." It would be as reasonable to assert that because one man is a Republican and another a Democrat that one or other of them must be suffering from a disease or intoxication of his brain as to insist that those conclusions reached and adjustments made which we call delusions and disorders of conduct are necessarily evidence of such.

The almost universal custom in teaching psychiatry to-day is to adopt some one of the numerous systems of classification and then to retail for each named type a symptomatology by which it may be recognized and a "differential diagnosis" achieved. It is true that, with the progress of time, dividing lines have been drawn which establish more or less clearly certain differences in course, but even these are frequently somewhat doubtful and conflicting. There can be but little claim, however, to the establishment of definite disease-entities.

The reason for this anomalous state of affairs is not far to seek. The situation is much that which existed and still, to some extent, exists in neurology and internal medicine. *The mental picture is not a disease but only a symptom* of disease or inadequacy in construction not only of the brain but of the various organs of the body. Just as hemiplegia is only a symptom, so the disorder of thought and conduct which is called "insanity" is only a symptom and not a disease. The conscious activities of the paretic which lead to the recognition of his "insanity" are no more than a symptom of the disease process in his brain and bodily organs generally exactly comparable to the disturbance of reflex, the albuminuria and the cardiovascular irregularities. It is true that this disease process results in the destruction of nerve pathways with consequent loss of associative connections evidenced by loss of memories, poverty of ideas, euphoria, etc. But it is also true that the picture varies within the widest limits, and one often hears it stated that paresis may present "symptoms" of any one of the named psychoses. The patient may be happy, depressed, paranoic, catatonic, etc., and for these facts no kind of explanation is offered to the student. Such a point of view might be permitted for definite structural diseases of this type wherein the symptomatic nature of the picture as a whole is clear; but when similar manifestations are presented again as separate disease-entities, hypothetic intoxications, etc., each with a set of "symptoms" of its own (symptoms of a symptom), it is small wonder that the utmost confusion and disrespect for the subject prevails in the mind of the pupil. He is almost forced to the conclusion that a particular kind of disease and a special poison cause the secretion of a particular kind of delusion and a special kind of conduct much as a particular kind of disease in the kidney results in the secretion of a particular kind of cast in the urine.

Let us now turn to a consideration of those points of view which permit of a reasonable method of teaching and study. All psychoses present certain peculiarities of thought and conduct, and the problem to be solved is the determination of the manner in which this person reaches the conclusions which these peculiarities represent. In order to start out on this question it is obviously first of all necessary to have some knowledge of the rules governing the operation of these mechanisms. In other words, it is necessary to study physiology and especially the physiology of the associative mechanisms of the brain, which is nothing more nor less than psychology—not the older psychology which has been condemned above but the more modern aspect which considers these nerve activities as a means of adaptation. It is not a question of studying the conscious state, as such, but of observing the manner of meeting existing situations rendered possible by the conscious mechanisms available.

The best introduction to this study with which I am familiar is "The Integrative Action of the Nervous System," by Sherrington. Here is shown in the most lucid and instructive manner the meaning of adaptation and of the selection of an appropriate response to a given stimulus, all entirely apart from any question of conscious choosing. The reactions which occur are highly complex but at the same time accurately arranged for the accomplishment of a definite purpose, this being the conversion of the stimulus to the welfare of the organism. There are illustrated combined activities of the whole musculature of the body into a picture apparently expressing emotion, although no conscious feeling can possibly be present. The laws governing the selection of reactions are admirably elucidated and can be applied equally well to the solution of this same question where conscious mechanisms are in operation.

From this as a starting point it becomes easy to grasp the real relation between the conscious feelings called moods, affects and attentive interest on the one hand, and the condition of the body as a whole on the other. It is not a question of reacting to situations in a certain manner because we feel this way or that, but simply that the condition of activity or rest of the muscular and glandular organs of the body, together with the conscious feeling, is the mode of meeting the situation adopted. The adoption of this particular attitude is the outcome of many factors, the consideration of which will give us the key to a rational method of teaching this subject. The person popularly described as insane, the hysteric, the psychasthenic and the man with nervous dyspepsia have all adopted a certain attitude toward the situation in which they are placed. This may be described as unusual or abnormal but not necessarily as diseased and certainly *not* as a disease of any hypothetic mind. The conduct and behavior, the delusions and often the sense falsifications thus cease to be "symptoms" of any special disease process but take their true position as part of a particular mode of meeting some situation. This is the situation as it appears to the patient and not necessarily that which the onlooker perceives.

The factors which must be considered in teaching concern not only the condition of the nervous system but also that of the whole body. It must be obvious from what has already been said that disturbance of the general attitude, including the feelings or moods, is inseparable from a lack of harmonious cooperation among the parts of the body. Such disturbances (symptomatic depressions, etc.), result, as we well know, from disease of all organs, and these facts need illustration and analysis in any course of study. From them can well be deduced the further fact that, even without disease, organs may be so poorly constructed that they fail to perform their function adequately whenever any special call is made on them, with consequent general disharmony and concomitant affective disturbance.

The selection of the reaction to any given situation depends in the first place on the adequate functioning of the various sense-organs in the collection of information concerning the facts to be faced. Granting that this be done, there may follow an immediate reaction without possibility of selection depending on the fact that the situation is one of such frequent occurrence and importance that the best way of dealing with it has become automatic for the individual or race. On the other hand, if a set stereotyped mode of adjustment is not present there follows activity in the associative pathways of the brain which implies the conscious-becoming of similar past experiences and the reactions which have been made to them together with the consequences of such reactions. We have then here a mechanism which is more or less peculiar to each individual depending, as it does, on the associative connections with which he was born and those which have been established as the result of his individual experience.

Finally we have to consider the fact that nerve-tissue is liable to suffer in its functional capacity as the result of disorders in nutrition and of disease. The only specific function of nerve-tissue is that of excitability with transmission of this state of excitement. It initiates nothing but merely responds to stimulation. Hence disturbances of function can be only disturbances of conduction. The excitability may be increased, diminished or lost, but there is no other possibility.

With these in mind it is obvious that in teaching psychiatry it is first necessary to consider the question of the kind of associative mechanism or mode of meeting situations with which an individual is born. Psychiatry provides for us most admirable examples of at least some types, readily grasped for the reason that they are grossly exaggerated. Among these would be included such kinds of adjustment (or, as they are also called, reaction types) which, according to the most prevalent classification, are grouped as hysteria, psychasthenia, manic-depressive insanity, paranoia, psychopathic personalities, and at least a large majority of the disorders classed under dementia præcox. These should be taught not as "diseases" but as illustrations of personal modes of adjustment. It is now recognized quite generally that the peculiar conduct and conclusions of these patients which make up the so-called "symptoms" of their insanity or psychoneurosis are only exaggerations of the manner of meeting difficulties which these people have always shown more or less clearly. Furthermore, we know that similar reactions are shown by supposedly "normal" persons, and that the "attack of insanity" is only precipitated by the call to face some situation of especial importance and difficulty, be this disease or merely circumstance. Clinical demonstrations of such types carried out from this point of view with analysis of the observed abnormalities in order to establish the underlying attitude or mode of adjustment will teach far more of practical value than any hypothetic considerations of toxins, degenerations, etc. It will lead to an intelligent appreciation of many of the nervous disorders of various organic functions so common in general and special practice and will lay the foundation for a rational consideration of the training and education of a child in relation to his personal mode of meeting difficulties which is generally more or less obvious before the outbreak of a more definite exaggeration or psychosis.

Various attempts have been made to standardize tests for the determination of what is called intelligence which is practically identical with adaptability. These tests represent a method of placing situations before the subject with the object of observing his mode of adjustment. The Binet-Simon tests have proved of great value in this way and should in my opinion be taught in our medical schools. Yet I would lay especial emphasis on the point that in their use the object should not be merely to estimate the age of intelligence which has been reached but to study the mode and kind of reaction which the individual shows. That this has a relation to age periods is not surprising because development is gradual, while experience and training modify and improve the possibilities of adjustment with which the individual starts.

Considerable emphasis has been laid on this particular phase of the problem for the reason that personal experience, as well as that derived from teaching others, has convinced me that it is of fundamental importance to a practical grasp of this subject. Whether such peculiarities in personal modes of adaptation will ever be satisfactorily related to structural anomalies only the future can decide, but it may be pointed out that quite similar problems are to be faced in connection with even such a prosaic organ as the kidney. That some kidneys, even apparently under quite ordinary conditions of life and without evidence of structural defect, secrete albumin, alkapton, cystin and indol-acetic acid will serve as an admirable illustration.

With regard to the teaching of the results of nutritional and structural changes in the nervous system there is but little need for me to go into detail. The effects of poisons and poor nutrition in the production of altered excitability, the consequent occurrence of clouding of consciousness with illusory misinterpretations, usually combined with disorder in mood consequent on the general disharmony of the bodily organs as a result of the intoxication and the facilitation which this exercises on those nerve pathways associated with such an attitude which again leads to sense falsifications and disturbances in thought and conduct are matters commonly taught. In describing disorders resulting from gross structural change such as general paralysis of the insane and arteriosclerotic destructions of nerve-tissue, it should be remembered that the chief evidences of the disease condition are those which result from loss of conductivity in nerve pathways, while the picture presented will necessarily be colored by the individual mode of reaction peculiar to the patient. The adjustments that he makes will still show the stamp peculiar to him in so far as the necessary nerve connections are left intact by the disease.

The course recommended may then be summarized briefly as follows:

1. Nerve physiology with especial consideration of the integrative actions as taught by Sherrington.
2. Dynamic psychology or a study of the modes of reaction accomplished through the cerebral associative system.
3. Study of individual reaction types with especial emphasis on their importance in the prevention of insanity. Under this heading would come the Binet-Simon tests of intelligence.
4. Disorders of attitude resulting from disease or inadequacy of the effector organs of the body.
5. The effects of changes in the nervous system produced by intoxication and malnutrition.
6. The effects of gross structural alterations in the nervous system.

## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. MOORE AND SINGER

**Dr. C. W. Burr**, Philadelphia: The old psychology threw no light on any problem in mental disease, but in the past few years psychology has broadened out and has taken in what seemed formerly to some of us conservatives as brain physiology, as reflex action, for example, or sensory symptoms, as well as the normal condition of the senses; palsies, aphasic conditions, etc., which we thought had nothing to do with psychology. More recently psychology has been made to include pedagogy both as regards normal and abnormal children, and questions of moral law, subjects far from medical as many of us think. The psychogenic origin of many mental diseases as taught by modern psychology seems to be based on very slight foundation. The questions for us to answer are: Is psychology of any use in the teaching of mental disease? What methods of teaching shall we follow? What time can we devote to it? I do not think the study of psychology has thrown any light on psychiatry. Many of our explanations of disease are not explanations at all. We are getting as far away from the truth as the older metaphysicians. In teaching psychiatry we should endeavor to teach the student how to distinguish a sane man from an insane one, and if insanity is present, what to do for the man—how to take care of him, how to treat him, when to decide that he must be confined, when it is safe to permit him to be at large, when he should be given medicine and when not, whether his trouble is syphilitic, or whether medication would do harm, questions of responsibility, etc. Mental diseases should be taught in precisely the same way as bodily diseases. They should be regarded as disorders of the function of the brain and not as some mysterious thing separate from the brain. I do not think a great deal of time can be devoted to the teaching of psychiatry. I have thirty-two compulsory hours in the third year and voluntary classes of eleven hours each in the fourth year. The course should be largely clinical. The didactic lecture does not have much place in the teaching of psychiatry. A hospital is requisite. It should be large enough to furnish examples of the ordinary insanities in more or less coordinated fashion so that the study may be systematic. Dr. Singer is really right in saying that there are no insanities, merely mental symptoms of disease of the brain. The Binet test has the fundamental error of assuming that feeble-mindedness is nothing more than normal growth up to a certain point, but not as high as it ought to be. That is not true. The imbecile boy of 20 is not the normal boy of 10. There is not only a quantitative unlikeness between the two, but a qualitative unlikeness as well. I have never seen an imbecile or backward boy or girl who was normal for any age at all. For that reason I do not think the Binet test is of much value.

**Dr. C. R. Woodson**, St. Joseph, Mo.: If I were going to advise what to teach students of psychiatry, I should say that they should know how to recognize insanity, how to recognize the border-line cases, should be warned of the danger of not recognizing and caring for the depressive forms, and those who have one or two delusions but who have the mental capacity to perpetrate and carry out almost anything they may desire. I would advise them of the danger to the patient in the manic depressive forms of insanity, that there is more danger of the patient being hurt than of hurting any one else, from the fact that any layman can recognize this form of insanity; that they should place these patients where they can be cared for, or should care for them themselves; as to the advisability of treating an individual who has a disease of the brain or mind. Demonstrate by presenting to the clinic a typical picture; advise with regard to protecting society and the patient's family, in protecting his property, as to how to commit in the event that the patient has not sufficient means to be cared for; how to testify if the patient's testamentary capacity is involved, and how to discriminate whether or not he is a malingerer. I would recommend that the patient be induced to sleep a natural sleep as quickly as possible: not by the administration of hypnotics, but by providing a good bed, a good atmosphere, a suitable nurse, suitable baths, suitable food. Many patients who do not otherwise sleep, sleep well when provided with these things. The patient who is insane should be watched as closely as the patient who has been subjected to the most difficult operation that comes under the surgeon's hand. I would advise the student how to diagnose the various forms of insanity, in such language as they can understand. If the patient did not eat or could not be persuaded to eat, I would advise tube-feeding and show them how it is done. I would advise the free use of water, and when the patient's condition will allow, the free use of sunshine and fresh air. If the time is too short to give a medical student such instruction in this subject, give him such instruction as will enable him to recognize the disease, to protect society, prevent the patient from becoming a violator of the laws of the commonwealth, to help restore him and place him in the best surroundings or institution that the patient's means will permit. If you give this instruction, there is time enough in which to follow up those things which some people have been inclined to designate as mysterious or metaphysical. I do not condemn the methods advocated, but I do say, give him the practical, and there is no reason on earth why the medical student can not be given ideas on how to recognize the condition and its etiology and how to treat and care for it, and then if desired he may later on take up these additional factors. Each medical college must determine for itself the period of time that it allots to the teaching of psychiatry. Insanity should be recognized by any student who has received thirty or forty lectures on the subject, especially if he has had a dozen clinics presented along the various lines without particular attention to classification.

Dr. James J. Putnam, Boston: With regard to the time that should be allotted to psychiatry in any given medical school, we can only present our views and then let the faculties of our schools adjust the various claims as they best can. We should, of course, emphasize the importance of a subject which we deem so vital to society, and I think there is nothing more important than to teach people what can be done in the way of prevention of insanity. Dr. Singer's paper seems so closely in line with what I tried to say, that I have nothing to offer, except with regard to one point. As I understand it, Dr. Singer would study mental disease just as all naturalists study their subjects; that is, through description and the collection of data under recognition of the view that they are dynamic processes with which we have to deal. We are not to be obliged, I presume, even to call these processes "normal" or "abnormal," we are simply to observe what happens in consequence of each new disturbance which they induce, just as if we were making laboratory experiments on "reactions." In other words, we are to treat diseases as "adaptations." The difficulty with the law of adaptation, however, is that it leaves the force that underlies the adaptation untouched. I think very likely it is true that from the point of view of the teacher we must leave that force untouched; but that something there needs study seems to me very certain. The question still is pertinent. What is it that leads animals to adapt themselves?

Dr. J. T. Fisher, Los Angeles: As a teacher of psychiatry I am very much interested in this subject. Dr. Burr has already said exactly what I had in mind to express. I believe absolutely as he does in the matter of the teaching of psychiatry in medical schools. With reference to the advantage or disadvantage of a previous knowledge of psychology on the part of a medical student, I would rather have students who have had, prior to entering the medical school, a course in psychology. I have had, however, many medical students who have had that training and many more who have not, and from my analysis of their mental qualifications at the time they came into the courses I can not say that those who have had a previous knowledge of psychology are any better fitted for their work than those who have not. We have, in the Psychopathic Hospital at Los Angeles, a large number of patients, and in addition to the work of the junior students in anatomy and physiology of the nervous system we commence at once giving one clinic each week, which is from an hour to two hours in duration, simply presenting from one to five or six cases for his or her edification and study, not infrequently requiring the student to examine these patients at periods before the clinic occurs. We differentiate and attempt to classify and teach our students the different types of the psychoses as they come to our attention. This particular clinical work is continued without any interruption both in the junior and in the senior year. In addition, while I may be antiquated, I believe it is quite necessary, notwithstanding the present teaching, that the student should have a certain number of didactic lectures, for this stimulates him to read up about the various types of the disease. In our school we give, once a week, a didactic talk from three-quarters of an hour to an hour in length, not only during the junior years, but in the senior year.

Dr. Frank P. Norbury, Springfield, Ill.: I speak from the point of view of one who for some time conducted examinations of students and graduates in medicine from various medical colleges. These examinations gave me the opportunity to study the relative importance given to nervous and mental diseases in one locality as compared with another. The results of examination, simple and elementary as they were, proved beyond a doubt the need of improving the teaching of psychiatry in all of our schools. Especially is it necessary to put it on an equal footing in clinical teaching with other departments of medicine. Psychology is simply the study of human conduct with its varied experiences. It is the science of the inner life and as such is varied, active and useful. Metaphysical psychology received its death blow in relation to mental disease some years ago and especially after Maudsley's books, "The Pathology of Mind," "Body and Will" appeared, which later were followed by his book "Life in Mind and Conduct." We have a new psychology, such as delineated by Dr. Singer, which should be incorporated in all of our medical teaching. The work of Dr. Singer stands for itself in Illinois hospital service as shown by the results of examinations and the work done in this public service. His work is representative of the great advance made in modern teaching in many of our medical schools.

Dr. Ross Moore, Los Angeles: I believe that the medical colleges and perhaps the Council on Medical Education do not consider external things sufficiently. A moment's consideration will make us all realize the particular wave of psychism or psychology that is going over the world to-day. I do not know that the college curriculum should reflect in any way such things as that. Possibly the curriculum committees would say that this is paying too much attention to the direction in which the surface winds are blowing and is not conservative enough. At the same time I do believe that psychiatry does not fill in the curriculum of the medical college the place which mental conditions fill in health and disease. My feeling is that we are out of proportion in our teaching of psychiatry as compared with the teaching of a number of other things which are given equal place and importance in the curriculum. The thing which seems to me to be the crux of the situation just now is that the curriculum committees of the individual colleges—I am speaking of averages, not with reference to any particular institution—do not give the subject of mental diseases any consideration whatever in the average. There are thirty-two or twenty-eight or forty hours given to it, and that have been given to it for many years, and the curriculum committee of the average school takes it for granted, it is a hard and fast rule, that they will continue for all the years the medical college continues. I believe it is our duty and privilege as teachers of psychiatry and members of the neurologic or psychiatric section of the American Medical Association, to go a little farther and be a little more active than we have been in presenting our claims as to the teaching of psychiatry, in order that the coming generation of physicians may know the subject better in its beginnings and therefore may take steps which will prevent insanity in the mass and in the individual in future generations.

Dr. H. Douglas Singer, Hospital, Ill.: With regard to some of the remarks which have been made by Dr. Burr and others, I feel that certain criticisms are absolutely necessary, because it is exactly that attitude which is of most importance in determining how psychiatry should be taught and what will be the results. I am quite in accord with those who say that the medical curriculum is very full, that the student has little time to digest the material he receives. It is therefore important that he should be taught fundamentals, not hypotheses, as has been said. The question is, what are the fundamentals, what are the facts? Because the various features generally included in lectures on general symptomatology and general etiology have come down to us from a good many generations of teachers, is no evidence that they are facts and not hypotheses. I feel strongly that most of them are extremely hypothetic. The teaching, for instance, that paranoia, as mentioned by Dr. Burr, is a disease without any lesion and a type for a number of other psychoses, is certainly open to considerable question. Psychology is nothing but a study of the mechanism of thinking, the mechanism whereby the conclusions are reached which represent an individual's character, conduct and behavior. It is a question of the manner in which the individual meets the conditions in which he is placed.

Like Dr. Putnam, I am fully aware that I have left out of consideration in speaking of this matter the question of what is the vital energy that lies behind these adjustments and adaptations. This is practically synonymous with what those advocating the Freudian doctrines speak of as "libido." This omission is not unintentional but purposeful. At present it is asking too much to attempt to teach this particular subject. It goes too far and is not sufficiently clearly outlined. We must all acknowledge that everything that we do in life, the mere fact of living, breathing, heart movements, reflexes, etc., constitute adaptation to our surroundings. They are means of procuring certain ends and this is universally accepted as an axiom from which to start. For the present we may leave it simply in that way. The main point I tried to establish is that in psychiatry we are not merely trying to study what are called the symptoms of insanity, we are not trying to establish that the patient has a delusion, that he is trying to commit suicide, or anything else; we are trying to determine what is the situation which he is meeting in this particular manner. That is really what the whole subject amounts to.

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# OPERATIVE INTERVENTION IN CYST OF THE LEFT CEREBRAL HEMISPHERE

## WITH A CONSIDERATION OF THE PREOPERATIVE AND SUBSEQUENT SYMPTOMS

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The interesting symptom-complex viewed in this case and the successful amelioration and alleviation by operative intervention will perhaps warrant a careful consideration from all points of view.

### REPORT OF CASE

*History.*—A man, aged 59, was referred to me July 25, 1913, for aphasia. The family and past history were negative; no suggestion of any neurotic or specific taint. Seven years previous, the patient while in the midst of a conversation was suddenly rendered unconscious. A doctor diagnosed the case as "paralysis," but the patient denies the existence of such. He does, however, remember that immediately on recovering consciousness he was unable to find the proper words by which to express himself. Since then there has been some improvement, but lately a gradual regression has ensued. There have been occasional attacks ever since of dizziness and a sensation of moving away from objects at which he was looking. Only once had he an attack severe enough to cause a fall.

*Examination.*—This disclosed blood-pressure of 200; pulse 68; no nausea or vomiting. The cranial nerves were normal. There were no sensory disturbances. The motor functions were normal. (Weakness on the right side was carefully sought for on account of the aphasia.) The stereognostic sense was slightly disturbed and failures occasionally occurred in the right hand. There was no apraxia or ataxia. The sense of position disclosed on examination no abnormalities. Romberg's and Babinski's signs were absent. There were no contractions or rigidities; no tetany or tremor. The superficial, deep and organic reflexes disclosed a normal state of activity. Trophic disturbances were absent. The psychic examination revealed a quick, emotional and high-strung disposition and a good memory. There were no hallucinations or delusions. Aphasic disturbances were very evident. Spontaneous speech was punctuated by many mistakes and the patient was unable to find the correct words to express himself, though comprehension of the word, when prompted, was immediate. The repetition of phrases was performed fairly well, though he occasionally made gross mistakes. Reading aloud was performed with great difficulty, and only by continual urging could a word or title be repeated very slowly. The patient was able to sign his name, but was unable to write anything else spontaneously. To dictation he could write slowly but not very legibly, and in copying was extremely backward. At this time a diagnosis was made of hemorrhagic destruction of a localized area of the brain cortex in the region of the angular gyrus and involving also Broca's area. The patient was advised to follow the therapeutic measures conducive to a diminution of the blood-pressure.

Track of the patient was lost until February, 1914. A note made then disclosed a condition similar to that of the previous visit, except that the aphasia was slightly more marked. In March, 1914, he returned to the office complaining of greater nervousness and an increasing difficulty in expressing himself. Blood-pressure was 195, pulse 52, and the patient had occasional gagging and nauseating sensations, and a feeling of tightness in the head which had been experienced only the last few weeks. He had also had spells of convulsive jerking of the fingers of the forearm on the right side associated with quite marked numbness in the same region. The usual seat of onset of these clonic spasms was in the forefinger and thumb.

Three days later the patient reported that he had had a severe convulsive attack of the hand, with marked numbness lasting for half an hour. During the next week the Jacksonian attacks were very frequent, and were witnessed twice in the office. Sensory disturbances were marked. There was distinct dulling of heat and cold perception, and of pain and of touch over an area involving the hand and lower half of the forearm. It was impossible in a small number of trials to differentiate the various sensations. On the foot, but not extending up the leg, was a similar but less marked disturbance of sense perception. The examination of motility disclosed no weakness of the cranial motor nerves. There was a definite weakness in the fingers and wrist of the right side, demonstrable in each movement—abduction, adduction, extension and flexion. Separation of the fingers was utterly impossible, while flexion of the fingers led to the greatest functional weakness. No disturbances were noted in the muscles of the upper arm. The hand itself as well as the forearm was seen in occasional spasms of flexion and supination, which were frequently associated with attacks of numbness in the same area.

April 7, the patient developed for the first time a slight weakness in the right foot which evidenced itself quite perceptibly by a dragging of the foot on walking. Closer examination disclosed a weakness involving the anterior tibial group, especially, but also the posterior muscles and the peroneal group. The aphasic disturbances were very evident. Spontaneous speech, the repetition of spoken words and reading aloud showed disturbances similar to the first examination about one year previous. Such repetitions as "Peetreet" for "Peachtree Street" were extremely common. Spontaneous writing outside of the patient's signature was impossible. In copying printed titles of three words, from four to six minutes were employed in this transference. It was almost impossible for the patient to transfer spoken speech to writing. Simple arithmetical sums were performed.

Inability to name objects was present in about 20 per cent. of the tests, and the patient was able to tell their use in a large percentage of the tests, though of course the explanation was paraphasic.

Apraxia was principally of the limb-kinetic variety (Liepmann). The finer and more intricate movements performed by the fingers were impossible. Such motions as buttoning the coat, using table utensils, etc., could not be performed, though the manipulation of a pencil in writing was moderately fair.

The ideokinetic variety evidenced itself in from 20 to 30 per cent. of the trials by such derailments as grasping an object when directed to write.

Consideration of the stereognostic sense was interesting. Simple articles, such as keys and pencils, when placed in the right hand were very frequently unrecognized. Probably 75 per cent. of the tests were failures.

Psychically considered, the patient was still emotional and high strung and there was a great tendency toward the hyperexcitable state of mind when involved in any conversation.

Examination of the ataxic disturbances disclosed correct execution of the simpler tests to be extremely rare. When directed to perform the finger-chin test the error would be sometimes so great that the patient would touch his forehead or ear.

The sense of position disclosed perhaps the greatest disturbances of all. It was utterly impossible for the patient to ascertain the position in which his right arm had been passively placed. It was not at all extraordinary for him to reach in front of him for his right arm and hand when they had been placed back of his head.

Reflexes revealed a slight exaggeration of the knee-jerks, particularly on the right side, but there was no ankle clonus or Babinski reaction. Superficial and organic reflexes were normal.

Examination of the eye revealed no paralyses. Eye grounds were slightly anemic. There was no edema. Perimetric findings were normal.

Examination of the cerebrospinal fluid showed a negative Wassermann.

Consideration of the signs and symptoms in this case led us to believe that the lesion was located on both sides of the fissure of Rolando and likewise involved the angular gyrus. Owing to the character of the perimetric findings a deep-seated location was not judged probable.

I am indebted to Dr. Hansell Crenshaw for the following summation, arrived at from an independent examination:

"We know that the patient in this case suffered from a brain lesion because of his difficulty of speech; and additional support is lent to this opinion by the increased knee-jerks indicating upper neuron involvement, and by the patient's inability to recognize the nature of objects merely through the tactile sense of the hand. Moreover, the twitching of the muscles of the right hand suggested an irritative lesion of the motor hand center, on the left side of the brain; and the dragging foot indicated a corresponding left motor center destruction. Thus it was evident that the motor area of the right hand and foot were involved in the lesion. It was further evident that the angular gyrus situated between the parietal and temporal lobes near the posterior extremity of the fissure of Sylvius was doubly involved, because the perception of written words occurs in this gyrus and because the stereogenous sense—the power to recognize objects by their feel—is also a function of this particular fold of the gray matter. Agraphia, then, or word-blindness, and astereognosis, or inability to know objects through the tactile sense, both being well marked in this case, the angular gyrus was decided on as a probable posterior boundary of involvement, while the motor area of the frontal lobe was taken as the probable anterior limit."

*Operation.*—This was performed by Dr. Remsen, April 17. At this time an osteoplastic flap was fashioned to include exposure of both motor region and angular gyrus on the left side. This flap was turned out on its hinge, replaced and sutured without opening the dura. The second stage of the operation was performed April 21. The osteoplastic flap was turned out again and the dura opened corresponding to the flap. The findings were as follows: In the center of the dural flap the dura was adherent to the underlying brain. This was easily separated and the cortex viewed. The cortex was yellowish and pale and flecked with bright yellow splotches which appeared to be the result of old and small hemorrhages. The spots measured about 0.5 to 1 cm. in diameter and resembled in appearance calcified areas. The cortex as a whole showed various hues of pale yellow, and few blood-vessels were seen except in the anterior part of the exposure. Here were several blood-vessels of normal size and the brain had a normal purplish-gray hue. The posterior portion of the exposure showed the same pale-yellow, anemic appearance and on careful depression under the posterior border of the skull this anemic condition could be seen extending posteriorly for a distance as far as 3 to 5 cm., gradually diffusing into normal-appearing cortical substance. The anterior outlines of the area were more sharply demarcated. The upper and lower boundaries corresponded with the flap. The substance of the cortex bulged out in a thinned shell corresponding to the pale-yellow area (5 by 7 cm.), and palpation suggested fluid. An exploring trochar revealed after penetrating a thin cortical layer about 0.25 cm. thick, clear, pale-yellow fluid under tension shooting up a distance of a foot from the operative field. About ½ ounce was evacuated this way, and the cortex immediately collapsed and wrinkled up over this area. Examination of the puncture hole showed the brain cortex to be jelly-like in consistency, in cross section. Further exploration of the cavity revealed no definite cyst wall and it seemed probable that the condition was either a cystic degeneration from circulatory disturbances or else an old hemorrhage which had caused the formation of a cyst. On account of the possibility of infection, drainage was deemed inadvisable, especially as there was an opening 0.5 cm. in diameter connecting the cavity with the subdural space. This was not tampered with. Unipolar faradism did not reveal response, but this was not persisted in very long. Our landmarks were merely from the external measurements and were, therefore, not as accurate as if we had obtained responses from direct stimulation of the cortex.

Closure was done in the usual manner, the dura with interrupted fine black silk, the fascia with the same, after the osteopastic flap had been replaced, and the skin with interrupted fine black silk.

*Result.*—Twenty-four hours after operation the general condition was excellent and the patient seemed very little disturbed from the operative procedure. The examination for motility exhibited no great change twenty-four hours after operation. There was a difficulty in performing the finer movements of the fingers and wrist (mostly apraxic). Flexion of the fingers and abduction of the thumb were especially weakened and limited. Separation of the fingers was as yet impossible. The anterior tibial group was unchanged, and abduction and adduction of the foot as well as extension showed an unchanged weakness. Examinations at intervals for the next eight weeks exhibited an intermittently improving change in the character of the motility of the right hand. (It is interesting to note that the lower phases of this intermittent progress were usually associated with rather marked trophic disturbances, evidencing themselves by a peculiar cyanosis, and a transient, boggy swelling limited to the fingers and palm.) At the end of eight weeks flexion of the hand was such that the patient was able to grasp objects such as a bottle or book, etc. The weakness of the extension of the fingers and wrist had practically disappeared, and adduction and abduction, though still weak, showed a distinct change for the better. At this time, too, the thumb motions had arrived almost at a normal state of activity. The Jacksonian attacks in the right hand have occurred but twice since operation, and within the first three weeks. Since then there has been a complete disappearance of this symptom of motor irritation. The results with the foot were encouraging. Weakness of the dorsal flexor group disappeared. There is still weakness in the plantar flexor group, so that the dragging of the foot, which may be remembered as a prominent feature, is now only of occasional occurrence. Examination twelve weeks after operation showed a still further improvement in the hand. Flexion of the fingers describes the normal arc, allowing the patient to use his hand with only slight difficulty, and this is perhaps more of an apraxic disturbance than a sensory-motor insufficiency. Strength of the grip is excellent, and the wrist movements as well as extension of the fingers is such that it will be difficult to tell this from the normal condition. In the foot, weakness of the dorsal and plantar flexors is not demonstrable. The dragging of the foot on walking has disappeared completely, while resistance to passive motion does not demonstrate any perceptible weakness in the anterior or peroneal group of muscles.

On examination of sensory disturbances forty-eight hours after operation, information was offered by the patient that his hand felt "more natural," and "not so numb." No subjective symptoms were experienced in the foot. No careful tests were made until two weeks after operation, when it was found that the area involving disturbance of heat and cold perception had diminished somewhat so that the upper limit was located at the wrist. Below this, disturbances to sense perception showed no improvement. At times, it may be noted, this condition was as bad as before operation, but these periods of regression were extremely transient, and soon passed off to be followed by an improvement. It was not until the end of eight weeks that we could notice anything like a permanent improvement in the hand. Disturbances in sense perception of the foot entirely cleared up within the month following operation. In the last four weeks it has been possible to follow with accuracy the diminution in the area, the upper limit of which has gradually descended until disturbances in touch perception, especially in the palm of the hand and over the dorsum of the wrist, still stand as the sole reminder of the past disturbances in this field. Subjectively, there is still occasionally an attack of slight numbness in the hand (sensory epilepsy?) which is, however, very evanescent.

No tests for ataxia were made until eight days after operation. At this time the patient had a rather gross ataxia of the right arm and hand and was utterly unable to perform such movements as touching the tip of the nose with the finger. During the seven weeks following, there have been periods of quite marked improvement punctuated with short spells of regression, but during the last month the periods of regression have been absent. The patient still diverges from 1 to 2 inches in touching the finger to stated points. Probably 75 per cent. of his trials are perfect, while the remaining 25 per cent. show this divergence. During the two months following the operation there seemed to be a slight but definite ataxia of the right foot and leg as evidenced in the patient's gait, which occasionally even suggested tabetic stride. This, complicated by the muscular disturbances, made walking not only burdensome but impossible. Lately this ataxic condition has shown a steady decrease, and at present cannot be demonstrated.

On examination fourteen days after operation, perception of the sense of position began to appear. Here we have seen a fairly steady progress with little or no periods of regression. At the end of the eighth week the patient was able to tell in approximately 80 per cent. of the trials the exact position of the arm when passively placed in various attitudes. At present practically 90 per cent. of the trials are successful.

The stereognostic sense showed at first a slow improvement, and was intermittent in its progress. Nevertheless, on the eighth week the patient showed an ability to recognize objects placed in the right hand with a fair degree of accuracy, about 50 per cent of the tests being perceived. Four weeks later, about ten objects were tried, such as a key, watch, pencil, ink bottle, match box and the like, and each object was readily recognized with the exception of one, the recognition of which was delayed for about two minutes.

Evidences of trophic disturbances existed six weeks after operation as seen by cyanosis, glossiness of the skin and a boggy swelling. These were quite marked at the examination two weeks after operation. The fingers were probably half again as big as the fingers of the left hand, while the glossiness and cyanosis were equally as evident. This condition was more or less transient, and appeared several times quite rapidly, possibly in the course of a few hours. Each exacerbation was rather sudden in its appearance, but subsequent diminution usually appeared shortly. Forty-eight hours previous to the last examination the patient had a similar symptom-complex, though the glossiness and cyanosis of the skin was practically absent, and the swelling of the fingers was such that without close observation this symptom might have been entirely missed. (No such disturbances were seen on the foot.) These disturbances went hand in hand with the regression in the sensory disturbances and would frequently mechanically interfere with the motility.

There has been but little disturbance of reflexes. The extremely slight increase which had been noted once in the arm was replaced by a quickly shifting variation in the reflexes on one or the other side, so that at no time was there any permanent distinction. The knee reflex of the right side, however, remained slightly increased. The superficial and organic reflexes have remained unchanged and normal.

The stimulation of the muscles by electricity has been of no special significance. Faradism to the weakened groups showed active response. Galvanism produced normal response.

Contractions and rigidities of the muscles have always been absent.

Apraxic disturbances have been extremely interesting. It will be noted that in the preoperative examination the more intricate movements of the fingers did not exist. Not only was the patient unable to perform such fine movements as buttoning his coat or putting on his collar, but it was also seen that there was frequently a derailment of motor actions, and he would comply to a request by an entirely different motion from that which he was directed to perform. It was noted, however, that subconsciously or spontaneously the patient could perform these movements when the necessity arose. The so-called ideatory apraxia, as far as could be judged, did not exist. The study of the first disturbance (limb-kinetic apraxia) revealed a marked improvement, especially in the last week. From almost utter helplessness, a condition which could not be accounted for by his local sensory motor disturbances, the patient has gradually begun to assume normal duties of eating and dressing with the aid of his hand, and at present rarely requires aid in the performance of these functions. The peculiar derailments noted in the second form of apraxia (ideokinetic) disappeared at the end of the eighth week, and have shown no tendency to appear.

The study of the aphasic disturbances has likewise been an interesting feature of this case. Spontaneous speech has shown the most erratic and striking changes. Eighteen hours after operation the patient showed an improvement which has never been equaled since then. At this time we held a 20-minute conversation, during which time his speech was fluent, easy, rapid and marked by not more than two or three mistakes. This change was noted immediately by the patient, who remarked on it. Following this phase, at examination three weeks later, he was making quite frequent mistakes—perhaps roughly about half as many as before operation. With periods of regression sketched on a broad background of progressive improvement, examination thirteen weeks after operation disclosed, as rare occurrences, mistakes in spontaneous speech, possibly one mistake being made in every one- to two-minute conversation. It was noted that the mistakes were corrected rather rapidly, a condition which had not been seen before. The patient says that he was involved in a long discussion several days previous, and was informed by his son the next day that speech mistakes were very rare. The Sunday previous the patient was called on in church to make a speech and was able to get up without difficulty and tell the assemblage that he had been sick for a long time and did not wish to strain himself attempting to talk publicly. Even under this excitement the patient volunteers that he made no errors.

The tests made four weeks after operation in the repetition of spoken words showed an ability to repeat words with great precision. Following this there was a period during which quite marked difficulty was experienced in this act, but this soon passed away. In the last three weeks repetition has been excellent.

The ability to read aloud has perhaps shown the greatest improvement. Such titles as those on magazines could be read at the end of the eighth week with some difficulty but with much greater facility than previously. The patient says that within the last two weeks (from ten to twelve weeks after operation) he has been able to repeat names that have been on the side of wagons, headlines on newspapers, and various other names which before this time he was entirely unable to transfer into speech, and tests uphold his statements. Legends are read with little difficulty.

Spontaneous writing shows a distinct improvement. At present when asked to write short phrases on a given subject he is able to do this immediately and fairly legibly.

Perhaps the only improvement in writing to dictation has been noted in the time taken to write a short phrase. Twelve weeks after operation the patient, though unable to write legibly, is able, nevertheless, to write immediately and without the continual repetition necessary before. On copying words and letters the patient shows little improvement in legibility, but the response is almost immediate.

In the addition and recognition of numbers there is an almost normal state of affairs. The patient still shows his ability to tell time immediately and he is able to pick out of ten objects each one as it is named. Several weeks after operation there was some hesitancy in this act. The use of these objects has always been recognized fairly well, but it is only lately that the patient has been able to express very clearly the various words.

The symptoms of intracranial pressure have been as follows: Blood-pressure has decreased from 200 mm. by an irregular descent to 160. The pulse fell from 60 down to as low as 52 three weeks after the operation, and gradually and intermittently rose to what was its highest point thirteen weeks after operation, when it registered 84. There have been no vomiting spells or nausea. The eyesight and vision have remained the same.

The psychic state has shown a peculiar course. The patient was emotional to a high degree before operation; there was a comparative stability until about six weeks after operation, when there was an extreme exacerbation of the emotional state, and an inability to utter more than a few words without a crying spell. This condition passed off within the course of a few days, but after that there was a slight tendency toward a depressed feeling. A feeling of encouragement on the part of the patient, and a general return of his good health has been accomplished in the last two weeks by a period of mental stability, which has not been seen in him before. At the present, even now, he is quite easily excited, but in the course of a normal conversation one would not recognize this feature.

Certain features associated with the accumulation and absorption of subdural and extradural fluid at the seat of operation are perhaps worthy of consideration. The wound healed by first intention. Stitches were removed the third day. The final dressing was made on the tenth day. About five weeks after operation there was noticed on deep palpation over the trephine holes what seemed to be a slight accumulation of fluid which would give fluctuation on deep pressure. This condition persisted for a week, and it was impossible to tell whether this was due to accumulation under the dura or to one extradurally located. From palpation it was judged that the dura was lifted and made rather tense under the trephine holes. This condition passed off after the eighth week. What is interesting to note is that associated with this probable subdural collection of fluid the psychic state was greatly disturbed and that the hand was in one of its periods of great regression at this time. Likewise, at this time, also, the aphasic symptoms showed an exacerbation which rapidly disappeared, hand in hand with the disappearance of the fluctuant accumulation.

### CONCLUSIONS

The interesting points concerning this case have been:

1. The history, which suggested the hemorrhagic destruction of brain tissue with aphasic symptoms, followed later by an increase in the symptoms, which indicated a progressive, growing lesion.
2. The rapidity with which the motor and sensory disturbances became evident.
3. The drainage of the cyst by a subdural route made necessary, in our desire to avoid external drainage, by the jelly-like consistency of the brain tissue, which absolutely precluded the possibility of manipulative procedures in this region.
4. The accumulation of fluid under the dura at about the sixth week, as demonstrated through the trephine holes, and the associated psychic and sensory-motor disturbances.
5. The absorption of this fluid with a consequent improvement in the regressive symptoms noted with the previous accumulation.
6. The complete disappearance of the Jacksonian epileptic attacks and of the dragging of the foot, the striking improvement in the motility of the right hand, the marked diminution in the aphasic symptoms, and the betterment, often striking in character, of the sensory, stereognostic, apraxic, ataxic and position-sense disturbances.

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# A CLINICAL CONTRIBUTION TO THE DIAGNOSIS OF EPILEPSY *

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It may not be out of place at this time to make a further report on some studies of epilepsy that have engrossed my attention for several years. The subjects treated comprise the following:

1. The nature and character of the epileptic voice-sign.
2. The outcome of high-dosage administration of bromid for rapidly recurring petit mal.
3. The practical results in Roentgen-ray analysis of gastro-intestinal tracts of epileptics.
4. A short disquisition on the variations of the sella turcica in the recent state of epileptics as shown by Roentgen-ray analysis.
5. A graphic chart for recording the quantitative daily epileptic discharge in severe forms of epilepsy.
6. The differential diagnosis of psychogenic convulsions from genuine epilepsy, together with a plea for the establishment of a central laboratory of research into the nature and treatment of epilepsy.

### THE EPILEPTIC VOICE SIGN

In 1907 I described what I called the epileptic voice sign, and through a method devised by Dr. Scripture

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* Read before the National Association for the Study of Epilepsy, Baltimore, May 25, 1914.

we succeeded in making accurate records and charts of it. The defect was shown to be in the expressionless quality of the epileptic voice. It usually renders the frank epileptic incapable of singing beautifully or speaking well. When the voice defect is once pointed out it is obvious to any one. Instead of the continual rise and fall in melody the vowels and phrases run along on even tones. The speech of the epileptic may thus be designated as "plateau speech"; that is, the melody proceeds by even steps. There is also a tendency to monotony, that is, the successive sounds do not vary much from each other as in normal persons.

Although at the time of the report I expressed the opinion that probably the speech defect developed *pari passu* with the disease, I have since found that this is not the case, inasmuch as many epileptics that I have examined since my first report present the defect in a marked degree although but two or three seizures may have occurred. Again, I have recently examined a number of epileptic individuals in whom there has been an arrest of their disease for several years, and in spite of this prolonged arrest or cure, the voice sign persists nearly if not quite as marked as when the disease was active. One must therefore relegate the voice sign to a part of the make-up of the epileptic constitution, quite independent of the seizure phenomena *per se*. It is true that by appropriate exercises epileptics can learn to speak normally for a time, but the voice readily relapses to the epileptic type through negligence, and indeed, two of my private patients whose epilepsy was arrested for several years took a long and intensive training to remove this voice defect, but have relapsed to their former epileptic type of speech, although all epileptic manifestations have remained continually absent.

It is interesting to note that this voice sign is not the expression of a type of congenital feeble-mindedness so frequently postulated as the essential mental make-up of the preparoxysmal state of epileptics, which mental defect may be proved to exist in perhaps the great majority of the early epilepsies. To prove that the foregoing is true, I will state that in a study of ten selected cases from private practice the voice sign is present in all, although by various carefully given intellectual tests they in no wise suffer any deficit in the intellectual field. Indeed, two of the series were college graduates of no mediocre standing in their respective classes.

It may not be necessary to say that all extraneous causes for the presence of the voice sign such as station in life, bringing up, nationality and sedative treatment have been ruled out. Further, it may be said here that an analysis of the voice sign of some of the ordinary types of feeble-mindedness found in a series of children and adults has proved that their voice type was rather distinctive of another sort of defect entirely. If I were to hazard another guess at this late day, I should say that the voice sign is a part of the epileptic constitution that concerns a fault in the full elaboration of the functioning of speech in which the elemental adjustment of inhibitory control was absent. It is somewhat akin to the peculiarity shown in the awkwardness and lack of smoothness of other volitional movements, both voluntary and involuntary in character, that have so often been referred to by the older writers as the disorders of motility in epileptics independent of seizure periods such as was extensively studied by Reymond years ago. The voice sign is therefore psychophysical in the character and import. While the epileptic voice sign has been incorporated in many text-books, I believe that it has not yet received all the attention it deserves at the hands of clinicians, especially now, when the necessity of sharper distinction between affect epilepsy or psychogenic convulsions and the genuine malady has grown to be of so much importance.

### HIGH DOSAGE OF BROMID IN RAPIDLY RECURRING PETIT MAL

Several years ago I reported on a new and rather rare form of rapidly recurring petit mal epilepsy and gave the details of the bizarre attacks in persons affected by it. Inasmuch as no similar cases have been placed on record since that report, the subject may be thought of little general clinical importance, but two or three points about the disorder are worthy of comment. I have seen one other such case since my report. The attacks in this peculiar form of epilepsy, it will be remembered, were in most instances a simple awakening from sleep, and the attacks occurred a hundred or more times in a single night. The patient no sooner fell asleep than the attacks began, either day or night. In one case as many as 300 separate and distinct attacks occurred in a single eight hours of sleep at night.

The patients usually awaken from deep sleep; the eyes are opened widely; the pupils are dilated and irresponsive to light; the head is moved from side to side. There is an anxious and furtive look in the face. The face may be congested or very pale, and is usually the one or the other to an extreme degree. In a few seconds after the onset the patient executes some incredibly rapid movements of the hands or feet, but with no clear intent or purpose, such as is seen in somnambulistic states. For instance, the patient drums on the bed, executes kicks aimlessly in space, or beats his head, thigh or chest in a senseless way. He may spring in the air or turn somersaults rapidly. Sometimes patients exhibit attention when spoken to, but they most frequently make no coherent reply. Unless disturbed, the patient soon passes into normal sleep at the end of the attack.

In Case 1 the patient met an accidental death after the petit mal had ceased three months. In Case 3 the patient relapsed after a year or more of freedom from her disease; grand mal attacks recurred, and she died of tuberculosis two years thereafter. In Case 4 the patient remained well for three years and then relapsed.

CASE 2.—This case, about which I shall make more extended report, was that of a young unmarried man who came under observation and treatment when he was 21 years old. His disease had originated when he was 18. The family history was negative so far as could be learned. The first seizure was that of petit mal, a turning of the head to the left, and the body was rotated several times to that side. The second seizure was of sufficient physical violence to throw the patient from his bed. The usual and ordinary doses of bromid sedatives stopped the seizures for a time, but later they recurred several times a day, but were always more frequent at night. In a six months' period of observation this patient had over 600 attacks of the peculiar petit mal previously outlined in this paper, and twenty-three typical grand mal attacks. In the next three months under the high dosage of sedatives he had but three grand mal diurnal attacks and no paroxysmal awakening seizures. Three months after, all epileptic manifestations ceased entirely and they have not recurred since. Sedatives were entirely discontinued three months after, or nine months after the high-dosage plan was installed. He has been entirely well for thirteen years; has a good position as traveling salesman, is married and has two apparently normal children. He is in robust health physically and mentally. The point of special interest in these cases is that the peculiar attacks were immediately increased by the ordinary doses of bromid (from 60 to 120 grains daily), but as the dose was increased from 120 to 180, or even to 230 grains daily, as in the case with recovery, detailed above, all attacks ceased.

The process of treatment was undertaken with the greatest care. The principle of high dosage of bromid may be stated as a form of hyperbromidism, bromid intoxication or poisoning. The drug was given in a steadily increasing dose, as that of iodid in specific disease. The patient had high rectal irrigation once or twice daily to reduce the amount of congestive catarrh, eliminate toxins induced by faulty metabolism or deficient oxidation, and for its diuretic effect. The patient was also given prolonged hot packs and baths at night for diaphoretic effect, and cold douches, sprays and cold dripsheet treatment mornings to stimulate the peripheral sensory nerves and to preserve vasomotor tone. Vigorous deep massage was steadily maintained to cleanse the muscular circulation. The inordinate tendency to local stasis of circulation in the skin under such extreme sedation and its consequent depression of the skin function shown in acne, etc., was corrected by face packs, hot moist bran applications, and mild stimulation of ointment applied at night. Mouth and nasal cleanliness, occasional lavage of the stomach and large quantities of aerated Vichy water (two or three quarts daily) were necessary. Respiratory gymnastics were not forgotten.

The disorder might be considered as a paradoxical narcolepsy. While the condition is surely rare it is by no means the intractable form of epilepsy noted by Herpin and Delassauve. The recent case which has not yet been placed on record behaved in the same clinical manner as those above noted and was given the same treatment. The patient has now remained two years free from his paroxysmal awakening attacks, the last year without any sedatives, and has shown no other manifestations of the epileptic disorder.

### GASTRO-INTESTINAL ROENTGENOSCOPY

Last year Dr. Bushy and I undertook to analyze thoroughly the gastro-intestinal tract of a small but select group of epileptics, and a report was made at the American Neurological Association in Washington. We found an abnormal position of the various parts of the gastro-intestinal tract present in every case examined. We were not then, nor are we yet, able to explain the genesis of these defects in epileptics. We presume, however, that it is not greatly dissimilar to that inducing the same condition in other persons not suffering from epilepsy. I believe that every case of beginning epilepsy ought to be thus analyzed whenever a markedly disordered digestion is in clinical evidence. In a few instances we demonstrated that the abdominal belts as ordinarily applied were entirely useless to replace abdominal viscera; neither the prolapsed splenic nor hepatic flexures were altered in the least by such appliances. It may be possible that the binders applied in the Trendelenburg position may be of service in this respect.

A point of considerable practical moment following these Roentgen-ray examinations has been a more or less definite indication to just what parts of the abdomen one should apply kneading and massage movements over the great intestine. I have found this therapeutic procedure of the greatest value, particularly when there has been a tendency to stasis in the ascending colon. One must remember that in not a few such cases of ptosed colon disorders but a little functional aid is all that is frequently needed. This view probably accounts for many simple practices being efficient, for a time at least, in restoring a relatively normal function of the colon in constipated persons. After all, the functional test of efficiency is the final proof of the value of any treatment for colon stasis. The outcome in such cases is the more easily rationalized if we know the relative position of the viscera as shown by Roentgen-ray examination of the intestinal tract. It may be added here that the reexamination of two cases of colon stasis several months after an improved functioning of the bowels had taken place showed no essential change of position in the structures which had been previously analyzed by the Roentgen ray. However this may be, we still believe that Roentgen analysis of the defective digestive tracts of epileptics is of both diagnostic and therapeutic value. It is an excellent supplement to the chemical and bacteriologic tests already in use. Close attention to the digestive tract forms a prominent part of any comprehensive hygienic plan of treatment in epilepsy.

### VARIATIONS OF THE SELLA TURCICA

The foregoing subject leads us naturally to the next, a Roentgen study of the variations of the sella turcica as shown in the recent state in some epileptics. In a general way one may state that Roentgen-ray work on the head, particularly to gain valuable information of a positive nature, has not been much improved on, and our Roentgen knowledge of the variations in the cranial viscera has had no such advancement as that of the abdominal viscera. There is little opportunity as yet for us to make parts of the brain denser than others so the different parts of the cranial content may be made distinctive. It is true, however, that improved Roentgen technic has made possible an excellent examination of the entire bony envelope of the brain both inside and out. Even large tumors or abscesses in the brain, though they may be of considerable density, are infrequently recognizable by Roentgen ray. It seems therefore that a great step must still be taken before we shall discover a method of Roentgen analysis of actual brain alterations, such as minute focal or general gliosis of cortical tissue which has been postulated as the morbid anatomy of the epileptic brain. The idea is, however, within the scope of possibility.

In the meantime a new question in Roentgen analysis of the epileptic cranium has arisen: what rôle the ductless glands play in the development and continuance of epilepsy itself, and particularly the pituitary gland. The remarkable impetus the whole subject of the function of the pituitary gland and the modifying influence which its abnormal functioning has on the rest of the body received great acceleration from the admirable work of Cushing in this special field. The interest in the different functions of the various glandular structures embraced in the pituitary has caused not a little inquiry about the bony envelope of the gland itself, the sella turcica. In such an investigation one must not neglect the commonness of variation in the epileptic cranium, a fact emphasized again and again in anthropologic studies of such individuals. Nevertheless many of us have noted rather remarkable changes in the posterior clinoid processes. They often hook over so as to nearly close the sella cavity; in a small clinical material of a score of cases now in my hands but three or four of this number present this pronounced sella variation. It is, of course, impossible for one to say just what influence this bony variation may have on the posterior lobe function. Certain it is that the cases showing this condition of the sella present no physical abnormality or variation in the epileptic state different from those not possessing it. Two of my patients who showed marked alteration of the sella were given pituitary extract hypodermic medication without any apparent alteration of the epilepsy for the better.

One cannot help but think that any such empiric medication must come to naught, especially in view of the fact that one neither knows the real nature and pathology of the disease, nor the nature and function of the pituitary secretion. Even if the pituitary secretion were the proper one to be supplied in the epileptic state, any of the present methods of administration must be considered too crude in practice when compared with that by which Nature supplies the same secretion in daily bodily metabolism. This statement is true in spite of the much overworked parallelism of thyroid medication in cretinism and allied states of myxedema. Again, a pure and properly prepared pituitary extract of the posterior lobe is probably not on the market to-day.

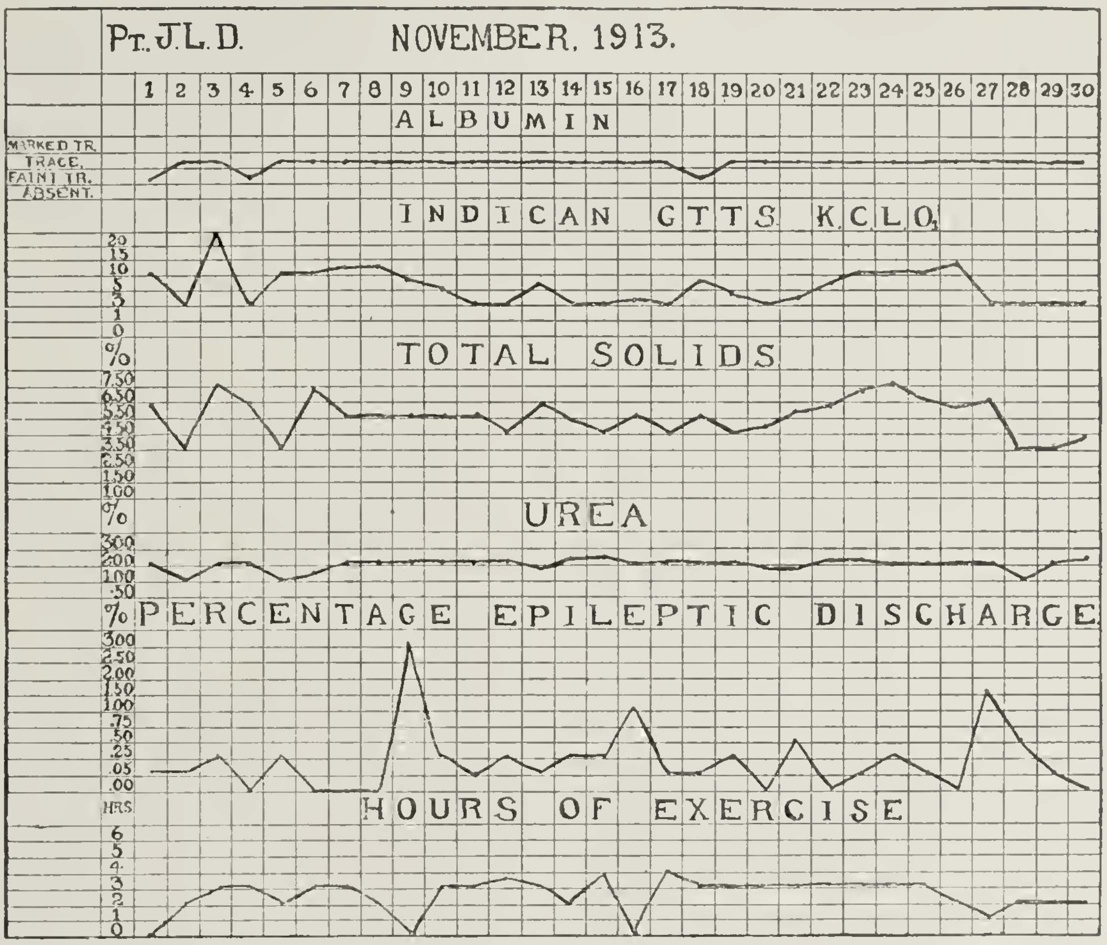

Chart showing a method of graphic tabulation of daily record of albumin, indican content, total solids, urea output of the urine, and hours of exercise contrasted to a graphic curve of the epileptic state in which the latter is estimated on a basis of percentage or scale. The slightest attacks, psychic in character, are given a value of 50 per cent., while the severest, grand mal attacks, are valued as 100 per cent. The method is of greatest use in recording epileptic states of maximum severity in which one or more attacks occur daily.

### THE QUANTITATIVE DAILY EPILEPTIC DISCHARGE

For some time I have been interested to determine and measure the amount of dynamic loss to the epileptic in his seizures, this to be measured by a quantitative scale in order that it may be chartered in a graphic curve. The idea is the more interesting when the epileptic attacks are frequent and vary in character so that the ordinary record, wherein single attacks are reported, is often misleading to one hastily viewing them. In many such cases I have employed a chart similar to the one shown here. We find recorded here by daily analysis the urine tests for albumin, indican scale, the total solids, urea, and the number of hours of exercises the patient indulges in. The seizure record is made in a graphic chart by giving a definite small percentage value to the slightest psychic episodes which the patient has and then gradually grading the severer attacks to the largest percentage for the grand mal attacks. By this scheme one gains a much clearer relationship of the amount of epileptic discharge that obtains than by the ordinary employment of numerals for the seizure attack. I hasten to add, lest some one may ask for the individual interpretation of the scheme, that I am not ambitious to say just what this chart proves in any causal relationships in the curves.

### DIFFERENTIAL DIAGNOSIS

Since the interesting and perturbing advent of the psychanalytic school, epileptologists have experienced another partition of their clinical garment of epilepsy as an established disease entity. There has been a special rendition of the petit mal type. Out of this group more especially has been built up the so-called affect epilepsies, or better, the psychogenic convulsions of the neuropathic. It may seem surprising to many of the uniniated that inasmuch as the so-called genuine epilepsy is generally recognized as an organic disease, the psychogenic seizures should be in any way compared with the former. It largely goes to prove on what slender basis an organic disease entity may be postulated when its integrity depends on group symptoms or a syndrome without exact knowledge of its underlying pathology. I venture to say that even many skilled clinicians to-day depend largely on the description of the seizure type for a final diagnosis of the disorder. Only in a secondary way do they take cognizance of the primary epileptic constitution and the secondary deterioration of the malady as well as the physical stigma of the disease. It may seem that the latter statements appear superfluous, but it should be borne in mind that not a few of us have seen many institutional cases in their very beginning when the diagnosis has been by no means easy. In my institutional life with epileptics I often wondered why many treatises on epilepsy devoted so much time and space to the differential diagnosis of epilepsy; I have since learned better. Given a poor description of some sort of convulsive attack by an excited and distraught relative, one has need of the keenest intuitive powers and the most careful examination before making a certain diagnosis. To us extramural physicians, therefore, the advent of the psychogenic type of seizures is especially perturbing. While nearly all old text-books emphasized the infrequent but certain occurrence of epileptoid convulsions, and, indeed, even true attacks emotionally induced in the otherwise frankly epileptic, these statements gradually lost place in modern works until to-day it reappears in many clinical studies almost like a new fact, that many attacks in epileptics are emotionally induced. For some time the situation has been made the most of by many quacks in dealing with many excitable and neurotic epileptics. Any one having much to do with epileptics, especially one living in close contact with them in colonies and institutions, daily witnesses true epileptic attacks psychically induced. Many types of peculiar seizures are also seen which are not epileptic at all but possess many characteristics akin to genuine hysteric convulsions. No two neuroses, any more than two organic nervous disorders, are mutually exclusive. A luminous essay might easily be made from a study of the various psychoneuroses seen in epilepsy. Many phenomena now classed as epileptoid or epileptic manifestations such as the epileptic twilight state, day dreams, temporary absences following emotional affects, frights, panics, distractions, pure phantasies and a notable criminal disposition shown in cruelties and assaults, may all be shown in part if not wholly to be due to outbursts of incompletely repressed affects. There can be no doubt that many such symptoms compared with the same occurring in pure psychoneurotics are in no respect dissimilar in manifestations or cause. Not a few of the so-called reflex and traumatic epilepsies of the past have been but thinly disguised psychogenic convulsions. One must bear in mind that in such cases the ordinary so-called stigmas of hysteria are absent, but even tongue biting and incontinence of the bowels and urine may occur and yet the disorder be psychoneurosis. I have seen two cases of the latter sort proved out by observation and treatment. However, true that in the majority of epileptics tongue biting and passing of urine in the attack may be good evidence for an organic or genuine epilepsy, one needs to remember that such symptoms *can* occur and the case not be one of epilepsy.

In the light of the foregoing it is easier now to make disposal of many reports of atypical and bizarre epilepsies, especially such as have been reported by Brush, Newmark and Sanger Brown. It is obvious, therefore, in a given case of epilepsy which shows none of the make-up of the epileptic constitution and no physical or mental deterioration from the malady, that one should consider such a case with the greatest care in the light of our knowledge of affect epilepsy or a psychogenic convulsant in a neuropath. One also should remember that a few cases of dementia praecox have epileptoid attacks. I meet such patients almost weekly. If time permitted I could cite many illustrations of the fact. At present I have no less than four cases of mixed types of convulsive attacks to diagnose differentially. In a brief statement it may be said that psychoneurotic episodes are differentiated from the ordinary types of so-called genuine epilepsy in that the former are symptomatic expressions of incompletely repressed and painful affects, having greater constancy, are often prevented or repressed purely by suggestion, may be displaced or prevented by psychanalysis and are usually unfavorably influenced by sedatives. The amnesic episodes are purely functional, and intelligence tests show no defects. The promptness and completeness by which the affect epilepsies may be cured make one wish that ordinary epileptic states were more frequently of this less grave nervous disorder. I attempt a partial analysis of every case of genuine epilepsy in the hope of removing many of the psychic elements that may act as irritants to the true disorder. It often fortifies the ground gained in the improved and arrested cases of epilepsy. Careful psychanalytic studies in true epilepsy are still to prove a mine of valuable and practical facts. It may yield data of practical points in treatment.

I wish to emphasize the great importance of establishing a central laboratory for research in convulsive disorders, the organization of which I made the basis of an address several years ago in the New Haven meeting of this association. Almost every other grave and wide-spread disorder which afflicts humanity by the thousands has had its special private or state endowment, and its laboratories busy in research. In the general study for the betterment of such human scourges as cancer, tuberculosis and insanity the cause of research into the nature and prevention of epilepsy seems to have lagged far behind. I am sure that no one thing would advance human welfare more than such a central laboratory for intensive research into the cause and prevention of epilepsy.

I trust the foregoing clinical exposition is of sufficient moment to warrant my further report on the several subjects at this time, and that it will be of sufficient interest to stimulate further clinical research into the still obscure clinical manifestations of this strange disease.

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# A CULTURE OF B. TUBERCULOSIS FROM THE BLOOD POST MORTEM OF A CASE OF MILIARY TUBERCULOSIS

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A careful review of the literature on tubercle bacillemia has failed to show a single instance in which the tubercle bacillus has been grown from human blood. A few unsuccessful attempts to obtain such cultures are cited by Bergeron[1] in his review, which is dated 1904. Anderson[2] in 1909 made blood cultures from forty-eight cases of tuberculosis, all of which were negative. He was successful in obtaining three positive blood cultures from eight artificially infected rabbits, and this is the only recorded instance in which the tubercle bacillus has been cultivated from the blood of tuberculous subjects.

The reasons for such uniformly negative results are easily seen. Any one who has attempted to grow tubercle bacilli, even from material rich in organisms and uncontaminated, is familiar with the difficulty of getting the growth started. Complete aerobiosis, a carefully regulated temperature, carefully titrated mediums, and proper moisture are all necessary to induce Koch's bacillus to multiply on artificial soil. Cultures from the blood present several obstacles to the attainment of the above ideal conditions, chiefly the fact that the few organisms which might be present in the small amount of blood utilizable will in all probability be buried in a mass of red cells and fibrin if the blood is poured over solid mediums, and so be shut off from the access of oxygen in the air. Even should growth begin and a colony develop, it would be extremely difficult to find on the rough and heterogeneous surface of such a culture. Poured agar cultures and cultures in liquid mediums are open to a similar objection, namely, the conditions of partial anaerobiosis. The ideal method would seem to be to lake the blood in sterile distilled water, centrifugalize at high speed and spread the sediment over the surface of suitable solid mediums. The writer has twice attempted this method without success, but still believes it to offer the best chances of success.

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[1] Bergeron, André: Etude critique sur la présence du bacille de Koch dans le sang, Thèse 223, Paris, 1904.

[2] Anderson, J. F.: The Presence of Tubercle Bacilli in the Circulating Blood in Clinical and Experimental Tuberculosis, Bull. 57, Hyg. Lab., U. S. P. H. S., 1909.

The other main reason for previous failure is the fact that tubercle bacilli cannot be demonstrated in the blood by any valid method in more than a small percentage of cases of tuberculosis. Fraenkel[3] reviewed the whole subject very thoroughly in 1913, and after concluding that animal inoculation is the only safe test for the presence of tubercle bacilli in blood, compiled figures from the literature to show that about one hundred positive inoculations had resulted from five hundred experiments. He adds that many of these positive results are of questionable authenticity. In many instances the antiformin method had been used and the finding of acid-fast bacilli in tissues without gross tuberculous changes had been accepted as sufficient evidence of tuberculosis.[4]

It may therefore be of interest to compile the results of inoculating guinea-pigs with the blood of tuberculous patients and to note the number of cases in which the presence of the tubercle bacillus has been demonstrated by *gross* tuberculous changes in the test animals. Collecting the statistics embodied in papers[5] published in the last three years (1911-1914), I have found that the blood from 1,060 cases of tuberculosis was so tested and that forty-five of the guinea-pigs used showed gross tuberculous changes. These figures indicate 4.2 per cent. positive results, but the actual figure is undoubtedly even lower, because in many of the tests two guinea-pigs were used and in some instances, at least, both of them became infected.[6]

In view of this low figure it is clear that most attempts at cultivating *B. tuberculosis* from the blood are foreordained to failure. This is true particularly for cultures made *intra vitam.* With blood cultures made at necropsy, however, the outlook is more promising. Meisel[7] reported eight positive inoculations from eleven cases, and Seidenberger and Seitz[8] reported nine out of twenty-six, all the guinea-pigs showing gross changes. These figures, the only ones that I have been able to find bearing on this point, show 38 per cent. positive inoculations from blood taken at necropsy. It appears, therefore, that shortly before death tubercle bacilli appear in the blood stream either in greater numbers or with greater frequency than before this time.

Between February and July, 1914, blood cultures were made at the Babies' Hospital from twenty-one cases of miliary tuberculosis. Ten cultures were made during life, fourteen after death, and in three cases cultures were made both before and after death. The quantity of blood taken varied from 1 to 5 c.c. Of these cultures only the one here reported was positive. In one other case a number of acid-fast bacilli were found in the culture at the end of two weeks, but the growth—if it was a growth—failed to develop further and later the contents of the tube failed to infect a guinea-pig. In another case the numerous acid-fast bacilli found in the smear were shown to have come from distilled water used in making the preparation for microscopic examination. These experiences emphasized to the writer the dangers of purely microscopic diagnosis in tuberculosis and the absolute necessity of corroboration by animal experiments.

The patient from whom the positive culture was obtained was a white boy 2½ years old, whose tuberculous infection dated back about two months and was the sequel of an attack of whooping-cough. The diagnosis of tuberculosis was made during life and corroborated at necropsy. Cheesy bronchial lymph-nodes, extensive caseous change, with a cavity in an area of old bronchopneumonia in the left upper lobe, tuberculous ulcers in the intestine and miliary tuberculosis of the lungs, spleen, liver and kidneys, were the principal pathologic findings.

Blood was taken for culture in the following manner: After opening the thorax, the pericardium was slit with scissors and the edges folded back. An area of about 2 x 2 cm. over the right ventricle was carefully seared with a red-hot knife. The knife was again heated and immediately plunged into the heart cavity. A sterile pipet was introduced into the opening and a little over 1 c.c. of fluid blood was withdrawn and transferred directly to a plain agar slant. The tube was laid so that the blood covered the surface and, when the necropsy was completed, sealed with paraffin and laid in a similar position in the incubator.

This culture, not originally taken for the purpose of demonstrating tubercle bacilli, remained apparently sterile, and it was decided to keep the tube as part of a series of blood cultures from tuberculous patients, which was begun at this time. The tubes of this series were examined microscopically once or twice a week. In the process of examination the contents of the tube were scraped with the platinum loop and partly redistributed over the surface. This not only gave access of air to the bacilli present but probably formed a layer of serum on the agar surface in which the bacilli could multiply. It is certain that plain agar is not a suitable medium for initial cultures of the tubercle bacillus and the successful growth in this case must be attributed to some such fortuitous circumstance.

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[3] Fraenkel, E.: Nachweis von Tuberkelbacillen im strömenden Blut. Schmidt's Jahrb. d. Med., 1913, cccxvii, 317.

[4] In view of the work of so many investigators (Brem, Walter V.: Investigation of Blood for Tubercle Bacilli, THE JOURNAL A. M. A., Sept. 18, 1909, p. 909. Von Lehmann, A.: Eine Fehlerquelle bei der Antiforminmethode, Deutsch. med. Wchnschr., 1913, xxxix, 1556. Holmes, E. B.: A Study of the Alleged Presence of Tubercle Bacilli in the Circulating Blood; Am. Jour. Med. Sc., New Series, 1910, cxxxix, 99. Kahn, E.: Zum Nachweis der "Tuberkelbacillen" im strömenden Blut, München. med. Wchnschr., 1913, cx, 345. Dreesen, H.: Ueber das Vorkommen von Tuberkelbacillen im strömenden Blute, Med. Klin., 1913, ix, 580.) proving that acid-fast bacilli are frequently present in distilled water and therefore in reagents made up with distilled water, it would seem that the time has come to reject the antiformin method and all other methods in which the diagnosis of tuberculosis is made from simple microscopic demonstration of acid-fast bacilli and to discard the results of previous experiments based on such methods.

[5] Rumpf: München. med. Wchnschr., 1912, No. 36. Bernard, Debré and Baron: Recherches sur la bacillémie chez les tuberculeux, Bull. Soc. d'étude scientif. sur la tubercul., 1912, ii, 154. Querner, E.: Ueber Vorkommen von Tuberkelbacillen im strömenden Blut, München. med. Wchnschr., 1913, cx, 401. Bacmeister: Virulente Tuberkelbacillen im Blut nach der diagnostischen Tuberculininjection, München. med. Wchnschr., 1913, No. 9, p. 343. De Verbizier, A.: Nouvelles recherches sur la présence du bacille de Koch dans le sang circulant des tuberculeux, Rév. de méd., 1913, xxxiii, 161. Fraenkel, E.: Tuberkelbacillen im strömenden Blut, Deutsch. med. Wchnschr., 1913, xxxix, 737. Rist, Armand-Délille and Lévy-Bruhl: Sur la prétendue bacillémie des tuberculeux, Bull. Soc. d'études scientif. sur la tubercul., 1913, iii, 19. Rothacker and Charon: Das Vorkommen von Tuberkelbacillen im strömenden Blut, Centralbl. f. Bakteriol., 1913, cxix, 478. Elsaesser, J.: Tuberkelbacillen im Blutstrom bei Lungentuberkulose, Beitr. z. klin. Tuberk., 1913, xxvi, 367. Kachel: Ueber Tuberkelbacillen im strömenden Blut, Beitr. z. klin. d. Tuberk., 1913, xxviii, 275. Moewes and Brautigam: Tuberkelbacillen im Blute, Deutsch. med. Wchnschr., 1913, xxxix, 2031. Klopstock and Seligmann: Zur Frage des Vorkommens von Tuberkelbacillen im strömenden Blut, Ztschr. f. Hyg. u. Infectionskrankh., 1913, cxxvi, 77. Haas, W.: Ueber den Nachweis von Tuberkelbacillen im strömenden Blut bei chirurgischen Tuberkulosen, Beitr. z. klin. Chir., 1914, xc, 78. Storath, E.: Ueber Bedeutung und Auftreten virulenter Tuberkelbacillen im Blut nach der diagnostischen Tuberkulininjektion, Ztschr. f. Tuberk., 1914, xxii, 1. Mayer, A.: Ueber das Vorkommen von Tuberkelbacillen im strömenden Blut und in der menschlichen Milch, Ztschr. f. Tuberk., 1913, xxi, 447. Seidenberger and Seitz: Ueber das Vorkommen von Tuberkelbacillen im Herzblute bei chronischer und latenter Tuberkulose, Virchows Arch. f. path. Anat., 1914, ccxv, 89. Liebermeister: Deutsch. med. Wchnschr., March 13, 1913 (Discussion).

[6] It has been objected that guinea-pig inoculation is not a perfect test for the presence of tubercle bacilli in tissues because one bacillus will not certainly cause infection. This is true. Nevertheless, since purely microscopic methods are not above suspicion, animal inoculation is at present the only satisfactory test. It is also very delicate since Selter (Vortrag auf d. Niederrhein, Ges. f. Nat. u. Heilk., Bonn, July, 1912, Discussion), as is well known, showed that ten bacilli almost certainly infect a guinea-pig.

[7] Meisel, W.: Vorkommen von Tuberkelbacillen im Blute bei der allgemeinen Miliartuberkulose, Wien. med. Wchnschr., 1884, Nos. 39 and 40.

[8] Seidenberger and Seitz: See Footnote 5.

After two weeks' incubation two or three acid-fast rods were seen in smears from the culture but as these were not perfectly typical no transplants were made. When the culture was one month old a clump of acid-fast bacilli, consisting of about twenty organisms, was found. These looked much more like genuine tubercle bacilli but were so closely clumped that identification was not then clear. Transplants were now made to glycerin-veal-agar, blood-agar, coagulated egg and to tubes of the egg-broth medium recently devised by Besredka and Jupille. The last proved to be the most suitable medium and showed at the end of two weeks small crumb-like masses of acid-fast bacilli which were identical morphologically with genuine tubercle bacilli. Transplants were again made and the growth carried, in the same medium, to the fifth generation. Two cubic centimeters of a month-old culture in egg-broth belonging to the third generation were injected subcutaneously into the abdomen of each of two guinea-pigs. Four weeks later one of these died and showed a cheesy nodule at the site of inoculation, miliary tubercles of the inguinal lymph-nodes, tuberculous peritonitis, the great omentum rolled up and caseous and miliary tuberculosis of the liver, spleen and lungs. (Probably in this case the needle had pierced the peritoneum.) The second guinea-pig died five weeks after inoculation and showed enlarged, cheesy inguinal lymph-nodes, partly caseous retroperitoneal nodes and miliary tuberculosis of the spleen, liver, right kidney and lungs.

Smears made by rubbing portions of the spleens of these animals on new, clean slides showed innumerable acid-fast bacilli resembling in all respects genuine tubercle bacilli.

I regard it as a matter of good fortune that this culture, made on an unsuitable medium, should have been successful. The other attempts, as has been stated, all gave negative results. About fifty tubes and flasks in all were inoculated and several methods employed. Among these may be mentioned placing blood in shallow, broad-based flasks containing, variously, glycerin-beef-broth, glycerin-veal-broth without peptone or salt, and Besredka's egg-broth; and in slants or flasks of glycerin-beef-agar, glycerin-bob-veal-agar, coagulated egg and glycerin-blood-veal-agar. In two cases the hemolyzed and centrifugalized blood was spread on glycerin-veal-agar in large, wide-mouthed bottles. In all cases the containers were carefully sealed with paraffin, rubber caps or lead foil. Of the cultural methods named none seems satisfactory except the last. I hope that this method may be tried more fully and believe that it may yield a number of positive results, especially with cultures from the heart's blood at necropsy.

My thanks are due Dr. L. Emmett Holt for permission to publish this paper, and to Dr. Martha Wollstein for direction of the pathologic work.

Babies' Hospital.

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# RABIES

## ITS DIAGNOSIS IN ANIMALS AND PREVENTION IN MAN

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On account of the increasing prevalence of the disease,[1] and in view of the ease with which the general practitioner may administer the prophylactic measures at the home of the patient, even if he is situated at a place some distance from the laboratory which supplies the material for treatment, a brief consideration of some phases of rabies in their bearing on diagnosis and prophylaxis may not be out of order.

Diseases which are contracted by man solely from one of the lower animals afford better opportunities for effectual prevention than other infectious diseases; and when the animal concerned is a large domestic quadruped, the problem becomes easier in proportion to the simplicity with which the animal may be controlled. Rabies has been eradicated in the island of Great Britain, both in human beings and in animals, the measures adopted being merely the muzzling of all dogs and prohibition on the importation of canines except after a quarantine sufficiently long to prevent the admission of a rabid animal to the island. Unfortunately in the United States, owing to state laws, general muzzling of all dogs is impossible, and rabid dogs may pass from one state to another, spreading the disease so that eradication by this means seems impossible for the present at least. Since this is the case, it becomes the duty of each individual physician to familiarize himself with the nature of the disease and its prevention so that each may contribute his share toward diminishing the mortality rate among human beings.

Since rabies is transmitted to man almost entirely by dogs, knowledge of the characteristics and of the diagnosis of the disease in that animal is of more importance than the diagnosis in man himself. Clinically the diagnosis is seldom difficult when the disease is advanced. As Hutyra and Marek[2] state:

> The symptoms of irritation, the aggressive conduct and subsequent paralysis, particularly the appearance of bulbar paralysis, forms a very characteristic picture of the disease, and the diagnosis is made easier by the existing suspicion of infection. Statements that no bite has been received must be taken with reservation, as slight wounds are inflicted not infrequently without the knowledge of the owner. In making the diagnosis the former behavior and temperament of the animal must be taken into consideration.

Laboratory methods when properly performed are sufficient to make a diagnosis, but the work is greatly facilitated and correspondingly expedited if clinical evidence is at hand in addition, and therefore animals which are not manifestly rabid should not be killed as soon as they have bitten but should be confined for observation by a competent veterinarian. If the animal shows no symptoms in fourteen days[3] there is no danger of the person bitten contracting rabies from that bite, while if symptoms appear or the animal dies from rabies within a week or ten days, the Pasteur treatment may be started at once without reference to laboratory diagnosis, although the latter may still be utilized to make the diagnosis doubly sure.

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[1] Hart, George H.: Circ. 129, U. S. Dept. Agric., Bureau of Animal Industry, 1908. Mohler, John R.: Farmer's Bull. 449, U. S. Dept. Agric., Bureau of Animal Industry, 1911. Kerr, J. W., and Stimson, A. M.: The Prevalence of Rabies in the United States, The Journal A. M. A., Sept. 25, 1909, p. 989.

[2] Hutyra and Marek: Pathology and Therapy of Diseases of Domestic Animals, translated by Mohler and Eichhorn, i, 483.

[3] Hart, George H.: Circ. 129, U. S. Dept. Agric., Bureau of Animal Industry, 1908, p. 15.

In man the disease is usually very readily diagnosed except in cases in which the bite has been overlooked at the time inflicted or forgotten shortly afterward. It is commonly divided into two stages of excitement and paralysis which follow one another in the order named but without strict regularity in this respect. When patients are seen with no history of having been bitten, the condition is frequently confused with other acute affections of the brain and meninges, and when the diagnosis is made previous to death, it is usually by the exclusion of other causes of irritation rather than from any pathognomonic symptom or symptom complex. The fear of water, which is due to spasm of the glottis from the laryngeal irritation occasioned by swallowing and the condition of general hypersensitiveness during the stage of excitement, or to choking from the entrance of fluids into the larynx during the paralytic stage, is quite characteristic. This spasm or paralysis of the laryngeal muscles also gives rise to the peculiar sound, resembling the barking of a dog when the patient attempts to speak. A positive diagnosis is probably seldom made until after death except in those cases in which symptoms follow a bite from an animal definitely known to be rabid.

A rapid diagnosis of the condition in the laboratory depends on the recognition of Negri bodies in the nerve cells of the brain of the animal.[4] While the accuracy of this method has been questioned,[5] and some still adhere to their views,[6] it is generally accepted among those most active in the work that Negri bodies are constantly present in rabies and absent in health and other diseases.[7] More recently Noguchi[8] has successfully cultivated these bodies and reproduced the disease with the cultures. Mohler[9] gives the results as 96 per cent. positive in rabid animals, presumably dogs.

Certain difficulties may arise in the laboratory examination as a result of lack of care in preparing the material. If the dog is killed early in the disease, the bodies may not have developed sufficiently either in size or number so that they may be recognized by our present microscopic methods. This difficulty would be almost completely eliminated were it not for the almost universal custom of killing any dog on suspicion as soon as he has bitten any one. As is noted above, he should be confined and observed for at least a week, during which, if he is infected with rabies, more definite symptoms than the mere defensive act of biting will develop. The only excuse for killing a dog immediately after he has bitten is in the case of an animal in the furious stage, when attempts at capture alive will in all probability lead to the infection of more individuals. A second difficulty arises from the appearance in the brain soon after death of artefacts which are indistinguishable from Negri bodies by microscopic methods, if the brain has not been properly cared for. It is with a view of diminishing the latter difficulty that the methods described in the section on preparation of material are suggested.

To further emphasize these two points, namely, the inadvisability of killing the dog early in the disease and the necessity for carefully preparing the material for shipment to the laboratory, it need only be recalled that when a human being has been bitten and the microscopic examination has been indefinite for either of the foregoing reasons, it is necessary to inoculate rabbits before the true state of affairs can be determined. Animal inoculation is practically useless for diagnosis in time to determine the necessity for preventive immunization, for characteristic symptoms seldom develop in animals in less than two weeks, and in order to insure the best results from the Pasteur treatment, it must be begun within the week following the bite. The physical discomfort and expense of this treatment, together with the suspense on the part of both the patient and physician until the results of the animal inoculation are known, surely justify the care in the preparation of the material necessary for a more rapid diagnosis.

### PREPARATION OF MATERIAL

In hot weather and at all times of the year when shipment is to be made from points more than two hours distant from the laboratory, it is best to place the material in a clean metal can or box, to solder it shut to prevent leakage or contamination and to place it for shipment in the center of a box filled with ice. If the material can be delivered at the laboratory within two hours after the death of the animal, it is best to forward the head and neck with as little anatomic disturbance of the parts as possible. When shipping from points estimated to be more than six hours distant from the laboratory, in order to insure a diagnosis within a week, it is best to remove the brain, to bisect it in the middle line and place one-half in sterile glycerin and the other half in a 10 per cent. solution of formaldehyd gas. Although this method of preservation prevents the diagnosis from the fresh tissue, it will obviate difficulties arising from decomposition and bacterial contamination, and the part in formaldehyd solution can be readily manipulated so as to give a diagnosis within a week at most. When doing a necropsy on an animal suspected of having had rabies, the contents of the stomach should be noted, since the absence of food and the presence of foreign bodies is perhaps more characteristic of the condition than any feature which can be determined by macroscopic examination. Since the brain and other parts may be infectious, the necropsy should be done with care, and rubber gloves worn lest the operator be infected through small abrasions on the hands.

### LABORATORY DIAGNOSIS

Material may be classified according to the methods which must be pursued at the laboratory as follows: first, material received without preservation; second, material which has been preserved either in hardening agents which kill the virus or in fluids which preserve the virulence but to a certain extent limit bacterial contamination of the virus. Unless material intended for examination while fresh is preserved from decomposition during shipment by cold, it is likely to be useless for microscopic examination, since, as was noted above, artefacts appear soon after death. While it is true that certain methods of staining are held to bring out the intracorporeal granules in the Negri bodies and thus distinguish them from artefacts, a stage of development is conceivable in which these granules may not be present in the parasite, and it is also true that the artefacts may appear to contain similar granules. Preserved material does away with the possibility of decomposition, and while it does not afford so rapid a method as the fresh material properly preserved, it will certainly enable a surer diagnosis to be made in a shorter time than if only decomposing brain substance is at hand.

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[4] Negri, A.: Ztschr. f. Hyg., 1903, xliii, 507, and xliv, 519.

[5] Keirle, N.: Studies in Rabies, Baltimore, 1909, p. 347.

[6] Bloodgood and McGlannan: Practical Treatment, Musser and Kelly, Philadelphia, 1912, ii, 606.

[7] Ravenel, M. P.: Modern Medicine, Osler and McCrae, Philadelphia, 1913, i, 959.

[8] Noguchi, H.: Jour. Exper. Med., 1913, xviii, No. 3.

[9] Mohler, John R.: Farmer's Bull. 449, U. S. Dept. Agric., Bureau of Animal Industry, 1911, p. 8.

Of materials which destroy the virus, a 10 per cent. solution of formaldehyd gas in water is probably the best, since it fixes well *en masse* and is usually more readily obtainable than other reliable fixing solutions. If it cannot be secured, a saturated solution of mercuric chlorid in alcohol, alcohol, or any of the commonly used fixing solutions may be used. Sterile neutral glycerin is probably the best fluid for retaining the virus in a fresh state, but if it cannot be obtained, sterile physiologic salt solution may be used.

The laboratory procedure available may be divided into two classes: first, the finding of the Negri bodies in the brain either in smear preparations or in cut sections, and second the inoculation of the brain substance into susceptible animals. Either of these procedures, if positive, is sufficiently characteristic of rabies to justify the Pasteur treatment, although on account of the time element, animal inoculation is seldom practiced for diagnostic purposes.

In some cases on account of decomposition, it is impossible to obtain sufficiently accurate results with the material received. When suitable fresh material is received, the diagnosis may be made rapidly from smear preparations of the brain tissue in the neighborhood of the hippocampus or from the cortex, where the cells which the parasites invade are most numerous. The tissue is spread in a very thin layer on a slide, fixed for a few seconds in neutral methyl alcohol, washed in distilled water, blotted and stained in the following solution:

| | |
|---|---|
| Saturated alcoholic solution of basic fuchsin......... | 0.3 c.c. |
| Saturated alcoholic solution of methylene blue...... | 2.0 c.c. |
| Distilled water...................................... | 30.0 c.c. |

The slide may be stained for five minutes cold or flooded with the stain and heated over a flame until it steams. The excess of stain is washed off with water and the slide dried and examined with the oil immersion lens. Negri bodies are magenta colored and should be found within the nerve cell: red blood-cells are stained an orange red hue and the nerve cells are blue. This stain must be freshly prepared for it deteriorates rapidly. By their magenta color, the Negri bodies may be easily distinguished from red blood-cells lying on a nerve cell. Other methods of staining may be used and some give more elegant preparations; the foregoing is cited merely as an example because it is easily manipulated and has been found satisfactory in routine diagnostic and experimental work.

Cut sections are prepared in suspicious cases in which the smear method has given negative results and when only preserved material is received. Small pieces of the tissue are fixed by formaldehyd, dehydrated, cleared and embedded in paraffin: thin sections (5 microns) are cut and stained with the fuchsin-methylene blue stain used for smear preparations or by the eosin-methylene blue method. Important points to be observed are thorough fixation, thin sections and good differentiation. Thorough fixation can be secured by cutting the tissue into small pieces, thin sections by care in embedding and cutting and good differentiation by the use of colophonium in the alcohol used as suggested by Wolbach.[10] The Negri bodies are red and some may contain blue granules; red blood-cells have an orange-red color.

On account of the facility with which they may be controlled, rabbits are usually selected for inoculation with rabies. Some of the brain of the suspected animal, either fresh or preserved in some medium which does not kill the virus, is ground with sand and salt solution in a mortar with sterile precautions, thus forming an emulsion. The rabbit is anesthetized, the top of the head shaved, and the skin nicked just anterior to and a little to one side of the external occipital protuberance. The skull being exposed, a small hole is made into the cranial cavity (a small gimlet serves very well as a trephine), the needle of the syringe is inserted for about ¼ inch into the brain substance and a small amount of the emulsion injected. The nick in the skin is closed with a suture and the animal allowed to recover from the anesthetic. It is always well to inoculate several animals since death may occur from injury to the brain or by infection from bacteria contaminating the material injected before rabies has had time to develop. In positive cases the symptoms usually appear within two weeks, depending on the strength of the virus and various other factors, but before a case is reported as negative, three weeks without symptoms in the rabbit should be allowed to elapse, and search for Negri bodies in the brain be negative. In case of the death of the animal, Negri bodies should be recovered from the brain to confirm the clinical findings.

Other methods of injection than the intracerebral may be used, particularly if the brain substance is badly decomposed and obviously contaminated; but the lengthened period of incubation renders these methods of even less value than the intracerebral for diagnosis.

### MANAGEMENT OF THE CASE

Any wound in which there is a suspicion that the animal inflicting it may have been rabid should be freely opened and thoroughly cauterized with fuming nitric acid. This procedure may not destroy all the virus present in the wound, but it will lengthen the period of incubation by reducing the amount of the virus left to be absorbed and will bring the possibility of failure in subsequent immunization to a minimum.[11]

The wound having been cauterized, the next step is to determine whether or not the animal inflicting it was really rabid. If the animal has been killed, the course of action should be governed by the distance to a laboratory where rabies diagnostic work is done, due regard being given to such preparation as will insure its arrival at that place without decomposition. If the animal is at large and furious, he will probably have to be shot, since any advantage to be gained by capture is not commensurate with the danger of exposing more persons to infection in attempts at the restraint of a manifestly rabid animal. If the animal is securely confined or can be secured with safety, it must be insisted that he be allowed to live until a diagnosis of rabies is made from the clinical features by a capable veterinarian who is sure of his ground. If no marked symptoms of the disease develop, he must be observed for at least ten days.[3] At the end of that time, he may be released or killed as the circumstances and value of the animal indicate.

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[10] Wolbach, S. B.: The Use of Colophonium in Differentiating the Eosin-Methylene Blue and Other Stains, The Journal A. M. A., Feb. 4, 1911, p. 345.

[11] Ravenel, M. P.: Modern Medicine, Osler and McCrae, i, 969.

Concerning the advisability of the Pasteur treatment, but little need be said. Failures are less than 1 per cent. in those receiving it, while in untreated cases developing rabies the mortality is 100 per cent. and is estimated at above 20 per cent. of all persons bitten by rabid dogs.[12] As may be discerned from this, not all persons exposed develop the disease, the probability of infection varying with the location and character of the wounds, with the susceptibility of the individual and with the amount and virulence of the virus. This, however, does not lessen the necessity for treatment, for of these factors, only one, the location and character of the wounds, can be determined immediately after the injury.

The physical discomfort and expense entailed make it advisable to secure definite information as to the exact nature of the condition of the animal before beginning the Pasteur treatment in the man, and this may be done by a little care in handling the case. The clinical diagnosis may be confirmed or a laboratory diagnosis made in any laboratory provided with a good microscope and the requisite reagents, provided the microscopist has had a little experience in preparing the slides and in recognizing the bodies. In the case of negative findings at inexperienced hands, it is well to have the work checked up by one who does the work regularly.

That there is ample time for this may be doubted; but the incubation period is from fourteen to one hundred days,[13] the average being about fifty,[14] and if treatment is started within one week after the bite has been inflicted, little fear of failure need be entertained.[15]

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# THE BACTERIOLOGY OF THE URINE IN TWO CASES OF PARENCHYMATOUS NEPHRITIS *

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Recently[1] we published the results of the bacteriologic examination of a number of cases of scarlet fever. It was found that living organisms in considerable numbers gained entrance to the blood-stream in the acute stage of scarlet fever and were excreted in the urine. The suggestion was made that these organisms and their toxic products might be identical with the hypothetic toxic material so often spoken of as the cause of the nephritis occurring in scarlet fever. The following cases have a direct bearing on the idea of the infectious nature of the parenchymatous, or of the so-called non-suppurative, nephritis.

## CASE REPORTS

Case 1.—Man, 33 years of age, driver, gave a history of measles, chicken-pox, pneumonia, gonorrhea, and moderate indulgence in alcohol. The present illness of six weeks' duration was characterized by vomiting, headache and edema. The physical findings were general edema, ascites, apex in nipple line, blood-pressure 180 mm., and marked pyorrhea alveolaris.

The urine voided in twenty-four hours was about 1,000 c.c. It contained 2 gm. albumin. In the sediment were found finely and coarsely granular casts, red blood-cells, and a few polymorphonuclear leukocytes.

The clinical picture was that of acute parenchymatous nephritis.

Bacteriology.—Anaerobic cultures of a catheterized specimen of urine showed: (1) Gram-positive streptococci in pairs or short chains, growing better anaerobically and producing acid in dextrose and lactose without laking blood or acidifying milk or mannite. After several transfers, these organisms grew well aerobically and acidified milk; (2) spiral organisms of the type *Spirochaeta buccalis;* (3) very small Gram-negative bacilli which grew slowly anaerobically, forming transparent pin-point colonies on blood-agar without hemolysis. They formed acid in dextrose and lactose, and did not change milk or mannite; they somewhat resemble those described by Davis[2]; (4) Gram-negative bacilli which grew aerobically and showed barring, beading and clubbing, with irregular staining. They formed a moist, greyish film giving a faintly acid reaction in dextrose and slight hemolysis. In lactose, mannite and milk they effected no change.

Cultures from a second specimen of urine taken three days after the first showed the same organisms.

Examination of pus from the pyorrhea alveolaris showed: (1) Gram-positive streptococci in moderately long chains, growing both aerobically and anaerobically, forming acid in milk, mannite lactose and dextrose and producing no hemolysis; (2) spiral organisms resembling those found in the urinary cultures; (3) Gram-negative, biscuit-shaped extracellular diplococci, found in smear and not obtained in culture; (4) Gram-positive anaerobic bacilli with tapered ends which formed acid in milk, lactose and dextrose, and did not hemolyze blood or ferment mannite; (5) Gram-negative bacilli identical with Number 4 of the urinary cultures.

It will be seen that of the four organisms found in the urine, numbers 1, 2 and 4 were found in pus from the pyorrhea. It is reasonable to suppose that in this case organisms entered the blood-stream from the alveolar pus and were excreted by the kidney in a viable condition.

Case 2.—Woman, aged 19, student, gave a history of diphtheria, chicken-pox, tonsillitis, appendicitis, pneumonia, two attacks of measles and two attacks of scarlet fever. The present illness of seven months' duration began with a tired feeling and gradual loss of appetite. Recently the patient has had nausea and severe headaches. Two months ago the urine was examined for the first time and albumin and casts found. Since then the urinary findings have remained unchanged. Physical examination showed the cardiac apex 8 cm. to left from mid-sternal line in the fifth interspace and blood-pressure 130 mm. The 1,250 c.c. of urine voided in twenty-four hours had a specific gravity of 1.008 and 1.2 gm. albumin. The sediment contained finely and coarsely granular and hyaline casts.

*Bacteriology.*—Anaerobic cultures of catheterized urine yielded: (1) Gram-positive streptococci in fairly long chains which had a slight hemolytic action and produced acid in dextrose and milk, without affecting mannite or lactose; (2) very small Gram-negative bacilli resembling in all respects those found in the urine of Case 1; (3) minute gram-negative cocci, forming brown or black colonies in anaerobic cultures and resembling those found in scarlet fever.[3]

These three organisms were present in the sediment of a freshly catheterized specimen and were also found in cultures made from a second catheterized specimen taken four days after the first.

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[12] Stimson, A. M.: Antirabic Virus, The Journal A. M. A., Jan. 22, 1910, p. 266.

[13] Frazier, C. H.: Keen's Surgery, vi, 82.

[14] Ravenel, M. P.: Modern Medicine, Osler and McCrae, i, 863.

[15] Ravenel and Hammer: Wisconsin Med. Jour., 1911, ix, 565.

* From the Memorial Institute for Infectious Diseases and the Medical Department of St. Joseph's Hospital.

[1] Anaerobic Culture in Scarlet Fever, Jour. Infect. Dis., 1914, xv, 85.

[2] Davis: Jour. Infect. Dis., 1910, vii, 599.

[3] Jour. Infect. Dis., 1914, xv, 85.

To Summarize: Two cases of typical non-suppurative nephritis with positive bacteriologic findings are described. In the first case, which was apparently an acute nephritis, it is probable that the portal of entry for the organisms was a pyorrhea; the bacterial flora of the urine corresponded closely with that of the pus from the gums. In the second, more chronic, case, the atrium of infection was not so clear, though the organisms found in the urine are commonly associated with diseased tonsils. Proof is wanting that the organisms found in the urine caused the associated nephritis. Davis,[2] however, found that in forty-two normal women the urine was sterile in thirty-eight cases and only a few organisms such as *B. coli* were present in the remaining four cases. The continued excretion by the kidney of organisms in quantities such as were found in these cases presents itself as the probable cause in some cases of parenchymatous nephritis.

# TUMOR OF THE CRUS CEREBRI *

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Tumors of the crus cerebri are rare. In the collection of the brains in the neurologic laboratory at the University of Pennsylvania there is only one instance, a case of Dr. Spiller's, to which reference will be made later. There is also a second case of glioma of the pons extending to the crus. A careful search of the literature has been made and only a few cases have been reported. Under these circumstances it seems justifiable to report a single case.

M. S., aged 12, colored, was admitted to my service at the Philadelphia Polyclinic, Dec. 1, 1912. The family history was negative. There was no history of tuberculosis, syphilis or mental disease. Both parents and one brother were well. Her birth had been normal and the child developed normally, physically and mentally. As an infant she suffered from measles, chicken-pox and whooping-cough.

Two years previous to admission she had suffered from an attack of typhoid fever and in the previous summer had had a second attack which her parents stated was associated with malaria.

Two years previously she partly lost the use of her right arm and hand, and after an attack of typhoid malaria eighteen months later the right leg became weak. Two months ago there developed pains over the left eye which radiated to the left ear, and ptosis of the left eye. During the two weeks before admission to the hospital she had vomited every morning immediately after breakfast and had convulsions of the right side of the body lasting two or three minutes and recurring several times during the day. She was stuporous during the attack, but regained consciousness immediately after the twitching ceased. There has been for four months difficulty with the rectal and vesical sphincter, the latter consisting of difficulty in emptying the bladder.

On examination the patient was found to be a poorly nourished colored girl. The physical examination of the heart and lungs proved to be normal. The liver and spleen were not enlarged and there were no palpable masses in the abdomen.

There was paralysis of the right side of the face in the lower distribution of the facial nerve. The patient moved the left side of the face and both sides of the forehead well and closed both eyes equally well. There was some rigidity of the neck when rotary or to-and-fro movements of the head were made. The pupils did not react to light or in accommodation. In making an effort to follow an object to the right the right eyeball did not move beyond the median line and the left eyeball moved only a slight distance to the right. In following an object to the left the right eyeball moved to the inner canthus and the left eyeball remained motionless. In following an object upward neither eyeball moved at all. In following an object downward the right eyeball moved only slightly and the left eyeball not at all.

The tongue protruded markedly to the right. The patient winced when the face was scratched with a sharp point on both sides. The finger to nose test showed marked ataxia on the right side and slight on the left.

In the right arm there was marked contracture of the biceps muscle which caused flexion of the forearm on the arm. She could not voluntarily extend the forearm. The grasp of the right hand was almost nil and was feeble on the left side. Rotary movements of the right arm could scarcely be made at all. The left arm was feeble but all movements were possible. There was no diadokokinesia. In walking she dragged the left leg, although both legs appeared to be weak.

Both knee-jerks were exaggerated and equal. There was no ankle-clonus, but the Babinski sign was present on both sides. The toes on both sides were hyperextended, especially on the right. Weakness of the legs prevented a satisfactory test for diadokokinesia. An examination of the eye by Dr. Zentmayer showed intense swelling of the nerve-head and surrounding retina with a few scattered hemorrhages. Later the pupils became unequal, the right being smaller than the left and the left eyeball protruded more than the right. A diagnosis of tumor of the upper part of the pons was made.

*Necropsy.*—The left crus cerebri was very much enlarged and extended to the right of the median line. On section it was found that the enlargement was due to a caseous tumor which extended to the upper limit of the pons below and the basal ganglia above. The internal capsule was somewhat implicated in its anterior limb and the optic thalamus was also apparently involved in its anterior third. The focus in the pons extended to the opposite side to a slight degree. There was also a small focus of circumscribed caseation in the white matter of the frontal convolution on the left side situated half an inch to the outside of the caudate nucleus. On microscopic section the tumor proved to be a tubercle.

*Summary.*—In a girl of 12 there developed gradual loss of power in the right side of the face, the right arm and leg, left sided ptosis and convulsive seizures confined to the right face, arm and leg. Later paralysis of associated movements upward and downward, and laterally, and finally weakness of the left arm developed. The symptoms were caused by a tubercle of the left crus cerebri which invaded the upper part of the pons, affecting the nuclei of the third nerve and extending upward into the basal ganglia. The paralysis of associated movements upward and downward and laterally indicated a lesion of the pons in the neighborhood of the oculomotor nuclei, and a lesion of the posterior longitudinal bundle.

To the diagnostic value of these symptoms Spiller has already called attention. It was the presence of the paralysis of associated movements which led to a diagnosis of tumor of the pons in this case. The extent of the tumor was not suspected during life. Indeed, I know of no way to differentiate between tumors of the crus and of the upper part of the pons.

It is not a surprising observation to find the two associated, to which the cases of Touche,[1] Sharkey,[2] Mann and Delépine[3] and Hun[4] will testify.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Touche: Neurol. Centralbl., 1902, xxi, 42.
2. Sharkey: Brain, London, 1894, xvii, 238.
3. Mann and Delépine: Brain, 1898, No. 21, p. 475.
4. Hun: Jour. Nerv. and Ment. Dis., 1887, xiv, 624.

Obviously the more caudal the lesion the more apparent it becomes that the lesion affects more than the crus.

When the lesion extends upward and involves the external geniculate body or implicates the optic tracts, there intervenes hemianopsia and hemiopic pupillary inaction. Motor ataxia or sensory disturbances indicate extension of the lesion to the tegmentum.

In a review of the literature only seventeen cases of tumor of the crus cerebri were found in which the diagnosis was verified by necropsy.

Sanz[5] reported a case of a child of 8. The right arm and leg were paralyzed and contractured and there was left ophthalmoplegia. To these symptoms were added delirium, fever and later right ophthalmoplegia and bulbar disturbances. The necropsy revealed a single tubercle in the left cerebral peduncle. Both peduncles were softened as well as the pons and medulla. There was some meningeal reaction.

Hunt[6] described a case of a boy of 17. A month after an injury to the head there developed strabismus and ptosis of the right eye followed by weakness and stiffness of the left arm and leg. There was somnolence, vertigo and inordinate laughter on slight provocation and sometimes spontaneous. There was no headache, nausea or vomiting. There was complete ptosis of the right eye, partial of the left, divergent strabismus on both sides, and paralysis of the upward and downward and inward movements of the right eye. The inward and downward movements of the left eye were also limited in their excursion. Some nystagmoid movements were present. The pupils reacted normally but sluggishly. The disks were congested and the upper margin was hazy.

The left side of the face, arm and leg were paralyzed and spastic. Ankle-clonus and the Babinski phenomenon were present but no objective sensory disturbances. The skin reflexes were absent on the left side. There was uncontrollable and involuntary laughter from time to time. The tongue deviated toward the left. Later there were involuntary urination and defecation. The motor portion of the fifth nerve was paralyzed on one side, the jaw deviating toward the right side.

At the necropsy was found a tumor extending from the right crus cerebri. It was a firm, nodular, grayish-white mass in appearance filling up the interval between the cerebral peduncles. The right third nerve was compressed and atrophic. There was also a cyst springing from the floor of the fourth ventricle measuring 1¼ inches by ⅝ inch. It dipped down into the substance of the pons and passed beneath the aqueduct and appeared on the inferior aspect of the right crus cerebri, where it became adherent to the tumor. Degenerative changes were found in the medulla and pons. The tumor in this case proved to be a glioma.

Henoch[7] reported a case of tuberculosis in a child of 3 who died twelve weeks after the onset of the symptoms. There was first tremor of the left hand, arm and leg. The fingers were held in a flexed position and there was right-sided ptosis, dilatation of the right pupil and external strabismus. Later there was ptosis, mydriasis and strabismus of the left eye. Death ensued as a result of measles and bronchopneumonia. A tumor the size of a cherry was found on the right cerebral peduncle extending into the third ventricle. The right third nerve was flattened, thin and discolored. There was also a tuberculous area in the apex of the left lung.

Garnier[8] described a case in a man of 65. The head and eyes deviated to the right and there was complete right-sided hemiplegia with slight rigidity. The temperature was lower on the left side. The patient died one hour and a half after admission.

A small ovoid tumor was observed on the right cerebral peduncle, which proved to be a lipoma. It was adherent to the base of the cerebral peduncle but it did not look as if it were the cause of the compression of that organ, the hemiplegia being probably due to a cerebellar hemorrhage which was also present. He stated that only thirty instances in the literature were found of lipoma in the central nervous system. These tumors originate in the meninges or their vicinity.

D'Astros and Hawthorn[9] cited a case of tubercle of the cerebral peduncle in a girl of 21 months. The symptoms began at 10 months of age after some digestive troubles. There developed trembling of the left hand and arm, some photophobia, right oculomotor paralysis characterized by ptosis, external strabismus with immobility of the eyeball and partial mydriasis with sluggish reaction of the pupil. There was paresis of the left side of the face but no involvement of the fifth nerve.

A conspicuous symptom was the rhythmic tremor of the forearm consisting of an oscillatory movement from side to side and forward and backward. The left leg was paralyzed and spastic. There was also some alternating flexion and extension of the muscles of the left leg. There was no Babinski sign. The patellar reflexes were exaggerated on both sides.

The patient died about twelve months after the onset of the disease. There was besides tuberculosis of both lungs a caseous tubercle, the size of a cherry about 2.5 mm. below the protuberantia and extending forward to the wall of the third ventricle. It occupied almost the entire upper portion of the right peduncle. He also cites the case of Raviard and Asset in which there was a tremor on the right side with left-sided ocular motor paralysis due to the large peduncular tubercle.

Blocq and Marinesco[10] described a case exhibiting a tremor like paralysis agitans which was confined to one side, in which there was a tumor of the cerebral peduncle, occurring in a man of 42. The first symptoms consisted of swelling and stiffness of the left side of the face, the eyes and tips of the fingers of the left hand. This rigidity progressed and at the end of a year and a half, tremor began. On examination the expression was Parkinsonian. There was a rhythmic tremor of the left hand and leg controlled for a short time by the will. The body was bent forward in walking and there was a slight tendency to stumble to the left. Transitory diplopia was noted. The left patellar reflex was exaggerated. No sensory change except subjective tickling of the left hand was noted. A diagnosis of unilateral Parkinson's disease was made. At the necropsy there was a tuberculous lesion found in the thorax and lumbar vertebrae. The right cerebral peduncle was enlarged and the seat of a tumor the size of a nut. There were no degenerative lesions.

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[5] Sanz: Rev. Espagne Med. y Cirur. Práct., 1908, lxx, 39.

[6] Hunt: Am. Jour. Med. Sc., 1904, cxxvii, 514.

[7] Henoch: Vorlesungen über Kinderkrankheiten, Berlin, 1903, Ed. ii, p. 270.

[8] Garnier: Rev. méd. de l'est., 1902, xxxiv, 590.

[9] D'Astros and Hawthorn: Rev. Neurol., 1902, x, 377.

[10] Blocq and Marinesco: Compt. rend. Soc. de biol., 1893, v, 105.

Pepper and Packard[11] described a case of glioma of the right crus cerebri in a boy 4 years of age. There was left-sided facial and corporal hemiplegia. The tongue protruded to the left and there was transient involvement of the left extrinsic ocular muscles. There was a marked contracture of the arm but none of the leg and there were no headaches, sensory disturbances, hemianopsia or paralysis of the masticatory muscles. Death followed convulsions. At the necropsy there was a tumor the size of a hazelnut seated at the outer and under surface of the right crus cerebri. The microscopic examination showed it to be a glioma.

Benedikt[12] cited a case of a boy of 4 who suffered from headache for six weeks before applying for treatment, at which time there was right-sided ptosis and oculomotor palsy of the same side. The head was turned toward the left and the chin toward the right. There was a tremor of the left hand and leg, which were paretic. The muscles of the lower lip were paralyzed, deviating toward the left. At the necropsy there were a number of tubercles found in the left frontal lobe, in the marginal convolutions, in the cuneus, and in the left cerebellar hemisphere. Finally a tubercle the size of a pigeon's egg occupied the inferior surface of the right cerebral peduncle. This tumor destroyed the right oculomotor nerve. He also cited a second case in a man with pulmonary tuberculosis presenting crossed oculomotor paralysis and hemiparesis with tremor of the paralyzed members.

Kraft-Ebing[13] described a case in a woman of 41 with tubercle of the right cerebral peduncle. The first symptoms consisted of heaviness in the legs associated with habitual headaches, right-sided tinnitus aurium, vertigo and weakness in the right arm with drawing pains in the right arm and leg. Diplopia and bilateral ptosis developed later and there was paralysis of the superior rectus muscles with pronounced right-sided papillitis. The deep reflexes were enormously exaggerated on the left side and there was right-sided hyperalgesia. There was persistent left hemiataxia. Death ensued at the end of three months. The necropsy revealed a tubercle 13 by 11 mm. in size occupying the entire tegmental nucleus. There was general tuberculosis.

Mendel[14] presented a specimen of tubercle from the brain of a child of 4 years and 9 months of age. The first symptoms consisted of an intention tremor of the right arm which later was followed by a weakness of the right leg, left-sided ptosis and paralysis of the right externus with dilation of the left pupil, which was twice as large as the right. The right side of the mouth appeared paralyzed, the face being drawn toward the left. The tongue protruded toward the right and the right neck-muscles were paralyzed. The right arm also was paretic. Sensation was not implicated. The temperature of the right arm and leg was, however, reduced. A large tubercle measuring 2 by 1.25 cm. was found in the left peduncle. The red tegmental nucleus of the superior peduncle seemed to be completely destroyed. Anteriorly the tumor extended to the left corpus subthalamus. There was some circumscribed meningitis in the interpeduncular space, which would explain the right-sided ocular motor paralysis.

Ramey[15] described a case of alternating paralysis of peduncular origin in a man of 52. Following occasional transitory sensation of tingling in the right foot, there followed a gradual paralysis of the right arm, leg and face. The knee-jerks were exaggerated on both sides. There was some diminution of sensation of the right side and the temperature was much lower than that on the other side. There was paralysis of the left third nerve, including the iris and the ciliary muscles. The right eye showed paralysis of the inferior, superior and external muscles. There was considerable contraction of the fields of vision. The necropsy revealed the presence of a miliary tuberculosis of the lungs. The left peduncle was larger than the right and was the seat of a tumor consisting of an agglomeration of eight to ten small yellowish masses.

Proust[16] cited a case of tumor of the right cerebral peduncle in a man of 32 who two years prior to coming under observation developed headache, vertigo and deafness. Three months previously there gradually developed an incomplete hemiplegia of the left side involving the face. The left forehead appeared much less wrinkled than the right. The left eyelid was opened less easily than the right and protruded more than the right. The pupil was dilated and there was some strabismus. There was some slight diminution of sensation of the left side. He emitted from time to time piercing cries. There was no vomiting, loss of consciousness or convulsions. At the necropsy a tumor the size of an egg was found occupying the right cerebral peduncle. There was distention of the right lateral ventricle. The peduncle was completely flattened.

Ria[17] added a case of a glioma of the left cerebral peduncle in a man of 33. The first symptoms consisted of a slight weakness of the right hand and a month later there developed weakness of the right leg and in still another month difficulty in speech. Later there was ptosis of the left upper eyelid. Tactile, pain and heat sensations were only a trifle below normal. The left pupil was dilated and there was external strabismus. At the necropsy a tumor the size of a nut was found in the left peduncle which extended to the optic thalamus and affected the corpus striatum. It also involved the left large ventricular ganglia. Under the microscope the tumor proved to be a glioma.

Archambault[18] presented a case of complete paralysis of the right ocular motor nerve and incomplete left hemiplegia in a child of 3 years of age. At the necropsy there was a tuberculous tumor the size of a nut in the right cerebral peduncle a little in front of the third ocular motor nerve. There was also a tuberculous lesion of the lungs.

Bouveret and Chapotot[19] described a case of a woman of 22 who awoke with weakness of the left side which was shortly followed by oculomotor paralysis and frequent headaches which were associated with vomiting and vertigo. Two months later there was partial paralysis of the left side of the face and complete left hemiplegia. Sensation to heat and cold was lowered on the left side. A slight ptosis of the right side was observed, but all the muscles of the left eye were more or less involved. The left pupil was larger than the right. There was incipient optic neuritis. About a month later there were left-sided convulsions and about two weeks after this there was paralysis of the right third nerve and dilatation of the right pupil. Choreiform movements followed shortly after this. The patient died six months after the onset of the symptoms. At the necropsy there was discovered tuberculosis of the lungs. A cherry-sized caseous mass was found at the junction between the gray and white substance at the base of the second frontal convolution of the left side. Both peduncles were the seat of a tuberculous tumor. On the right side the tumor projected toward the occipital horn of the lateral ventricle and extended under the aqueduct of Sylvius, where it destroyed the gray matter.

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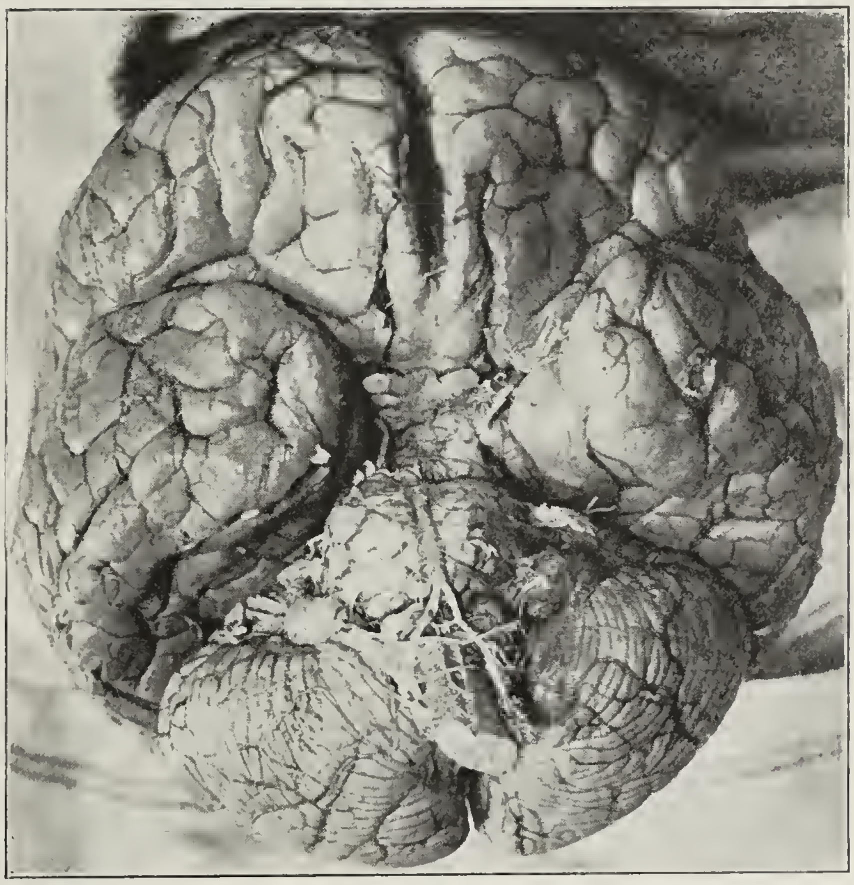
[11] Pepper and Packard: Am. Jour Med. Sc., 1890, cxix, 263.
[12] Benedikt: Bull. Med., 1889, iii, 547.
[13] Kraft-Ebing: Wien. klin. Wchnschr., 1889, ii, 896.
[14] Mendel: Berl. klin. Wchnschr., 1885, xx, 468.
[15] Ramey: Rev. de méd., 1885, v, 489.
[16] Proust: Progrès méd., 1882, x, 187.
[17] Ria: Ann. clin. d'Osped. Incur., 188$, v, 82.
[18] Archambault: Progrès méd., 1877, v, 718.
[19] Bouveret and Chapotot: Rev. de méd., 1892, xii, 728.

Beck[20] reported a case of hard round-cell sarcoma in the left crus in a male. The first symptoms were attacks in which he would feel weak and experienced a sudden sensation of shock which caused the head and upper part of the body to bend forward and which was associated with vertigo. He also suffered from severe frontal headache. On examination there was found diplopia, the right pupil was smaller than the left, which did not react at all to light, and there was convergent strabismus in the right eye, the left eye remaining stationary. The ophthalmoscope showed a fulness of the veins. The right facial nerve was slightly paralyzed. The tongue protruded straight and there was no speech disturbance. The movements of the right arm and leg were much slower than on the left and the patellar and Achilles reflexes were exaggerated. Two months later there developed complete ptosis of the left side and a slight ptosis of the right. The left ocular muscles were paralyzed with the exception of the rectus externus. All symptoms became aggravated until death about six months after applying for treatment. At the necropsy a spherical tumor was found measuring 1.5 by 2 cm. situated in the left cerebral peduncle and reaching as far as the ganglia. The oculomotor nerves were flattened by the pressure from the tumor.



Enlargement of left crus cerebri.

Spiller[21] described a case in a man of 48 years of age who had paralysis of upward associated ocular movements with loss of convergence. The downward movement was difficult, while the lateral movements were intact. The speech was bulbar in character and there was dysphagia associated with constant dribbling of saliva. He complained of headache, extreme vertigo and uncontrollable spells of laughter. Later all associated ocular movements became impaired and there was slight ataxia of the arms.

At the necropsy there was found a tumor of the right cerebral peduncle which measured 2 by 5 mm. and consisted of a sarcoma, possibly endothelioma. The lowest portion of the tumor was at a point where the fibers of the oculomotor nerves leave the nuclei in large bundles and it extended toward the aqueduct almost to the lowest part of the oculomotor nucleus. A few fibers of the right oculomotor nerves passed through it. Posteriorly the tumor extended a little beyond the aqueduct of Sylvius.

The characteristic symptom complex of tumor of the crus cerebri is said to consist of a hemiplegia on the opposite side to the lesion associated with oculomotor palsy on the same side. This has been termed hemiplegia alterans superior. But in fourteen of eighteen cases collected from the literature and including my own, the hemiplegia was associated with oculomotor palsy on both sides in nine instances (Hunt, Henoch, Kraft-Ebing, Mendel, Rhein, Ramey, Bouveret and Chapotot, Beck, Benedikt) and only in five cases was the oculomotor paralysis unilateral (Sanz, d'Astros and Hawthorn, Benedikt, Ria, Archambault). The close proximity of the two nuclei of the third nerve explains the frequency of the involvement of the oculomotor nerve on the opposite side. In rare instances the paralysis and oculomotor palsy may be on the same side. Farnell and Burnett described such a case but there was no necropsy. In Pepper and Packard's case with necropsy the hemiplegia and third nerve palsy were on the same side.

The hemiplegia is gradual in onset and is usually associated with spasticity.

In some cases a tremor or choreiform movements are present. In the cases cited in this paper this symptom was present in eight instances (Henoch, d'Astros and Hawthorn, Bouveret and Chapotot, Raviard and Asset, Blocq and Marinesco, Benedikt (two), Mendel). In d'Astros and Hawthorn's case the tremor consisted of a rhythmic tremor of the forearm in which the movements were from side to side and forward and backward. In Bouveret and Chapotot's case the tremor was choreiform in character. In the case described by Blocq and Marinesco the tremor was like that of paralysis agitans. Also in the two cases cited by Benedikt there was a tremor of the paralyzed limbs. In Mendel's case an intentional tremor of the right arm was the first symptom. The tremor must be looked on as an irritating symptom due to pressure on the pyramidal tracts.

Hemiataxia has been noted, as in the cases of Kraft-Ebing and Spiller. Ataxia was present in both arms in the case cited by myself in this paper.

In rare instances palsy of the opposite limbs may be observed, when according to Oppenheim[22] dysphagia and dysarthria may occur.

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[20] Beck: Virchows Arch. f. path. Anat., 1883, xciv, 378.

[21] Spiller: Jour. Nerv. and Men. Dis., 1905, xxxii, 497.

[22] Oppenheim: Spec. Path. u. Therap., Nothnagel, Wien., 1896, ix, 125.

Sensory disturbances are present in some cases consisting of contralateral hemianesthesia. Parasthesia and hemihyperesthesia have occurred.

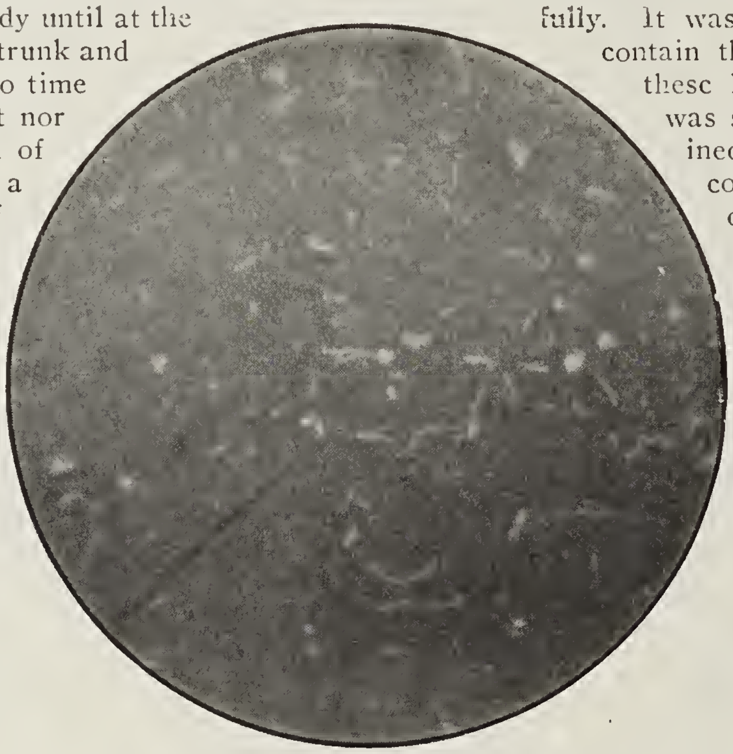
Reduction of the bodily temperature on the paralyzed side has been noted in some cases (Garnier, Mendel, Ramey). This possibly may be referred to vasomotor disturbances due to implication of the substantia nigra. Inordinate laughter occurred in two cases, namely, those of Spiller and Hunt. Of the eighteen cases, twelve were tuberculous tumors (Sanz, Henoch, d'Astros and Hawthorn, Blocq and Marinesco, Benedikt (two), Kraft-Ebing, Mendel, Ramey, Archambault, Bouveret and Chapotot, Rhein). In one the tumor was a lipoma (Garnier), in three cases glioma (Pepper and Packard, Ria, Hunt), and finally, in two cases the tumor was a sarcoma (Beck, Spiller).

1732 Pine Street.

## IDIOSYNCRASY TO ORTHOFORM

T. C. McCleave, M.D., Berkeley, Cal.

Some months since, a few hours after partaking of soft-shell crab at dinner, a patch of urticaria appeared on the arm, gradually spreading over the body until at the end of twenty-four hours, the entire trunk and head were involved. Curiously, at no time did the eruption go below the waist nor were the hands involved. The skin of the affected parts finally was of a dusky red color, with a sprinkling of darker areas closely resembling the eruption of measles. There was a uniform brawny thickening of the skin, which on the face produced a most grotesque distortion of the features and rendered it difficult to open the eyes and mouth. During the first thirty-six hours there was some fever and a tendency to stupor, with great prostration. Itching was intense. The condition persisted some five or six days, and gradually subsided, but for several weeks the skin showed a bronze discoloration and desquamated in fine scales.



Photomicrograph of a specimen of prepared India ink; Reichert ½-inch objective; No. 4 ocular; tube length 160 mm.

It seemed clear that the attack was an anaphylactic reaction to some protein, presumably, of course, from the crab.

No significance was attached to the use, during the preceding week, of very small amounts of orthoform in the cavity left after the extraction of a molar tooth.

Three months later, however, the application of 10 per cent. orthoform ointment to a traumatism of the tongue was followed in a few hours by symptoms identical with those above described, except in lesser degree, as the etiologic relation of the orthoform was at once recognized and the drug withdrawn.

The occurrence of transient papular eruptions after the use of orthoform has been reported, but it is ordinarily regarded as free from toxic dangers, and in some conditions, as cancer and ulcer of the stomach, has been used in large dosage. My personal experience, here reported, indicates, however, that it cannot be used with impunity in all persons, even in very small dosage.

Berkeley National Bank Building.

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**The Good Doctor Is All of These.**—We cannot agree exactly on what a "good doctor" is. Some will say "Practical"; some will say "Scientific"; some will say "Knowledge"; some will say "Heart."—Lyon.

# New Instruments and Suggestions

## THE INDIA-INK METHOD OF EXAMINATION OF SPIROCHAETA PALLIDA

William A. Walters, M.D., Billings, Mont.

This method has been described in detail from time to time, and in the majority of cases in which India ink has been used as a means of detecting the *Spirochaeta pallida*, a prepared waterproof India ink has been recommended.

The method usually described is to obtain a specimen from the suspected lesion; a drop of this is placed on a glass slide, an equal amount of prepared India ink is added and the mixture is smeared fairly thin.

It has come to my attention in using this method that the secondary organisms were usually abundant and that the field in every instance showed a striking similarity of these secondary organisms. On comparing the slides of the same case made by the prepared India ink and the field seen with the dark-ground illuminator, it was noted in every instance that many more organisms could be identified with the India ink than with the dark-ground illuminator.

These two apparently dissimilar results obtained on the same patient with the prepared India ink and the dark-ground illuminator caused me to compare the methods carefully. It was thought that the ink itself might contain these organisms, and working along these lines a drop of prepared India ink was smeared on a clean slide and examined. It was found that the ink itself contained myriads of organisms, many of them long and filamentous, having a wavy contour not unlike that of the spirochete. There were also many other long rod-like organisms present. An examination of the accompanying photomicrograph will illustrate this point.

A number of other bottles of India ink were examined and almost every bottle contained the same character of infection. It is evident that in the manufacture of this ink the contamination is almost identical in every instance. At least I believe that prepared India ink is unreliable as a means of determining the spirochete.

To obviate these artifacts a dry stick of India ink was obtained and rubbed with a small amount of filtered water. This was spread on a slide and examined and no micro-organisms could be found.

My method is to rub the dry stick of India ink with two or three drops of filtered water in the bottom of a small mortar. The filtered water can be obtained at almost any soda-fountain.

No pestle is used in this operation. The stick itself is simply rubbed against the bottom of the mortar as the pestle would be used in triturating. This India-ink solution is then added to an equal amount of material obtained from the suspected lesion and smeared carefully over the surface of a clean slide. A little practice will enable one to judge the proper thickness of the smear. If it is too thin the organisms are not seen well; this is also the case if the smear is too thick.

Most stationers handle slate ink-slabs which draftsmen use in rubbing up the sticks of India ink. They are very convenient, and they can be procured at a comparatively small cost.

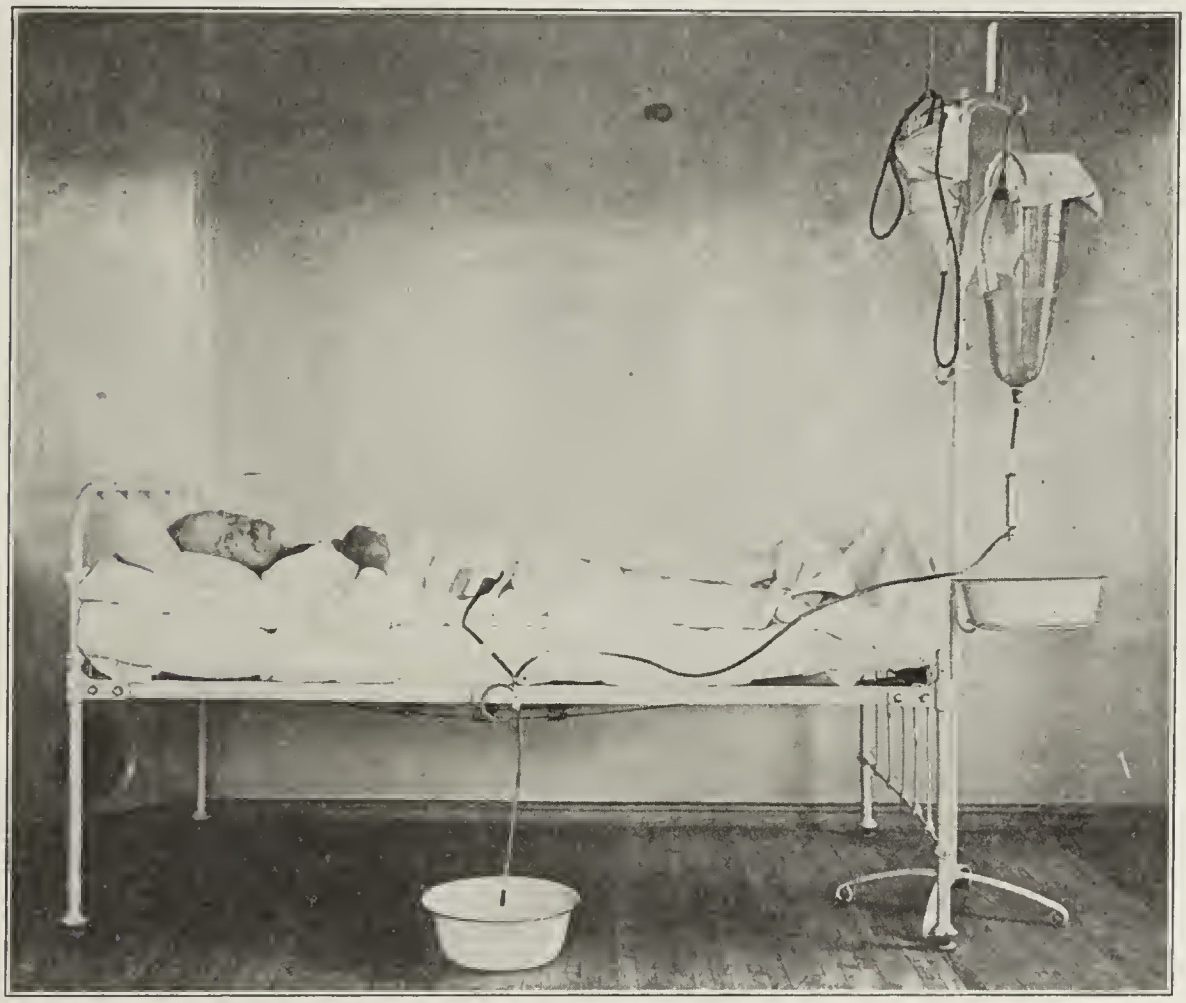
This method, while a little slower and less convenient than with the prepared solutions of India ink, is far more accurate and will obviate all secondary organisms of the microscopic field.

## SUPRAPUBIC PROSTATECTOMY WITH SPECIAL REFERENCE TO DRAINAGE

Lucian W. Smith, M.D., LaFayette, Ind.

Although suprapubic prostatectomy has increased in popularity in recent years, the problem of satisfactory bladder drainage has remained a discouraging feature. In my own experience this objection has been eliminated by a plan which the accompanying illustration will assist in explaining.

The customary large drainage tube with fenestrated end is secured in the bladder, extending about 1 inch into the viscus and emerging at the upper end of the skin incision. It is important to know the exact length of this tube in order to place properly within it a smaller tube which should reach only to the fenestrae of the drainage tube. This smaller tube acts as a siphon and with certain modifications to be described extends to a receptacle beneath the bed and terminates in a glass tube which is tipped with a rubber bulb from a medicine dropper. A slit in the end of this bulb converts it into a valve which prevents ingress of air with its displacement of water within the tube.



Author's apparatus for suprapubic drainage in use.

About level with the bed-rail the siphon-tube is thrown into a circular loop having a diameter of about 3 inches, and fastened with adhesive plaster. Immediately above this point the tube is joined by another, leading from a reservoir which is placed somewhat higher than the bed. Water slowly flowing from the reservoir is regulated by a suitable valve and fills the circular loop at brief intervals. Each time the loop is filled to overflowing its contents fill the tube below the loop and start the siphon, which draws from the bladder any fluid that may be within reach, after which the vacuum is relieved by air which finds its way into the drainage-tube. This air is carried along with the fluid, and its passage through the tube, with the sound of its escape through the valve, is a sure indication that everything is working properly. This sound does not annoy, but is a source of satisfaction to the patient who knows that while it continues his bed will remain in a dry condition.

If the tube is obstructed by a clot, the passage of air will cease and the difficulty is at once apparent. A clot may be easily removed by compressing the tube with one hand, then grasping it at a more distant point with the other, so that when the compression is removed a partial vacuum is formed which causes the clot to be held by air pressure in the end of the tube, with which it may be withdrawn. A section of glass in the siphon-tube near the patient's body is valuable for observation purposes. At this point a flask with a double perforated stopper may be connected to catch the urine for analysis.

The bladder may be irrigated through a urethral catheter. By allowing a more rapid flow of water from the reservoir the siphon works more continuously, and with a little regulation of irrigating fluid, all will be carried away without soiling the bed.

I use two irrigations daily until urine becomes normal, then stop. Continuous hot irrigations are not always efficient in stopping hemorrhage, and for this purpose I prefer a solution of alum of strength varying from 1 per cent. to 5 per cent., followed at once by irrigation with a normal salt solution.

The controlling valve shown in the illustration was made from a discarded ethyl chlorid container having a screw valve. The glass tip and opposite end of the container were removed by the heat of an alcohol flame, and the vent enlarged by means of a small bone drill. A filter is provided by inserting a firm plug of absorbent cotton which prevents obstruction of the valve by sediment, and a perforated stopper with a connecting tube completes the apparatus. Tubing for the siphon should not be over ¼-inch in diameter, as capillary attraction has much to do with the successful working of the siphon.

When the large drainage-tube is removed, it may be replaced for a time by a smaller one, and the end of the siphon-tube should be reduced to fit loosely into the smaller tube.

While the bladder wound is healing, after permanent removal of the drainage-tube, a very small tube, wrapped with gauze and inserted part way into the wound, and connected to the siphon-tube, serves to carry off most of the escaping urine during such time as the patient may be confined to his bed.

Soldier's Home Station.

## AN ACCURATE MICROCHEMICAL METHOD OF ESTIMATING SUGAR IN THE BLOOD *

Albert A. Epstein, M.D., New York

The method to be described is an adaptation, on a very small scale, of the one devised by Lewis and Benedict[1] for estimating the sugar-content in the blood. It is based on the fact observed by Dehn and Hartmann,[2] also by Lewis and Benedict,[1] that picric acid and sugar in the presence of an alkali (sodium carbonate) give, on heating, a color reaction which is proportionate to the amount of sugar present.

I have used the method of Lewis and Benedict in about three hundred tests for blood-sugar and found it admirable both in point of simplicity and accuracy.[3] It entails, however, the use of 2 c.c. of blood and the employment of costly

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* From the Chemical Laboratory, Pathological Department, Mount Sinai Hospital. Work done under the tenure of the Theodor Escherich Fellowship in Pathology.

[1] Lewis and Benedict: Proc. Soc. Exper. Biol. and Med., 1914, xi, 57.

[2] Dehn and Hartmann: Jour. Am. Chem. Soc., 1914, xxxvi, 403.

[3] A solution of picramic acid, suggested by Dr. Stanley R. Benedict, was used as the color standard in most of these tests.

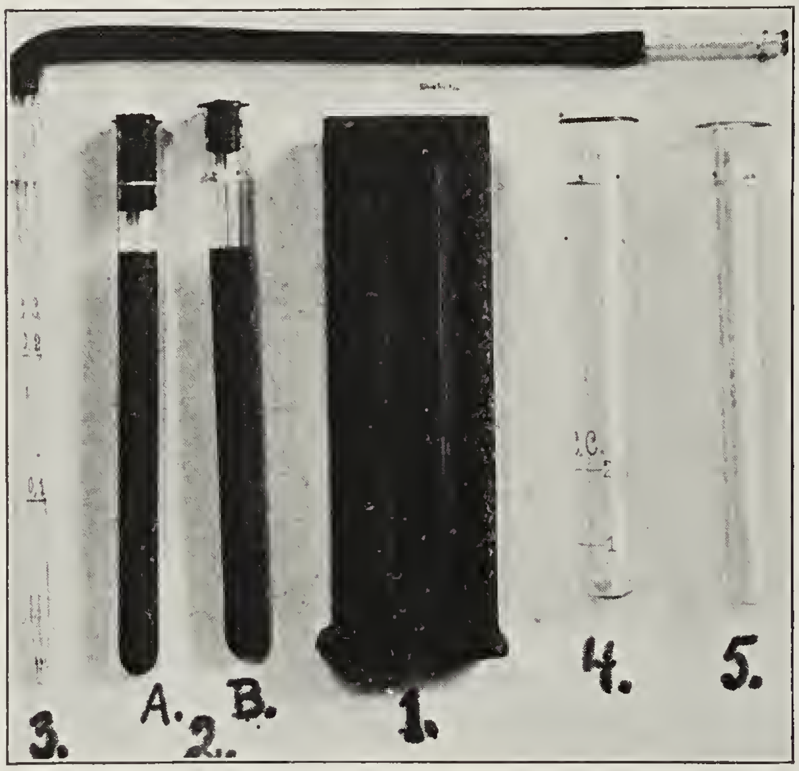
colorimetric apparatus. To overcome these drawbacks and to render the estimation of blood-sugar more suitable for general clinical and laboratory work, I have adopted the Sahli-Gower hemoglobin colorimeter (with suitable color standards) and by that means found it possible to work with small quantities of the necessary reagents, and to estimate with precision the amount of sugar present in 0.2 c.c. or even 0.1 c.c. of blood.

### TEST PROCEDURE

The apparatus[4] shown in the illustration and the following reagents are necessary:

1. Picric acid, saturated solution.
2. Sodium carbonate, 10 per cent. solution.
3. Sodium fluorid or potassium oxalate, 2 per cent. solution.

Put one or two drops of the fluorid or oxalate solution into the graduated test-tube 4 (see illustration). By means of the blood pipet, 3, 0.2 c.c. of blood is obtained from the tip of the finger or the lobe of the ear and is discharged into the tube, 4, containing the fluorid solution. The pipet is rinsed two or three times with distilled water and the washings added to the blood in Tube 4. Distilled water is then added to the 1.0 c.c. mark. After laking of the blood has taken place, picric acid is added to this (a few drops at a time) up to the 2.5 c.c. mark, shaking the tube gently with each addition of the acid. Precipitation of the blood-proteins takes place; the sugar, together with an excess of picric acid sufficient for the reaction, stays in solution. The tube is finally shaken vigorously (covering the end of the tube with the finger) and the contents filtered through a small filter, or, better still, centrifuged for one or two minutes.



Apparatus for estimating sugar in the blood by microchemical method. 1. Sahli-Gower hemoglobinometer stand and graduated tube. 2. Two standard color tubes, one (*A*) suitable for measuring quantities of sugar in the blood ranging from 0.05 per cent. to 0.1 per cent.; the other (*B*) is adapted to quantities of sugar over 0.1 per cent.; 3. A special pipet (resembling but larger than the hemoglobin blood-pipet) graduated at 0.1 c.c. and 0.2 for collecting and measuring the blood. 4. A test tube (½ by 4 inches) graduated at 1.0 c.c. and 2.5 c.c. 5. Another test tube of similar dimensions (not graduated) suitable for boiling.

One cubic centimeter of the filtrate or the clear supernatant fluid obtained on centrifugalization is withdrawn, put into the boiling tube, 5, and heated carefully over the naked flame. The contents of the tube are boiled until all but 2 or 3 drops of the solution is evaporated. One-half cubic centimeter of the 10 per cent. soda solution is then added and the tube heated again until the contents are concentrated to a small volume equal to about two or three drops. The color of the fluid changes from yellow to deep red or reddish brown and the reaction is completed.

Three or four drops of distilled water are added and the tube warmed gently. The contents are then transferred to the graduated tube, 1. The boiling tube is rinsed several times with water (using only three or four drops at time). The tube is warmed with each rinsing before transferring the contents to the graduated tube. The volume of fluid is then made up to the mark 50 on the scale.

The color of the resulting solution is compared with that of the two standard tubes, *A* and *B*. If it is darker than standard *A* (representing 0.05 per cent. of sugar) and lighter than standard *B* (representing 0.1 per cent.), the first standard is used for comparison. In either case the solution in the graduated tube is diluted gradually with water (just as is usually done in hemoglobin estimations) until the colors match.

The percentage of sugar in the blood is then computed thus: Using the lighter standard *A* the figure on the scale, divided by 1,000 represents the percentage of sugar in the blood. For example, the tube reads 86; then the result is

$$\frac{86}{1000} = 0.086 \text{ per cent.}$$

When Standard *B* is used for comparison, the figure on the scale is multiplied by 2 and divided by 1,000. For example, the tube reads 73; then the percentage of sugar is

$$\frac{73 \times 2}{1000} = 0.146 \text{ per cent.}$$

With the instructions given, the above formulas may be used for direct computation of the percentage of sugar only, when 0.2 c.c. of blood is used in the determination. When, however, only 0.1 c.c. of blood is used, the formulas apply as well, but the value obtained must be multiplied by 2.

In developing this method I at first used three standard tubes representing 0.05 per cent., 1.10 per cent., and 0.20 per cent., respectively, so as to meet all likely percentages of sugar in the blood. The use of the last of these I found inadvisable inasmuch as the color which it represents is too concentrated, and accurate readings with it are almost impossible. It is better, in cases in which a high sugar content in the blood is suspected (in diabetes for example) to use only 0.1 c.c. of blood for the determination. In all other cases 0.2 c.c. of blood should be used.

The advantages of the method are obvious and require no discussion. It needs only seven to ten minutes to complete a determination of sugar. The small quantity of blood necessary for the test renders it suitable for general clinical work on children as well as adults, and does away with venipuncture. The colorimeter readings are easy and yield reliable results.[5]

995 Madison Avenue.

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[4] The tubes belonging to this hemoglobinometer are not all equally calibrated. With some the 50 per cent. mark represents a volume of 1.0 c.c.; with others, 1.0 c.c. of fluid reaches up to the 43, 45, 46 or 47 per cent. mark. In all of the tubes that I have examined (twenty-four in number) the error in the calibration is below the 10 per cent. mark; the graduations above this mark are usually correct. By means of the standard 1.0 c.c. pipet one can readily determine whether or not a given tube is properly calibrated. In order to facilitate a direct reading of the percentage of sugar on these hemoglobinometer tubes, it is essential to have 1.0 c.c. of fluid stand at mark 50. To overcome a discrepancy (if any exists) in the calibration of a given tube, one may put one, two or three small glass beads in the bottom of the tube, of such size as to raise the meniscus of 1.0 c.c. of fluid up to the 50 per cent. mark.

[5] The special apparatus devised for this method was made for me by Eimer and Amend, New York.

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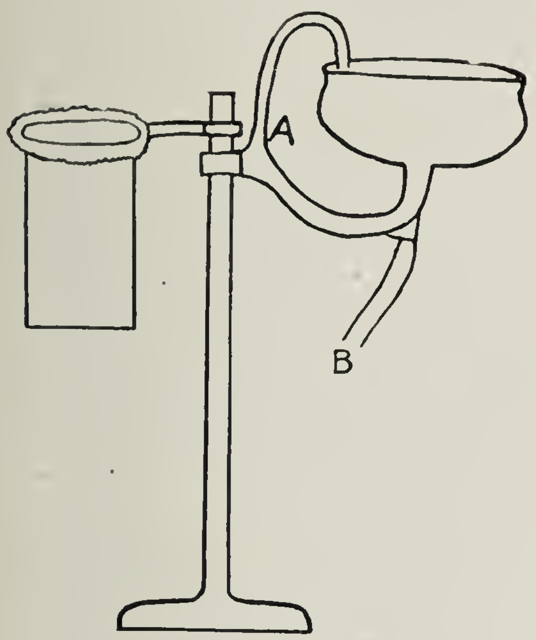
**Hospitals and Education.**—It is the privilege and duty of hospitals to extend their field of usefulness by opening their wards more freely to undergraduates in medicine, to elevate the standards of work done by nurses, internes, residents and attending staff, to foster research. By so doing they are not harming the patients, but are rather insuring them better and more skilful treatment. They are serving to enlighten and educate not only the individual, but the observing public as well, eager to learn and to be instructed in knowledge of medical matters.—Herrick.

## A SANITARY WASTE COTTON RECEPTACLE

Wilfrid Haughey, A. M., M.D., Battle Creek, Mich.

The problem of a sanitary receptacle for waste cotton for ear, nose and throat treatments has been a puzzle. Most of the receptacles on the market have to be cleaned out and are in an awkward position. I have taken an iron ring clamp from an ordinary laboratory ring stand and clamped it to the standard of my fountain cuspidor. I then place a manila paper sack, like those grocers use for sugar, etc., in this ring with the open end projecting about ½ inch above the ring and crushed over it. Waste cotton is simply thrown into this sack. As often as need be the bag is taken out, the open end twisted shut and it is ready for disposal, a new clean sack being placed in the ring. There is nothing that has to be cleaned, and after once taking the cotton from the applicator it does not have to be touched again.



Paper-bag receptacle for waste-cotton. *A*, water, *B*, waste.

This apparatus is handy to the surgeon, inexpensive to instal, and the up-keep is practically nothing. Five hundred sacks cost only about forty-five cents.

24 West Main Street..

## AN EXERCISE AND A NEW METHOD OF SELF-MASSAGE USEFUL IN THE TREATMENT OF CHRONIC CONSTIPATION

Hale Powers, M.D., Brookline, Mass.

Second Assistant Visiting Physician for Diseases of the Nervous System, Boston City Hospital

It is not greatly to the discredit of physicians that chronic constipation is usually treated by medicine alone, or by medicine and diet, and rarely by medicine, diet and mechanical therapy. The physician is not wholly to blame. His experience has taught him that while nearly all patients will faithfully take medicine and some will submit to a restricted diet, only the exceptional individual will or can faithfully take exercises. Want of time or facilities and the aversion to muscular effort which grows on those of sedentary habit are some of the reasons for this.

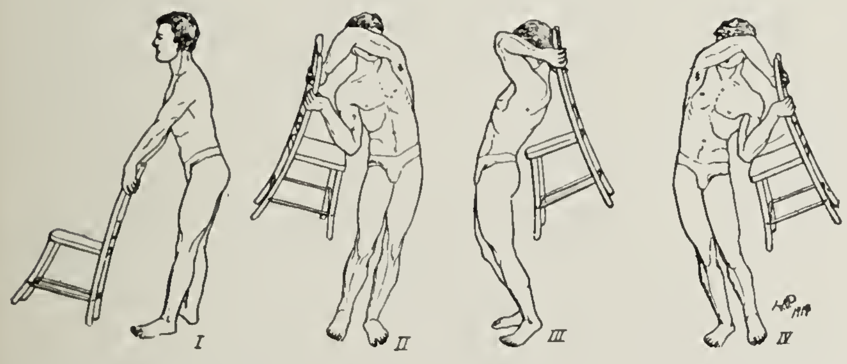


Fig. 1.—An exercise for all of the muscles of the trunk not requiring special apparatus.

The exercises to be described require little time and involve no expense, as they were devised primarily for patients in a free clinic. To overcome a persistent aversion to exercise there is no other way save to interest the patient in sports. Golf and tennis are the sugar-coated pills, or the enticing elixirs of mechanical therapy. Specific exercises are its bitter tonics.

In the treatment of constipation with atonia and low position of the stomach and colon, all exercises calling into action the muscles of the trunk, which are the only ones of much importance to health, are indicated. The value of walking is much exaggerated by those who write on health matters for lay consumption. Going over rough and hilly ground is good, but walking on a level way, which consists merely in the repetition of the restricted movement of placing one foot before the other, does not meet the indications. The familiar exercise of lying on the back and flexing the thighs with legs extended develops the recti, but probably not the oblique muscles, which are of equal importance.

The chair exercise here illustrated (Fig. 1) exerts equally all of the muscles of the trunk. It strengthens the abdominal muscles, whose support is necessary to maintain the viscera in their normal position, and in addition to this it develops the elevators of the ribs, thus removing the abnormal downward pressure which is produced by a contracted thorax. It is performed as follows:

The back of the chair is loosely grasped with the thumbs forward. The left elbow is raised above the head. The left hand is carried forward and to the right and then backward and to the left, and as the chair is rotated the right hand follows the left, the chair being carried behind the body, then to the left and again in front. After circling a number of times from left to right, the movement should be reversed. One should not stand erect and swing the chair in the way that might be considered good form in a gymnasium, but on the contrary, should allow the chair to hang nearly perpendicular, moving the chair as little as possible and bending the body as far forward, as far from side to side and as far backward as possible.

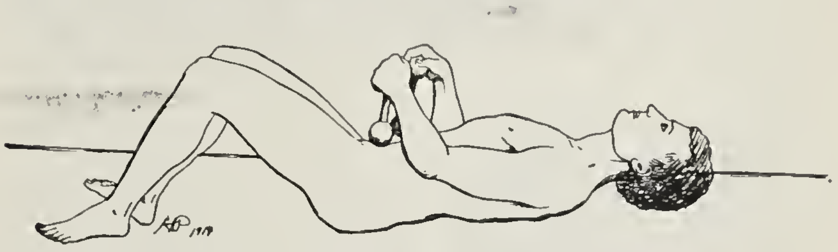


Fig. 2.—Massage of the colon with wooden dumb-bells.

To neglect to employ massage, when it is available, in cases having a flabby and pendulous abdomen, is an omission that cannot be condoned. Every physician should be competent to give massage and willing to do it when time permits. Probably nothing is as effective as abdominal massage by the hands of a skilful operator, but a very good substitute is self-massage with wooden dumb-bells, which I suppose to be a new method. The half-pound wooden dumb-bell is of the proper size for this purpose. The patient lies on his back with legs and thighs partially flexed (Fig. 2) in order to relax the abdominal muscles. As it may be difficult to maintain this relaxation during the massage, the necessity of doing so must be emphasized. Beginning at the cecum and following the course of the colon the abdomen is kneaded with the dumb-bells, which are not held by the handle but by the head which is away from the body. There is to be no pounding but merely deep pressure. This cannot be done with the hands alone, because in that way only light pressure can be exerted. The hand grasping the head of the dumb-bell 8 inches from the body, however, can produce as much pressure as may be desired. It is superior to the cannon-ball massage devised by Sahli, because there is a to-and-fro motion resembling what is done by a masseur. After massaging the course of the colon a few times while lying on the back, the patient turns and lies on the left side and again massages while in this position. This cannot be done at all with the cannon balls. It is a useful procedure because in this posture gravitation assists in the passage of the feces through the transverse colon and the flexures. As the position of the colon varies with the individual and from time to time in the same individual, the massage is not always accurately applied, but when the body is horizontal this variation is probably never great enough to render the massage ineffective.

Neither the exercise nor massage should be performed while the stomach is full. When gastric stasis, without pyloric obstruction, is present, it may sometimes be relieved by lying on the right side either with or without massaging the stomach.

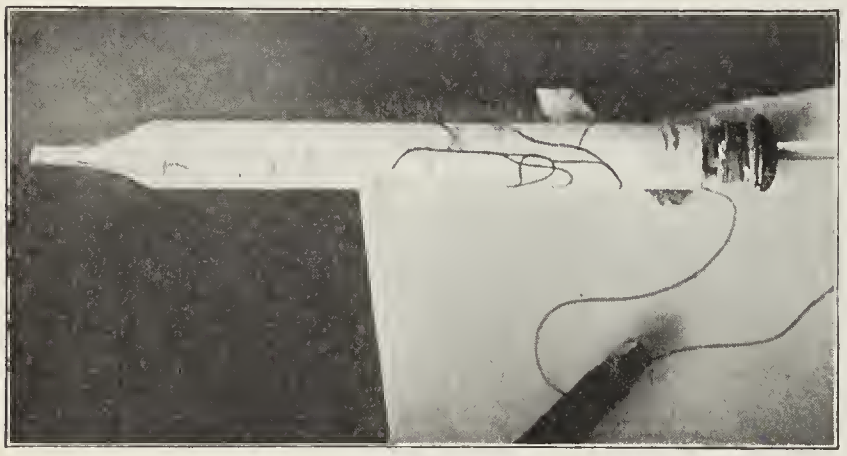
68 Davis Avenue.

## A NEW METHOD FOR FOLLOWING FISTULAS

W. L. Brown, M.D., and C. P. Brown, M.D.,
El Paso, Texas

1. Through an ordinary glass syringe of from 6 to 8 dram capacity a piston is run after it has been oiled with petrolatum to leave the interior of the syringe so that silk thread will stick to it.
2. With a long slim pair of forceps a spool of black silk thread secured from a dry goods store is placed within the interior of the syringe in as near a spiral as possible, the lower end being left close to the outlet of the syringe, and thread several inches long outside of the syringe at the proximal end.
3. The syringe is filled with well-warmed bismuth paste and the fistula injected, the tip of the syringe fitting the external opening of the fistula snugly. The bismuth carries the thread anywhere it is possible for it to go.

Case 1.—An abdominal fistula of the cecum following tuberculous appendicitis, only of sufficient size for gas to escape, rarely any fecal matter, had been operated on unsuccessfully once because the small opening in the bowel could not be located. It was injected with bismuth paste and silk thread thirty-six hours before the second operation. The thread led down around the outside of the cecum into its posterior wall through a very small opening; at the time of operation the thread had gone into the bowel and could not be extracted. After the opening had been isolated and ready for closure, the thread was cut flush and left.


Syringe filled and ready for use.

Case 2.—In a case of multiple perineal fistulas originating from ischiorectal abscess, one opening to the right side of the anus, one to the anterior side, and one opening high up under the perineum at the base of the scrotum, the fistulas were injected, and it was found that the small opening at the right side of the rectum had direct communication with the opening high up in the perineum. The thread guide gives perfect control of the situation at operation.

In many rectal fistulas the injection can be made at the time of operation, the thread frequently returning from the rectum, or it can be found and fished out with the finger if it is not desirable to make the injection the day before.

It is a great relief in undertaking these operations to feel that one has a perfect and easy method of following the fistula throughout its entirety.

The Wise.—The most manifest sign of wisdom is continued cheerfulness.—Montaigne.

# Therapeutics

## PREVENTION IS GREATER THAN CURE

(*Continued from page 1579*)

### VII

### EFFECT OF SEASONS ON HEALTH

A positive indication of the effect of this factor on public health can be obtained by the death-rate in the registration areas for the different months of the year. Many studies of these statistics have been made, and it seems to be a fact that the greatest mortality usually occurs in the month of March, although sometimes January surpasses March in mortality, and February follows closely. In July and August, also, the death-rate is somewhat higher than in the immediately preceding and succeeding months, while the minimum death-rate generally occurs in June, and November is usually the month of next lowest mortality. These statistical facts are not surprising, as it has long been recognized that the highest mortality occurs in the months characterized by extremes of temperature, the hot weather of July and August causing a large mortality among children, while the cold weather of January and February causes a high death-rate from diseases of the respiratory system. Many old people and many feeble persons who may have combated and survived the severity of January and February are quite likely to succumb in March. Also the relaxation of a little warmer weather causing more or less carelessness among the well makes March the month of the greatest number of deaths.

Besides the morbidity and mortality associated with these extremes of temperature of summer and winter, various other factors must be taken into account. Such are local climatic conditions, as peculiarly unhealthy weather may prevail in a region, at any season, and cause the death-rate to be abnormal for that season. Persistent and recurrent rain or snow, dark days, or excessive humidity may so depress individuals that they become more susceptible to disease; and the ill do not so readily recover as when the weather is pleasant. Epidemics of various kinds may, of course, also increase the death-rate at any season.

While it is the sick, the weak, the old, and the very young who are especially likely to suffer from excessive heat or severe cold, even the strong and the robust are affected by climatic severities, and a larger proportion of the well become ill, especially with the intense heat of summer.

To prevent illness in hot summer weather, persons should not unnecessarily expose themselves to the rays of the sun, and should especially avoid severe exercise in the heat when it is not necessary. This is a special warning for those who take hard exercise, in vacation recreations or amusements, in the sun in the middle of the day. Such persons, also, are often not used to such exposures, their work being mostly indoors.

The air in cities is likely to be more dust-laden and more impure in hot weather than in cold weather, as however well the streets are watered, the dust on houses and buildings and in crevices more readily dries sufficiently to be wafted by the least breeze. Also decomposition of all animal matters occurs more rapidly and more readily contaminates the air. Consequently, because of the heat and this air impurity, all those who are able leave the city and seek the seashore or the country. Such changes of location are not always a panacea, as, if such individuals are compelled to lose all their home comforts, if they must sleep in small, ill-ventilated rooms and in crowded quarters, if they are pestered with mosquitoes and their food is covered with flies, as obtains in so many summer boarding houses, and if the sea-food presented is not immediately from the water or properly refrigerated, the harm done is greater than the good. Many things should be considered by the individual or the family and by the family's physician before the summer abode is changed. This is not to minimize the great advantage of vacations and of fresh, clean, seashore and country air, provided other dangers are not incurred. Also, the danger of overdoing seashore bathing must not be forgotten.

For the many individuals or families who cannot leave their homes, or to whom it seems unwise to do so, the summer may be rendered more comfortable by properly screening the windows and doors from flies and mosquitoes and still allowing free circulation of air, screening of verandas or balconies, if such is advisable, resting as much as possible during the interim from labors, and not taking severe and uncomfortable trips or amusements to add to the exhaustion caused by the work that must be done. Many persons come back from excursions or trips, after buffeting with the crowds, more exhausted than when they left. The trolley trip should be selected that gives the greatest amount of fresh air with the least amount of crowding and exertion. Cool bathing should be advised and urged as a most splendid method of lowering the temperature, cleansing the skin from perspiration and causing it to become more active and thus lowering the internal temperature. Of course excess of such bathing should be avoided.

Before leaving this subject of summer heat, let it be urged once more that over-eating, late hours, and strenuosity in vacation and summer amusements should be abolished, and that the prime thing is restfulness in the coolest, cleanest air that can be obtained.

Men are not careful enough to wear thin clothing and protective, air-cooled hats. In this era nothing need be said of the air-cooled clothing of the women for summer. Certainly from a physiologic and sanitary, if not a moral point of view, their clothing seems unassailable.

As to the opposite climatic extreme, namely, the severe cold of winter, it is equally important that the strong as well as the weak should not subject themselves to needless exposure. The strong are likely to boast that they do not need overcoats or other means of protecting themselves from the cold. Many such individuals fall by the wayside, needlessly. The under-clothing should be that found best for the individual; whether linen mesh, silk (if one can afford it) or thin woolen, is a matter for individualization, modified by the region in which one lives, and the work which one does. Whether an individual wears overcoats or sweaters is a personal decision, but the wearing of sweaters all day, at work or in buildings, is a serious mistake, which is made frequently by young men. The feet should be warm, the kind of shoe depending on the weather. High shoes should be worn in cold weather and rubbers when it is wet, unless the shoes are water-proof. If a child wears rubber boots for storm and play, in wet and snowy weather, he should not be allowed to sit with them on in school. Rubber heels are always good; rubber soles are a serious mistake, especially in summer, and for one to be insulated with these heavy rubber-bottom shoes for hours, or all day, is an abomination. Such rubber insulation causes the feet to perspire, and causes a lack of tone of the feet.

The costume and clothing of men in winter does not require a great deal of discussion. The clothing of women and girls, projected from the summer into the winter, is a proposition that it is practically hopeless and needless to discuss. They wear furs draped around them almost anywhere; the warmth of the rest of their costume is indeterminable. We venture to state that the physician of to-day rarely feels more helpless than when one of these girls comes to his office with a severe cold and cough. He knows that it is more care and common sense that cures a cold than drugs, and without the two former elements in the cure he is forced to rely on drugs in which he has but little faith. Any common-sense advice that he will give such a girl will either place him in disfavor, or will be received and not acted on. It might be parenthetically stated that what is said above also generally applies to the girl's mother.

The clothing of young children in cold weather is more often incorrect than correct. Many are over-clothed; many are under-clothed. The family physician should carefully advise in this important matter.

Those who habitually live or work in warm rooms should be careful to wear clothing of moderate weight so as not to be overheated while in the house, but they must put on overcoats or cloaks on going out. In the northern and eastern parts of the United States people are very likely to have their houses overheated in winter. A temperature ranging from 68 to 72 F. with an adequate amount of fresh air is the temperature that is the most healthful. Old people and very young children require and must have greater heat than this in winter. The best heating system for houses and buildings need not here be discussed.

Individuals who can afford it, and who are weak and feel the cold severely, or who suffer more or less from bronchitis, colds, or other disturbances due to cold weather, should go to a warmer region during the winter. If they go to the southern United States, however, they must go far enough south to get the warmth, and not into the middle south where it is not very warm, and where the houses are not as well heated as their own homes. They should go at least below South Carolina in the East, and in the West, to Southern California, Arizona, or New Mexico. Many people who can afford this climatic luxury return to their homes too early in the spring, and are more likely to acquire severe colds, and even pneumonia, than though they had remained at home all winter. Also, it must not be considered that these regions are exempt from the possibility of severe chilling and from pneumonia. Many an individual has gone to a warmer climate and acquired pneumonia, and died of it.

*(To be continued)*

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**Hygiene and Society.**—Every citizen should be inspired with love of personal and public hygiene, as were the Greeks. Every physician should be deeply grounded in physiologic medicine and provided with proper facilities for using it practically. Every public health officer should know thoroughly the contributions of etiologic medicine. All efforts should be made to promote these fundamental needs of society.—Bardeen.

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SATURDAY, NOVEMBER 7, 1914

## VENTILATION

In the light of more modern studies in ventilation it would seem that the real explanation of the ill effects of bad ventilation is not to be found in the chemical composition of the atmosphere breathed. One is constrained to ask wherein the disagreeable or detrimental influences of poorly ventilated spaces lie. The various phases of this vital and timely, though not new subject were discussed some time ago by qualified experts in a symposium on ventilation at the Chemists' Club in New York City.[1] There is unanimity among them regarding the possible significance of the chemical vitiation of the air. Pure air contains nearly 21 per cent. of oxygen. This may be reduced to 17 per cent., a proportion too small even to support ordinary combustion, before its diminution becomes harmful. Except in extreme conditions the amount of oxygen in the closest halls crowded with people practically never falls below 20 per cent. Oxygen will, therefore, take care of itself and may probably be wholly left out of consideration in ventilating systems. Indeed, Henderson[2] has reminded us that it is necessary to go only a short distance up into the mountains to come under an atmospheric pressure such as to reduce the oxygen supply much more than it is reduced in crowded assemblies, and yet mountain air is especially healthful. The amount of oxygen in the air apparently has little or nothing to do with the stimulating or depressing properties of the atmosphere breathed in ordinary life.

The air, under the usual conditions, contains about 4 parts of carbon dioxid per ten thousand parts (0.04 per cent.) and the "standard" of desired purity for the air of dwellings was long placed as low as 6 parts per ten thousand. Experimentation indicates, however, that it does not become harmful to man until the carbon dioxid accumulates to above 1 per cent., or nearly forty times its usual amount. The air in crowded rooms very rarely reaches 0.4 per cent., so that evidently a quantity of carbon dioxid far exceeding the highest hygienic limit which has hitherto been set up as a "standard" can be breathed with impunity. Certain it is that the poisonous properties of this waste product of combustion have been greatly overestimated when the physiologic limits have been placed in terms of parts per ten thousand; though we may hesitate to accept the much higher concentrations of carbon dioxid at which a few individuals have lived in comfort under conditions of experiment, as a safe guide for formulating rules which shall apply to all persons and over long periods. Lee has exhibited the mental attitude which ought always to characterize men of science by admitting that notwithstanding these recent changes in our ideas of the relation of oxygen and carbon dioxid to ventilation, he is not prepared to say without reservation that the continued exposure of an individual day after day and week after week to even a moderately diminished quantity of oxygen and a moderately increased quantity of carbon dioxid would be wholly without harm. The hygienist is led to this reservation not by any existing physiologic knowledge, but rather by the necessity of maintaining an open mind receptive to future possible discoveries.

The long-debated idea that expired air contains organic matter which is toxic has been abandoned by most physiologists. The odor which permeates a crowded room and the putrescible character of the fluid which can be condensed from the atmosphere under such conditions leave no doubt of the presence of foreign substance of some sort attributable to the presence of man. There is no tenable evidence, however, that this comes from the lungs and is incident to respiration itself. The organic matter is probably derived from decomposition of food particles in the mouth. The well-known contention of Rosenau and Amoss[3] in 1911, suggesting the presence of a peculiar organic and volatile constituent, probably of a protein nature, which is toxic to human beings and other animals has not been supported by the independent researches of Weisman and of Lucas. It seems likely that the odor of air vitiated by human beings is no index of the presence of specifically harmful ingredients. It has been stated also that the bacteria in the air need not be considered in relation to the problem of ventilation, since the comparative unimportance of the air as a vehicle of infection is becoming widely recognized.[4] The assumed desirability of washing the air free of dust is thus put in a new light.

In contrast with all the foregoing negative factors with respect to the causes of discomfort or ill health hitherto associated with inadequate ventilation, we may now conclude with reasonable certainty that the symptoms of discomfort in a badly ventilated place are due to the physical condition of the air in respect to temperature, humidity and movement, and not to any chemical properties whatever. Flügge long ago alleged that the familiar symptoms noted in closed, crowded rooms — restlessness, headache, dizziness, nausea, etc. — are to be attributed solely to heat retention. There are investigators who, while admitting the essential facts that the malaise of bad ventilation depends on interference with heat elimination by the skin and is due wholly or in part to heat stagnation in the atmosphere contained in the pores of clothing surrounding the body, find the explanation here advanced unsatisfactory.[3] Nevertheless, overheating is the chief evil to be guarded against in ventilation at present.

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[1] The addresses are printed in full in the Jour. Indust. and Engin. Chem., 1914, vi, 245 flg., as follows: Lee, F. S.: Physiological Problems of Ventilation, p. 245; Kimball, D. D.: Mechanical Problems of Ventilation, p. 248; Baskerville, C.: Investigation of School Air in New York City, p. 250; Winslow, C. E. A.: The New York Commission on Ventilation and Its Problems, p. 255.

[2] Henderson, Y.: The Unknown Factors in the Ill Effects of Bad Ventilation, Tr. XV. Internat. Cong. Hyg. and Demography, Washington, 1913, ii, Part 2, p. 622.

[3] Roscnau, M. J., and Amoss, H. L.: Jour. Med. Research, 1911, xxv, 35. The Physiologic Properties of Expired Air, editorial, The Journal A. M. A., March 9, 1912, p. 702.

[4] Chapin, Charles V.: The Air as a Vehicle of Infection, The Journal A. M. A., Feb. 7, 1914, p. 423.

Most persons realize that in our American cities the chief danger of our torrid summer days is not the heat alone, but the combined heat and humidity; few appreciate that it is precisely the same factors which are responsible at all seasons for the evil effects of the confined air of rooms. There is no doubt that the air of our American living-rooms and many schoolrooms and other assembly chambers is kept too warm. No fixed standard percentage of humidity can be set, since the content of aqueous vapor in the air is so closely related to temperature. As Lee remarks, if any single standard is to be chosen as the standard of healthful air, it is probably the temperature of the air as indicated by the wet-bulb thermometer, which is a measure of heat and humidity combined. The effect of clothing appears to be disregarded by nearly all who discuss these problems; indeed, the hygiene of clothing remains to be written. According to Haldane, body temperature begins to rise in fairly still air, even in persons stripped to the waist and doing no work, when the wet-bulb temperature exceeds 31 C. (88 F.); when moderately hard muscular work is done, the rise may begin at 26.7 C. (80 F.). When ordinary clothes are worn, serious rise of temperature in still air may begin at much lower wet-bulb temperatures. Soldiers marching in uniform, for instance, are liable to heat-stroke at wet-bulb temperatures of under 21 C. (70 F.).

Much criticism has been aimed in the past at the apparent inadequacy of various "systems" of ventilation. An expert present at the New York symposium[5] insisted that there were no mechanical problems unsolved in the field of ventilation; that is to say, the engineer can provide any chemical or physical condition of the atmosphere of a closed space which may be required. What is needed, primarily, is some agreement among physiologists and medical men as to the desiderata in respect to the air in which we must live and work. The engineer may then be counted on to provide the conditions, whether they concern oxygen, carbon dioxid, the once vaunted ozone,[6] temperature, humidity, air-movements, dust or bacteria. Many existing ventilating plants yield unsatisfactory results for reasons which are not related to shortcomings of the ventilating engineer. Until recently he has been told by the hygienist that the prime object of ventilation was to remove noxious gases rather than to regulate air-temperature and humidity; and, furthermore, he has rarely been able to count on an intelligent and conscientious operation of his plants after they have been built.

Professor Winslow has well summarized the importance of the subject under discussion by reminding us that there are three factors and only three which universally affect the life-processes of living beings. These are the physical and chemical conditions of the enveloping medium, food-supply, and predacious or parasitic enemies. The first of these factors, in the case of man, is solely a question of air-conditioning or ventilation. When the ideal air-conditions and practical methods of securing them have been worked out with reasonable completeness an incalculable gain in the health and efficiency of man will have been effected.

One cannot read the interesting contributions presented by Winslow, Miller, Lee, Bass, Ohmes, and Van Der Bent in the current number of The Journal[7] without realizing that further investigations of the conditions *actually* existing in the midst of what is assumed to be inadequate ventilation are called for. As one of the writers has remarked, the extraordinary thing about the shifting practices in the ventilation of public buildings is that sweeping conclusions and far-reaching changes in policy have been arrived at without any detailed or systematic study such as seems essential in order to establish a safe basis for action.

## A GOVERNMENT REPORT ON THE FRIEDMANN TREATMENT

In recent years there has probably been no announcement in medical literature which attracted a more wide-spread attention in this country than did the announcement of the Friedmann treatment for tuberculosis. This was due to skilful handling of the publicity work in the daily press. The sensational newspaper reports of alleged improvement and cure of cases of tuberculosis following the use of the treatment, the reports of persons of high position in public life, of lay workers in tuberculosis, and even a few physicians who became enthusiastic supporters of Friedmann will be recalled by every one. When a note of warning was sounded by The Journal and others the assertion was made that Friedmann was being hindered in his great work. The fact is otherwise.

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[5] Kimball, D. D.: Jour. Indust. and Engin. Chem., 1914, vi, 248.

[6] See editorials, The Journal A. M. A., Ozone Myths, Feb. 10, 1912, p. 412; The Truth About Ozone, Sept. 27, 1913, p. 1045; Temperature and Humidity in Hospitals, Oct. 25, 1913, p. 1541; The Ventilation Problem, Nov. 22, 1913, p. 1902.

[7] Symposium on Air Problems in Hospitals, The Journal A. M. A., this issue, pp. 1620-1635.

Immediately on the arrival of Dr. Friedmann in this country, the United States Public Health Service took up an investigation of the validity of the claims for the treatment. A board was appointed consisting of Surgeon John F. Anderson, the director of the Hygienic Laboratory, and Surgeon A. M. Stimson, to make a thorough study of the results of the use of the treatment. The report of this board[1] has just appeared and its findings are a complete refutation of Friedmann's claims, not only for having developed a specific cure for tuberculosis, but also for the harmlessness of his treatment for man and animals. The board had an opportunity to observe the effect of the treatment in ninety-four cases of tuberculosis and was prepared to furnish many more for treatment and observation, but owing to Dr. Friedmann's delay, dilatoriness and unprofessional conduct it was obliged to limit observations to the ninety-four cases.

The claims made for the treatment were, briefly, that by means of injections of a living acid-fast organism, harmless of itself, it was possible to cure cases of tuberculosis which had not advanced to that stage where death was imminent. From the way in which the claims were put forth and from the fact that successes only and not failures were reported in the public press, the reader of Friedmann's claims could assume that such results only were the rule. In other words it was claimed that a sovereign remedy for tuberculosis had been discovered and that a method had been devised whereby living acid-fast organisms could be administered without abscess formation.

Investigation did not confirm the claims. On the contrary, it was found that the preparation used was not devoid of dangerous properties of itself, and still less so when injected into persons with tuberculosis. A favorable action on tuberculous processes by the treatment was certainly not the rule, and if the improvement noted in a few cases was to be ascribed to the treatment, we are equally bound to attribute to it the serious retrogression observed in other cases. Abscess formation had not been avoided, as abscesses occurred in a number of cases.

The board made extensive studies of the organism used in the preparation of the vaccine, both by cultural methods and by animal inoculation. It was found that the injection of the organism in animals causes abscess formation in over 25 per cent. of the animals treated. Animals treated with the organism —rabbits and guinea-pigs—either before or subsequent to infection with virulent tubercle bacilli, developed as a rule an increased susceptibility to tuberculosis. The treatment did not show either curative or protective properties in monkeys against tuberculosis.

The observations of the board on the methods of injection and dosage employed by Friedmann offer an interesting side-light on his methods. It was found that the technic employed by Friedmann was in general adequate but not scrupulous, although some glaring exceptions were accidentally observed. Two bottles of the material for injection were at hand, one to be used for intravenous injections and the other for intramuscular. Cultures made by the board, on three occasions, from these bottles, showed a contamination in two instances. On at least one occasion the board observed that the bottles became unwittingly confused, without, however, causing any unusual symptoms in the patient.

It is a matter for congratulation that this painstaking report from the Public Health Service has appeared; it is a pity that it could not have been given publicity at the time when consumptives were being so widely exploited; but scientific work of the kind done by the Public Health Service in this instance obviously requires a long period of time. It is a report that shows the absolutely flimsy evidence on which the Friedmann method for the treatment of tuberculosis was based. Of course this report is merely what might have been expected. It is confirmatory of other reports that are now in the possession of The Journal from widely separated points. The evidence which The Journal has accumulated and which includes reports on the poor victims that relied on the Friedmann treatment—together with the death notices of scores of victims—shows that the commercialization of the Friedmann cure was a grisly hoax on the unfortunate but ever hopeful consumptive.

## FLIES AS CARRIERS OF DISEASE

The part that insects, and especially the two-winged insects or *Diptera,* play in the transmission of disease, has given a profound impulse to the study of the methods and mechanisms by which the micro-organisms are conveyed from one diseased subject to another. More has been done in the study of disease-carrying insects, their habits and intimate anatomy, during the past twenty years, than in all the years preceding. The agency of mosquitoes in yellow fever and malaria, and the possible relations of the black-fly to pellagra, of the moth-fly, *Phlebotomus,* to verruga, of the stable-fly to infantile paralysis, of the tsetse flies to sleeping sickness and various diseases of the domestic animals are among the most astonishing and far-reaching discoveries of biologic and medical science of the past quarter of a century.

Of all the groups of blood-sucking flies that molest man only the minute *Ceratopogon* midges or punkies have so far not been accused of criminality. And it may be confidently believed that ere long even these little pests will be arraigned for high misdemeanors. Fortunately the blood-sucking horse-flies, the only other two-winged flies that have piercing proboscides, do not often molest man, but that will not absolve them from all suspicion.

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[1] Anderson, John F., and Stimson, Arthur M.: The Friedmann Treatment for Tuberculosis: A Report of the Board Appointed for Its Investigation, Hyg. Lab. Bull. 99, 1914; abstr., The Journal A. M. A., this issue, p. 1690.

Of the blood-sucking *Muscidae,* the common stable-fly, the horn-fly and the various tsetse flies of the Far East are the only ones that have achieved much popular notoriety; the first has been accused, probably rightfully, as the conveyer of the minute germs of infantile paralysis; the last have been known for the past fifty years to be the cause of various diseases of domestic animals in Africa, and more recently of the sleeping sickness in man. One wonders that the relations between cause and effect that have been known for so long had not led earlier to the discovery of the trypanosomes; but the student of "bugs" was then looked on by the generality of men in a sort of contempt.

In a recent memoir, Cragg[1] gives a technical description of the mechanism of the blood-sucking apparatus of these muscid flies and a number of their newly discovered relatives in India which will appeal only to the specialist, for the greater part. But some of the author's conclusions are of wider interest. He shows, very satisfactorily, that the flagellates found in the alimentary canal of the blood-sucking muscids and allied non-blood-sucking forms did not come originally from the blood of vertebrates; the facts simply point to a common origin of the two types. The author seems unquestionably right in maintaining the view that blood-sucking habits are a specialization in these, as in all other blood-sucking flies; but he seems slightly hazy in his geologic reasons. At no time since flies have been in existence, for they are a comparatively late evolution among insects, has the world been more covered with water than at the present time. Tsetse flies are very old inhabitants of the earth. Specimens of them have been found in the Tertiary rocks of Colorado, and it has been stated by an experienced observer that they have been correctly identified. Tsetse flies lived in North America at least half a million years ago, and how long it took for them to migrate here from Asia, which probably was their original home, no one can say. It is not at all improbable, according to Cragg, that the original ancestors of all the species of *Glossina* lived a million years ago, and that the common parents of tsetses and the other muscids which breed the allied flagellates lived half a million years earlier still. Lots of things could happen in a million years. Kellogg of California has recently reached the interesting conclusion that the allied species of *Pediculus* that infest the hair of the uncleanly and that of the simian apes had common ancestors in the parasites of the common ancestors of man and the same simian apes, at least as long ago as Miocene times, say not less than half a million years ago. That is nothing very strange either, for recent research goes to show that many allied birds and mammals have allied parasites which have descended from their common ancestors parasitic on the common ancestors of their hosts.

All of this goes to show that the blood-sucking habits of flies are exceedingly old ones, to speak in non-geologic terms. Another conclusion of Cragg of immediate economic interest to the physician is that "the evolution of blood-sucking habits can be seen at the present time in those flies which are blood-suckers, but which have no biting mouth-parts," but which "depend on true biting flies for the making of the wound"—a sort of commensal parasites. His own observations as well as those of other students seem to prove his contestation.

It is needless to say that these results are important, because such flies, while having no biting mouth-parts, may easily be agencies for the transfer of micro-organisms from the sick to the well. Cragg also shows from the structure of the mouth-parts why the *Glossina* flies, unlike the stable-flies, for instance, stand upright in the act of thrusting the proboscis into the skin of animals.

## IODIN AND THE THYROID SECRETION

That the thyroid gland elaborates some sort of "internal secretion," which finds its way through some channel or other into the general circulation and is thereupon distributed in the organism, is to-day tacitly assumed. There is, of course, considerable indirect evidence of such a thyroid function; but the detection of the actual product of glandular activity in the blood or lymph has not been attended with success. How important it would be for the understanding of numerous as yet unsolved thyroid problems if the secretion product could actually be traced in the body, scarcely needs to be pointed out.

The interrelation of iodin and the thyroid glands has centered attention on the possibility that the glandular product is an iodin-containing substance. Small amounts of iodin are common constituents of the glands, which respond to the introduction of iodin into the organism by retaining a portion in their tissue. The element is not merely present in some readily soluble inorganic form such as the iodids, in the guise of which it is commonly administered. The greater part of the iodin of the thyroidal tissue exists in fixed organic combination, presumably with proteins.[1] The iodized protein of the thyroid does not exhibit a constant content of iodin, but one that is quite variable and is increased after iodid administration.

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[1] Cragg, F. W.: The Comparative Anatomy of the Proboscis in the Blood-Sucking Muscidae, Scientific Memoirs of the Medical and Sanitary Departments of the Government of India, Calcutta, 1913.

[1] Compare Blum, F., and Grützner, R.: Studien zur Physiologie der Schilddrüse. IV. Mitteilung. Schicksal des Jods in der Schilddrüse, Ztschr. f. physiol. Chem., 1914, xci, 400.

Is the thyroid hormone or secretory product—if such there be—really an iodized substance? There have been assertions that this is the case,[2] although there is no lack of negative evidence in the literature on the subject. The fact, for example, that in the absence of any iodin intake the thyroid still maintains its content of the element, in other words, that the iodized substance does not become exhausted by secretion in the absence of a renewal of supply, has been urged against the assertion.[1] The search for iodized compounds in the blood or lymph, in which the product might be expected, becomes a search for minute traces and involves a most refined chemical technic. The newest researches by Blum and Grützner[3] in Frankfort conclude that organic iodin compounds, such as one would expect in the case of thyroid secretion, are not to be found in normal blood. Small amounts of iodin in inorganic form may be discovered now and then; but they are accidental and are derived directly from the food. The blood from patients suffering from various pathologic conditions has at times been found to exhibit organically combined, that is, non-ionized, iodin. This is particularly true in eclampsia. This indirect fact will not, however, justify the conclusion that iodin forms a part of the normal secretory product of the thyroids. The bearing of the discovery must await an accumulation of experimental evidence.

## ALFONSO CORTI, A SUBMERGED HISTOLOGIST

The name of Marchese Alfonso Corti is permanently associated with his great discovery of the spiral "organ of Corti," containing the terminal auditory apparatus of the cochlea, and its component parts, eponymically known as the cells, ganglion, membrane, rods, teeth and tunnel of Corti. Beyond this fact and the titles of his works, nothing whatever has been known of his life to date. Hyrtl, it is true, designated him as his prosector,[1] and Corti's epoch-making monograph of 1851, a milestone in the history of otology, gave him the widest reputation. His brother Luigi, a prominent Italian statesman and diplomatist, known during his term of residence in nearly all the embassies of the greater cities, became Minister of Foreign Affairs under Cairoli in 1878. The elder Corti himself, however, although living and working in the full current of modern science, suddenly and mysteriously sank out of public recognition about the middle of the nineteenth century and became as one submerged.

In 1907, Dr. Joseph Schaffer of Vienna applied to Prof. Max Neuburger for biographic information about Corti, and received the significant reply, "Corti belongs among those whose names are on every lip and of whose lives one knows nothing." The distinguished medical historian was able, however, to put Dr. Schaffer in touch with various Viennese archives of documents, thus starting him on a train of research the results of which have been recently published.[2] A brief abstract of these may be of interest to our readers.

Alfonso Corti, the son of a Piedmontese marquis of the name, was born on one of his father's estates at Gambarana, Sardinia, June 15, 1822. After completing a course of philosophical studies at Pavia, he entered the medical school there in 1841, mainly, as he himself said, through a particular liking for anatomy, human and comparative. For four years he devoted himself to the subject, under the direction of Panizza and Rusconi, and during the time made many preparations for the Royal Museum of the city. His industry and his special aptitude soon gave him the position of actual, if not nominal, assistant at the university. This post, however, was soon abandoned for the attractions of the New Vienna School, of which Hyrtl, just called from Prague and perhaps the greatest anatomic teacher of his time, was then the bright particular star. Reaching Vienna in 1845, Corti appears to have first matriculated at the university about 1846-1847, and shortly after was assisting Hyrtl in the preparation of lecture specimens. Twelve human and twenty-four comparative preparations of Corti's handiwork are still in the Anatomical Museum at Vienna. During his vacations home, he made collections of marine zoology on the Italian coast, some of which he took back to Hyrtl. He soon mastered the German language, but his inaugural dissertation, on the vascular system of *Psammosaurus griseus* (Vienna, 1847), dedicated to Hyrtl and illustrated with six original drawings, was written, as then usual, in Latin. Dec. 16, 1847, Corti was chosen as Hyrtl's second assistant (without emolument), after an official demonstration of his practical skill in which his fluency in German was amply displayed. Hyrtl and Czermak both spoke in glowing terms of this demonstration (on the neck), of which Corti's holographic report still exists at Vienna. During the March revolution of 1848, the university buildings, containing the anatomic institute, were turned into a barrack, and Corti's laboratory was transferred to the narrow confines of the Josephinum. He therefore went up to Berlin to follow the lectures of Johannes Müller, who seems to have spurred him to the study of the higher sense organs, as shown by Corti's next publication,[3] on the anatomy of the retina (1850). In this he discovered the origin of the optic nerve fibers of the retina from the multipolar cells of its inner layer. In the early autumn of 1850, Corti was in Utrecht, but it is inferred that he began his studies on the cochlea at Wurzburg prior to this visit, since he had already lent drawings to Kölliker and studied the retiform arrangement of cardiac muscle with him. Kölliker, in his work on microscopic anatomy (1850), already mentions Corti's work on the lamina spiralis. June 30, 1851, Corti published his *opus magnum,* on the auditory organ of mammals, in particular the cochlea, in Kölliker's *Zeitschrift.*[4] Kölliker gives a full account of Corti's work in his "Handbook of Histology" (1852), and in the second volume he characterizes it as the starting point of any exact knowledge of the cochlea. It is interesting to note that Corti appears to have employed the carmin stain before Gerlach. His confirmed Corti's discovery that the spinal ganglion of the cochlea nerve contains bipolar cells, in the embryo, and Retzius, by means of Golgi preparations. The second part of the monograph, which was to deal with the human cochlea and the vestibule of mammals, and incidentally to extend morphologic investigation to a great variety of animals and apply the laws of acoustics to the elucidation of auditory functions, was never completed. Shortly after the publication of the memoir, Corti disappeared, "like a meteor from the horizon line," and was never heard from again as a contributor to scientific literature. What was the cause of the mystery?

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[2] Biedl, A: Die innere Sekretion.

[3] Blum, F. and Grützner, R.: Studien zur Physiologie der Schilddrüse. V. Mitteilung. Kommt Jod im Blut vor? Ztschr. f. physiol. Chem., 1914, xci, 450.

[1] Hyrtl: Lehrbuch, Ed. 14, p. 626. A short sketch of Corti's work is given in Hirsch: Biographisches Lexikon, ii, 86.

[2] Schaffer: Anat. Anzeiger, 1914, xlvi, 368. See also, Brückner, G.: Arch. f. Gesch. d. Naturwissensch., 1913, v, 69.

[3] Corti: Müller's Arch., Berlin, 1850, p. 273.

In 1852, he returned to Italy, sending to Kölliker from Turin what was to be his last communication, on a dissection of an elephant in the Royal Museum at Stupinigi, made at the instance of Professor de Filippi. About this time he began to suffer from a severe arthritis deformans, acquired in early youth, which involved his hands and feet to the extent that he could neither move nor eat without assistance. Confined to his chair by increasing pain and absolute helplessness, he was forced to give up his scientific and social activities and retire to his estate, the Villa Mazzolino, near Casteggio, where he took up wine culture with the same zeal and skill which he had hitherto devoted to histology. The improvements and novelties introduced by him are said to have been of great benefit to the peasants of the country round, the Corti estate being virtually a school of agriculture. In 1855, he married Maria Bettinzoli, a lady of noble birth, by whom he had two children. His son married a Countess Sanseverino (whose name suggests Stendhal's famous heroine) and continued his father's enologic activities at Corvino San Quirico, where the eminent histologist himself died, Oct. 2, 1876.

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[4] Corti: Recherches sur l'organe de l'ouie des mammifères, 1e Partie, Limaçon, Ztschr. f. wissensch. Zool., 1851, 109.

# Current Comment

## UNWRAPPED BREAD

The increasing displacement in this country of home-made bread by the bakery loaf has been accompanied by a growing attention to the sanitary aspects of the baking industry. Attempts, in large part successful, have been made to improve the conditions under which bread is prepared in city bakeries. It is evident, however, that the conditions of distribution as well as of preparation need to be safeguarded. We have already commented[1] on the possible dangers of bacterial contamination of bread through handling by typhoid or other disease carriers. Recent studies have added to the evidence we surveyed at that time. In a paper by Jacobs, LeClerc and Mason[2] of the United States Department of Agriculture it is shown that the surface of wrapped bread purchased from retail markets is more nearly free from organisms than unwrapped bread obtained at the same time from the same sources; *Bacillus coli* was found more than eight times as frequently in the unwrapped loaves. This result is substantially the same as that obtained by Katherine Howell[3] on which our previous discussion of this subject was based. Curiously enough, these later writers make no reference to Miss Howell's work. With respect to the effect of wrapping on the palatability and general quality of bread, the conclusions of Jacobs, LeClerc and Mason are generally favorable. They state that, while bread as it comes from the oven has a sterile crust, it may become contaminated with organisms while cooling in the laboratory and therefore should be wrapped as soon as it is sufficiently cooled, a period which they fix at approximately three hours. In their discussion, however, these writers do not sufficiently discriminate between the sanitary importance of organisms such as molds or harmless air bacteria, and definite pathogenic microbes that may be smeared on the bread from infected hands. Protection of the bread from contact with fingers or mouth spray is much more essential than protection from ordinary dust. The fact that "bread which was cooled only one hour before wrapping retained heat and moisture enough to favor the growth of certain organisms" does not necessarily mean that a higher degree of safety is obtained if wrapping is delayed for two hours longer, and the authors would probably not wish such a conclusion to be drawn from their work. One practical point brought out in this paper deserves especial mention, namely, that unwrapped bread becomes stale noticeably sooner than wrapped bread and that the gain to the baker by wrapping undoubtedly more than balances the extra cost. Of great economic importance —when we consider bread, economy is important—is the reduction in weight of the wrapped loaf as compared with the unwrapped. A conference with a number of bakers showed that the cost of wrapping is from

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[1] The Bacterial Contamination of Bread, editorial, Journal A. M. A., July 6, 1912, p. 39. The Wrapping of Baker's Bread, editorial, Journal A. M. A., Oct. 10, 1914, p. 1298.

[2] Jacobs, LeClerc and Mason: Am. Jour. Pub. Health, 1914, iv, 721.

[3] Howell, Katherine: Am. Jour. Pub. Health, 1912, ii, 321.

4 to 5 per cent. On the other hand, the reduction in weight of wrapped loaves varied from 7.5 to 14 per cent. The consumer can be expected to bear at least half the cost of wrapping, or 3 per cent., but he should not be compelled to pay all of it, including a profit. A similar, but less comprehensive, study made by the Research Laboratory of the New York City Health Department has also been reported recently,[4] and this also confirms the results of Miss Howell respecting the bacterial superiority of wrapped loaves. We may consider it as established that the distribution of unwrapped bread offers manifold possibilities of infection, and that the use of wrapped bread not only offers some safeguard against disease transmission, but entails no economical disadvantage.

## THE ARTIFICIAL MENOPAUSE

The opinions held by gynecologists with respect to the effects of complete surgical extirpation of the ovaries are not in entire accord. Probably the incidence of age plays a part in the character of the individual consequences. In women of child-bearing age the operation often results in a characteristic train of symptoms known as the artificial menopause. A great diversity of phenomena, such as excessive sweating, increased pulse-rate and signs of vasomotor instability, have been described, most of them manifesting themselves comparatively soon after the operation and finally disappearing after some months.[1] It is not easy to evaluate and correctly to interpret a group of symptoms which are particularly exhibited in relation to the nervous system and which have the further psychologic uncertainty that attaches to human evidence of a personal sort. Long ago the effects said to follow ovarian extirpation were charged to a condition of overexcitability in the sympathetic system. Obviously it would be a great advantage to have some tangible, objective indication of what, if anything, actually takes place in the nervous system as the result of the operative procedure referred to. The evidence should include something more than mere "behavior" or manifestations of peculiar "feelings." Drs. Hoskins and Wheelon[2] of the Northwestern University Medical School in Chicago have determined the degree of sympathetic irritability in animals at various intervals before and after ovariectomy. The vasomotor system was selected as exemplifying the sympathetic system as a whole. Blood-pressure records were obtained to show the influence of selected drugs. The reactions to standard quantities of nicotin gave an index of the irritability of the sympathetic nervous system proper and similarly the reactions to epinephrin indicated the condition of the peripheral vasomotor structures. The research showed a marked augmentation in the vasomotor reaction to the nicotin within from six to eight weeks after removal of the ovaries. The reaction to epinephrin was not similarly increased, thereby suggesting that the augmented irritability was neither in what has been termed the sympathetic "receptive substance" nor in the vascular musculature, but rather in the sympathetic system proper. Hoskins and Wheelon conclude that these results, in conformity with clinical evidence, indicate that the operation does cause a heightened irritability in the sympathetic nervous system.

## EDUCATIONAL WORK OF THE NEW YORK CITY HEALTH DEPARTMENT

A program of educational work recently undertaken by the Department of Health of the City of New York promises great things. Though familiarity with advances in medical and sanitary science is necessary to their highest efficiency, the medical and lay employees of health departments find it difficult to keep up with the rapid progress along such lines. To overcome this difficulty the New York City health department has provided four courses of lectures, one for its medical inspectors and other physician employees, one for its lay inspectors (food and sanitary), one for its hospital nurses, and one for its field nurses. Attendance is not compulsory, but employees are expected to be prepared to pass an examination, at the termination of the course, on the subjects discussed. All the courses except that for hospital nurses (which is given in the various hospitals for contagious diseases) are open to the public. The health department further offers to provide lectures on any of the subjects in the course on application from organizations. The plan and scope of this work are so good that the results cannot fail to be a great public benefit.

# Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

## CALIFORNIA

**Personal.**—Dr. Robert T. Legge has resigned as chief surgeon of the McCloud Hospital to take effect Jan. 1, 1915, and has accepted the appointment as professor of hygiene and university physician at the University of California, Berkeley.——Dr. Ernest L. Walker, formerly chief of the medical laboratories of the bureau of science of Manila and chief of the department of medical zoology in University of the Philippines, has taken up his work as associate professor of tropical medicine in the George Williams Hooper Foundation for Medical Research.——Dr. Charles E. Ide has resigned as health commissioner of Redlands and has been succeeded by Dr. Frank H. Folkins, who will give his entire time to the work.——Dr. Edmiston Darragh, formerly surgeon to the Consolidated Copper Mining Company, Cananea, Mex., has moved to Los Angeles.——Dr. James W. Richards has succeeded Dr. Harry E. Kirschner, as first clinical assistant at the Pottenger Sanatorium, Monrovia.

## GEORGIA

**Additions to Library.**—The library of the Georgia Medical Society, Savannah, has been given 450 bound volumes by Dr. Isaac Minis Hays of Philadelphia.——Dr. William W. Owens, Savannah, has presented to the society an engrossed and framed copy of the notice of the meetings issued by the society in 1807.

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[4] Weekly Bulletin of the Dept. of Health of the City of New York, Oct. 10, 1914.

[1] Compare Schickele: Innere Sekretion und Nervensystem, Lewandowsky's Handbuch der Neurologie, 1913, iv, 434. This gives the literature.

[2] Hoskins, R. G., and Wheelon, H.: Ovarian Extirpation and Vasomotor Irritability, Am. Jour. Physiol., 1914, xxxv, 119.

## ILLINOIS

### Chicago

**Personal.**—Drs. John M. Kara and Duro Guca have sailed for Europe to enter the Red Cross work with Servia.——Dr. and Mrs. William W. Meloy and son have returned from Europe.——Dr. Grace L. Meigs has been appointed by Miss Julia Lathrop, chief of the children's bureau of the U. S. Department of Labor, as expert on sanitation on the staff of that bureau. Dr. Meigs is a graduate of Rush Medical College and has done special work under Professors von Pirquet, Finkelstein and Von Bokay. She has recently been attending physician in children's diseases in Cook County Hospital, and will act in a general advisory capacity to the bureau in matters of child health and hygiene.

**Clinical Meeting of Pediatrists.**—A clinical meeting was held under the auspices of the Chicago Pediatric Society, October 29 to 31. On the first morning, the clinic was held at the Northwestern University Medical School; the afternoon clinic, at the Sarah Morris Memorial Hospital connected with the Michael Reese Hospital, and in the evening, Dr. Arthur Kendall delivered an address on "The Relation of Bacteria to Summer Diarrhea in Infants." On the second morning, a clinic was held at the Children's Memorial Hospital; in the afternoon, visits were paid to the children's health stations, playgrounds, etc., and in the evening, a beefsteak dinner was given at the Auditorium Hotel with Dr. Frank S. Churchill as toastmaster. On Saturday morning, clinics were given at the Home for Destitute Children and Cook County Hospital; and in the afternoon, at the amphitheater of the Rush Medical College and the Annie Durand Hospital.

**Wesley Memorial Hospital Fellowships.**—The Wesley Memorial Hospital of Chicago has established five fellowships to be given yearly to those graduates in medicine who have clinical scientific problems that they wish to solve. The work will be done under a joint board made up from the staff of the Wesley Hospital and the laboratory departments of the Northwestern University Medical School; the clinical work to be done in the hospital and the laboratory work in the laboratory of the medical school. The problems are restricted to those having direct application to clinical medicine and surgery or the specialties. The fellowships are open to any graduate in medicine. The recipient of the fellowship will be required to devote his entire time during the first year, at least, to the prosecution of his investigation. It is hoped through these fellowships to correlate more satisfactorily than in the past the departments of clinical and scientific medicine.

## INDIANA

**Personal.**—Dr. Charles A. Pfafflin, Indianapolis, returned from Europe, October 26.——Dr. Cassius E. VanMatre, New Castle, is reported to be critically ill at his home.

**Small-Pox.**—Thirty cases of small-pox have been reported brought to the isolation hospital at Whiting. Schools, churches and theaters have been ordered to be closed and the street cars passing through the city have been fumigated, the population being vaccinated. Small-pox is also reported from Porter.

**Women Physicians Form Club.**—Twenty-five women physicians of Indianapolis met October 18 and organized the Indianapolis Women Physicians' Club, one of the chief aims of which is to establish a hospital for the care of sick children. Dr. Hannah M. Graham was elected temporary chairman and Dr. Lillian B. Mueller, secretary.

## KENTUCKY

**Operating Room Donated.**—An operating room, modernly equipped, was given by Charles R. Long to the Louisville Masonic Widow's and Orphan's Home, in memory of the father of the donor. The gift was accepted by President Fred J. Drexler of the board of directors and Dr. Ap Morgan Vance, president of the medical board.

**Clinic Held and Hospital Dedicated.**—A new hospital recently erected and equipped at a cost of $150,000 on the campus of the W. C. T. U. settlement school, Hindman, Knott County, was dedicated October 19, Dr. William S. Stucky of Lexington making the dedicatory address. Dr. Stucky, with Dr. George H. Wilson of Lexington and Dr. Isadore N. Bloom of Louisville, also held a four-day clinic at Hindman.

## LOUISIANA

**Louisiana Health Train.**—The Educational-Hygiene exhibit, which is a constant feature in the health educational campaign in Louisiana, has been consolidated, and two cars owned by the State Board of Health are being used throughout the state for health propaganda. Educational-Inspection Car No. 1 is used as living quarters for the force. It contains drawing rooms, sleeping quarters, living quarters, bath room, lavatories, linen closets, kitchen and engine room in which a motor is installed that generates power for electrical models, fans and lights. The force consists of Dr. Dowling, president, inspectors, sanitary engineer, bacteriologist and office help. All mail for the central office is handled from the car. Educational Car No. 2 contains exhibits devoted to child hygiene, community hygiene and disease prevention. Motion picture entertainments are given, in addition to lectures and other exhibitions offered by the health train. On invitation the cars will be taken to the meetings of the Southern Medical Association in Richmond and to the meeting of the American Public Health Association in Jacksonville, making stops in large cities en route. For this trip a very complete exhibit on bubonic plague has been arranged which will show species of rats common in the United States, plague infected rats in various stages, species of fleas, exhibits of *Bacillus pestis*, models of rat proofing and pictures of specific features of plague eradication. Literature on different topics is to be distributed. On the return of the cars from Jacksonville, the annual trip through the state will be made and probably last four months.

## MICHIGAN

**Personal.**—Dr. Cedric P. Sibley, Detroit, is on duty at the Military Hospital in Vienna.——Dr. James N. Garber, Detroit, was seriously injured in a collision of automobiles, October 25.——Dr. Robert B. Gaston has been appointed senior house surgeon of Grace Hospital, Detroit.

**Foot-and-Mouth Disease.**—Dairy cattle around Niles and Watervliet have been so seriously affected that a number of federal investigators have been sent to inspect every farm and every animal in Berrien County. A rigid quarantine on diseases of cattle has been established throughout the county except four townships.

**State Tuberculosis Commission.**—The president of the State Medical Society has appointed the following tuberculosis commission: Drs. Victor C. Vaughan, Jr., Detroit; Arthur F. Fischer, Hancock; Robert L. Dixon, Wahjamego; Arthur H. Burleson, Olivet; Alvin H. Rockwell, Kalamazoo, and Clarence M. Williams, Alpena.

**Sanitary Survey of Copper Country.**—Passed Assistant Surgeon Robert Olesen and assistant Joseph S. Bolten, U. S. Public Health Service, are making a sanitary survey of the Copper Country, including industrial conditions, sewerage and water systems, etc., and are also holding conferences with the township and village boards of health regarding the sanitary conditions of the community.

## MINNESOTA

**Health Week Proclaimed.**—Governor Eberhart has issued a proclamation setting aside the week of November 29 to December 5 for the study of general health problems.

**Results of Typhoid Vaccination in Hospital for the Insane.**—A report issued October 14 by the State Board of Control shows that of nearly 2,000 who have received typhoid vaccination at the Fergus Falls Hospital for the Insane within the last two years, none has contracted the disease. Five cases have occurred in the same time among unvaccinated employees.

## MISSISSIPPI

**Yellow-Fever Fund.**—It is announced that there still remains in a bank in Grenada a balance of $2,700 to the credit of the yellow-fever fund subscribed during the epidemic of 1878.

**Personal.**—Dr. Hyman M. Folkes, Biloxi, has been elected president of the Gulf Coast Life Insurance Company.——Dr. Joel C. Hall, Anguilla, has been appointed surgeon-general of the United Confederate Veterans, vice Dr. Christopher H. Tebault, New Orleans, deceased.——Dr. J. C. R. Gathings, Parchman, has resigned as superintendent of the Mississippi Penitentiary, Vicksburg, to take effect Jan. 1, 1915.

## MISSOURI

**District Society Organized.**—The organization of the Northeast Missouri Medical Association was perfected at a meeting held in Memphis, October 7. The district includes the counties of Clark, Scotland, Schuyler, Lewis, Knox and

Adair. About twenty physicians were present and the following officers were elected: president, Dr. Clarence N. Frame, Ewing; vice-presidents, Drs. Phillip M. Baker, Memphis, and Alexander C. Crank, Canton; secretary-treasurer, Dr. John S. Gashwiler, Novinger.

## NEW YORK

**Tuberculosis Fee for Physicians.**—After January 1 physicians of Syracuse will receive $1 for each case of tuberculosis reported to the Local Bureau of Health.

### New York City

**Award of Alvarenga Prize.**—The Alvarenga Prize for 1914 has been awarded to Dr. Herman B. Sheffield for an essay entitled "The Fundamental Principles Involved in the Use of the Bone Graft in Surgery."

**To Regulate Keeping of Chickens.**—An attempt recently to put certain restrictions on those keeping chickens in the city limits met with considerable antagonism, and modifications were considered. At a recent meeting of the Board of Health it was ruled that roosters must not be kept in the city; that runways and coops must be whitewashed and sanitary, and that the chickens must not be kept within 25 feet of any inhabited or public building other than that of the owner, and none may be kept in tenement houses.

**Cerebrospinal Meningitis.**—The health department calls attention to a considerable increase in the number of deaths reported from epidemics of cerebrospinal meningitis. During the week ended October 24, ten deaths have been reported, as against one in the corresponding week of 1913. It is suggested that the increased mortality may be a forerunner of an approaching epidemic. The department, however, is well prepared to handle the situation, having a good supply of antimeningitis serum for free distribution.

**Ask Appropriation for Inebriate Farm.**—The Health Federation of the city of New York has asked the city to set aside $39,032 for use by the Board of Inebriety at the farm in Warwick, purchased by the city several years ago. A modern dormitory is now being built on the farm and existing buildings are being remodeled. When the work is complete there will be accommodations for several hundred inebriates on the farm. There are now eighty-six patients in city hospitals waiting to be removed to the country institution.

**Health Advice for Policemen.**—Commissioner Woods of the police department has distributed booklets to the policemen of the city on "How to Keep Well," which have been prepared by a committee of police surgeons, consisting of Drs. Arthur S. Vosburgh, Henry C. Webster and Edwin C. Fiske, acting under the direction of acting chief surgeon, Dr. Edward T. Higgins and Health Commissioner Sigismund S. Goldwater. It is especially emphasized that a low sickness rate means increased efficiency for the department and also contributes to the welfare of the men and their families.

**Medical Inspectors for Defective Pupils.**—In order to meet the necessity for medical inspectors of ungraded classes, the board of education has amended its by-laws so as to provide for them. The amendment requires that the applicants, in addition to graduation from a medical school recognized by the Regents of the State of New York, must have had two years' specialized experience in the treatment of nervous diseases of children, with special reference to mental defectives. It was further ruled that on the nomination of the Board of Superintendents the board of education might appoint such inspectors and assistant inspectors of public school athletics, and such inspectors and assistant inspectors of ungraded classes as it deemed necessary. Such inspectors and assistant inspectors shall be subject to the supervision and direction of the board of education.

## NORTH CAROLINA

**New Wing to Asheville Hospital.**—Work will begin shortly on the new fire-proof wing of the Asheville Mission Hospital. The building will be fire-proof and will cost about $50,000.

**Tuberculosis Day Observance.**—The State Board of Health has prepared and distributed in churches and schools throughout the state an elaborate program for tuberculosis day, November 20.

## NORTH DAKOTA

**Personal.**—Dr. Clinton E. Spicer, Litchville, has returned from abroad.——Dr. Arnt G. Andersen has disposed of his practice in Hillsboro to his partner, Dr. Syver Vinje, and has located in Minneapolis, Minn.

## OHIO

**Personal.**—Dr. William Clyde Leeper, McConnelsville, has been elected president of the Eighth Councilor District Medical Society.——Dr. Henry M. Metcalf, Elyria, secretary of the Loraine County Medical Society, has been elected treasurer for the unexpired term of the late Dr. Evan Cameron.

**Component Society Recognized.**—The officers of the Ohio State Medical Association have notified the secretary, Dr. Lewis R. Culbertson, Zanesville, that they have recognized the Muskingum County Medical Society as the component society for that county. Members of the Muskingum County Academy of Medicine will be reinstated as members of the Muskingum County Medical Society on payment of all dues.

**Trust Fund to Western Reserve University.**—By the will of the late Liberty E. Holden, a trustee of the University, who died in 1913, his estate appraised at from three to six millions, is left to the trust fund, one-sixth of which, less $50,000, the Medical School of Western Reserve University is to receive eventually. The terms of the gift are very liberal and the income is to be devoted to research on problems on the cause and cure of disease.

**Faculty Changes at Western Reserve.**—Dr. Howard T. Karsner, assistant professor of pathology in Harvard Medical School, has been appointed professor of pathology and will begin his duties December 1.——Dr. Henry O. Feiss has been appointed full-time instructor in experimental medicine.——Dr. Gaius E. Harmon, Randolph, Mass., full-time instructor in hygiene; Bradley M. Patten, Ph.D., full-time instructor in histology and embryology and George E. Simpson, B.S., full-time instructor in organic and biochemistry.

## PENNSYLVANIA

**Sanatorium Opened.**—The Third State Tuberculosis Sanatorium of Pennsylvania, located at Hamburg, was opened for patients October 26. The necessity for this institution is evident when it is considered that in addition to the 1,150 patients under treatment at Mt. Alto Sanatorium and the 400 who are receiving care at the Cresson Sanatorium, there is still a waiting list of more than 1,000. The new Hamburg Sanatorium will accommodate 550 of these. The institution was inspected by the governor and other officials of the state on October 24.

**Personal.**—Dr. Calvin N. Wherry, Chatham, has resigned as a member of the medical staff of the Cresson State Sanatorium——Dr. Walter J. Cathrall, South Bethlehem, is reported to have been adjudged insane and committed to the Rittersville State Hospital.——Dr. Charles C. Waggoner, Corry, while hunting near Garland, October 16, was accidentally shot in the eye by a companion.——Dr. Clair W. Burket, Altoona, fell while hunting near Spruce Creek recently, fracturing his left arm.——Dr. Henry X. Bonbrake, Chambersburg, has been admitted to the Chambersburg Hospital for treatment.—Dr. William C. White, medical director of the Tuberculosis League of Pittsburgh, has been elected president of the First North Atlantic Tuberculosis Conference.

### Philadelphia

**College of Physicians Residuary Legatee.**—The late Dr. Morris Longstreth, who at one time held the chair of pathological anatomy in Jefferson Medical College and later was in practice at Cambridge, Mass., and Barcelona, Spain, made the College of Physicians of Philadelphia his residuary legatee.

**Personal.**—Dr. Ellwood R. Kirby has been appointed consulting and chief surgeon for the Masonic Home, Elizabethtown, Pa.——Dr. Thomas A. Benbow, an Australian, has resigned as house physician of Jefferson Hospital and has started for England to offer his services to the Royal Army Medical Corps.——Dr. Joseph C. Doane was named, October 27, by Director Harte, as the chief resident physician at the Philadelphia General Hospital. The position pays $4,000 a year.

**Faculty Changes.**—The Medico-Chirurgical College of Philadelphia announces the following faculty changes: Dr. Herbert H. Cushing, professor of practical anatomy; Dr. Ardrey W. Downs, professor of experimental physiology; Vernon K. Suydam, professor of physics; Charles E. Vanderkleed, professor of analytical chemistry; Dr. John H. Small, associate professor of bacteriology; Dr. Eugene A. Case, associate professor of pathology; Dr. Philipp Fischelis, associate professor of histology and embryology; Dr. Guy Hinsdale, Hot Springs, Va., associate professor of climatology, Dr. Arthur C. Morgan, associate professor of medicine; Dr. John Stewart Rodman and Dr. John J. Gilbride, associate professors of surgery; Drs. Howard L. Jameson and Andrew Callahan, associates in medicine, and Dr. Robert F. Ridpath, associate in laryngology.

**The Alvarenga Prize.**—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize being the income for one year of the bequest of the late Señor Alvarenga and amounting to about $250, will be made on July 14, 1915, providing a worthy essay is offered. Essays may be on any subject on medicine, but must not have been published. They must be typewritten and if written in any language other than English, should be accompanied by an English translation and must be received by Dr. Francis R. Packard, secretary of the college, 19 South Twenty-Second Street, Philadelphia, on or before May 1, 1915. Each essay must be sent without signature, but must be plainly marked by a motto and accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. The successful essay or a copy of it is to remain in the possession of the college. Other essays will be returned on application within three months after the award has been made.

### WASHINGTON

**Personal.**—Dr. William N. Kellar, Tacoma, has been appointed superintendent of the Western Washington Hospital for the Insane, Steilacoom, succeeding Dr. Arthur P. Calhoun, Fort Steilacoom, resigned.——Dr. Alfred S. Oliver, Jr., who has been acting superintendent of the Western Washington State Hospital, Medical Lake, has been appointed superintendent of that institution.——Dr. Charles C. Hunt, Seattle, was the guest of honor at a dinner given by the Lee County (Ill.) Medical Society at Nachusa Tavern, Dixon, October 14.

### WEST VIRGINIA

**A Year's Tuberculosis Campaign.**—Dr. Harriet B. Jones of Wheeling, director of the West Virginia Antituberculosis League, reports work done from Sept. 15, 1913, to Sept. 15, 1914, under a legislative appropriation of $9,900, the Baltimore and Ohio Railroad Company donating the use of a car and free transportation for six months. The car was fitted up in August with an exhibit, lighting plant and literature. No less than 100,000 people saw the exhibit in six months. Dr. Thurman Gillespy of Wheeling accompanied the car as lecturer. Dr. Jones preceded the car, talking in schools and giving lectures at night to adults. The statistics of the work done include 44 counties visited by the lecturers, 33 counties visited by the exhibit car, 624 talks given in schools to 53,354 pupils, 102 lectures to over 19,000 adults, 16 county teachers' institutes attended, lectures given to over 70,000 pupils and 250,000 pieces of literature distributed.

### WISCONSIN

**Medical Secretaries Elect.**—At the annual meeting of the State Secretaries Association of Wisconsin, which is made up of secretaries of county medical societies, Dr. Joseph F. Smith, Wausau, was elected president; Dr. Mina B. Glasier, Bloomington, vice-president, and Dr. Henry W. Morgenroth, Oshkosh, secretary.

**State Foes of Tuberculosis Meet.**—The Wisconsin Antituberculosis Association met in Milwaukee, October 16, and elected the following officers: president, Dean Louis Reber; vice-presidents, Drs. Timothy L. Harrington, Milwaukee, and Gustave Windesheim; secretary, Dr. Clarence A. Baer, Milwaukee. Dr. Mazyck P. Ravenel, Madison, who resigned as president on account of his having accepted a position on the faculty of the University of Missouri, delivered his farewell address, in which he reviewed the progress in health education and legislation in Wisconsin during the last few years.

### GENERAL

**Southwest Physicians to Meet.**—The ninth annual meeting of the Medical Association of the Southwest will be held in Galveston, Tex., November 10 and 11, under the presidency of Dr. Samuel S. Glasscock, Kansas City, Kan.

**Meeting of Pan-American Physicians.**—At the meeting of the executive committee of the Pan-American Medical Congress in Cincinnati, October 28, the following officers were elected: president, Dr. Charles A. L. Reed, Cincinnati; secretary, Dr. Ramon Guiteras, New York City; and treasurer, Dr. Henry L. E. Johnson, Washington.

**Medical Examination of Canal Zone Children.**—The annual examination of the children attending the Canal Zone schools took place during the week of October 26. By this means an accurate record of schoolchildren is expected to be kept, not only with reference to communicable diseases, but also in regard to defective teeth and defects in sight, hearing and the respiratory passages.

**Examinations for Army Medical Corps.**—The Surgeon-General of the Army announces that a preliminary examination for the Army Medical Corps will be held at various points in the United States, January 11. Applicants must be citizens of the United States, between 22 and 30 years of age, graduates of medical schools legally authorized to confer the degree of Doctor of Medicine, of good moral character and habits and shall have had at least one year of hospital training as an intern after graduation. Information regarding these examinations may be procured on application to the Surgeon-General, U. S. Army, Washington, D. C.

**Railway Surgeons Elect.**—At the annual meeting of the Association of Seaboard Airline Railway Surgeons at Petersburg, Va., October 19-21, the following officers were elected: president, Dr. Milton L. Wood, Montgomery, Ala.; vice-presidents, Drs. Robert L. Harris, Jacksonville, Fla.; Frank L. Eskridge, Atlanta, Ga., and Wilbur A. McPhaul, Lumberton, N. C.; secretary-treasurer, Dr. Jarrett W. Palmer, Ailey, Ga.; and member of the executive committee, Dr. Emmett H. Terrell, Richmond, Va. The association decided to meet next year in August at Wrightsville Beach, near Wilmington, N. C.

**New Officers of the Mississippi Valley Medical Association.**—At the fortieth annual meeting of the Mississippi Valley Medical Association held at Cincinnati, October 27-29, Lexington, Ky., was selected as the next place of meeting and the following officers were elected: president, Dr. Hugh Cabot, Boston; vice-presidents, Drs. Willard J. Stone, Toledo, Ohio, and Albert H. Freiberg, Cincinnati; secretary, Dr. Henry Enos Tuley, Louisville (reelected); treasurer, Dr. S. C. Stanton, Chicago (reelected), and chairman of committee arrangements, Dr. Carl L. Wheeler, Lexington, Ky.

**Bequests and Donations.**—The following bequests and donations have recently been announced:

Presbyterian Hospital, Chicago, one-third of the estate of Thomas Murdoch, Chicago, which was appraised at nearly $4,000,000, after the payment of specific legacies, by the will of Thomas Murdoch, Chicago.

Presbyterian Hospital, Children's Ward, $2,120; Margaret Etter Creche, $2,100; Bethlehem Creche, $1,975; Wesley Hospital Children's Ward, $1,875; Mary Thompson and Providence Hospitals, each $1,289; Outing for Crippled Children and Jackson Park Sanitarium, each $1,029, as the result of Children's Charity Tag Day in Chicago, October 24. There was donated for charities on Tag Day, nearly $47,000.

### FOREIGN

**Death of Professor Pawlik.**—The death is reported of Dr. Karel Pawlik, professor emeritus of obstetrics and gynecology in the Bohemian University of Prague, aged 65.

**New Institute of Hygiene at Madrid.**—The *Siglo Medico* states that congratulations are in order for the new and elaborately equipped building just completed at Madrid to house the Instituto de Higiene de Alfonso XIII which had long outgrown its old quarters. Professor Ramon y Cajal has been at its head since it was founded in 1899, and is still director in chief. The extensive *Parque sanitario*, with its isolation buildings, is in charge of V. Cortezo, and R. Serret, one of the three editors of our exchange, is at the head of the vaccine department. The two other members of the editorial staff of the *Siglo Medico*, C. Cortezo and Pulido, are on the national board of public health.

**American Red Cross Relief Work Abroad.**—The American Red Cross, October 19, cabled to the American consul-general in Canton, China, a contribution of $5,000 from its contingent fund to aid in the relief of famine sufferers in central China. From the same fund $3,000 was cabled to Ambassador J. Morgenthau in Constantinople for the survivors of the earthquake in Konia Province, Turkey, where 3,000 persons were killed and many injured and made destitute. In response to the telegraphic appeal of Rear Admiral Howard of the United States Navy, Charles J. O'Connor, director of the Pacific division of the American Red Cross, has been authorized to buy $1,000 worth of pork and beans for the starving thousands in the vicinity of Acapulco. Secretary of the Navy Daniels has arranged to send the supplies to Acapulco on the naval collier *Nero*.

## CANADA

**University News.**—McGill University will grant degrees to all fourth-year students who enlist with the Canadian expeditionary forces before the conclusion of the present college term. First, second and third year students will be given credit for full term's academic work; and on their return will be admitted to the class immediately above.

**Montreal Wins in Vaccination Suit.**—The Court of King's Bench, Montreal, has given judgment in a vaccination case where the parents of a child vaccinated by order of the Medical Department of Health and performed by an officer of the board of health, sought to recover $10,000 damages owing to subsequent paralysis of the arm. A jury had awarded $8,000 damages but the King's Bench has reversed this judgment and now the case has been settled in favor of the city. The physicians called as witnesses disagreed as to whether the paralysis had been caused by the vaccine or not, so the judge ruled the jury had no jurisdiction, as it was not a matter of fact but a matter of opinion.

**Recognition of Ontario Physicians Abroad.**—The medical faculty of Queen's University, Kingston, Ont., have adopted the following resolution: Whereas, a number of physicians registered in Ontario have volunteered for the Imperial army medical service, and have not been accepted because the Ontario qualifications are not recognized in Great Britain; Resolved, that in the opinion of the medical faculty of Queen's University the time is opportune to establish reciprocal relations between the General Medical Council of Great Britain and the Medical Council of Ontario, and, resolved, that the faculty suggest to the officers and executive of the Ontario Medical Council that a special meeting of the council be held at the earliest posible moment to deal with this important matter.

**Personal.**—Dr. Joseph O. Reaume, Windsor, has resigned as minister of public works of Ontario.——Dr. William G. Anglin, senior surgeon Kingston General Hospital, has volunteered for service in the second Canadian force.—Dr. James W. Good, Winnipeg, has returned from a trip round the world, in which he spent considerable time in the hospitals of Russia, China and Japan.——Dr. John S. Gray, Winnipeg, registrar of the Manitoba College of Physicians and Surgeons, has returned from England.——Winnipeg contributed the following medical officers to the Canadian overseas force: Drs. Claude E. Fortin, John A. Gunn, George S. Mothersill, Walter L. Watt, Percy G. Bell, J. F. Bell, Stanley A. Smith, John H. Leeming, John D. McQueen and William Webster.——Dr. George W. Ross is lecturing on therapeutics at the University of Toronto during the absence of Dr. Robert D. Rudolf in Europe.——Dr. William J. O. Malloch, Toronto, first assistant surgeon in the service of Dr. Herbert A. Bruce at the Toronto General Hospital, recently underwent operation for gall-stones and is recovering rapidly.

## WAR NOTES

**Splints Given to Red Cross.**—The University of Pennsylvania Hospital has contributed to the American Red Cross, 300 pieces of woven wire splints for use in Europe.

**Anticholera Vaccination.**—The troops in Austria and Hungary are being vaccinated against cholera on an extensive scale, both those on the firing line and in the garrisons.

**Celebrates Eightieth Birthday in the Field.**—Dr. Hertwig of Berlin is now serving in the eastern German army on his third military campaign. He recently celebrated his eightieth birthday in the field. He began practice in 1860.

**Courses of Lectures on Surgery in the Field.**—Our Italian exchanges state that lectures on military hygiene and sanitation are being held in Rome and other cities and towns are urged to follow this example.

**American Red Cross Expedition in Berlin.**—Of the seven expeditions sent out by the American Red Cross, the one destined for Germany had arrived at Berlin by October 18, and passed on to the eastern seat of war.

**Exportation of Drugs and Hospital Supplies Prohibited in Austria.**—The list of articles includes vaccines and laboratory animals as well as phenol, mercury, strychnin, iodin, bismuth, materials for culture mediums, catgut, morphin, etc.

**University Gives Ambulances.**—Yale University has advised the American National Red Cross that it will give two ambulances for European relief work, one for Germany and the other for the American Ambulance Hospital in Paris.

**Professor König Not Dead.**—Our German exchanges of October 18 correct the notice they had previously sent out in regard to the death of Professor Friedrich König in the field. It was a younger brother, a captain of cavalry, who was shot in active service in the East.

**Red Cross Hospital Trains.**—The German Red Cross has equipped twenty-four hospital trains, each with dining car, four physicians, thirty-six attendants, bookkeeper and porter, and beds for 320 wounded. Nearly all the trains are in use and have rendered excellent service.

**Hospital Ship Wrecked.**—The British hospital ship *Rohilla*, en route to a Belgian or French port, bearing physicians, nurses and hospital supplies, ran on the rocks near Whitby, October 30, and was totally wrecked. One hundred and thirty of the passengers and crew were saved. All nurses, it is believed, were saved, but eleven physicians are supposed to have perished.

**England's Queen Appreciates Work of Red Cross.**—Queen Mary of England has communicated to Mrs. Lewis Harcourt, one of the honorary secretaries of the woman's war relief fund in London, her appreciation of the sending of the American National Red Cross Ship *Red Cross* with American surgeons and nurses, and quantities of hospital supplies in their hour of distress.

**American Surgeons Commissioned in Russian Army.**—A telegram from Petrograd announces that commissions as generals in the Russian medical service have been given to the two senior surgeons of the American Red Cross units assigned to service in Russia while the four junior surgeons have been commissioned as colonels in the medical corps. The units have been assigned to duty at Kiev.

**Wounded in Brittany.**—In a letter to Miss Mabel T. Boardman, chairman of the relief board of the American National Red Cross, written from Val Fleuri, Dinard, France, a pathetic appeal is made for hospital supplies for the wounded which number 42,000 in this corner of Brittany alone. The special needs are for wools for socks, wristlets and chest protectors; absorbent cotton and antitetanus serum.

**Losses in German Medical Corps.**—Up to October 24, it is reported, that the medical corps of the German army has lost 74 officers dead from wounds, 37 have been wounded, 13 are missing, 8 have died from disease and 3 are prisoners of war.——In the medical branch of the Austria-Hungary service, 8 officers have been killed, 25 wounded, 1 is missing and 25 are incapacitated by reason of illness.

**Organization of Welfare Work for Wounded Soldiers in Austria.**—This work in Austria is divided into three departments: the direct care of the wounded, with central Red Cross headquarters at Vienna; the care of the families left dependent by the departure of the breadwinner for the front; and the care of the dependents left by soldiers who have been killed. Each branch has its separate office and information bureau, and receiving committee for donations.

**Fiftieth Anniversary of the Geneva Convention.**—This fall fifty years have elapsed since the Geneva Convention met to organize the systematic care of the wounded during war. The emperor of Austria in honor of the anniversary, which was celebrated with ceremony at Vienna, has founded an order with silver and bronze badges to be awarded to those in Austria-Hungary who distinguish themselves in Red Cross work either actively in the field or by contributions.

**Canadian Hospital in London.**—Surgeon-General Whitehead in command of the eastern district, in behalf of the war office, inspected the Queen's Canadian War Hospital, October 14.——The Anglo-Canadian Committee has raised $85,000 for the equipment of the institution. At present 60 beds are occupied by wounded from Antwerp. The staff includes Sir William Osler, physician in chief; Dr. Donald Armour, surgeon in chief, and Drs. Frazier and Wallace, assistants.

**American Medical Journals and the War.**—Our Italian exchange, the *Policlinico*, commenting on the present reduction in size and contents of so many of the medical journals of the world remarks: "The American medical journals scarcely seem aware of the terrible conflict going on in Europe. They are keeping alight the torch of medical science. They arrive unfailingly and serenely although with occasional delays of two or three weeks; then they appear in a bunch."

**Medical Supplies for England.**—The British War Relief Association, New York City, announces that five cases of medical supplies, a case of blankets, one of shirts and socks and two of children's clothing have been sent to the head of St. Andrew's Ambulance Association.——An order has been placed with a Philadelphia firm by the British government for 6,000 packages of tetanus antitoxin, and with another for

500,000 yards of muslin for bandages.——A firm in Reading, Pa., has contracted to make 50,000 stretchers to be sent abroad; 1,000 stretchers are to be delivered each week.

**More Red Cross Personel to Go Abroad.**—The American National Red Cross has decided to send two additional surgeons and six additional enrolled Red Cross nurses to England.——Two extra hospital units will sail for Servia on the steamer *Finland*, November 17. Extra Unit Number 1 is in command of Dr. Ethan Flagg Butler of Washington, D. C., with Drs. S. H. Hodge, Knoxville, Tenn., and James F. Donnelly, Stapleton, S. I., N. Y., staff physicians. Dr. Ernest P. Magruder, Washington, D. C., is medical director of Extra Unit Number 2, and the staff physicians are Drs. Clapham P. King and Morton P. Lane, both of Washington, D. C.

**University of Vienna Buildings Transformed into Hospital.**—Particulars are at hand as to the transformation of the university buildings at Vienna and Breslau into large hospitals. Linoleum has been laid over wooden floors, partitions erected and recitation rooms changed into bathrooms, etc., so that the whole presents the appearance of a modern and well equipped hospital. A. Fränkel is in charge at Vienna. To this hospital the wounded are transferred after they have been operated on or otherwise treated at the Hochenegg and Eiselsberg surgical clinics. Special arrangements have also been provided for treatment of outpatients. The university is paying the expense of this transformation of its buildings and of maintenance.

**First-Aid Packet.**—German physicians writing from the front comment with approval on the first-aid packets in use among the Germans. They are fastened in the front of the coat and are not carried in an inner pocket as the French soldiers carry theirs, so they are very accessible. The French packet is said to be hard to open and the dressing to be mostly absorbent cotton which is difficult to remove when the dressing is changed later, especially in case of jagged shrapnel or grenade wounds. The French also use lint to some extent. The German first-aid packet is surpassing all expectations. One physician mentions as a typical instance of what it can accomplish the absence of peritonitis in a case of extensive abdominal wound with protrusion of part of the liver. A comrade applied at once the first-aid dressing but the wounded man was obliged to stay where he fell until the second night and did not seem severely injured when he was brought in. Shrapnel wounds are said to suppurate in fully 85 per cent. of the cases.

**Imported Drugs in Sweden.**—According to *Hygica*, it has been impossible for dealers in drugs to get into communication with French drug firms so that all pharmaceuticals of French make are cut off. Representations have been made by the higher authorities to Germany asking that Sweden might be exempted from the prohibition of exportation of pure phenol, mercury, caffein and the other drugs whose exportation was prohibited when the war broke out. But no exception is to be permitted in favor of Sweden. All pharmaceuticals which do not contain any of the prohibited substances can still be obtained freely from Germany. England has also prohibited the exportation of a long list of drugs, and it has been a difficult matter to obtain even the nonprohibited drugs and proprietaries from England. Switzerland has also decided not to allow the exportation of phenol, morphin and caffein, pantopon, codein and arecolin. On the whole, *Hygica* concludes, physicians in Sweden will do well to be economical in the prescribing of drugs as it possibly may be difficult for the drug-stores to fill prescriptions calling for certain ingredients.

**The Work of the American Hospital.**—The work of the American Hospital in Paris has received great praise on account of its efficiency and adaptability to emergencies. Between August 12 and September 1, it converted the Lycee Pasteur at Neuilly into the American Ambulance of Paris, one of the best equipped war hospitals in Europe. In a fortnight the wing of the building was completed, operating theaters, anesthetizing and sterilizing rooms and a Roentgenray department installed and wards prepared. The American Colony in Paris is responsible for this work. The good work of the hospital is limited only by the amount of money subscribed for its support. It has at present 400 beds and desires to increase its capacity to 1,000. The cost of maintainance of the hospital is about $2 per patient a day although the nurses and physicians serve without charge. The hospital asks a donation of one-half million dollars which will enable it to do the great work it desires and to the fullest extent. It is at present under the charge of Dr. Joseph Blake, New York, Dr. Richard Derby, Boston, and Dr. C. W. Dubouchet, an American, who lives in Paris. Contributions may be sent through J. P. Morgan Company, 23 Wall Street, New York.

## LONDON LETTER

London, Oct. 23, 1914.

### The War

#### ENLISTMENT

Young men to the number of 700,000 have enlisted for the new army. Their physique is admirable and a great improvement on that of the past. Thus twenty years ago 40 per cent. of recruits were rejected on medical examination; ten years ago 30 per cent., now only 20 per cent. The aggregation of such a body of men in a country which does not maintain a large standing army presents a new and serious problem in sanitation. A reform introduced in 1907 by Sir Alfred Keogh, Director-General of the Army Medical Department, whose reappointment after retirement was announced in my last letter, has proved valuable. He suggested that the health officers should combine in a voluntary organization with the object of preventing disease in the masses of men who would be mobilized in war time. The result is that wherever troops are about to be quartered the local health officer is consulted by the military authorities as to the means of obtaining the best sanitary conditions. He is also encouraged to visit the camps so as to advise regarding the removal of excreta and other matters.

#### THE USE OF VACCINES

Since the outbreak of war the Inoculation Department of St. Mary's Hospital has been busily occupied in preparing vaccines both for the British and the allied armies. It may be remembered that Sir Almroth Wright, whose appointment as consulting physician to the army in the field was announced in my last letter, is the director of this department. Nearly a million and a half doses of vaccine, representing approximately 166 gallons of fluid, have been produced. Not only antityphoid vaccine but also an "antisepsis vaccine" consisting of 500 million *Staphylococcus aureus* and 25 million *Streptococcus erysipelatis* in each dose of 0.5 c.c. has been produced. It is believed that this vaccine may be useful in cases of apprehended or incipient sepsis, while a smaller dose (0.05 c.c.) might be given when sepsis is established in the form of septicemia. The department is also supplying the vaccine to the allied forces; 200,000 doses have been sent to the French army, 100,000 to the Belgian army, and the same number to the Russian army. Sir Almroth Wright has gone to the front with his assistant Dr. Fleming to observe whether or not these vaccines are being used to full advantage and consider the possibility of supplying other vaccines. Another member of the staff of the inoculation department will probably go to Galicia to obtain a culture for cholera.

#### THE WOUNDED

The total number of beds in the auxiliary home hospitals amounts to 6,480. These hospitals are being served by between fifty and sixty voluntary aid detachments. Since the tide of war has turned in favor of the allies the number of British wounded arriving from the front has greatly diminished, but following the surrender of Antwerp and the evacuation of Ostend Belgian wounded are arriving in large numbers, and fully a thousand are distributed in the hospitals throughout England. There are also some French wounded. Many of the Belgians are suffering from diseases such as pleurisy, pneumonia and rheumatism induced by the hardships of war. It is pitiful to hear these brave people tell of the ruin and devastation of their country. They say: "Our fields are blackened, our homes destroyed, our loved ones murdered, taken prisoners or exiled. For years, perhaps decades, Belgium can be nothing more than it is now—a desert." The *Times* has raised a fund of two and a half million dollars for the purchase of motor ambulances to be used for the conveyance of wounded from the front and also received motor cars. It has thus been enabled to supply a fleet of 700 vehicles, which will be under the control of the British Red Cross. It must be remembered that these are additional to the transport of the Army Medical Corps. Special provision is being made for the wounded of the Indian troops. The Admiralty has supplied six hospital ships each of about 6,000 tons displacement and accommodating 350 cases, including 100 special swinging cots for severe cases. In addition the generosity of the Indian princes will provide other ships. Accommodation for the Indian wounded has been provided at the great military hospital at Netley. Here use will be made of the Indian Field Ambulance, which consists of Indian students living in London, who some time ago, wishing to participate actively in the war, volunteered to form an ambulance corps. Another detachment has left for service on the hospital ships set apart for Indian soldiers. Comforts for the Indian soldiers in France are also receiving attention and their distribution is being arranged by Sir Havelock Charles, retired Surgeon-General of the Indian Medical Service, who has gone to France to study the problem. An institution known as the St. John Ambulance Association is proving of considerable service. In time of peace it trains men in ambulance work and arranges lectures and examinations by physicians. It has been in existence more than forty years and has issued certificates to a million persons; it was thus able to furnish trained orderlies to the army. For the first 4,000 vacancies in hospitals near the fighting line, at the base or in various parts of England and France it offered 20,000 volunteers. They are doing excellent work.

## PARIS LETTER

Paris, Oct. 15, 1914.

### Military Surgery

Two papers of present-day interest on military surgery were read October 13 before the Académie de médecine. One by Dr. Picqué, surgeon of the hospitals of Paris, was on the subject of the preservation of limbs in cases of wounds of the soft parts and fractures of the diaphyses. Picqué is a strong partisan of conservative methods. According to him, at the front military surgeons ought to strive, first of all, to avoid infection of wounds. In the hospitals at the rear, it is necessary to consider patients of two classes: those with aseptic and those with septic wounds. For the first, abstention from operation and infrequent dressings give the best results. Abstention from operation is preferable also in cases of moderate infection. In serious infections, especially those due to shrapnel and fragments of shells, it is necessary to follow the rules of septic surgery and exercise daily surveillance. Amputation is necessary in scarcely any cases except those of total gangrene. Wounded soldiers are young men, generally without organic defects, and capable of undergoing a slow but regular convalescence.

Dr. Tuffier, surgeon of the hospitals and *agrégé* at the Faculté de médecine de Paris, described the workings of the military health service, which he was enabled to study from the firing-line of the Vosges to the hospitals of the rear. Tuffier gave moving testimony to the courage, endurance and technical skill of the surgeons at the front, who are performing their duty in a remarkable way under very perilous conditions. The hospitals near the fighting-line continually run the risk of abandonment if there is an advance and of capture if there is a retreat. Therefore, only extremely urgent operations are performed. According to Tuffier's personal experience, abdominal surgery is not possible under such circumstances. Tuffier declares that it is necessary to return to the antisepsis of Lucas-Championnière and to the drainage of Chassaignac and that the French method of conservation of the limbs ought to be adopted. Non-lacerating gunshot wounds heal with a single dressing. Shrapnel wounds and fractures are serious because they are often infected. Thoracic wounds, even when they traverse the thorax, heal easily. Abdominal wounds ought to be let alone where facilities for operating on them are lacking at the front. The wounded man is left seated without being fed until he arrives at the hospital of the second line. At the rear, treatment is in accordance with the particular case. A serious complication is tetanus, which should receive preventive treatment by injections of antitetanus serum. The future method of procedure is antitetanus serum applied on the battle-field, even before the first dressing. Among other serious complications it is necessary to reckon gaseous gangrene and acute septicemia, which are treated with hydrogen peroxid, scrupulous cleansing of the wounds and good drainage.

The trains for the removal of the wounded are necessarily freight trains. Tuffier estimates that these trains by themselves are capable, if necessary, of removing five hundred wounded men per train while the evacuation of several thousand wounded must be carried out in a night. Thus in spite of all the devotion of the staff, the progress of these trains is necessarily a real *via dolorosa.* The establishment of canteens and railway station first air by the press (The Journal, Oct. 24, 1914, p. 1492) is commendable.

### Personal

Dr. Walther, surgeon of the hospitals of Paris, at present detached physician-major of the ambulances of the government of Paris, has become a candidate for the seat left vacant in the section of operative medicine of the Académie de médecine by the death of Professor Reclus (The Journal, Aug. 15, 1914, p. 592). The academy has decided, on the suggestion of its permanent secretary, that since several of the candidates are in the army, elections for the places now vacant or which may become vacant shall not be held until the end of hostilities.

### List of the British Wounded

The British Red Cross is now establishing a list of the British wounded in the French hospitals or ambulances, either in Paris or in the provinces. Many British families are ignorant of the fate of members who, wounded and received into French hospitals or ambulances, may have been carried as "disappeared" on the lists of the war office.

### The Evacuation and Transportation of the Wounded

The evacuation of the wounded continues to command the constant interest of the public and the war department. Before the battle of the Marne, in consequence of the retreat of our troops and the necessity of not allowing the wounded to fall into the hands of the enemy, and since the battle of the Marne, because of the increase of the number of the wounded, there has been some disturbance in transportation. Of late, however, an effort has been made to coordinate the various services. The minister of war has charged Dr. Paul Chavasse, medicine inspector-general of the military health service, with coordinating the general working and organization of the service of evacuations. He will also see to the provisioning of the armies with sanitary supplies.

The three societies which compose the French Red Cross have been invited by the military health service to send means of transportation to certain stations in Paris. The following are the arrangements made: The selection of the wounded is made on arrival of trains by the army physicians. The slightly wounded soldiers remain on the trains. Those whose condition, though not serious, requires new dressings but who are transportable, are kept in the ambulances of the station to be removed the next day. Those who are not considered capable of being transported are put in the care of the Red Cross and placed in hospitals.

### The Disadvantages of Reduction of Flesh in Some Heart Cases

October 16, Dr. C. Fiessinger read a paper on this subject before the Académie de médecine. He showed that it is an error to say that an individual has the weight belonging to his height; he has the weight belonging to his nutritive regimen. Vitiated nutrition, before it produces organic lesions in many cases manufactures fat. The adipose tissue seems to act as a toxic reservoir. If the patient reduces his flesh, it may happen that the toxic substances resulting from defective nutrition may, since the fat no longer affords them lodgment, distribute themselves through the other tissues and give rise to various complications. The composition of a reducing diet rich in albuminoid substances plays a part in causing such complications. The milk-and-water diet with reduction of albuminoids and of total foods is sufficient, in certain patients, to produce a crisis of gout within the third or fourth day. The sole cause seems to be the setting free of toxic substances contained in the fat. Dr. Fiessinger has already published an observation on three women affected with serious cardiac complications of the menopause, whose troubles became ameliorated on increase of flesh. Nervous diseases act in the same way as cardiac complications. Every physician has observed in some women a cessation of troubles coincident with the increase of flesh of advancing years. The fat, imprisoning the toxic substances, arrests the morbid symptoms just as growing thin causes them by the release of the same substances.

### Foundation of a Dental Prize

By a decree just published, the Académie de médecine has been authorized to accept a gift of 78,000 francs ($15,600) from Drs. Julien Tellier and Francisque Martin of Lyons, the income of which is to be employed for a prize to be awarded triennially under the name of the *prix Claude Martin de Lyon.* The prize is to be awarded for manuscripts or printed works in French, by any authors whatsoever, on dental subjects (odontology, stomatology and buccofacial prothesis).

## Marriages

F. Raymond Taylor, M.D., High Point, N. C., to Miss Rachel E. Farlow of Guilford College, N. C., September 25.

Oscar Lee McFayden, M.D., Stedman, N. C., to Miss Pearl Bryant Jackson of Fayetteville, N. C., October 14.

Rowley Smith Flagg, M.D., Fairfax, Vt., to Miss Harriet Gertrude Hulburd of Rutland, Vt., October 7.

Troy Adam Spitler, M.D., Carey, Ohio, to Miss LaVerne Beck of Mount Blanchard, Ohio, recently.

Warren Wallace St. John, M.D., to Miss Grace Dorothea Staude, both of Troy, N. Y., October 5.

John Carroll Wiggins, M.D., to Miss Ethel Follin, both of Winston-Salem, N. C., October 14.

Pearlie Watson Lutterloh, M.D., to Miss Grace Cole, both of Jonesboro, Ark., October 14.

Charles Edgar Barker, M.D., to Miss Viola Todd, both of Oklahoma City, Okla., October 7.

Carl Robert O'Brien, M.D., Boston, to Miss Lucille Teresa Cassidy of Bangor, Me., recently.

Irvin Harris Farr, M.D., Holyoke, Mass., to Miss Ruby Beaching, at Holyoke, October 7.

Bert George Wilcox, M.D., to Miss Lillian Mine Bell, both of Joliet, Ill., October 14.

Lawrence Glenn Griffis, M.D., to Miss Ruth Morris, both of Kalispell, Mont., October 7.

Felician J. Slataper, M.D., to Miss Valbourg Berger, both of Houston, Texas, October 8.

Levi H. Surber, M.D., to Miss Dora M. Holladay, both of Indianola, Ia., October 7.

Emery L. Meyers, M.D., to Mrs. Ida Snow, both of Chico, Cal., October 8.

## Deaths

**Elias J. Beall, M.D.** Tulane University, New Orleans, 1857; *ad eundem*, Missouri Medical College, St. Louis, 1876; Honorary, Missouri Medical College, 1880; a Confederate veteran with service as surgeon of the Fifteenth Texas Infantry and later as chief surgeon of General Walker's division; one of the organizers of the Fort Worth Medical College and for four years professor of principles of surgery and president of the faculty; one of the founders of the Protestant Sanitarium, Fort Worth; died at his home in Fort Worth, October 20, aged 80. As a tribute to the memory of Dr. Beall, his portrait and a chair in the faculty room of the Fort Worth School of Medicine will be draped in mourning for thirty days. At a special meeting of the Tarrant County Medical Society, October 21, addresses eulogistic of Dr. Beall were made by several of the members and it was decided that the society as a body attend the funeral.

**Samuel David Huntington, M.D.** University of California, San Francisco, 1897; a captain of U. S. Volunteers during the Spanish-American War with service in the Philippine Islands; afterward a student of theology of Milwaukee; died in the Good Samaritan Hospital in that city, October 20, from the effects of a stab wound of the breast, self-inflicted it is believed with suicidal intent, aged 45.

**Harry Madison Jenkins, M.D.** Starling-Ohio Medical College, Columbus, Ohio, 1908; a member of the Ohio State Medical Association; died in his office in Washington Court House, Ohio, October 16, from the effects of poison believed to have been self-administered with suicidal intent while mentally irresponsible, aged 34.

**Arthur Scott Gilson, M.D.** Medical School of Maine, Brunswick, 1894; a Fellow of the American Medical Association; surgeon to the Maine General Hospital and surgeon of the Board of Police Examiners, Portland; instructor in clinical surgery in the Maine Medical School; died at his home in Portland, October 9, aged 59.

**Vaudois Hedwood Handley, M.D.** Kentucky School of Medicine, Louisville, 1889; formerly of Sturgis, Ky., and later of San Diego, Cal.; while visiting the ranch of his son in California, October 3, was kicked in the face by a mule and died eleven days later from tetanus in the Agnew Hospital, San Diego, aged 50.

**Gustav Burton Turner, M.D.** Northwestern University, Chicago, 1912; a Fellow of the American Medical Association; formerly of Chicago, and an intern in St. Luke's Hospital; for a few months a resident of California; died in the Mount Zion Hospital, San Francisco, September 19, from diabetes, aged 27.

**Walter G. Compton** (license, Tennessee, 1889) a member of the Tennessee State Medical Association; died at his home in Westport, Tenn., October 22, from septicemia, aged 44.

**Madison Monroe Holland, M.D.** Vanderbilt University, Nashville, Tenn., 1884; died at his home in Statesboro, Ga., September 30, from cerebral hemorrhage, aged 54.

**Velpeau Jackson Ward, M.D.** Medical College of Georgia, Augusta, 1888; formerly of Berlin, Ga.; died suddenly at his home in Blackshear, Ga., September 18, aged 47.

**Thomas Madison Schooler, M.D.** Baylor University, Dallas, Tex., 1901; formerly a practitioner of Oklahoma; died in his apartment at Fort Worth, Tex., October 10.

**John W. Carico, M.D.** Tulane University, New Orleans, 1888; a practitioner and druggist of Cloverdale, Cal.; died at his home in that city, October 8, aged 53.

**Joseph Armand Charette, M.D.** Laval University, Que., 1894; of Montreal; was caught under an overturned automobile, September 18, and instantly killed.

**Columbus L. Troutman, M.D.** University of Louisville, Ky., 1894; of East Bernstadt, Ky., was shot and killed October 5, on a street in East Bernstadt, aged 45.

**W. L. Barrett, M.D.** Memphis Medical College, Memphis, Tenn., 1854; a Confederate veteran; died at his home in Covington, Tenn., October 9, aged 82.

**Clement Chandler Larkin, M.D.** University of Minnesota, Minneapolis, 1911; of Huron, S. Dak.; died at Point Pleasant, Minn., September 3, aged 29.

**Bruce Livingston Riordan, M.D.** McGill University, Montreal, 1880; University of Toronto, 1889; died at his home in Toronto, August 29, aged 55.

**George Franklin Wise, M.D.** Medico-Chirurgical College of Philadelphia, 1894; formerly of Jeddo, Pa.; died in Beaver Falls, Pa., July 11, aged 43.

**Arthur C. Hanger, M.D.** Missouri Medical College, St. Louis, 1886; died at his home in Cherry Box, Mo., October 13, from heart disease, aged 51.

**Joseph Von Osinski** (license, Indiana, 1897) for twenty years a practitioner of Indiana; died at his home in Laporte, Ind., September 30, aged 48.

**Kenneth Laughlin Macleay, M.D.** Dartmouth Medical College, Hannibal, N. H., 1885; died at his home in Newport, Vt., August 17, aged 43.

**Thomas Arthur Campbell, M.D.** Tennessee Medical College, Nashville, 1903; died at his home in Kodak, Tenn., October 10, from nephritis, aged 33.

**William L. Turk, M.D.** University of Tennessee, Nashville, 1892; of Gallion, Ala.; died in an infirmary in Selma, Ala., September 29, aged 48.

**James Bacon Ware, M.D.** University of Pennsylvania, Philadelphia, 1854; died at his home in Bridgeton, N. J., September 7, aged 83.

**Minyard T. Colvin, M.D.** University of Tennessee, Nashville, 1890; died at his home in Luttrell, Tenn., about September 30, aged 62.

**Louis Charles Philippe Massicotte, M.D.** Bennett Medical College, Chicago, 1890; of Keene, N. H.; died last month in Montreal, aged 56.

**John Henry Kelley, M.D.** Bellevue Hospital Medical College, 1875; died at his home in Parkersburg, W. Va., September 8, aged 61.

**Calvin Shaw, M.D.** Trinity Medical College, Toronto, 1898; died at his home in Cleveland, Ohio, October 12, from typhoid fever, aged 46.

**Archibald Dunn Walker, M.D.** Queens' University, Kingston, Ont., 1888; died at his home in Riverside, Cal., August 9, aged 49.

**James L. Short, M.D.** Hahnemann Medical College, Chicago, 1885; died at his home in Abilene, Kan., October 6, aged 75.

**John McMillan Shaw, M.D.** Queen's University, Kingston, Ont., 1886; died at his home in Lansdowne, Ont., September 22.

**Alphonso Harris, M.D.** Missouri Medical College, St. Louis, 1880; died at his home in Dallas, Tex., October 8, aged 67.

# The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

## ECKMAN'S ALTERATIVE

### A Consumption Cure Fraud Uses a Philadelphia Newspaper as an Advertising Asset

Eckman's Alterative is a fraudulent consumption cure. It was exposed in The Journal, April 27, 1912. At that time an analysis of the preparation made in the Association's laboratory was published showing that it consisted, essentially, of alcohol, calcium chlorid and cloves. The only reason for giving further publicity to this cruel fraud is the fact that the Eckman concern is now running a series of advertisements, in which the impression is given that the medical profession, through The Journal and other medical publications, has endorsed Eckman's Alterative. The advertisements consist largely of quotations regarding the use of calcium (lime) in tuberculosis. By inference the reader is led to believe that wherever the use of calcium in the treatment of tuberculosis has been suggested by physicians, Eckman's Alterative has been endorsed. Nothing, of course, could be further from the truth.

The advertising of Eckman's Alterative has undergone the same change that has taken place in most medical advertising during the past two or three years. The "lie direct" has given place to the "lie with circumstance"; the outspoken falsehood has given place to the indirect falsehood; the definite statement that Eckman's Alterative will "cure consumption" has given place to inferential claims that mean the same thing; the word "consumption" has in many instances been eliminated from the advertising "copy," but other words have been substituted, which to the sufferer from consumption, mean exactly the same. Actually, the advertisements to-day are more dangerous than they were when their very outspoken falsity repelled a certain portion of the thinking public.

The various articles from this and other medical journals which the Eckman concern quote inferentially as references in favor of their cruel nostrum, have in fact nothing whatever to do in the remotest way with Eckman's Alterative. That calcium may have some value in the treatment of tuberculosis may be admitted. There are several drugs that may be given in selected cases of tuberculosis with some benefit, provided always that they are prescribed in accordance with the needs of the individual patient and provided further that the patient is warned at the time that the drugs are merely an incident. For here lies one of the strongest objections to all drugs sold as cures for consumption. The real treatment of pulmonary tuberculosis consists in painstaking and conscientious attention to the hygienic and dietetic rules laid down for the individual case. Every physician who has treated cases of consumption and every visiting nurse who comes in contact with such cases, knows that the hardest task in the treatment of this disease is to make the patient realize that drugs hold out no hope for cure but that reliance must be placed on other measures.

The average person believes, unfortunately, that any disease can be cured by taking something out of a bottle—if only one knows just what to take. On this fallacy is built up the vast superstructure of fraud in the exploitation of consumption cures and cancer cures. It is not always pleasant nor easy for the consumptive to so change his method of living as to stand some chance of recovering. It is so easy, comparatively, to buy a bottle of medicine and take the stuff three or four times a day in the belief that it will cure the disease. Here lies the great danger in the use of every consumption cure, whether it is sold as a consumption cure or as a "remedy" for "serious lung trouble" to quote from one of the later advertisements put out by the Eckman concern.

In addition to the advertisements appearing in newspapers, the Eckman Manufacturing Company publishes the full series of advertisements in booklet form and emphasizes that "these advertisements are appearing in the Philadelphia *North American* and other leading newspapers through the United States." The Philadelphia *North American*, which stands for high ideals in its editorial columns, is participating in the profits of an inhuman fraud when it accepts advertising contracts from the Eckman consumption cure.

Summed up the case against Eckman's Alterative is this:

1. It is sold as a cure for consumption, which it is not. In other words, it is a fraud.
2. It is sold under the claim that it contains no "narcotics or habit-forming drugs." Alcohol is both narcotic and habit-forming.
3. Its purchase means the use of money that frequently can be ill afforded and which should go into wholesome food and rational treatment.
4. Its use means that the consumptive is led to rely on a perfectly useless nostrum and to neglect the very things which offer him the only hope.
5. To claim that, because lime is sometimes used in the treatment of tuberculosis, therefore a preparation containing lime is a cure for consumption, is as illogical as it is cruel.

## "AN APOLOGIST FOR PATENT MEDICINES"

### Detroit Saturday Night Replies to the Specious Arguments of a Nostrum Exploiter

The article which follows is taken in full from *Detroit Saturday Night*, a virile weekly that expresses itself in no uncertain tones against medical and other frauds. The article, which appeared October 10, is by Jacob Nathan, the business editor of *Saturday Night:*

Carl J. Balliett, of the Foster-Milburn Co. of Buffalo, spoke before the Advertising Affiliation at its Detroit meeting last Saturday, taking for his theme:

> "Granted that all honest business men tell the truth in their advertising, is it right for any publisher to close his columns to the advertising of any large line of business because there are some liars in it?"

That this theme may be better understood let it here be said that Mr. Balliett represents a line of business in which there are more liars than in any other avocation or profession in the world—the patent medicine business, or as Mr. Balliett prefers to call it, the manufacture and sale of proprietary medicines.

It will somewhat illumine the theme also if it be known that Mr. Balliett's company manufactures Doan's Kidney Pills, of which the American Medical Association says:

> "Doan's Kidney Pills, or as they are sold in the British market, 'Doan's Backache Kidney Pills,' are in this country sold as a 'remedy'; in Great Britain they are a 'specific.' The difference is that between truth and falsehood. The British label also differs from the American label in having a larger list of diseased conditions for which the nostrum is recommended. * * * Doan's Kidney Pills are a fraud and a dangerous fraud. While they are advertised to 'cure all kidney ills,' the assertion is a false one. While they are said to be a 'simple vegetable remedy,' the analysis contradicts this."

Be it also known that Doan's Kidney Pills advertising has been thrown out of the columns of a number of American newspapers—several times as many numerically, as Mr. Balliett admitted to the ad-crafters. Hence Mr. Balliett's theme, because he insists the Foster-Milburn Co. should not be classed among the liars in the proprietary medicine business.

Mr. Balliett made the point that no medicine should be condemned until it had been tried, even advising the ad-men to be lenient with dear old Lydia Pinkham until they had personally and individually proved her remedies fraudulent.

We do not presume to say that Mr. Balliett paid his respects to the American Medical Association in the manner he did because of its little treatise on his kidney pill, but he did so in precisely the same temper that quacks and fakers usually display toward the medical profession. Declaring that there is $160,000,000 worth of proprietary medicines sold in this country annually, he declared that if you would divide that amount by the number of practicing physicians you would find that it meant an average of $2,000 out of the pockets of the medicine men. This, he inferred, was the motive of the American Medical Association in denouncing patent medicines.

And we wonder, too, if what Dr. Harvey W. Wiley had to say about Doan's Kidney Pills in the September *Good Housekeeping* had anything to do with Mr. Balliett's expressed contempt for the celebrated chemist and food and drug expert. Speaking of kidney cures in general, Dr. Wiley said:

> "A very dangerous class of remedies are the kidney cures. For the most part they depend on potassium nitrate, just as the rheumatism cures fall back on salicylic acid and a cathartic. Warner's Safe Remedies are anything but safe if such a dangerous disease as Bright's disease is making progress while you neglect diet and hygienic living, to take this mixture of 'potassium nitrate, alcohol, glycerin, a trace of oil of wintergreen and vegetable extractive,' possibly taraxacum. The exact composition of these mixtures containing very small amounts of many different products cannot be determined, but this analysis indicates the character of the alleged cure, and potassium nitrate, its main ingredient, could hardly be called a 'vegetable material.' Like many other drugs, it has most undesirable side effects, and its miscellaneous ingestion in this way may be vicious in itself, besides the fact that loss of time in diabetes and Bright's disease may prove fatal. Doan's Kidney Pills belong in the same category, and depend also mainly upon potassium nitrate, with fenugreek, oil of juniper, and hemlock pitch for their effect. Think how the sales would fall off if all of these 'safe cures' and 'sure things' were sold for what they are, with a formula on the bottle; and a true statement as to their efficiency."

Of course Mr. Balliett doesn't like the American Medical Association. He doesn't like the newspapers that refuse to accept medicine advertising. He does not like Dr. Wiley or any other agency or person that is endeavoring to persuade the public not to purchase Doan's Kidney Pills. And because he doesn't like them it is only natural that he should speak as he did before the ad-crafters. So far as the newspapers that have eliminated medicine advertising are concerned, they took that course as a means of protecting the public against what Samuel Hopkins Adams has termed "The Great American Fraud."

### "A NEW PHYLACOGEN"

A large number of so-called "independent" journals are carrying a "reading notice" announcing a new phylacogen for typhoid fever put out by Parke, Davis & Co. Commenting on this the *Wisconsin Medical Journal*, in its issue for October, 1914, says:

> "When commercial greed is locking horns with scientific facts and wishes to prove its case scientifically it seems easy to collect much so-called proof. Reports of several hundred cases successfully treated by several hundred physicians impress certain minds as having the same weight in evidence as fifty cases treated by one man with all the necessary controls. Verily judgment is difficult.
>
> "The very latest style in therapeutics is Typhoid Phylacogen featured in Therapeutic Notes, September, 1914. 'This preparation consists of a culture filtrate of the Bacillus Typhosus, ——— combined with an equal volume of the basic or Mixed Infection Phylacogen.' 'Reports have been made on the Phylacogen treatment of typhoid fever in 310 cases, with recovery in 283, or 91 per cent.' This is recommended subcutaneously or intravenously. It is well to remember that basic phylacogen is composed of the filtrates from the growth of five or six bacteria, such as colon, staphylococci, streptococci, etc. Now to get down to actual facts, we have known for a long time that the typhoid bacillus produces a specific toxin only when the bodies of the bacilli are crushed. An enormous amount of work has been done in an endeavor to produce a typhoid toxin in a bouillon culture which will cause immunity in injected animals. *It has never been done.* One does, however, get protein toxins which are not specific for typhoid infection, that is to say these toxins cannot produce immunity to typhoid infection.
>
> "If physicians are to be instructed in modern therapeutics by sales-agents of commercial firms then it seems time for us to close up our medical schools and send the students to school in drug and serum manufacturing houses."

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**The Reaction of the Normal Organism on the Environment.**—If we contrast an ordinary developing child with one which is "backward," we will often notice that it is in initiative that the latter is primarily and fundamentally lacking; it is not so much that he has not got a brain as that he objects to use it. Whereas the healthy child will constantly, of his own accord, seek out new problems, and attempt zealously to master them, the defective child can only be induced to do so by extremely tactful handling and plodding perseverance on the part of the parent or teacher, failing such intelligently directed environmental stimulus, he may be allowed to remain all his life practically at the stage of infancy, although in all likelihood possessed of, the capabilities of very much further, if perhaps not of complete, development.—Arthur J. Brock, *Edinburgh Med. Jour.*

## Correspondence

### Health Insurance and the Medical Profession

*To the Editor:*—To obtain the services of the medical profession for the benefit of the sick of the poorer classes has been the object of many a philanthropic movement. The free clinic, the public ward or the free hospital, all expressions of philanthropy, are made possible by securing the free services of medical men. The fraternal societies, as we know them to-day, are an indication on the part of the masses that they would prefer to pay their own way if such were possible. In Great Britain the matter has been thought sufficiently important for a government to make it the subject of important legislation. All we lack in either the United States or Canada is the right type of politician and it will be made a subject of legislation on this side of the Atlantic.

The free clinic and all similar charitable institutions are made possible by exploiting the medical profession in the name either of charity or of religion. In Great Britain, Mr. Lloyd-George has been gracious enough to exploit the profession in the name of politics.

Our profession has made great progress in all the sciences pertaining to the healing art, but our methods of giving services and receiving our fees have remained unchanged for generations. A portion of the public pays us a large fee, another portion a small fee and a third portion nothing at all. It is estimated that 33 per cent. of the urban population of Great Britain was affected by the national insurance act. In this country the percentage of population of any fair-sized city seeking medical aid through the free clinic, the public hospital service, the fraternal society contract physician or the general practitioner's charity list is placed by many men as fairly high—some say as high as 50 per cent.; scarcely ever do I find it put as low as 25 per cent., so that I believe legislation similar to the national insurance act of Great Britain introduced into either Canada or the United States will affect as large a proportion of the population in either country on this side of the Atlantic. In other words, the profession gets to-day nothing for 33 per cent. of its work—for work that is worth more to the public than it ever has been before, in a time when the average medical income is on the decrease and the cost of living on the increase. We are living in an age when the "gold standard" determines one's standing in society. Mr. Aloes from Pill Castle, who has made a fortune out of his knowledge of human nature and drives a limousine, is much more likely to be chosen for senator than is a doctor who scarcely makes a living out of his knowledge of medicine and rides around in his little roadster. The day is past when the doctor is respected because of his profession alone, and most of us are guilty of valuing our practices by our cash receipts for the year. Therefore, to be consistent, we should welcome some method of converting this 33 per cent. loss into a paying proposition.

It is obvious that there is something missing in our present-day civilization and that before society will be satisfied the services of the medical profession must be at the disposal of rich and poor alike. The national insurance act of Great Britain was introduced to fit in between the medical profession and the public, although in its proper place it has been found inefficient and unsatisfactory and is a fair example of how any question will be solved by commencing at the wrong end. If we as a profession can do anything to prevent the introduction of such an act into this country there is no time like the present. A national medical service has been suggested by some as the best solution. I can see only two objections to this myself, namely, that a number of things already under national control are not managed with that degree of fairness that would tempt us to place our destinies in the hands of politicians, and that the change from our present status would be too great. Reforms come slowly, and to be at all permanent must be introduced step by step. We are living in a commercial age and I believe our solution will be found by adopting commercial methods.

The business way of guaranteeing a man's loss through fire is by fire insurance, and the business way of guaranteeing man's loss through ill health should be health insurance. I believe that by analyzing insurance methods we shall ultimately arrive at a solution that will be satisfactory to both public and profession. By accepting the good points of present insurance methods and supplying what is lacking to make it acceptable to the medical profession, we arrive at a scheme to guarantee the insured public the payment of their medical, surgical and hospital bills on the one hand, and guarantee the medical profession payment of their fees on the other hand. In working out any scheme of insurance on these lines if the following four points are adhered to it should be acceptable to the medical profession:

1. The services of the whole of the medical profession should be at the disposal of the whole of the public.
2. No one should be made the object of charity.
3. The average income of the medical practitioners should be increased.
4. The basis from which the actuary must do his reckoning should be the schedule of medical fees.

This should sufficiently protect the medical practitioners and should be sufficient guarantee to the public.

Any insurance scheme which has for its object the securing of medical attention for the masses depends for its successful working on the judgment of medical men, and should, therefore, as much as possible remain under medical control. If the thing depends on our judgment for its successful working, we should be rewarded.

This is, perhaps, the largest problem that the younger members of the medical profession will have to solve in their day and generation. It is worth every man's while studying, and as I am not through studying it myself I shall be glad to communicate with those members of the profession who are interested, and shall make their questions and objections the subject of a second paper on this question at a later date.

A. R. Munroe, M.D., Edmonton, Alta.

### The Office-Boy Perineum Operation

*To the Editor:*—In The Journal, May 18, 1912, I published a description of a perineal operation. The chief technical point consists in stabbing a pair of scissors down to a part of the levator ani muscle, opening the scissors *in situ* and thus stripping the muscle free from attachments. This leaves it in condition for accurate suturing and restoration of the most important part of the elastic floor.

This peculiar step in technic simplifies the operation to such an extent that I have spoken of the whole operation as the "office-boy perineum operation," because the office-boy could do it after obtaining one object lesson.

A number of other surgeons are at present claiming priority for this technical step in question. I do not know who first employed it. As it is to become a matter of history, perhaps it may be well to state that I have taught this step in technic since 1895. I have letters from members of the visiting staff of five different hospitals with which I am connected in the way of documentary evidence. My object in furnishing this evidence is not for the purpose of establishing a priority claim, but to protect myself against the charge that some one's else step in technic has been appropriated by me and published without reference to some earlier operator.

Robert T. Morris, M.D., New York.

### Help Asked for American Hospital in Paris

*To the Editor:*—The following letter was recently received by me in regard to the American Hospital in Paris. The writer is Mr. Charles H. Mower, who has been a prominent member of the American Colony in London for the last twenty-five years. Should any of your readers care to subscribe to this good cause, I shall be pleased to receive and forward any sums, which will be duly acknowledged if sent to me at 279 Marlboro Street, Boston, Mass.

Walter G. Chase, M.D.

While in Paris, and particularly since the war, I became very much interested in the work of the American Hospital. The good work of the Hospital seems only to be limited by the amount of money which they are able to get subscribed for carrying it on. If they get sufficient money they will be able to increase their present capacity from 400 to 1,000 beds. I am informed by the Chairman of the Board of Managers, Monahan, that the cost of running the hospital per bed is 10 francs a day, in spite of the fact that all of the doctors and nurses are volunteering their services free. Their staff of doctors, nurses, cooks and other servants number already 200, all of whom have to be fed. The heating alone consumes about 12 tons of coal per month, costing about £300. They require about half a million dollars, as they contemplate being able to take care of 1,200 beds. The Hospital is entirely under American control, and is being financed by Americans, and it appeals to me very strongly because of its magnificent equipment and also, that being so near the seat of war it undoubtedly will receive many of the most serious cases, which cannot bear longer transportation.

## *Queries and Minor Notes*

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

### PLACE FOR A REST CURE

*To the Editor:*—I have a patient who is in a general run-down condition, and I wish to find a place where she can get care, proper diet and quiet, attractive surroundings. I should prefer some place in the South among the hills and mountains; among forests, where the climate is not too rigorous for the delicate woman to be out of doors, and yet where it is not too enervating, as it is in some parts of the South. I prefer a small place, providing she could get proper medical attention in such a place. One where tuberculosis or mental disorders are treated would not be satisfactory.

W. A. V., Jr.

Answer.—We shall be glad to forward information regarding such place or institution.

### STATES WHICH REQUIRE PROPHYLACTIC FOR OPHTHALMIA NEONATORUM

*To the Editor:*—What states have laws requiring the use of silver nitrate in the eyes of the new-born?

A. B. M., Waycross, Ga.

Answer.—The following states have either laws or regulations for the prevention of ophthalmia neonatorum: Connecticut, District of Columbia, Idaho, Illinois, Iowa, Indiana, Kansas, Louisiana, Maryland, Maine, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, Porto Rico, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Washington and Wisconsin.

The law does not in all of these states specifically designate the kind of preparation to be used, the state boards of health being authorized either by direct mandate or by implication to determine this point.

The following states by law require the use of some form of prophylatic for ophthalmia neonatorum: Indiana, Louisiana, Maryland, Massachusetts, Missouri, New Jersey, New York, Vermont and Wisconsin.

In the following states the boards of health by regulation have authorized the use of silver nitrate: District of Columbia, Minnesota, Nebraska, New York, Porto Rico, Rhode Island, Utah and Washington.

### TYPHOID VACCINATION AND IMMUNITY

*To the Editor:*—1. Does one attack of typhoid render a person immune? If so, for how long?

2. Is it advisable to vaccinate a child under 5 years of age for typhoid when moving to a typhoid locality?

3. Please give the procedure in administering the vaccine.

P. R. Brenton, M.D., Tacoma, Wash.

Answer.—1. An attack of typhoid may leave a certain degree of immunity; how long this lasts is not known.

2. Vaccination of children against typhoid seems to have given good results and is advisable in the conditions mentioned.

3. Typhoid vaccine is administered hypodermically under aseptic conditions. The site of the inoculation should be sterilized by the application of tincture of iodin and the vaccine injected from a sterile syringe. The inoculation is usually made in three doses, the first consisting of 500 million killed bacteria. The second dose of 1,000 million bacteria is given after an interval of from a week to ten days and the third dose of 1,000 million after a similar interval.

# Medical Education and State Boards of Registration

## COMING EXAMINATIONS

Arkansas: Little Rock, November 10-11. Sec., Dr. W. S. Stewart, 404 Citizens Bank Bldg., Pine Bluff. Homeopathic, Little Rock, November 12. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic, Little Rock, November 10-11. Sec., Dr. C. E. Laws, Ft. Smith.

California: Los Angeles, December 8. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.

Connecticut: New Haven, November 10-11. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, New Haven, November 10. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Delaware: Dover and Wilmington, December 8-10. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

Florida: Palatka, December 2-3. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Kentucky: Louisville, December 16-18. Sec., Dr. A. T. McCormack, Bowling Green.

Maine: Portland, November 10-11. Sec. Dr. Frank W. Searle, 776 Congress St., Portland.

Maryland: Baltimore, December 8. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton, Baltimore.

Nebraska: Lincoln, November 11-12. Sec., Dr. H. B. Cummins, Seward.

Ohio: Columbus, December 8-10. Sec., Dr. George H. Matson.

Pennsylvania: Philadelphia, December 1-3. Sec., Dr. N. C. Schaeffer, Harrisburg.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Waco, November 10-12. Sec., Dr. W. L. Crosthwait, Amicable Bldg., Waco.

Virginia: Richmond, December 15-18. Sec., Dr. J. N. Barney, Fredericksburg.

## Washington July Report

Dr. C. N. Suttner, secretary of the Washington State Board of Medical Examiners, reports the written examination held at Seattle, July 7-10, 1914. The total number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 70, of whom 64 passed, including 9 osteopaths; and 6 failed, including 2 osteopaths. The following colleges were represented:

| College PASSED | Year Grad. | Per Cent. |
|---|---|---|
| California Eclectic Medical College | (1914) | 91.5 |
| Coll. of Phys. and Surg., San Francisco | (1902)<br>(1903) | 85.4<br>81.1 |
| University of Colorado | (1913) | 83.4, 86.4 |
| Chicago College of Med. and Surg. | (1911) | 96.3 |
| College of Phys. and Surgs., Chicago | (1907) | 76.5 |
| Illinois Medical College | (1910) | 77.8 |
| Northwestern University | (1914) | 92.2 |
| Rush Medical College | (1899)<br>(1902)<br>(1913)<br>(1914) | 77.9<br>75.3<br>80.4, 87.1, 92.5<br>75 |
| University of Illinois | (1914) | 85.7 |
| State University of Iowa, Coll. of Med. | (1907) | 81.7 |
| Louisville Medical College | (1907) | 77.4 |
| University of Louisville | (1914) | 83.2 |
| College of Phys. and Surgs., Baltimore | (1905) | 78.2 |
| Johns Hopkins University | (1913) | 85.8 |
| University of Maryland | (1908) | 77.4 |
| Harvard University | (1912) | 86.4 |
| Detroit College of Medicine | (1912) | 75 |
| University of Minnesota, Coll. of Med. and Surg. | (1905)<br>(1911) | 93.2<br>89.4 |
| St. Louis University | (1913)<br>(1914) | 88.4; 90.2<br>83, 90.6 |
| University Med. Coll., Kansas City | (1896)<br>(1904)<br>(1910) | 81.1<br>84.4<br>80 |
| Washington University | (1913) | 94.2 |
| Omaha University | (1898) | 88.4 |
| Bellevue Hospital Medical College | (1898) | 85.4 |
| Columbia University, Coll. of Phys. and Surgs. | (1911) | 92.3 |
| Eclectic Medical College, Cincinnati | (1911) | 75 |
| University of Oregon | (1914) | 82.4, 87.1, 87.7, 88.1, 92.4 |
| Willamette University | (1889) | 86.9 |
| Jefferson Medical College | (1913)<br>(1914) | 80.6<br>91 |
| University of Pennsylvania | (1910)<br>(1914) | 92.3<br>90 |
| Medical College of the State of South Carolina | (1892) | 92.9 |
| University of Tennessee | (1912) | 75 |
| Vanderbilt University | (1911) | 91.5 |
| Manitoba Medical College, Winnipeg | (1914) | 81.8 |
| McGill University, Quebec | (1905)<br>(1914) | 82.2<br>79.8 |
| University of Helsingfors, Russia | (1913) | 81.8 |

| College FAILED | Year Grad. | Failed |
|---|---|---|
| Northwestern University | (1894) | 1 |
| Johns Hopkins University | (1913) | 1 |
| Wisconsin College of Physicians and Surgeons | (1902) | 1 |
| Royal Medical College, Stockholm, Sweden | (1899) | 1* |

* Withdrew.

# Book Notices

Arteriosclerosis: A Consideration of the Prolongation of Life and Efficiency after Forty. By Louis Faugeres Bishop, A.M., M.D., Clinical Professor of Heart and Circulatory Diseases, Fordham University, School of Medicine, New York. Cloth. Price, $3.50. Pp., 383, with illustrations. New York: Oxford University Press, 1914.

Unfortunately this book does not seem to discuss this most important subject clearly; or neither does it inform the reader as to what is really known about it to-day. This book is a plea for the author's theory that arteriosclerosis is caused by eating habitually many proteins and large quantities and that it can be prevented or mitigated by a "few-protein" diet. By "few-protein" he means a diet, the proteins of which are derived from a single source and not as ordinarily from many sources simultaneously as from meat, fish, fowl, eggs, milk and vegetables.

The following quotations from various parts of the book will make clear his leading idea:

> The key to the riddle of arteriosclerosis I believe lies in just this sensitization of individuals to particular proteins, or to be more specific, to split products of particular proteins. . . . .
>
> The truth is not all found in popular explanations with such trite names as intestinal putrefaction, but is found in the ultimate destination of food substances and their relation to the cells. . . . .
>
> Arteriosclerosis seems to me often to develop as a result of damage done by some material derived from food to which the tissues are idiosyncratic. The damage often comes about gradually without disagreeable symptoms. The substances at fault are in all probability split products derived from the breaking down in the intestines of nitrogenous food derived from eggs, fish, meat and soups. Which of these foods supply the product doing the damage can only be determined by experiment with the individual under observation. . . . .
>
> The individual eating the great variety of protein foods found in a modern dietary is laying himself open to the attack of many different kinds of amino-acids and other split products, any one of which may be the one which is to do him harm. If he cuts out one-half of his proteins, he is by that much safer. If he is willing to do with a single protein, he is almost certain, on the theory of chances, to escape that which will do him damage.

The author admits that a "low-protein" diet or small quantity of protein does good, but believes that his "few-protein" diet is more certain to do good. He denies that the action of microbes on protein produces the toxin which causes the lesion of arteriosclerosis, or at least denies that it usually does so. But he advances no proof that his theory that it is some protein or amino-acid made from it which does, unless the statement that "on practical grounds, the few-protein diet is to be recommended because it is successful," can be regarded as proof. The author has not digested and assimilated and built his theories and practice on such modern knowledge as that during digestion all proteins are split into amino-acids and absorbed into the blood as such, and that some proteins contain all the kinds of amino-acids needed for the maintenance of tissue health and that others are lacking in one or another which is necessary. Nor does he seem to realize that proteins are from the physiologic point of view very complex and that what he calls a "few-protein diet" affords many amino-acids to the individual who eats it; sometimes more kinds than might be obtained from a mixture of certain proteins. Fortunately the proteins of milk which he urges as the best "few-protein" food for the relief and prevention of arteriosclerosis contain all of the needed amino-acids. He is most diffuse in his style. Almost every chapter contains digressions from its subject and often long and wearisome ones. The important chapter on the chemistry of the proteins contains fewest digressions, for little of it is written by the author. Six pages are quoted from Cathcart. Fourteen pages are quoted from Underhill. There is a scant page in all written by the author, welding these quotations together. The book contains reproductions of roentgenograms and polygraph tracings. Some of the latter are poor. If a reader will pick out the author's practical suggestions for treatment he will obtain useful ones; though his theoretical explanation of the mode of action of the treatment which he advises is most doubtful. The key to treatment is a simple diet, small or moderate in quantity, in which cheese is substituted for other protein food (vegetable proteins he regards as harmless) and regular, free catharsis, preferably by oleum ricini. He condemns salines as harmful.

Medical Gynecology. By Samuel Wyllis Bandler, M.D., Adjunct Professor of Diseases of Women, New York Post-Graduate School and Hospital. Third Edition. Cloth. Price, $5 net. Pp., 790, with 150 illustrations. Philadelphia: W. B. Saunders Company, 1914.

In preparing this well-known volume for its third edition the author has undertaken a thorough revision of the entire field covered by the subject matter. In its general arrangement there is no material change, the classification being at first clinical, according to symptoms, and second, pathologic, according to local or general disease processes. The various topics are viewed from the points of view of the symptoms, the disease, the bimanual and microscopic findings, and the general physical and nervous state. Thus there is presented a brief but comprehensive summary of the topic under discussion, followed by a more exhaustive consideration of the conservative treatment, operative procedures having been viewed as a last resort. The relation which pelvic abnormalities bear to the physical and mental state of the woman is constantly borne in mind, so that diagnosis and therapeutic method is not limited to the female pelvis. This is nowhere better demonstrated than in the new chapter devoted to the consideration of the internal secretions. Here in the space of fifty-three pages the reader finds a concise presentation of this vast and complex subject. The relation of the various glands producing internal secretions to pathologic and normal states in women has been considered in accordance with the most recent research of the various German investigators as well as the work of Cushing on the pituitary body. Certainly no more fitting place for the discussion of these questions can be found than in a volume dealing with medical gynecology. In this respect the author has brought his subject matter up to date and produced a work of definite value to the physician and to the student of gynecology.

Nervös. Zwanzig Gespräche zwischen Arzt und Patient. Von Dr. Ludwig Scholz, Direktor A. D. der Provinzial-Irrenanstalt in Kosten. Paper. Price, 4 marks. Pp., 188. Berlin: S. Karger, 1914.

In twenty short chapters, so-called conversations, the author popularizes the entire subject of psychotherapy, beginning with the definition of nervousness and ending with a philosophy of life. He handles his theme in the form of questions and answers, the patient asking the question, the physician answering. The author assumes for the patient a great deal more intelligence than we can actually credit him with. However, it must be admitted that the German patient is usually intelligent and capable of following a line of abstract reasoning. The book may be put down as a compend of Dubois' psychotherapeutic views, explained in the form of questions and answers. The brochure can safely be placed in the hands of those German-speaking neurasthenics and hysterics who possess the necessary intelligence to follow the author.

Psychology in Daily Life. By Carl Emil Seashore, Professor of Psychology in the State University of Iowa. Cloth. Price, $1.50 net. Pp., 226, with 17 illustrations. New York: D. Appleton & Co., 1914.

This volume is in the Conduct of Mind Series, which aims to supply a foundation for the practical application of psychology. The more didactic chapters are introduced by essays on play, serviceable memory and mental efficiency, considered from the point of view of mental health. Then mental laws are discussed, and are shown to explain the phenomena of illusions. In this section there are various entertaining diagrams. Laboratory methods are shown as applied to the measurement of musical ability. The subjects are selected merely for their illustrative value and are not meant to cover the entire field. The book reveals the practical use which may be made of psychology in everyday life, and gives some excellent suggestions.

Scraps. By A. G. Field, M.D., LL.B. Cloth. Pp., 88. Des Moines: Welch Printing Company, 1914.

In this book Dr. A. G. Field has compiled various papers, addresses, etc., published by him during a long period of human service. It is a reminder that many physicians daily are silently and conscientiously serving their fellow men in wide fields of endeavor.

# Miscellany

## Public Health Service Report on Friedmann Treatment

When, two years ago, Friedmann announced the discovery of a new treatment for tuberculosis, the immense publicity given to the announcement prompted the Public Health Service to appoint a committee to investigate the claims of the alleged cure. A board consisting of Surgeon John F. Anderson, director of the Hygienic Laboratory as chairman, and Past Assistant Surgeon A. M. Stimson of the Hygienic Laboratory as recorder, was appointed for this purpose. It will be remembered that some difficulty was experienced in securing the entire cooperation of Dr. Friedmann and that in the *Public Health Reports* of May 16, 1913, a progress report was published which said, "Without presenting in detail the condition of patients under observation, we are in a position to state that the effects so far observed do not justify that confidence in the remedy which has been inspired by widespread publicity." The board of investigation has now presented its final report[1] containing the results of both clinical observation and laboratory experiments. Clinically the board observed the treatment of ninety-four cases. A number of the patients belonged to the third stage according to the Turban method of classification, but many of these third-stage cases were in excellent general condition, without fever, of good body weight with little cough and expectoration, and stationary or very slowly progressive lesions. Dr. Friedmann was disposed to criticize this material, although his published papers warranted the expectation of cure in similar cases. On the other hand, Dr. Friedmann refused cases of the first stage on the ground that since they were already doing well, the beneficial effects of the treatment would not be as apparent as in those having more pronounced symptoms. In the report, abstracts of the histories of the cases are given which show, generally, no particular change in condition except such as might be expected for cases of pulmonary tuberculosis under ordinary methods of treatment. Anderson and Stimson note two classes of exceptions. They state that good results have been reported in some cases. It is explained that by this is meant simply that "the improvement noted was of such degree as is not commonly observed in the general run of cases. In no single case was this improvement such that it could not be paralleled in the experience of any physician having extensive acquaintance with tuberculosis." In other cases the record shows that the results were bad. The investigators say

> "By 'result unusually bad' we mean that the course of the disease following treatment was distinctly worse than would be expected in the general run of cases. Here again we must concede that no single case taken by itself would be unparalleled in an extensive experience."

The claim of Friedmann that his material is harmless is not sustained by the results of the investigation. The investigators conclude from the study of the clinical cases as follows:

> "The preparation used by Dr. Friedmann in our cases was not entirely harmless, inasmuch as it frequently produced abscesses or discharging lesions at the site of the injection. Moreover, there is presumptive evidence that it may cause damage to a tuberculous person. For this reason we believe that its promiscuous injection into tuberculous patients is unjustifiable.
>
> "There is evidence that this preparation exerts a specific action when injected into persons suffering from tuberculosis, which in the majority of cases treated with the number of injections which our patients received is insufficient to materially alter the course of the disease, in a small minority of cases redounds to the patient's advantage, and in another small minority results in definite injury.
>
> "The nature of the claims, the cases cited, and the general tone of Dr. Friedmann's article are such as to create the impression that his methods represent a great advance over previous methods of treating tuberculosis. The observations here recorded do not bear out this impression.
>
> "It is realized that the claim will be made that our patients did not receive as protracted a course of treatment as might have been administered if they had been continuously under Dr. Friedmann's care, and that had they received more treatment the result might have been dif-

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[1] Hyg. Lab. Bull. 99, October, 1914, on the Friedmann Treatment of Tuberculosis. This bulletin may be obtained from the Superintendent of Documents, Washington, D. C., at 10 cents per copy.

> ferent. To this claim we can answer: First, that many of the brilliant results which he reports in his article, and which we must assume to be representative, were obtained with but one or two injections; second, that the failure of our patients to receive further treatments was due to Dr. Friedmann's negligence, unprofessional conduct, and commercial greed, primarily, and secondly to the alarm engendered on the part of the health authorities locally responsible by the unfavorable course taken by the disease in certain patients, apparently as a result of the injections."

The laboratory studies consisted of culture of the material on various mediums with observation of the morphology and staining reactions of the Friedmann bacillus. Morphologically and in staining reaction, the Friedmann bacillus showed considerable variation. In general the morphology was indistinguishable from that of tubercle bacilli and the grouping was often characteristic of the pathogenic organism. The animal experiments continued over fourteen months. One hundred and eighty guinea-pigs, thirty rabbits, sixteen monkeys and eight tortoises were used. The animals were weighed weekly and the temperatures of some were taken daily or twice daily. Some of the experimental evidence indicates that the organism is not harmless. Thus, one monkey died after an inoculation with the Friedmann bacillus, and the necropsy showed the presence of clumps of acid-fast bacilli in the liver and spleen. This monkey had reacted negatively to the von Pirquet test before the inoculation with Friedmann bacilli. Two rabbits inoculated with the Friedmann bacillus and afterward with bovine tubercle bacilli showed a certain degree of immunity, but this appears to be no greater than was shown by some of the control rabbits and further examination showed that the tuberculous process was advancing in all the animals, both those which were treated with Friedmann's remedy and the controls. In the attempt to immunize guinea-pigs, the final average duration of life for all treated guinea-pigs was 61.8 days and the average for all controls, 71 days.

The authors summarize their laboratory studies as follows:

> "The organism used by Dr. Friedmann is an acid-fast bacillus, morphologically similar to the tubercle bacillus. Culturally,. the organism may be distinguished from organisms heretofore recognized as tubercle bacilli.
>
> "Some of the cultural characteristics can be artificially modified.
>
> "It is relatively but not completely a virulent and apparently may in very rare cases cause a tubercular process on inoculation (Guinea-Pig No. 11).
>
> "Inoculation with the Friedmann bacillus in the doses used caused, as a rule, hypersusceptibility to bovine tuberculosis in the guinea-pig and rabbit, the treated animals dying earlier, on the average, than the untreated.
>
> "In a few instances the animals which received the Friedmann culture were apparently somewhat resistant to infection, but all showed tuberculosis at autopsy (Guinea-Pigs Nos. 3, 33, 35, and Rabbit No. 1). Neither curative nor protective action against natural or inoculation tuberculosis was shown in monkeys. Acid-fast organisms were repeatedly found in previously healthy guinea-pigs over 100 days after treatment with the Friedmann organism. Dr. Friedmann claimed they 'are never found in the guinea-pig body, even after a short time.' The material used by Dr. Friedmann for the treatment of human beings was found to be at times contaminated with staphylococci."

The following are the general conclusions of the investigation:

> "The claims made by Dr. Friedmann for his method of treating tubercular infections are, in brief, that, by means of injections of a living acid-fast organism, harmless of itself, he is able to cure cases of tuberculosis, pulmonary or otherwise, which have not already advanced to that hopeless stage where death is imminent. From the manner of presenting these claims and from the fact that successes only and not failures are reported, the reader of these claims is bound to assume that such results are the rule; in other words, that a sovereign remedy for tuberculosis has at length been discovered, and incidentally that a method has been devised for the administration of living acid-fast organisms which avoid abscess formation, a complication which has hitherto limited their employment.
>
> "The results of the investigation here reported do not confirm the claims made by Dr. Friedmann. We find, in brief, that the preparation used by him is not strictly devoid of dangerous properties of itself, still less so when injected into tuberculous subjects; that the favorable influencing of tuberculous processes by his methods is certainly not the rule, and that if we are to ascribe to the Friedmann treatment the improvement noted in a few cases, we are equally bound to impute to it the serious retrogression observed in other cases; and finally that the phenomenon of abscess formation has not been avoided by Dr. Friedmann's methods.
>
> "We find that the organism used by Dr. Friedmann differs in important cultural characteristics from any heretofore recognized tubercle bacillus.
>
> "The subcutaneous and intramuscular inoculation of animals with the Friedmann organism caused the formation of abscess in over 25 per cent. of the animals treated.
>
> "The treatment of animals with the Friedmann organism—rabbits and guinea-pigs—either before or subsequent to infection with virulent tubercle bacilli, is followed, as a rule, by an increased susceptibility to the disease.
>
> "Inoculation of monkeys with the Friedmann culture did not show either curative or protective action in those animals against tuberculosis."

### SUMMARY

The investigators summarize their conclusions in the following succinct statements:

The claim of Dr. F. F. Friedmann to have originated a specific cure for tuberculosis is not substantiated by our investigation.

The claim of Dr. F. F. Friedmann that the inoculation of persons and animals with his organism is without harmful properties is disproved.

# Medicolegal

## Evidence and Damages in Action for Malpractice in Treating Fracture of Clavicle

*(Duffy vs. Charters (Mich.), 147 N. W. R. 541)*

The Supreme Court of Michigan affirms a judgment for $1,080 damages in the plaintiff's favor, for alleged malpractice in the treatment of an oblique fracture of the left clavicle. The plaintiff's claim, supported by his own testimony and that of two others who were present, was that when the defendant came to his house all he did was to pick up his arm and place it diagonally across his breast so that the points of the fingers of the left hand were against the lower part of the right shoulder, above the armpit and below the top of the shoulder; that thereupon he applied bandages, which the defendant claimed was done in the approved method known as Sayre's dressing, but, it was claimed by the plaintiff, was not done as Sayre's method required. Whether the defendant was negligent in that he did not use a proper method in reducing the fracture was the question.

A medical witness produced on behalf of the plaintiff was asked a hypothetical question based on what the lay witnesses testified was done by the defendant when he put on the bandages. It was urged that the question was incomplete and so insufficient as to have no value in assisting the jury in determining the defendant's responsibility. The question did not contain what the defendant claimed he did in reducing the fracture, but stated substantially what the plaintiff claimed he did, as testified to by the witnesses present. Another physician described the proper method to be used in reducing such a fracture. The court holds that the testimony of the experts being based on the testimony of the plaintiff's witnesses, it was proper to have their answers stand. The question of the value of their evidence and that of the other witnesses for the plaintiff was for the jury, and was properly submitted by the trial court.

It was contended that there was a fatal variance between the plaintiff's declaration and attempted proof of a want of proper union of the broken ends of the clavicle. The declaration charged failure to put the bone or bones of the shoulder properly in apposition and to use the proper means for so placing and keeping them in apposition. The plaintiff argued that the false or fibrous union shown by the proofs was the natural result of imperfect apposition, as set forth in the declaration, and that it was therefore not necessary to specifically allege it. This was supported by the testimony of the physicians, who testified that the first step in the treatment of such a fracture is to get the ends of the bone together and keep them there, if possible, and, unless this is done, no perfect union results. The court thinks the declaration was sufficient to warrant receiving this evidence.

The jury were instructed that, for the pain and suffering which the plaintiff would have actually sustained by reason of this broken clavicle and its treatment, if properly treated, he could not recover damages, because the defendant was not responsible for that. But for the pain and suffering which were extra, if any, which was caused by the defendant, the plaintiff could recover. Under the issue in this case, it was entirely proper to submit to the jury the question of compensation for extra pain and suffering.

# Society Proceedings

## COMING MEETINGS

American Association of Anatomists, St. Louis, Dec. 28-30.
Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
American Physiological Society, St. Louis, Dec. 27-30.
Amer. Public Health Association, Jacksonville, Fla., Nov. 30-Dec. 5.
Medical Association of the Southwest, Galveston, Nov. 10-11.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Society of American Bacteriologists, Philadelphia, Dec. 29-31.
Southern Medical Association, Richmond, Nov. 9-11.
Southern Surgical and Gynecological Assn., Asheville, N. C., Dec. 15-17.
Western Surgical Association, Denver, Dec. 18-19.

## MINNESOTA STATE MEDICAL ASSOCIATION

*Annual Meeting held at St. Paul, Oct. 1-2, 1914*

(*Concluded from page 1602*)

### Typhoid Prophylactic Vaccination in Two Thousand Cases

Dr. C. C. Burlingame, Fergus Falls: Prophylactic vaccination against typhoid has seemed to furnish absolute protection to some 2,000 persons, some of whom have undoubtedly been exposed. It has failed to cause much discomfort and has been accomplished by no accident of any kind. The administration of vaccine at regular intervals produces a positive or atypical Widal usually within thirty days in about 94 per cent. of cases. This blood reaction is quite variable and becomes negative with comparative rapidity. Although this reaction has disappeared in the majority of cases, clinical evidence indicates that the immunity continues. The administration of vaccine at irregular intervals appears to have the effect of retarding or inhibiting the development of blood-changes and may or may not have influence on the degree of immunity afforded. There is apparently some evidence in favor of adopting the ten-day interval for vaccination rather than the seventh day.

#### DISCUSSION

Dr. R. R. Mullin, Minneapolis: It has been clearly shown by the work done at Fergus Falls that we have in the use of antityphoid vaccine a method that is easily employed and easily adapted to protecting the insane against typhoid fever. Dr. Burlingame says about 94 per cent. of the patients will show a positive Widal reaction sometime after the vaccinating process has been undertaken. This corresponds closely to what is thought to be the percentage of cases in which the Widal will occur in actual typhoid. In a small percentage of the cases we fail to get a Widal after the vaccinating process, and so, too, in actual typhoid there is a small percentage of cases in which apparently it seems it is impossible to get a Widal reaction.

Dr. C. L. Scofield, Benson: The efficacy of typhoid vaccination has been definitely settled. The town in which I live has gone through a severe epidemic of typhoid. In point of numbers as to population it was the most severe epidemic the state has ever known. One in every twenty of the whole population had typhoid. On the first day of August our first case appeared. In twelve days from the time the first case occurred, the trouble was located in the water supply, and the water was treated with hypochlorite, and the source of infection was removed in about four weeks. During that time all of our 2,000 people had been exposed to the infection. We vaccinated over 1,400 people. There were no severe reactions. After six weeks we are able to say that we have not yet had what we call a secondary case.

Dr. L. Ulrich, Minneapolis: No case of typhoid fever ought to be dismissed without an examination of the feces and urine to determine whether or not the case is a typhoid carrier.

### Case of Splenic Anemia; Early Splenectomy and Necropsy Two Years Later

Dr. Thomas S. Roberts, Minneapolis: There was nothing in the history of the patient suggestive of the etiology of the disease. There was a marked leukocytosis soon after operation, which persisted and increased to the end. The average number of white cells in eight counts before operation was 4,925; the lowest, 2,700; the highest, 6,500. The average of twelve counts after operation was 15,985; lowest, 9,000; highest, 25,000. There was throughout this case a rather unusually high hemoglobin percentage, the general average being 52 per cent. The average color index was eight; highest, one; lowest, six. A notable irregularity in the shape and size of the red cells was always present, and during the last year became very pronounced. Gastric and intestinal hemorrhages occurred only after the removal of the spleen. There was no jaundice or pigmentation of the skin even during the Banti's stage. There were several periods of improvement, two especially prolonged and pronounced, suggesting recovery, but there was no corresponding improvement in the condition of the blood. Splenectomy, even though done early, did not, contrary to the usual experience in these cases, arrest the disease or modify its course in any way. The clinical diagnosis of uncomplicated splenic anemia was apparently confirmed by the necropsy. The only other important pathologic condition was a moderate grade of parenchymatous nephritis, but this did not seen sufficient to account for the death of the patient, and, moreover, the progress of the case to the very end was like that of splenic anemia and not nephritis.

#### DISCUSSION

Dr. S. Marx White, Minneapolis: It is not necessary to differentiate splenic anemia from Banti's disease. It is the opinion generally that we are dealing with one and the same condition. The term splenic anemia is used particularly for those cases in which the anemia is prominent or has not developed to the point which would correspond with the classical original description which Banti gave it. The results of the surgical treatment by splenectomy would tend to confirm the idea that Banti originally advanced, that the anemia is due to increased hemolytic action on the part of the spleen, or, at least, that we have in the spleen a very important link in the chain of changes which are characteristic of the disease, and which produce the anemia, and which cause the progress of the disorder.

Dr. William J. Mayo, Rochester: The removal of the spleen is not so serious an operation as we had previously supposed. According to the statistics based on early splenectomies, the mortality varied from 25 to 50 per cent., but at present the mortality from the removal of this organ is very small, provided the patient is in fair condition otherwise.

### Avoidable Errors in the Diagnosis of Cardiac Insufficiency

Dr. Charles Lyman Greene, St. Paul: Two great problems lie along the line of prevention in the early recognition of decompensation. Any proper comprehension of cardiovascular ailments must rest on the primary and basic clinical fact that the true problem is always the state of the myocardium. With respect to the subjective symptoms, they are many and varied; few of them are peculiar to cardiac disease, and the fundamental factors in their interpretation are: (1) The relation of their onset to concurrent or antecedent physical exertion, psychic excitation, or a toxemia; (2) their association with the lesser grades of demonstrable dilatation; (3) especially in the case of the middle-aged patients, and to a less degree in younger persons, their relation to excitement or emotional strain; (4) the favorable response both of subjective symptoms and of any increased cardiac outline to cardiac stimulation with or without physical rest or regulated exercise as may be indicated. It would be difficult or impossible to make a positive diagnosis of cardiac insufficiency on the basis of subjective symptoms alone, save in the cases of typical angina pectoris major, which is usually unmistakable.

### Medical Education and the Medical Profession

Dr. E. P. Lyon, Minneapolis: The modern scientific medical school has become a necessity. In this necessity three elements are involved: 1. The material equipment for science training, including buildings, laboratories with proper apparatus, hospitals with proper equipment and adequate patients. 2. The faculty, who should be men of exceptional training and high character, active in productive scholarship and especially endowed as leaders and teachers. 3. The library, which is the accumulated capital of science, whose wise investment gives light and power to teaching and research. All of these essentials to science training are hard to get and very expensive. The individual student cannot get them for himself exclusively. They must exist and must be provided through some form of cooperative effort. What more natural than that the cooperative unit supplying these facilities should be the state?

Medicine is a public function. The condition arises partly from legal enactments which place various positive duties on doctors. Medical education is an accepted part of public policy. What we need to do is to see that medical education is more adequately and fully supported. It is the duty of the medical profession, as that body of citizens who most clearly recognize this need, to urge it emphatically and constantly. A second inevitable result of the progress of medicine has been the rise of specialism. No man can reach the highest perfection in all parts of medical practice. If he desires to excel he must concentrate on a single field.

### The Cancer Problem

Dr. William J. Mayo, Rochester: Why has the public become so confirmed in the belief that cancer is incurable and how has this pessimism been fostered? One unfortunate result of the inquiry into the influence of heredity on the causation of cancer has been the encouragement of a belief that cancer is hereditary and therefore carries a stigma with it. The person who has been successfully operated on for cancer conceals the nature of his malady with the same solicitude he would probably conceal the fact that he had "done time" in a penitentiary. Of the hundreds of patients who have had cancer and who have been cured by operative means the public knows little or nothing, while those who have had cancer and been operated on without success are known to all.

There is no evidence that would lead to the belief that cancer is hereditary. This is equally true of "cancer houses" and "cancer towns." Small towns in older settled countries have more cancer than new towns; they have more people of a cancer-age; the younger people have left for new fields.

A good diagnostician will seldom mistake syphilis for cancer. Yet the liability to this mistake has been dwelt on and greatly magnified, and many individuals have advanced from the curable to the incurable stage while an effort was being made through antiseptic treatment to eliminate the possibility. The Wassermann reaction has fortunately come to our aid and to the patient's rescue.

Mistakes in diagnosis from lack of careful examination is the most common cause of failure to recognize malignant disease in time for a curable operation. A too high percentage of patients with cancer are subjected to inefficient operation by inexperienced men. Because the disease is early it appears as though it might be easily cured and men who would not think of operating where a radical operation was to be done, will often make a small operation—futile, hopeless.

The surgeon has had a great share in creating the feeling of hopelessness which exists among the laity and discouraging the general practitioners by attempts at radical operation in plainly incurable disease or extensive palliative operations which fail to palliate.

Radio-active substances have a field of usefulness in superficial growths and inoperable disease, but these agents should not be used in early growths curable by operation. The embryonic cell, such as the cancer cell, has less vitality than the normal cell and is injuriously affected by heat. The Percy method of using heat raised to such a degree as to coagulate the embryonic cells by a slow cooking process is a distinct advance.

Great benefit in diagnosis before operation has come from the radiograph and at the operating table by means of the frozen section. The first enables us to know in a large percentage of cases what we are going to find and the latter gives the microscopic diagnosis while the operation is in progress.

The prophylaxis of cancer is exceedingly important. Let us say to the public: "Go to your physician at once on the discovery of any sign or symptom of irritation about warts, moles and benign tumors, or ulcerations, chronic inflammatory processes or injuries, however slight, which fail to heal promptly." When the laity understand that all sources of irritation carry with them a deadly significance, the prevention of cancer will have been greatly advanced and the percentage of curable cases which come to the only known cure—operation—will be enormously increased.

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## DELAWARE STATE MEDICAL ASSOCIATION

*One Hundred and Twenty-Fifth Annual Meeting, held at Wilmington, Oct. 12-13, 1914*

The President, Dr. H. W. Briggs, Wilmington, in the Chair

### Puerperal Infection

Dr. J. J. Jones, Wilmington: I am in favor of conservative surgery wherever possible. In cases of incomplete abortion, if I cannot remove remnants of placenta with the Bell curet, I leave them alone. I pack the uterus, using 1-inch tape, with a solution of tincture of iodin, phenol (carbolic acid), glycerin and thiol.

DISCUSSION

Dr. Willard Springer, Wilmington: I do not think any one uses sharp curets nowadays. Why does Dr. Jones put such a shotgun combination into the uterus instead of packing it with iodoform gauze?

Dr. George I. McKelway, Dover: There is no word quite so much abused as that word "conservative." The best possible conservation is the conservation of the patient and not of a lot of diseased tissues. Too much cannot be said about delay in operation in cases whenever pus is concerned. Most men have learned that the best thing to do with a boil is to open it before pus forms. It is best to operate very quickly in cases of puerperal infection rather than to wait. The two fingers constitute the best curet in cases of puerperal infection and retained placenta. The hand can be introduced into the vagina in its entirety, two fingers introduced into the uterus, the other hand on the outside of the abdomen, and the uterus can be cleaned out absolutely and thoroughly.

Dr. Samuel C. Rumford, Wilmington: I do not think that many of the men who do much of this work use the sharp curet. A dull curet, or better, the fingers, will clear out the foreign material and shorten the woman's convalescence.

Dr. J. J. Jones, Wilmington: I use the combination that I spoke of in place of iodoform because I have used iodoform and found that there was some poisonous effect from it. The mixture which I use is not strong enough to corrode the endometrium, and yet the glycerin in it acts as a depleting agent to the uterus. There might have been a time when the finger was the best curet, but I believe that time has passed. We have something better than the finger to-day, and better still than to manipulate much is to leave it alone and drain the uterus and Nature will do the rest. I have handled hundreds of these cases and I have the first patient yet to die of waiting. I have had pus in the abdomen, pus in the joints and pus everywhere. Improve the condition of the patient to fight the trouble she has. Do not operate immediately. Find out whether the patient can stand the operation.

### Some Cases Treated by Physical Therapeutics

Dr. William Marshall, Milford: Since the beginning of the year I have been using different types of electrical treatment in a variety of cases. I have found autocondensation to be very effective in reducing high blood-pressure and giving relief to symptoms associated therewith. In high tension cases it is necessary to abstain from heavy meals, to cut down the amount of liquid and proteins ingested and to avoid worry, overwork, exposure, constipation and excesses of all kinds. My experience in the treatment of menorrhagia by means of the Roentgen ray and the treatment of catarrhal conditions of the nose and ears has been very gratifying. I have been able to relieve the pain of neuralgia and neuritis by means of a few applications of the high-frequency current through the medium of a vacuum tube.

### DISCUSSION

Dr. Henry J. Stubbs, Wilmington: The high-frequency current will reduce blood-pressure. The question arises how much and when to reduce blood-pressure. Treat once or twice a month to keep up the effect. This current has some effect on the artery and we do not want to produce too much change in the arteries when a patient is from 50 to 60 years of age. Keep up treatment to get the effect of softening the deposit in the arteries. I have been disappointed in the treatment of angina. Where we have high pressure without neuralgia of the heart I get excellent results. I have had patients with pressure of 240 to 270.

Dr. Albert. Robin, Wilmington: I wish to report failures. One case was that of a woman between 50 and 60 years of age who had slight arteriosclerosis. The blood-pressure would rise to 190 and stay there for a considerable time. The nitrites would reduce it; so would rest in bed, on exclusive milk diet, but then it would come up as soon as she got on her feet. I had a high-frequency apparatus put in her bedroom and told her to use it very day. The treatment was given every day for months. Reduction of pressure did occur to the extent of 20 or 30 points, but it would soon come up again, and as far as any permanent results are concerned I saw none. At present the woman is in the same condition as before. In all probability the high blood-pressure is compensatory and we may probably come to the point later on when we shall decide not to try to reduce the pressure unless it produces decided symptoms. Another point is that arteriosclerosis is characterized by the existence of fibrous tissue in the blood-vessels. When you destroy the fibrous tissue it is replaced by more fibrous tissue; fibrous tissue replaces itself invariably. The fibrous tissue cannot be dissolved.

Dr. H. A. Cleaver, Wilmington: What little experience I have had in high-frequency and static work has been such as to convert me from disbelief to reasoning. I have had two evidence in my own person. I have had sciatica until I was frantic with the pain; ⅓ grain of morphin gave me no relief. The static machine relieved me in less than twenty minutes. I treated a man who had sciatica. He had been under treatment by others for months without getting relief. The second treatment with the high-frequency current relieved him completely.

Dr. H. K. Stubbs, Wilmington: We know that the success of electricity depends largely on the Morton wave. You can get it only on a static machine and in no other way. The coil is the most essential thing you can use. I do not think it cures everything, but there are marvelous successes. We get the results. That is what the patients want.

Dr. William Marshall, Milford: High blood-pressure is often compensatory, but sometimes it will go up so high that compensation is lost. In these cases the only drugs I have found useful are digitalis and strychnin. They will bring the pressure down and they are the only drugs that will.

### Referred Pain in Gynecologic Conditions

Dr. Samuel C. Rumford, Wilmington: A normal healthy woman should be no more conscious of her pelvic organs than the average schoolboy is of his heart, but unfortunately so many abnormal conditions exist in women that their discomfort calls for attention. Nature has so placed the uterus and ovaries that they swing freely in the pelvis and are exempt from blows, jars, etc. When the uterus leaves its normal position either because of inflammatory adhesions or a lax condition of its suspensory ligaments then its natural balance is upset, nerves are pulled and pressed on and veins become congested, with a resulting amount of discomfort to the woman. The posterior positions, however, are the ones most apt to cause ovarian discomfort, as the tubes and ovaries easily slip into the culdesac, where, if they do not become inflamed and adherent, at least they are subjected to more pressure than when in their original position. Backache is a very constant symptom of gynecologic conditions and is explained by the rich distribution of sympathetic nerves supplied to the genital tract which act reflexly on the spinal cord. Individuals vary in their power of nerve resistance as in other ways, and we quite commonly see one woman with a gross pathologic condition in the pelvis who suffers much less than another who may be a nervous wreck because of some minor defect. It is our duty to help these nervous and hysteric women who offer some real lesion, for their mental suffering is often very great and, if not relieved, may become serious. The right lower abdominal quadrant of women is the most difficult area of their anatomy in which to make a satisfactory diagnosis in all cases, for there are situated in this region so many sources from which painful symptoms may arise. Such cases are often diagnosed only at operation.

# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### Albany (N. Y.) Medical Annals

*October, XXXV, No. 10, pp. 527-574*

1 Cortical Connections of Red Nucleus. L. Archambault, Albany.
2 *Use of Normal Horse Serum for Prevention of Hemorrhage in Nose and Throat Operations. C. F. Theisen and N. K. Fromm, Albany.
3 Acute Ileocolitis of Infancy. D. V. O'Leary, Jr., Albany.

2. **Use of Normal Horse Serum.**—In eight cases reported by Theisen and Fromm the average coagulation time before injection of the serum was 5.18 minutes, and after injection 4.12 minutes, making an average decrease in coagulation time of 1.06 minutes. Considering the comparative safety in the use of serum, and the great lessening of the danger of postoperative hemorrhage, the authors advise that it should be used whenever an operation must be undertaken in a subject of the hemorrhagic or hemophilic diathesis.

### American Journal of Obstetrics and Disease of Women and Children, York, Pa.

*October, LXX, No. 4, pp. 545-688*

4 Anatomic Study of Very Early Tubal Pregnancy; Decidual Reaction in Ectopic Gestation. M. Caturani, New York.
5 Pituitary Extract in Obstetrics. S. J. Druskin, New York.
6 *Tracheloplasty, New Operation for Relief of Sterility Due to Stenosis of Cervix Uteri. E. A. Schumann, Philadelphia.
7 Removal of Both Breasts, with Subsequent Pregnancy and Entire Absence of Labor Pains. W. E. Parke, Philadelphia.
8 Case Report Illustrating Certain Dangers in Use of Intra-Uterine Stem. W. R. Nicholson, Philadelphia.
9 *Total Non-Protein Nitrogen of Blood in Toxemias of Pregnancy. C. B. Farr and P. F. Williams, Philadelphia.
10 Scopolamin Narcophin Seminarcosis in Labor. J. A. Harrar and R. McPherson, New York.
11 Use of Scopolamin in Obstetrics. A. J. Rongy, New York.
12 Thyroid Gland and Its Degenerations in Relation to Gynecology and Obstetrics. C. W. Barrett, Chicago.

6. **Tracheloplasty for Sterility.**—The procedure employed by Schumann depends on the excision of a portion of the cervical endometrium and its replacement with a strip of mucous membrane covered with flat squamous epithelium and derived from the mucosa of the posterior vaginal vault. The operation in detail is as follows: Under ether anesthesia, the cervix is dilated to fully 1½ inches with the Goodell dilator and the uterus curetted or not as the indications demand. A strip of the cervical mucosa 1 centimeter in width is then removed from the center of the posterior lip of the cervix and extending from the internal to the external os. The entire thickness of the mucosa is to be removed, down to the muscularis, and the edges of the denudation are to be smooth and regular.

The cervix is now drawn upward out of the way and a strip of mucous membrane is cut from the posterior vaginal vault, the top of the strip corresponding to the upper attachment of the vagina to the cervix. The vaginal strip is cut to fit the denudation in the cervical canal, and the lower margin is left attached to the vagina for purposes of nutrition. The resulting denuded area in the vaginal vault is drawn together by interrupted catgut sutures and the defect closed. The strip of vaginal mucosa, free except for its lower extremity, is then inserted into the canal previously cut in the posterior cervical wall and fastened in place by a few interrupted sutures of fine catgut, and the operation is complete. From five to seven days later, when the vaginal insert has become closely adherent to the tissues of the cervix and its nutrient blood supply is well established, the narrow band connecting the vaginal strip with the vaginal floor is severed with scissors and any redundant tissue trimmed away. The end result is a cervical canal having in its posterior wall a gutter of mucosa covered with flat squamous epithelium, which permits the free ingress of spermatozoa no matter how great the degree of cervical spasm or stenosis may be.

9. **Non-Protein Nitrogen of Blood.**—As a rule the total non-protein nitrogen of the blood does not exceed 30 mg. per 100 c.c. of the whole blood in a normal pregnancy. In those pregnant women who have renal changes associated or not with toxic manifestations, as convulsions, there is usually a slight and in most cases a definite increase in the total non-protein nitrogen. But the increase bears no relation to the severity of the symptoms. The degree of retention corresponds to that seen in parenchymatous nephritis. The amount of phenolsulphonephthalein eliminated varies so with the clinical picture that the use of this test does not appear to Farr and Williams to be of much value either as a diagnostic or prognostic aid in the toxemias of pregnancy.

### American Journal of Tropical Diseases and Preventive Medicine, New Orleans

*June, I, No. 12, pp. 815-892*

13 Beriberi. E. B. Vedder, U. S. Army.
14 Educational Methods for Use in Antimalarial Work. H. R. Carter, Baltimore.
15 Malarial Investigations in United States by U. S. P. H. Service. R. H. von Ezdorf, Mobile, Ala.
16 Prevention of Malaria and Its Relation to Drainage of Swamps and Other Collections of Water. I. W. Brewer, New York.
17 Administration of Emetin to Young and Debilitated Children. N. Barlow, Cuyamel, Honduras.
18 Rheumatic Malarial Fever. N. Barlow, Cuyamel, Honduras.
19 Ulcus Interdigitalis Fetidum. N. Barlow, Cuyamel, Honduras.

### Archives of Internal Medicine, Chicago

*October, XL, No. 4, pp. 453-608*

20 *Relation of Methods of Disposal of Sewage to Spread of Pellagra. J. F. Siler, P. E. Garrison, U. S. Army, and W. J. MacNeal, New York.
21 *Normal Presystolic Sound. E. W. Bridgman, Baltimore.
22 Periarteritis Nodosa; Report of Two Cases. A. R. Lamb, New York.
23 *Latent Hypertrophy of Heart in Nephritis of Children. H. Wessler, New York.
24 Non-Specificity of Carbohydrate Tolerance Tests. J. C. Friedman and S. Strouse, Chicago.
25 Potassium Content of Cerebrospinal Fluid in Various Diseases. J. Rosenbloom and V. L. Andrews, Pittsburgh.
26 *Relation Between Phenolsulphonephthalein Excretion in Urine and Non-Protein Nitrogen Content of Blood in Human Cases. C. Frothingham, Jr., and W. G. Smillie, Boston.
27 *Point to Be Considered in Use of Abderhalden Reaction. E. L. Ross and H. D. Singer, Kankakee.
28 Specificity of Cholesterin with Syphilitic Serums and of Cholesterin-Reinforced Heart Antigen in Wassermann Reaction. I. C. Walker, Boston.
29 *Botulism. Food-Poisoning Apparently Due to Eating of Canned String Beans. Report of Fatal Case. R. L. Wilbur and W. Ophüls, San Francisco.
30 *Normal Peculiarities of Heart-Sounds in Region of Sternum. G. Blumer, New Haven, Conn.

20. **Disposal of Sewage and Spread of Pellagra.**—The authors found that pellagra morbidity was higher in congested communities using surface privies than in more sparsely settled districts in which similar methods for the disposal of excreta were employed. In the city of Spartanburg the endemic foci of pellagra were located in the districts in which surface privies were in use. In cotton-mill villages equipped with surface privies pellagra was found to be endemic and new cases of the disease arose there year after year. In two cotton-mill villages completely equipped with water-carriage systems of sewage disposal it was impossible to find cases of pellagra which had certainly originated there, although some cases which had originated elsewhere were present. There is some evidence that pellagra spreads in hospitals for the insane more readily in the wards housing untidy patients. This study indicates that methods of disposal of human wastes may prove to be a determining factor in the spread of pellagra in certain communities and it suggests a possible method of prophylaxis, which is now being tested in a practical way.

21. **Normal Presystolic Sound.**—A presystolic sound, which is generally below the limits of human audibility, was shown on the phonographic tracings of a number of normal boys studied by Bridgman. It occurs 0.02 second after the beginning of the auricular wave of the apex cardiogram, 0.07 second before the beginning of the first sound; is of a duration of 0.04 second. A possible etiologic factor is suggested, the tension of the ventricular walls, and a possible relationship between this sound and the presystolic gallop is called to mind.

23. **Latent Hypertrophy of Heart in Nephritis in Children.**—Of eight cases of mild nephritis following scarlet fever five showed albumin in the urine usually in traces, not constantly, and with the occasional appearance of hyaline casts. In three of them, on a single examination, albumin was not found. The physical signs pointing to cardiac hypertrophy were the classical ones. They were in evidence in each case and especially significant was the clear, and at times ringing aortic second sound, which usually exceeded in intensity the pulmonic sound.

In all the cases in this group the orthodiagraphic examination disclosed a more or less marked hypertrophy of the left ventricle. The aorta was frequently dilated and showed an unusually marked pulsation. There was evidence in two of the patients of a muscular insufficiency of the left ventricle. Of six cases of chronic and subacute hemorrhagic nephritis in children, the etiology in three was scarlet fever; it was undetermined in the others. With one exception, these patients had an acute hemorrhagic nephritis with edema, a relatively short time previously, signs of which continued with abated severity to the present. The urines of all of them contain large amounts of albumin, hyaline and granular casts and red blood cells. Of cardiac symptoms, these patients had few, only two of them complaining of dyspnea on exertion. The physical signs were uniformly those of hypertrophy of the left ventricle without dilatation, findings which were convincingly shown by orthodiagraphic tracings. In two cases of acute glomerular nephritis an exquisite left ventricular hypertrophy had developed with the usual clinical signs and fluoroscopic appearance.

26. **Phenolsulphonephthalein Excretion in Urine and Non-Protein Nitrogen Content of Blood.**—The authors found that many cases of chronic nephritis show normal phenolsulphonephthalein excretion and normal non-protein nitrogen content in the blood. The content of non-protein nitrogen in the blood varies in a rough way inversely with the excretion of phenolsulphonephthalein in the urine in nephritis. The phenolsulphonephthalein excretion is influenced by cardiac decompensation and other unknown factors so that quite unexpected results occur in individual cases. The content of non-protein nitrogen in the blood seems to be less influenced by cardiac and other complicating factors. The amount of non-protein nitrogen in the blood seems to be of considerable prognostic value. The height of the blood-pressure and the pulse-pressure do not seem to be of prognostic importance in nephritis.

27. **Abderhalden Reaction.**—Ross and Singer summarize their work as follows: 1. Using the Abderhalden technic with the Abderhalden reaction, the serums of normal animals frequently show evidence of the presence of ferments capable of digesting various tissues of the body. 2. The material causing the positive Abderhalden reactions between normal serum and normal tissue may be precipitated from the washings by the addition of an equal volume of alcohol. 3. The

material causing the positive Abderhalden reactions between normal serum and normal tissue may be completely removed from the substrate if the washing is continued long enough. The number of washings required varies with different individuals and different tissues. 4. The only method which will show whether this material is completely extracted from the substrate is to make a number of Abderhalden tests using a number of normal serums. Until this has been done the substrate cannot be considered fit for use with pathologic serums.

29. **Botulism Due to Eating Canned Beans.**—The twelve cases reported by Wilbur and Ophüls presented the typical clinical picture of botulism apparently due to eating of domestically prepared canned string beans served without preliminary heating. That string beans may act as a culture medium for the *Bacillus botulinus* is possible, and the possibility is being further investigated. The methods of sterilization under pressure in use by canning factories seems to preclude the possibility of the growth of *Bacillus botulinus* in their pack.

Vascular thromboses were found about the brain-stem in a patient dying with the symptoms of botulism. Such lesions explain better the clinical phenomena observed than does the more or less hypothetical assumption of a specific action of the botulin on certain ganglion cells.

30. **Normal Peculiarities of Heart-Sounds in Region of Sternum.**—The peculiar quality of the heart-sound underneath the sternum and in its neighborhood is emphasized by Blumer. The sound occurs at all ages after infancy. After the age of 2 years Blumer has seldom failed to find it. The quality of the sound is described as a superficial scratching sound. In a few instances it has a clicking or tapping quality. The scratching quality is present with both systole and diastole. Usually it is of brief duration and of equal intensity with both sounds. Occasionally the systolic scratch is the more intense; rather more frequently the diastolic. The sound appears to be decidedly superficial, does not resemble an endocardial murmur, but does strongly suggest a friction rub. It is uninfluenced by respiration, and in many instances change of position has little or no effect on its intensity. In about 50 per cent. of the cases it is somewhat intensified by the leaning forward position or by the right or left lateral position. In the left lateral position the maximum area of the sound sometimes shifts 1 or 2 cm. to the left.

The sound is usually heard best at the lower end of the sternum opposite the fifth and sixth costal cartilages, a little to the left of the median line. In the average adult the area over which the scratching quality is readily appreciable measures about 13 by 9 cm.; in children, about 7 by 8 cm. In hearts which are hypertrophied or dilated from disease the area is usually distinctly enlarged, averaging about 15 by 12 cm. In a vertical direction there is a good deal of variation in the situation of the area of scratching. It is practically always prominent just above the ensiform cartilage, and occasionally can be heard below the ensiform. It only occasionally passes upward above the angle of Louis. While Blumer does not believe that the sound will ever be a frequent source of error, he is confident that it will be an occasional one. For this reason he thinks it important that it should be recognized as a physiologic phenomenon.

### Arkansas State Medical Society Journal, Little Rock

*October, XI, No. 5, pp. 113-132*

31 Surgical Treatment of Glaucoma. H. Moulton, Fort Smith.
32 Prevention of Peritonitis in Belated Cases of Intra-Abdominal Infections with Especial Reference to Iodin. J. A. Crisler and E. J. Johnson, Memphis, Tenn.
33 Underestimation of Internal Medicine by Some Who Do Surgery. C. S. Pettus, Little Rock.
34 Infections of Gall-Bladder. W. A. Snodgrass, Little Rock.

### Boston Medical and Surgical Journal

*October 22, CLXXI, No. 17, pp. 621-658*

35 *Vaccine Therapy in Eye Diseases of Bacterial Origin. L. S. Medalia, Boston.
36 Study of Two Hundred and Twenty-Six Cases of Enuresis. A. B. Schwartz, Chicago.
37 Tobias Smollett: Physician and Novelist. R. M. Green, Boston.

35. **Vaccine Therapy in Eye Diseases of Bacterial Origin.**—The use of vaccine in bacterial infections of the eye, Medalia says, if judiciously carried out, will yield results as could not be obtained with any other method of treatment heretofore known. Autogenous vaccine should be used as soon as possible. In order to obtain good results optically as well, the vaccine treatment should be employed before permanent damage to the eye occurs. When used in infections of the anterior chamber, especially in hypopyon ulcers, repeated paracentesis, if performed, alongside of the vaccine treatment, will yield better results than when vaccine is used alone. Small and oft-repeated doses will do away with marked negative phases and minimize the chance of a possible set back, both of which might occur if too big a dose is employed. Vaccine if used in a prophylactic way is of value in connection with preoperative immunization. It is of special value in cataract operations in which the conjunctiva contains bacteria that cannot be gotten rid of in the ordinary way. The bacteriologic examination in connection with prophylactic immunization of all cases prior to cataract operations seems to be the logical method of procedure and will do away, to a great extent, with running the risk of postoperative infections.

### Bulletin of Medical and Chirurgical Faculty of Maryland, Baltimore

*October, VII, No. 4, pp. 45-61*

38 *Antitoxin Given Intravenously in Laryngeal Diphtheria. S. Nicholson, Jr., Baltimore.

38. **Antitoxin Given Intravenously in Laryngeal Diphtheria.**—Eight cases are reported by Nicholson. Iridoplatinum needles were used exclusively. A small piece of rubber tubing was fitted to the needle and together they were boiled. The end of the syringe that contained the antotoxin was dipped in tincture of iodin, dried on a piece of sterile gauze and the rubber plug removed. The needle was then connected. The place selected for injection was the median basilic vein, and there usually was no difficulty in administering the serum. In some instances, however, particularly in small infants, occasionally incisions had to be made to expose the vein. At the beginning of this work large doses of antitoxin were administered, as high as 20,000 units at a single dose. Later, 5,000 units was the dose employed and occasionally 10,000 to the very bad cases with results just as encouraging as in cases in which larger doses had been employed. It was Nicholson's custom to use routinely atropin in appropriate doses at proper intervals until the dyspnea disappeared. In very small children as a safeguard against auto-extubation and to prevent reintubation when extubation was resorted to, Dover's powders in dose from 1 to 3 grains gave satisfactory results.

The result of the treatment was: First, reduction of mortality from $10\frac{5}{7}$ per cent. to 5 per cent. in all cases of diphtheria, not excluding the deaths that occurred within twenty-four hours. In 1912 the death rate was $10\frac{5}{7}$ per cent.; antitoxin was then given intramuscularly and hypodermatically. In 1913 the death rate was 5 per cent. plus, including deaths that occurred within a few hours after admission. Total number of cases treated in 1912, 75; 1913, 100. Second, period of convalescence more rapid and vigorous than those cases in which antitoxin was administered in the muscle or under the skin. Third, intravenous antitoxin does not prevent the necessity of intubation unless administered in the early stage of the disease. Fourth, small amounts of antitoxin necessary (see under technic). Fifth, patients who have received antitoxin previously should not be injected intravenously. Sixth, the harassing and perplexing feature of extubation is reduced if the intubation is carefully done and without injury to the larynx.

### California State Journal of Medicine, San Francisco

*October, XII, No. 10, pp. 397-436*

39 Duodenal Feeding—Practical Demonstration. H. G. Watson, Los Angeles.
40 Roentgen Diagnosis of Gastroduodenal Ulcers. W. W. Boardman, San Francisco.

41 Medical Management of Duodenal Ulcer. L. G. Visscher, Los Angeles.
42 Gastroduodenal Ulcer: Symptomatology and Diagnosis. E. Schmoll, San Francisco.
43 Three Cases with Relaxed Pelvic Supports. R. Brown, Santa Barbara.
44 Novocain Poisoning. R. B. Giffen and F. F. Gundrum, Sacramento.
45 Function of General Practitioner in Relation to Study and Prevention of Nervous and Mental Disease. H. W. Wright, Santa Barbara.
46 Induction of Anesthesia and Ethyl Chlorid. C. Dederer, Los Angeles.
47 Case of Hair-Ball Tumor of Stomach. A. Berg, San Francisco.
48 Intranasal Operation for Dacryostenosis. L. D. Green, San Francisco.
49 Shockless Surgery. A. B. Cooke, Los Angeles.
50 Nursing Situation Since Passage of Law. G. S. Courtright, San Francisco.

### Cleveland Medical Journal

*September, XIII, No. 9, pp. 595-676*

51 Hereditary Basis of Eugenics. A. R. Timme, Cleveland.
52 Juvenile Paresis. Report of Case. W. B. Laffer, Cleveland.
53 Conservation of Hearing. J. G. Wishard, Wooster.
54 Wassermann Reaction. Report of Cases. J. M. Danforth, Cleveland.
55 Consideration of Morton's Neuralgia or Metatarsalgia. J. B. Tyrrell, Chicago.

### Indiana State Medical Association Journal, Fort Wayne

*October, VII, No. 10, pp. 461-506*

56 Conservation of Health. V. C. Vaughan, Ann Arbor, Mich.
57 Family Doctor. E. G. Regennas, Hope.
58 Federal Control and Prevention of Tuberculosis. W. Moore, New Albany.
59 Protest Against Commercialism in Medicine. E. P. Easley, New Albany.

### Journal of Biological Chemistry, Baltimore

*October, XIX, No. 2, pp. 141-304*

60 Mode of Action of Urease and of Enzymes in General. D. D. Van Slyke and G. E. Cullen, New York.
61 Effect of Hydrogen Ion Concentration and of Inhibiting Substances on Urease. D. D. Van Slyke and G. Zacharias, New York.
62 Permanent Preparation of Urease and Its Use in Determination of Urea. D. D. Van Slyke and G. E. Cullen, New York.
63 Metabolic Changes in Muscular Tissue. S. A. Matthews and C. F. Nelson, Lawrence, Kan.
64 Soluble Polysaccharides of Lower Fungi. A. W. Dox and R. E. Neidig.
65 Basal Metabolism and Creatinin Elimination. W. W. Palmer, J. H. Means and J. L. Gamble, Boston.
66 Isolation of Substance in Butter Fat Which Exerts Stimulating Influence on Growth. E. V. McCollum and M. Davis, Madison, Wis.
67 Determination of Iodin in Connection with Studies in Thyroid Activity. E. C. Kendall, Rochester, Minn.
68 Formation of Hexone and Purin Bases in Autolysis of Glomerella. H. S. Reed, Blacksburg, Va.
69 *Physiology of Reproduction in Domestic Fowl. R. Pearl and F. M. Surface.
70 Purin Enzymes of Opossum (Didelphis Virginiana). G. T. Caldwell and H. G. Wells, Chicago.
71 Determination of Sugar in Blood. P. A. Shaffer, St. Louis.
72 Normal Level of Blood-Sugar of Dog. P. A. Shaffer, St. Louis.
73 Parahydroxyphenylethylamine, Pressor Compound in an American Mistletoe. A. C. Crawford and W. K. Watanabe, San Francisco.

69. **Physiology of Reproduction in Domestic Fowl.**—It is shown by Pearl and Surface that the dessicated fat-free substance of the corpus luteum of the cow, when injected in suspension, in proper dosage, into an actively laying fowl immediately inhibits ovulation. The duration of this effect varies with different birds from a few days up to two to three weeks. After the bird begins ovulating again the laying goes on unimpaired. The same effect is produced by the injection of extracts of the lutear substance, either intravenously or intra-abdominally. The active substance in producing the inhibition is inactivated by boiling. Further investigation of the subject is in progress.

### Journal of Cutaneous Diseases, New York

*October, XXXII, No. 10, pp. 683-750*

74 *Colloid Degeneration of Skin. Report of Case of So-Called Colloid Milium. M. B. Hartzell, Philadelphia.
75 *Use of Calcium Lactate in Treatment of Certain Dermatoses. C. J. White, Boston.
76 *Skin Diseases in American Negro. H. H. Hazen, Washington, D. C.
77 Case of Ringworm of Scalp in an Adult. J. J. Rothwell, New York.

74. Abstracted in The Journal, June 20, p. 1988.

75. Abstracted in The Journal, June 13, p. 1921.

76. **Skin Diseases in American Negro.**—Hazen claims that mulattoes suffer more severely from skin diseases than do full-blooded negroes. The following diseases are more prevalent among negroes than among whites; dermatitis papillaris capillitii, keloids, dry seborrhea, syphilis, tinea tonsurans, urticaria and vitiligo. The following diseases are less prevalent among negroes; alopecia areata, cancer, dermatitis actinica, acute eczema, erythema multiforme, furuncles and boils, angiomata and nevi, pediculosis capitis, psoriasis, rosacea, sycosis vulgaris, tinea cruric and xanthelasma.

### Journal of Nervous and Mental Disease, Lancaster, Pa.

*October, XLI, No. 10, pp. 617-680*

78 Association of Various Hyperkinetic Symptoms with Partial Lesions of Optic Thalamus. E. E. Southard, Boston.
79 *Case of Adult Type of Poliomyelitis and Case of Acute Ascending Paralysis of Type of Landry. H. C. Gordinier, Troy, N. Y.
80 Contusion of Brain. J. H. W. Rhein, Philadelphia.

79. Published in the September issue of the *Albany Medical Annals*, and abstracted in The Journal, October 3, p. 1230.

### Journal-Lancet, Minneapolis

*October 15, XXXIV, No. 20, pp. 525-550*

81 Diagnosis and Treatment of Infection of Urinary Tract. F. Ewing, Kenmare, N. Dak.
82 Nasal and Pharyngeal Conditions Affecting Voice. J. G. Parsons, Sioux Falls, S. Dak.
83 Suggestions on Use of Reference Library in Preparation of Medical Papers. M. H. Mellish, Rochester.
84 Public Health Legislative Campaign. H. W. Hill, St. Paul.

### Kentucky Medical Journal, Bowling Green

*October 1, XII, No. 19, pp. 579-614*

85 Brotherhood of Doctors. W. A. Poole, Henderson.
86 *Tumor Formation in Plant and Animal Life: Its Relation to Frequency of Cancer in Man. A. D. Wilmoth, Louisville.
87 Anatomy and Pathology of Acute Intestinal Obstruction. G. A. Hendon, Louisville.
88 Intestinal Obstruction. G. A. Hendon, Louisville.
89 Management of Labor in Country Practice. G. G. Thornton, Lebanon.
90 Ecbolic Action of Pituitrin. J. L. Atkinson, Campbellsville.
91 Case of Gunshot Wound of Bladder. T. F. Miller, Cave City.
92 *Severe Case of Purpura Hemorrhagica Treated with Subcutaneous Injections of Pure Blood. C. C. Howard, Glasgow.
93 Eye-Strain. J. H. Thorpe, Owensboro.
94 Surgical Treatment of Diseases of Thyroid. J. R. Wathen, Louisville.

*October 15, No. 20, pp. 615-650*

95 Conservative Surgery of Ovary. C. W. Hibbitt, Louisville.
96 Chronic Prostatitis Following Urethral Neisserian Infection. C. G. Hoffman, Louisville.
97 Osteomyelitis. C. W. Karraker, Louisville.
98 Selection of Anesthetic. E. F. Horine, Louisville.
99 Epistaxis. W. D. Levi, Louisville.
100 Case of Diphtheria with Recurrence and Fatal Termination. V. E. Simpson, Louisville.
101 Case for Diagnosis. J. B. Lukins, Louisville.
102 Some Interesting Appendices. C. B. Spalding, Louisville.

86. Abstracted in The Journal, October 25, p. 1502.

92. **Purpura Hemorrhagica Treated with Injections of Pure Blood.**—Howard's patient had been bleeding slowly for three weeks. Every force of treatment employed had failed. Subcutaneous injection of pure blood from healthy persons was suggested to the patient, and the suggestion was adopted. A healthy young man was selected whose arm veins were very prominent, 28 c.c. of blood were drawn from the vein and immediately injected into the subcutaneous tissue of the hip (used two 10 c.c. Luer syringes). The hemorrhage had almost ceased within twenty-four hours. On the second day 55 c.c. were injected, taking the blood from two young men. Within twenty-four more hours the hemorrhage had entirely ceased. The fourth days 80 c.c. were injected, again using two donors. The sixth day 90 c.c. were injected, using two donors. The patient was markedly improved by this time. His pulse was 80 with temperature normal. Hemorrhage would now occasionally stain the septum. Small doses of iodids were given at this time to aid absorption. Three months have elapsed since

this treatment was instituted. The patient has improved to the degree that he is now able to be out most of his time. He has gained 30 pounds in weight, but has not yet resumed his regular duties.

### Laryngoscope, St. Louis

*September, XXIV, No. 9, pp. 773-836*

103 Oral Complications of Exanthemata. C. R. C. Borden, Boston.
104 Etiology, Diagnosis and Treatment of Aural Complications of Exanthemata. S. A. Friedberg, Chicago.
105 Two Cases of Loss of Caloric Vestibular Reaction, with Operative Findings. E. B. Dench, New York.
106 Teratoma of Pharynx. C. C. Eves, Philadelphia.
107 Orbital Abscess with Optic Neuritis Due to Acute Ethmoiditis in Child. Operation. J. H. Guntzer, New York.
108 Use of Vaccines in Treatment of Chronic Diphtheria Carriers. A. I. Weil, New Orleans.
109 Apparatus for Giving an Approximately Accurate Quantitative Hearing Test. J. W. Downey, Jr., Baltimore.
110 New Tonsillectome. H. B. Searcy, Tuscaloosa, Ala.

### Medical Record, New York

*October 24, LXXXVI, No. 17, pp. 769-740*

111 Relation of Diet to Cancer. L. D. Bulkley, New York.
112 Amputations. A. M. Fauntleroy, U. S. Navy.
113 Neurologic and Psychiatric Aspects of Railway Accident Cases. Some Medicolegal Problems. A. Gordon, Philadelphia.
114 Modern Treatment of Syphilis. W. H. Watters, Boston.
115 Acute Leukemia. A. Strauch, Chicago.
116 Umbilical Infections. R. L. Vioran, Chicago.
117 Occlusion of Inferior Mesenteric Artery. E. D. Friedman, New York.
118 Case of Giant-Cell Sarcoma Successfully Treated by Combination of Surgery and Roentgen Rays. E. Birdsall, Glens Falls.

### New York Medical Journal

*October 24, C, No. 17, pp. 797-848*

119 *Muscle Bound Feet. R. A. Hibbs, New York.
120 Eventration of Diaphragm. M. Manges and H. Wessler, New York.
121 Tuberculosis of Conjunctiva. W. T. Shoemaker, Philadelphia.
122 Neoplasms of Bladder. F. R. Hagner, Washington, D. C.
123 End-Results of Criminal Abortion. M. Rabinovitz, New York.
124 New Bed Bathtub. E. A. Gallegher, New York.
125 Implantation of Generative Glands and Its Therapeutic Possibilities. G. F. Lydston, Chicago. (To be continued.)
126 Curette for Endotympanum. E. L. Meierhof, New York.
127 Syphilis in Colored Canal Laborers. W. G. Baetz, Canal Zone.
128 Horse Asthma. J. G. Missildine, Parsons, Kan.

119. **Muscle Bound Feet.**—Limitation to dorsal flexion, Hibbs states, is a common cause of muscle bound feet. The removal of the limit to dorsal flexion must be accomplished by some method which at the same time inhibits the function of the calf, after walking is resumed, long enough to allow the opposing anterior leg muscles to develop. Otherwise muscle balance will not be restored and no permanent good will be accomplished. Lengthening the tendo Achillis fulfills these conditions perfectly. It removes at once the limit to dorsal flexion and at the same time inhibits the function of the calf for from two to three months in children and four to six months in adults, giving abundant time for the proper development of the opposing muscles and the intrinsic muscles of the foot, and for the complete restoration of normal muscle balance.

In operating on the tendo Achillis, Hibbs sees to it that the continuity of the tendon is unbroken, its lengthening accurate, and its sheath preserved, so that there is absolutely no danger of any impairment of the strength of the tendon or the function of the muscle. Thirty-eight patients have been entirely relieved from the symptoms of which they complained and have had restored to them the capacity to walk normally and do so with pleasure and great benefit to their general health, and none of them have required further treatment of any kind.

### Old Dominion Journal of Medicine and Surgery, Richmond, Va.

*October, XIX, No. 4, pp. 121-162*

129 Laparotomies of Four Years at Abingdon Hospital. A. M. Willis, Richmond.
130 *Back Ache—Its Cause and Its Treatment. W. T. Graham, Richmond.
131 Sporotrichosis (?). E. P. McGavock, Richmond.
132 Cholesteatomatous Involvement of Mastoid. R. H. Wright, Richmond.
133 Typhoid, Hemorrhagic. R. S. Preston, Richmond.

130. **Back Ache—Its Causes and Its Treatment.**—Back ache due to flat foot, Graham says, usually disappears promptly when the inner sides of the heels of the boots are elevated ¼ of an inch and the inner corners of the heels set ½ inch farther forward than the outer corners. If this does not afford the desired relief the arches may be supported by felt pads or steel supporters. Of the two forms of support mentioned, Graham much prefers the felt instep pads to the rigid steel supports. The most common surgical cause of continued back ache met with in children and occasionally encountered in adults, he says, is spinal caries or tuberculosis of the spine. When acute, as evidenced by marked muscular spasm of the back and exquisite pain, the patient should be placed on a Bradford frame with a bag of sawdust underneath the spine so as to produce a posture of hyperextension. When the acute stage has sufficiently subsided a plaster corset is applied extending from the sternal notch above to a point just sufficient to allow the patient to sit down. During the latter stage of convalescence a steel brace may be worn. When ankylosis is well established and all pain has disappeared all support may be gradually omitted.

Sacro-iliac strain is relieved in the milder cases by adhesive strips which should be placed diagonally across the lumbar region. Starting at a point just below the anterior superior spine, the strip of adhesive is carried diagonally across the back. Then one is started on the opposite side and carried across in a similar manner. The successive strips overlap each other from ⅓ to ½ of the width of the strip. Then circular bands encase the pelvis. For the chronic types of sacro-iliac strain a leather belt around the pelvis often affords perfect relief. This belt is worn tight around the pelvis in order to prevent movement in the sacro-iliac joint. In the more serious types fixation by plaster or a steel splint are indicated. For spondylitis deformans, a condition in which bony deposits are thrown out around the articular surfaces of the vertebra and on the spinous and transverse processes, producing a painful and deforming condition, a long plaster corset extending from the pelvis to the suprasternal notch offers the best hope of relief.

Lumbago is best treated by the criscross adhesive strapping as described for sacro-iliac strain, except that it is not necessary in this condition to encircle the pelvis. Visceroptosis causes much back ache which can be relieved by a corset which fits snugly around the pelvis and supports the abdominal viscera and strengthens the abdominal wall. The corset should begin to be less snug as it leaves the brim of the pelvis, and should gradually become more open from that point upward. In exceptional cases an abdominal pad or an abdominal supporter, to be worn inside the corset, is indicated. Static back, a condition indicated by weak, flabby muscles and accompanied by faulty weight bearing and pain, calls for massage, exercises and a properly adjusted corset. Scorbutic spine is best treated by recumbency on a Bradford frame, with the spine hyperextended, proper attention being given to diet and hygiene.

### Philippine Journal of Science, Manila

*June, IX, No. 3, pp. 199-305*

134 Some Data Concerning Medical Geography of Philippines. F. Calderon, Manila.
135 Etiology of Trichomycosis Palmellina in Philippine Islands. O. Schöbl, Manila.
136 *Bacteriology of Leprosy. J. A. Johnston, Manila.
137 Intestinal Helminthiasis in Philippine Islands as Indicated by Examinations of Prisoners on Admission to Bilibid Prison, Manila. D. G. Willets, Manila.
138 Bacillary Dysentery: Most Prevalent Form in Manila and Its Treatment. W. E. Musgrave and A. G. Sison, Manila.
139 Widal Reactions Among Healthy Adult Filipinos. D. G. Willets, Manila.
140 Experiments on Cultivation of Rinderpest Virus as Described by Baldrey. W. H. Boynton, Manila.
141 Kidney-Worm Infestation of Swine in Philippine Islands, with Special Reference to Pathologic Changes. W. H. Boynton, Manila.
142 Another Dangerous Jellyfish in Philippine Islands. S. F. Light, Manila.
143 Some Simple Laboratory Apparatus: Thermoesthesiometer: Venous-Pressure Apparatus: Simple Timing System. R. B. Gibson, Manila.

136. **Bacteriology of Leprosy.**—From the spleens of two lepers who died Johnston succeeded in cultivating an absolutely non-acid-fast streptothrix. These two strains are apparently identical, and now grow readily on the ordinary glycerin agar, but the original isolations were slow in growth. They were made on placental agar and fish-juice agar, and required from three to four weeks for growth to become apparent. The growth of this organism is described as spreading, with a tendency toward the formation of small islets with an elevated center. These eventually coalesce and the surface growth is dull and more or less rugose. It is pearly white in young cultures, becoming brown in cultures more than four months old.

Several forty-eight hour cultures of this streptothrix were rubbed up in a mortar and a number of guinea-pigs and rabbits were inoculated with this suspension. The rabbits were all inoculated with 1 cubic centimeter intravenously; the guinea-pigs with 0.5 cubic centimeter subcutaneously in each groin. Of this series, one animal died while three animals are still alive; the others, numbering sixteen, were killed at varying periods from a week up to six months. No lesions were discovered post mortem in the series of animals killed. One guinea-pig dying, however, showed a slightly enlarged liver with a few scattered nodules on the undersurface. There was no glandular enlargement. Smears from the cut surface of several of the nodules showed no organisms, but many small rounded masses from 3 to 6 microns in greatest diameter were visible; these were distinctly fast. Johnston had noted similar masses in the juice expressed from a leproma, in scrapings from a nasal ulcer in a leper, and also in old cultures of the streptothrix. Some of these bodics had frayed-out edges, and resembled blood-plates as they sometimes see them. Nine days after, cultures made from these nodules showed in two tubes of placental agar a slight whitish growth of about the consistency of cream cheese. It was spreading, did not grow in the water of condensation, and at the end of four weeks covered the surface of the slant. Stained preparations from these cultures showed long and short rods which were distinctly acid fast.

In April a second series of animals was inoculated as before. One of the guinea-pigs developed a pussy discharge from its left eye eight days after inoculation. Stained smears showed enormous quantities of acid-fast bacilli. Cultures from this guinea-pig were all negative at the end of two months. This animal died some nine months later, and the liver, lungs, spleen and some of the lymph glands showed marked nodular involvement. Smears from the different organs showed a few acid-fast bacilli. Cultures made from the spleen on placental agar showed after two weeks a growth practically identical with the first isolation. Efforts to identify the organisms isolated by means of agglutination and deviation of complement tests have been so far unsatisfactory.

### Public Health Journal, Toronto

*October, V, No. 10, pp. 611-656*

144 Public Health and General Practitioner. T. H. Whitelaw, Edmonton, Alberta.
145 Use of Rebipelagar in Water and Milk Examination. J. Race, Ottawa.
146 Standards with Reference to Sewage Treatment. T. A. Murray.
147 Some Difficulties of Medical Officers of Health in Towns and Rural Communities. T. W. Vardon, Galt.
148 Conservation of Child Life. J. J. Kelso, Ontario.

### Texas State Journal of Medicine, Fort Worth

*October, X, No. 6, pp. 215-254*

149 Sarcoma. W. A. Bryan, Nashville, Tenn.
150 Carcinoma of Stomach: Early Diagnosis. R. W. Knox, Houston.
151 Method of Choice in Prostatectomy. F. C. Walsh, San Antonio.
152 Some Laboratory Methods Which Deserve Wider Usage. M. A. Wood, Houston.
153 Significance of Acid-Fast Bacilli in Urine. J. E. Robinson, Temple.
154 Microscopy of Urinary Sediment in Life-Insurance Examinations. W. F. Thomson, Beaumont.
155 Examination of Urine in Life-Insurance Examinations. W. Harrall, Dallas.
156 Eye Symptoms in Brain Tumor. H. T. Aynesworth, Waco.
157 Gunshot Wound of Cavernous Plexus. Report of Case. E. H. Cary, Dallas.

## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Journal of Tuberculosis, London

*October, VIII, No. 4, pp. 195-244*

1 *Milk-Supply as Causal Factor in Tuberculosis. S. Delépine.
2 *Surgical Tuberculosis in Childhood. R. L. Knaggs.
3 *Arneth Count in Pulmonary Tuberculosis. W. E. Cooke.
4 *"Albumin Reaction" of Sputum in Pulmonary Tuberculosis. E. G. Glover.
5 Tuberculosis Conference at Leeds. H. D. Woodcock.

1. **Milk-Supply and Tuberculosis.**—Delépine's investigations indicate that cow's milk plays a very important part in the production of infantile tuberculosis in England and Scotland.

2. **Surgical Tuberculosis in Childhood.**—Rest in the treatment of joint tuberculosis according to Knaggs if properly made use of, will, in a large proportion of cases, make recourse to surgery unnecessary, although he admits that only in a hospital can these patients get the rest and extension treatment which is so essential to their recovery.

3. **Arneth Count in Pulmonary Tuberculosis.**—A blood-film showing an increase of large mononuclears, perhaps a slight increase in lymphocytes, and a dislocation of the "Arneth" to the left, Cooke agrees with others is strong evidence of the existence of an active tuberculous focus. The Arneth count also tells whether any absorption of toxins is taking place, and therefore whether the lesion is active or quiescent. A left-handed dislocation always indicates toxemia. As an aid to prognosis the Arneth count is valuable. A patient with few physical signs presenting a marked dislocation of the count to the left, which does not improve under treatment, must be looked on as in grave condition. There is probably a larger amount of mischief than is indicated by the physical signs. If the count tends to assume a more right-handed appearance, the prognosis becomes more hopeful, according to the amount of that improvement.

Lastly, the Arneth count is a guide to treatment. In treatment by tuberculin the count affords evidence as to whether the focal reactions are taxing the patient's capacity of dealing with the toxins resulting from them. If tuberculin be pushed too far, there appears an increase in the cells of classes 1 and 2. If the Arneth count is stationary, the dose has for the time being reached its therapeutic maximum. In treatment by "contratoxin" the count is also useful. The bacteriolysis and phagocytosis generated by "contratoxin" produce an auto-inoculation. This causes a further deviation of the count to the left; an indication, therefore, temporarily to reduce the dose, or discontinue its administration for a short time. When this is done the count soon assumes its previous appearance and continues to move to the right. Further injections are indicated until the count becomes normal.

4. **"Albumin Reaction" of Sputum.**—Two hundred and ten quantitative examinations of the sputum were made by Glover in 149 cases, and he found that the sputum of phthisis patients contains, on the average, a larger amount of albumin than that of the non-tuberculous, but that the amount present in tuberculosis cases is often less than that usually found in the non-tuberculous. Injury to the epithelial surface of any part of the respiratory or buccal tract may give to the presence of albumin in the sputum. Glover points out that a sputum test, the delicacy of which may be imparied by the vigorous brushing of teeth prior to expectoration does not give promise of conclusive results or material assistance in the diagnosis of doubtful cases of pulmonary tuberculosis.

### British Medical Journal, London

*October 10, II, No. 2806, pp. 609-652*

6 *Tetanus; Its Prevention and Treatment by Use of Antitetanic Serum. A. MacConkey.
7 Insects and War; Flour Moth in Soldiers' Biscuits. A. E. Shipley.
8 Treatment of Syphilis. J. E. R. McDonagh.
9 Need of Method in Treatment of Lupus. N. Walker.
10 *Antimony in Syphilis. J. C. McWalter.
11 Modus Operandi of Wassermann Reaction. J. E. R. McDonagh.

12 Four Cases of Lahore Sore. J. G. Tomkinson.
13 Infantile Eczema. H. Davis.
14 Keratodermia Blennorrhagica. A. W. Williams.

6. **Tetanus; Prevention and Treatment by Use of Antitetanic Serum.**—MacConkey summarizes his paper as follows: Tetanus may be cured by the administration of antitoxin, provided that the serum treatment is begun early in the attack and is pursued vigorously and continuously. Unfortunately in the present state of our knowledge a diagnosis is, as a rule, made only when the disease is in a stage so advanced as to make the results of treatment uncertain, even though large doses of antitoxin are used. These large doses are costly, and place the serum treatment of tetanus practically out of the reach of those with shallow purses—unless, of course, the serum be provided by the state. But in the prophylactic use of serum there is within the reach of every one a means of checking the disease. It has been proved beyond the shadow of a doubt that, wherever the prophylactic use of antitoxin has been carried out systematically, tetanus may be said to have disappeared. Tetanus should therefore be looked on as a preventable disease.

10. **Antimony in Syphilis.**—While the curative effects of antimony on syphilitic lesions are much like those of arsenic, McWalter says, it is distinctly milder in character, and is seldom or never, followed by optic neuritis or by the fatal effects attributed to arsenic compounds. He does not think that antimony will cure syphilis if given alone, but it certainly assists the cure if mercury be also given. It appears to be particularly useful in the dermatologic manifestations of the disease, and the cases which McWalter treated with it were notably free from nervous complications. The red sulphid—or antimonium sulphuratum—is the most convenient salt to employ. The dose should not exceed from 1 to 2 grains, but must be continued daily for two or three months—with occasional intermission of a few days. McWalter thinks it is a useful drug in the fatal bronchopneumonia which carries off so many infants the subjects of inherited syphilis.

### Edinburgh Medical Journal

*October, XIII, No. 4, pp. 289-360*

15 Atypical Male and Female Sex Ensemble (So-Called Hermaphroditism and Pseudohermaphroditism). D. B. Hart.
16 Primary Hypertrophy of Gums and Reduplication of Lip. D. M. Greig.
17 Passing of Vesalius. (To be continued.) G. M. Cullen.

### Glasgow Medical Journal

*October, LXXXII, No. 4, pp. 241-319*

18 *Use of Neosalvarsan in Mental Deficiency. L. Findlay.
19 Points in Abdominal Surgery. (To be continued.) T. K. Dalziel.
20 New Medical Electric Department of Glasgow Royal Infirmary. J. MacIntyre.

18. **Neosalvarsan in Mental Deficiency.**—On the basis that syphilis is a frequent cause of idiocy, Findlay introduced neosalvarsan intravenously or intramuscularly in four cases and found a marked effect in improving the mental condition of the patients. Each of the cases was a marked example of mental deficiency, three of them being frankly idiots. The treatment in all had a most salutary effect, and although it did not bring them up to a normal level, it made it possible for two of them to be educated, and to look after themselves. Findlay suggests that in milder cases, and especially if the treatment were commenced earlier, it might be possible to obtain complete cures.

### Indian Medical Gazette, Calcutta

*September, XLIX, No. 9, pp. 337-376*

21 Water-Supplies of Troops in India. P. Hehir.
22 Treatment of Malignant New Growths, Dr. De Keating-Hart's Method of Fulguration and Thermoradiotherapy. E. A. C. Matthews.
23 Anemia Occurring Among Indian Troops Stationed in Singapore—1912-1913. V. N. Whitamore.
24 Clear Pupil after Cataract Extraction. V. B. Nesfield.
25 Devil Driving. Panchoa Devils—Classed as "Silent" and "Crying." K. P. Bagchi.
26 Ascaris Lumbricoides Infection in Malabar District. T. K. G. Nair.
27 Ruptured Extra-Uterine Pregnancy Five to Six Months. Laparotomy. C. C. Barry.
28 Surgical Treatment of Goiter in Tibet. G. B. Harland.
29 Anagnostakis' Operation for Trichiasis. S. Clark.
30 Emetin and Young Children. C. Newton-Davis.

### Lancet, London

*October 10, II, No. 4754, pp. 883-930*

31 Pathology of Heart Function. T. Lewis.
32 Making Cultivation Media without Prepared Peptones; Peptone-Free Medium for Growing Tubercle Bacilli. S. R. Douglas.
33 Transport of Wounded in War. E. Kondoleon.
34 Case of Acute Exophthalmic Goiter Simulating Acute Obstruction. G. M. Smith.
35 Improvisation of Apparatus in Treatment of Certain Fractures in Modern Warfare. J. H. Watson.
36 Observations on 31,000 Consecutive Medical Examinations. J. Collie.
37 Wounds of Present Campaign. G. H. Makins.

### Quarterly Journal of Medicine, London

*October, VIII, No. 29, pp. 1-95*

38 *Clinical and Pathologic Study of Heart in Diphtheria. W. E. Hume and S. J. Clegg.
39 *Effects of Anemia on Pathologic Processes Occurring in Acute Ulcer of Stomach. C. Bolton.
40 *Conduction in Auricles. A. E. Naish.
41 Inspiratory Diminution of Pulse (Pulsus Paradoxus). A. W. Falconer and J. M. McQueen.
42 Pathologic Changes in Adrenals. T. R. Elliott.
43 Tonicity of Abdominal Muscles in Enteric Fever. A. Patrick.

38. **Study of Heart in Diphtheria.**—Five hundred and seventy-three cases of diphtheria were under the daily supervision of Clegg and when any irregularity of the heart and pulse was detected, polygraphic records were obtained. Other cases were similarly investigated if the general condition of the patient suggested that the heart would be affected in a later stage of the disease, even though the rhythm of the heart was regular during the early stages. In this way Hume and Clegg obtained polygraphic records of seventy cases, of which thirty were found to be normal. Of the forty cases which presented irregularities, twenty-two showed the characteristics of a sinus arrhythmia and were associated with normal cardiac signs and symptoms.

The remaining eighteen cases presented many different types of heart irregularity and form the subject of this communication. Though the varieties of arrhythmia are great, the cases fall naturally into certain clinical groups. For instance, in Group 1 six cases are described which had many features in common; the patients were very ill from the onset of the disease, the hearts presented gross and varying irregularities of rhythm, and the pathologic picture in four cases was identical. In Group 2 nine cases are included which manifested a less serious clinical condition in the early stages than those in Group 1; although the patients were seriously ill at some period of their rather prolonged stay in the hospital, there was less variety in the types of arrhythmia, and in two fatal cases the pathologic lesions of the heart were slight as compared with the gross changes found in the four instances in Group 1. In Group 3 three mild cases are described in which some cardiac irregularity occurred without any other sign of involvement of the heart. The authors claim that any form of arrhythmia of the heart (except sinus arrhythmia) in diphtheria indicates that the heart muscle or nerves are involved in a pathologic process, however mild the illness may otherwise appear to be, and that special precautions are necessary to keep the patient recumbent.

39. **Effects of Anemia in Acute Ulcer of Stomach.**—The experiments made by Bolton show that when an animal, the subject of an acute gastric ulcer, is placed on a milk diet, so that its stomach empties rapidly, the growth of the epithelium over the base of the ulcer and the filling up of the latter with granulation tissue occurs with precisely the same regularity and at the same rate at all stages in the healing process whether the animal is anemic or normal. When once the slough has separated from the base of the ulcer and healthy granulation tissue commenced to grow, the latter is no more vulnerable to the action of the gastric juice in the anemic than in the normal animal. The same applies to the regenerating epithelium, and, in addition, its activity of growth and power of forming new glands are not in the least interfered with by the anemia.

Anemia, therefore, produced by direct loss of blood, has no influence as an isolated factor in facilitating the production of an acute ulcer; nor in causing such an ulcer to extend laterally or in its depth by increasing the vulnerability of the tissues concerned; nor in preventing its healing either by interfering with the regenerative power of the surface epithelium or of that of the granulation tissue of the base of the ulcer. When the anemic animal is allowed meat to eat, any delay in the healing is due to the diet of the animal and not to the anemia. These experimental facts agree with the clinical observations made by Bolton.

40. **Conduction in Auricles.**—Tracings are published by Naish from a case of acute heart-block, which receive a ready explanation only on the supposition that the cardiac impulse spreads to the ventricle and to the auricle by different paths, and does not pass to the ventricle through the auricle, as hitherto supposed.

### Presse Médicale, Paris

*August 12, XXII, No. 62, pp. 597-604*

44 *Necessity for Conservative Surgery in the Field. (Conseils aux chirurgiens.) E. Delorme.
45 Emergency Treatment for Wounds of the Eyes. (Traitement d'urgence des plaies de guerre interessant les yeux.) V. Morax.
46 Emergency Immobilization for Fractures. (Le service des brancardiers.) P. Bonnette.
47 Field Hospitals. (Organisation des ambulances de guerre.) P. Bonnette.

*August 19, No. 63, pp. 605-608*

48 Electric Light in Treatment of Infected Gangrenous or Torpid Wounds. Chaput.
49 Technic for Vaccination against Typhoid. G. Vitoux.

*August 26, No. 64, pp. 609-612*

50 Instructions for Lay Nurses. (Notions indispensables aux infirmières.) H. Hartmann. Concluded in No. 67.
51 Massage in After-Care of Gunshot Wounds and Fractures. (Le massage méthodique chez les blessés de guerre.) P. Kouindjy.

*September 2, No. 65, pp. 613-616*

52 Prophylaxis of Contagious Diseases. L. Laganc.

*September 9, No. 66, pp. 617-620*

53 Immobilization of Fractures from Gunshot Injury. (L'immobilisation des fractures en chirurgie de guerre.) Chaput.

*September 16, No. 67, pp. 621-624*

54 *Roentgen Apparatus in the Army. (Les rayons X dans l'armée.) P. Desfosses.
55 *Diagnosis of Death in Wartime. (Le diagnostic immédiat de la mort en temps de guerre.) M. D'Halluin.
56 Sanitary Hygiene in Temperary Camp. (Etablissement des feuillées.) P. Desfosses.

*September 23, No. 68, pp. 625-628*

57 Revaccination is Morally Obligatory. Wurtz.

44. See Paris Letter in The Journal, October 24, p. 1492.

54. **Roentgen Work in the Field.**—Three different types of portable Roentgen apparatus have been provided for the French army, it is stated. One type has proved its usefulness already in Morocco and in the Balkan campaigns. The Roentgen apparatus are all mounted on autotrucks. Béclère is in charge of the radiologic service for the entire army. He advises outlining at once with tincture of iodin or silver nitrate on the patient's skin the shadows cast by the organs or bodies being examined within. This takes the place of Roentgen pictures in emergencies.

55. **Rapid Diagnosis of Death.**—D'Halluin says that the simplest and most practical test for persisting vitality is instillation of ether into one eye. If there is still life, the eye reddens. The subject should be lying horizontal, in order to favor the circulation in the head, and only one eye should be treated; this leaves the other eye for the control. This test has never failed him, but still he advises not to rely on it too implicitly in case of negative findings.

He does not advocate the blister test, for various reasons, but states that direct puncture down to the heart has proved useful and harmless in his experience. He introduces the needle until it just rests on the myocardium; then if the needle does not move in the slightest it is evident that the heart is not beating. By tapping on the heart with the needle it may be possible to start it to contracting if it is still capable of being aroused. His experiments on dogs gave astounding results in some cases from this mechanical stimulation of the heart action, to supplement artificial respiration, resuscitating many animals apparently long dead. In these experiments he made a small incision in the skin in an interspace through which he introduced a grooved sound or blunt probe, and pushed against the myocardium rhythmically and abruptly, thus starting up the heart to resume its work. The certainty of this cardiopuncture test outbalances in many instances the more or less theoretical dangers that may be advanced against it, he remarks. Icard's subcutaneous fluorescein test is the standard one for the purpose, but the circulation may be so weak that subcutaneous injection may not prove decisive. Consequently D'Halluin advises intravenous injection of 5 c.c. of the usual solution of fluorescein 20 parts, sodium carbonate 30 parts, and distilled water to 100 parts. This test is so sensitive that if the fluid is injected nearer the head it is liable to give misleading results. He warns further that various specimens of fluorescein may differ in their action or be contaminated.

### Archiv für Verdauungs-Krankheiten, Berlin

*August, XX, No. 4, pp. 423-542*

58 *Melanosis in the Large Intestine. (Dickdarmmelanose.) F. Niklas.
59 *Gastric Ulcer and Cancer. (Ulcus rotundum et Carcinoma ventriculi.) A. D. Woloschin.
60 Familial Occurrence of Gastric Ulcer. (Familiäres Auftreten des Ulcus ventriculi.) V. Plitek.
61 *Pathology of the Appetite. (Hyperorexie, Anorexie und Parorexie.) W. Sternberg.
62 Duodenal Ulcer; Two Cases. J. de Groot.
63 *Various Types of Malnutrition in Adults. (Ueber Nährschäden Erwachsener.) C. Funck.
64 Gastric Ulcers in Bavaria. J. Kossinsky.

58. **Melanosis of the Large Intestine.**—Niklas adds two to the thirty cases on record of this peculiar pigmentation restricted to the lower bowel. In his two cases the mesocolic lymph-glands were also melanotic. His chemical study of these cases and of a case of Addison's disease suggests that an excessive production of oxidases is the explanation of the pigmentation.

59. **Gastric Ulcer and Cancer.**—Woloschin analyzes the experiences in the last seven years in his service at Cronstadt with 11 cases of ulceration in the stomach and 51 of malignant disease. He found large accumulations of colon bacilli over the ulcers in their early stages, and is convinced that they had something to do with the development of the lesion; they were not found elsewhere in the stomach, and the water at Cronstadt is contaminated with colon bacilli to an extreme degree. In none of the 11 cases had the correct diagnosis been made; appendicitis was the presumption. Among the 51 gastric cancer patients, 4 were between 20 and 30, and 6 between 30 and 40.

His necropsy findings confirm the assumption of a primary proliferation of connective tissue, the same cause inducing this and likewise atypical proliferation of the epithelium when the cause acts uninterruptedly and long on a certain point in the gastric mucosa. An infectious cause might do this and also explain the transformation of an ulcer into a cancer. The cancer in all his younger cases was an adenocarcinoma and it spread by extension, without metastases in neighboring organs, and thus this form offers the best prospects for operative intervention. In a number of instances of diffuse cancer of the stomach there were no morbid findings elsewhere except in adjoining lymph-glands. In his total cases there was metastasis in lymph-glands in 18; in the liver in 17; in the pancreas in 10; peritoneum in 4; appendix in 3; and in the adrenal, kidney, gall-bladder and rectum, in 1 each. Of the total 105 cancer cases during the seven years in question, 75 were in the stomach or esophagus and, with one exception, all were from the civilian population although the civilian patients numbered only 4,394 to the 7,007 soldier patients from the garrison. He accepts this as further evidence incriminating the much contaminated water in connection with the occurrence of gastric ulcer and cancer. In the garrison the drinking water is systematically sterilized.

61. **Pathology of the Appetite.**—A recent article by Sternberg along much the same lines as this was reviewed in The Journal recently, p. 1598.

63. **Chronic Disturbance in the Intermediate Metabolism in Adults.**—Funck refers to the chronic malnutrition in adults corresponding to what the Germans call in infants *Nährschäden,* which means literally "injury from the food." The

trouble is not in the chyme nor intestinal wall but beyond this, in the preparation of the albumin molecule for absorption. The improperly prepared molecule acts like a poison, setting up a kind of anaphylaxis, as he explains and describes in detail, with the tabulated metabolic findings in a number of typical cases. They showed a toxic relative lymphocytosis, increase in the specific precipitins, and a new precipitin appeared in the blood. The anaphylaxis condition may entail disturbance in carbohydrate metabolism and this disturbance may persist even after the primary cause, the malnutrition, has ceased to act. This all paves the way for diabetes and other metabolic diseases. The improperly prepared alien albumin may get into the blood from the food or from the pathologic product of some gland with an internal secretion—often as a response to the stimulus from food entering the bowel. Correction of one may have a favorable influence on the other. When diabetes is complicated with gastro-enteritis, the sugar output may often be reduced to normal merely by curing the stomach and bowel trouble. As the gastro-intestinal mucosa becomes less permeable for the alien albumin, and its normal functions are restored, the functioning of glands with an internal secretion, the pancreas in particular, improves with it.

Funck has often succeeded in restoring clinically normal conditions in the intermediate metabolism by modifying the diet, lavage of the stomach, supplying substitutes for lacking digestive ferments, and having the patient drink large amounts of a mineral water. But far beyond the effect of these measures is systematic flushing out of the bowel with a hypotonic solution through a duodenal sound. This clears out the bowel, draws out toxic secretions and washes them away, modifies the bacterial flora and its culture media in the intestines, while exerting a healing action on the mucosa and glands in the bowel. He uses three liters in from two to five hours, or keeps up the irrigation for sixty hours. In some cases of impending uremia he rinsed the bowel first with a hypotonic solution without chlorids and followed this with an isotonic diuretic solution, keeping up this enteral drainage .for six hours. The blood-pressure subsided to 35 mm. and profuse diuresis followed. Similar prompt and far-reaching benefit was realized in delayed reabsorption of effusion and transudates, in anemia, in "presclerosis," and to promote the elimination of the products of acute infection. In a case of "asystolic toxemia" the pulse was reduced by this enteral drainage from 112 to 84, the respiration rate from 26 to 18, while the output of urine increased from 950 to 1,750 c.c. in thirty-six hours.

The clinical manifestations of this form of chronic malnutrition may include dyspepsia in its broadest sense, pruritus, eczema, neurasthenia or neuralgia, constipation generally of the spastic type, diarrhea with all the signs of an enteritis, subjaundiced, greyish tint, depression, migraine or hypertony. Examination of the stools throws no light on the absorption of toxins but there may be anacidity and defective pancreas function and motor insufficiency of the stomach.

### Berliner klinische Wochenschrift

*September 28, LI, No. 39, pp. 1657-1676*

65 Effect of Manual Artificial Respiration. (Zur Frage nach dem Effekt der manuellen künstlichen Atmung beim Menschen.) A. Loewy.

66 Treatment of Colitis by Irrigation through the Appendix. (Behandlung der Colitis gravis mittels Spülungen von der Appendicostomie aus.) E. Fuld.

67 Care of the Wounded in the Home Zone. (Der Kriegssanitätsdienst in Berlin.) H. W. Brettner.

68 Surgery of Vessels. (Gegenwärtiger Stand der Blutgefässchirurgie.) E. Jeger. Commenced in No. 38.

### Correspondenz-Blatt für Schweizer Aerzte, Basel

*September 5, XLIV, No. 36, pp. 1121-1152*

69 *Skin Reaction in Differentiation of Small-Pox and Chicken-Pox. (Differentialdiagnose von Variola und Varizellen mit Hilfe der kutanen Allergie.) Tièche.

*September 12, No. 37, pp. 1153-1184*

70 *Improved Technic for Formaldehyd Sterilization. (Neues apparatloses Formaldehyd-Verdampfungs-Verfahren.) A. Hauswirth.

71 *Diagnosis of Gastric and Duodenal Ulcer. F. de Quervain. Commenced in No. 35.

*September 9, No. 38, pp. 1185-1216*

72 Examination in Cases of Paralysis of Ocular Muscles. (Zur Analyse der Doppelbilder.) J. Strebel.

*September 26, No. 39, pp. 1217-1248*

73 Cutaneous Manifestations of Tuberculosis in Children. (Die kleinpapulösen Haut-Tuberkulide beim Kinde.) E. Peer.

69. **Differential Skin Reaction in Variola and Varicella.**—Tièche applies a test technic, similar to that of Pirquet's tuberculin skin reaction, as a means for rapid differentiation of small-pox from varicella and other eruptive diseases. His eighteen months of experience have confirmed, he says, the harmlessness and reliability of the simple measure. Kling's experience with protective vaccination against varicella when an epidemic broke out in an institution with 200 children, also confirmed incidentally the value of the test, as he mentions casually that no local reaction was observed until the eighth day at the point inoculated with the varicella lymph. Vaccine lymph, on the other hand, always induces a prompt local reaction and, generally in four hours at longest. Tièche experimented on himself until he had conclusively demonstrated that no local reaction was evident for several days, if at all, after he had vaccinated himself in the arm with the secretion or rubbed-up contents of a varicella pimple. On the other hand, the secretion or scrap of contents from a small-pox pustule promptly induced a typical early reaction in the skin at the point of inoculation. In his first communication on the subject he reported constantly negative results in 18 varicella cases and constantly positive in 9 variola cases. He here brings his report down to date with 7 new cases suspected to be small-pox. The reaction was positive in 5 and the course of the cases confirmed the assumption of variola, while the negative reaction in the other cases .likewise was proved correct by the further course. The test inoculations were made on three healthy adults, himself, his wife and sister-in-law.

To render the secretions harmless, he heated the lymph to 60 or 70 C. for five minutes before applying it to the three minute scratches on the arm, or treated it with carbon dioxid snow or with ether, or all three. If a harmless substance, like a tuberculin, could be prepared to use this would be better, but too much time would be lost. He obtained a positive early reaction with the variola lymph after keeping it for eleven months in one case. A few cases are described in which everything seemed to indicate small-pox but this negative local reaction, and on this he based his diagnosis and allowed the patient to stay at his hotel, thus saving all concerned great annoyance and trouble, and the course of the case confirmed that it was not small-pox, but either varicella or an atypical erythema multiforme. Public health officials might test themselves with varicella secretions to learn whether they are especially sensitive to it. If not, they can feel confident that they will be able to differentiate variola in its earliest stages by the above technic. He gives an illustration of the typical positive and negative findings. (Kling's articles were summarized in The Journal, Dec. 20 and 27, 1913, pp. 2277 and 2326.)

70. **Simplified Technic for Formaldehyd Sterilization.**—Hauswirth describes a technic which is proving constantly very effectual. Several chemical reactions are involved, with generation of large amounts of steam, which supplies the needed moisture, and the process starts at once with extreme violence, so that the effect is realized even if the room is not quite hermetically sealed. There is no danger of fire, he says, while the ingredients are comparatively cheap, and no special skill is required. The ingredients can be put up in two packages for the layman to mix. He reviews the chemical principles involved; the generation of heat is an important factor and the tin tub or wooden tub used must not be too thick-walled or it would absorb too much heat. The substances used are molecular amounts of potassium chlorate and metallic iron in fine powder and calcium carbonate in an amount corresponding to the size of the room. These are all mixed well together. Then formaldehyd is added in the proportion of 20 c.c. to the cubic meter of space. The reac-

tion occurs when to this mixture sulphuric acid is added in an amount to correspond to the molecular relations of the $KClO_3$ and Fe. He mixes the 98 per cent. sulphuric acid with kieselguhr (diatomaceous earth) and dilutes with 20 c.c. water to the cubic meter of space. When these two mixtures are poured together the steam and fumes rise in such clouds that even two liters of fluid soon evaporate and leave the vessel dry.

[The potassium chlorate should be in finely powdered form and be mixed with the iron and chalk without friction, as otherwise there might be danger of an explosion.—Ed.]

71. **Gastric and Duodenal Ulcer.**—De Quervain's article was prepared for the meeting of the International Surgical Association at New York last April.

### Deutsche medizinische Wochenschrift, Berlin

*September 24, XL, No. 39, pp. 1777-1800*

74 *Psychiatry and War. K. Bonhoeffer.
75 *Injuries of the Eyes in the Field. (Kriegsophthalmologische und organisatorische Erfahrungen.) T. Axenfeld.
76 Cremation in Wartime. (Zur Feuerbestattung im Kriege.) J. A. Grober.
77 Vaccine Therapy of Gonorrhea. (Die Vakzinebehandlung der Gonorrhoe und gonorrhoischer Komplikationen.) O. Boeters.
78 Care of the Wounded in the Field. (Organisation des Sanitätsdienstes im Kriege.) Schuster.

74. **Nervous and Mental Disease in the Field.**—Bonhoeffer reiterates that the protection of the other troops is the first thing to be thought of when mental disease develops in a soldier at the front, and as the tranquil surroundings so necessary in treatment of nervous and mental disease can be obtained only in the home zone, the patient should be hurried thither as fast as possible. To facilitate transportation and the protection of the troops against imitation psychoses, he suggests that nothing seems to act better than 0.0005 to 0.001 gm. scopolamin with 0.01 or 0.02 gm. morphin. Morphin alone is inadequate. He states that during the mobilization in Germany a number of cases of delirium developed, all without physical complications. The emotional stress of starting for the war, the fatigue of long journeys and the deprivation of alcohol were responsible for the delirium in persons in the corresponding stage of chronic intoxication.

75. **Injuries of the Eyes in the Field.**—Axenfeld has already had extensive experience in this line as his town, Freiburg, has received large numbers of wounded direct from the battle-fields in Lothringen. He emphasizes the necessity for caring for the injured eye from the first instead of deferring this until later as too often happens when the wounds are extensive elsewhere, and the eye is left in such a condition as to invite sympathetic ophthalmia. He asserts that insidious inflammatory changes developing in the wounded eye are the most liable to entail sympathetic mischief; when the inflammation develops with a stormy onset the other eye is far more liable to escape. If the eye has been perforated by a projectile cautious exenteration should be done, scraping out with the curet every scrap of tissue, particularly of the uvea, after removing the cornea. When the exenteration is complete the conjunctiva should be drawn together with a few loose stitches if possible. Circumscribed wounds and ruptures affecting only the front part of the eye may heal with retention of some vision, even if the interior of the eye has been flooded with blood; it may be absorbed in time if the wound heals over without inflammation. The best method to obtain this is to draw down the mobilized conjunctiva according to Kuhnt's technic. In one of his cases this was done at once and the ruptured margin of the cornea healed under this plastic shield without a trace of infection and vision is improving every day. The main point is to have such wounds of the eyes fall early into the hands of one skilled in operative ophthalmology. The humors of the eye afford unusually good culture media for germs; pneumococcus sepsis developed in some cases incredibly fast after a shrapnel injury of the eyeball. Roentgenoscopy may fail to reveal metal scraps which yet can be drawn out with the magnet. Axenfeld has impressed on the army surgeons at the front the extreme importance of sending men whose eyes have been injured to the nearest ophthalmologist, and has insisted on such being available near the front.

### Jahrbuch für Kinderheilkunde, Berlin

*August, XXX, No. 2, pp. 133-262*

79 *Curability of Tuberculous Meningitis. (Heilungsmöglichkeit der Meningitis tuberculosa.) J. v. Bokay.
80 Composition of Body in Malnutrition. (Zur Kenntnis der Körperzusammensetzung bei Ernährungsstörungen.) E. Klose.
81 Pneumococcus Meningitis. (Ueber Pneumokokkenmeningitis und ihre Behandlung mit Optochin.) S. Wolff and W. Lehmann.
82 *More Individualization in Infant Feeding in Hospitals. (Eine weniger schematische Behandlung von Säuglingen im Krankenhause.) K. Stolte.

*September, No. 3, pp. 263-372*

83 The Problem of Contagiousness. F. v. Szontagh.
84 Supernumerary Bone in Infants' Skull. (Grosser Fontanellknochen der vorderen Fontanelle bei einem Säugling.) M. Soldin.
85 Leukemia in Infants. (Die Leukämie der Säuglinge.) E. Adler.
86 *Intravenous Antitoxin in Diphtheria. K. Alber.
87 Persisting Aortic Stem and Ductus Arteriosus in Infant Living for Six Months. (Fall von persistierendem Truncus arteriosus communis.) Z. von Bokay.

79. **Curability of Tuberculous Meningitis.**—A diagnosis of tuberculous meningitis has commonly been regarded as equivalent to a death sentence. Bokay gives tables of 34 cases of recovery in this disease, reported in the literature, and details of three cases of his own. There were no recoveries in children under 2 years of age; the proportion of recoveries increased in children from 5 years up, though only 10 per cent. of the cases occur in children over 7. The recoveries generally occurred in cases in which the tuberculosis was limited to the meninges and did not involve other organs, and in which there is no marked tubercle formation. Aside from hyperemia, the only method of treatment that contributes to recovery is the surgical, consisting in trephining and drainage. In the cases in which recovery has followed Quincke's lumbar puncture, he thinks that the recovery is due as much to the natural resistance of the body as to the treatment.

82. **More Individualization in Care of Infants in Hospitals.**—The results in hospitals for infants and children have been better of recent years with the development of greater knowledge of the principles of nutrition. The fact remains, however, that the majority of children do not thrive as well in a hospital as in the home. This question of "hospitalism" has been much discussed. Stolte holds that with proper management children may be made to thrive as well in hospitals as in the home. To accomplish this result it is necessary to individualize more in the child's treatment. There are many factors that enter into his well-being besides those of just the right kind and amount of nourishment. Rules should not be followed blindly. The nurses should be given considerable latitude in their treatment of the child, and nurses of sufficient intelligence and interest selected so that they will, to a certain extent, supply the place of a mother's care. The child has psychologic, as well as physical needs, and personal attention and tenderness are important factors. In his service, the mothers themselves are allowed to be with the children as much as possible. Adults require different amounts of food at different times and under different bodily conditions. Why not infants? So the amount of food is adjusted, within certain limits, to the child's desires. If he is manifestly hungry a quarter or a half hour before feeding time he is fed. Nurses are taught to watch each individual child and treat it as a human being with emotions and desires, not merely as a "case" in which certain rules are to be followed in a routine fashion. Often a child can be made to assimilate its nourishment satisfactorily only after the nurse has carried it about, played with it or sung to it. Naturally this does not mean that there is any relaxation of care in regard to scientific feeding, avoidance of infection, etc., but rather the contrary. Medicinal treatment is avoided in alimentary disturbances as far as possible. Five case histories are given illustrating the method and its success.

86. **Intravenous Injection of Antitoxin in Diphtheria.**—There was an extraordinarily severe epidemic of diphtheria in Bremen in the winter in 1913. Because of the unusual severity of the disease, Alber adopted the intravenous method

of giving the antitoxin. He gives histories of forty-three cases and temperature curves from a number of them. The results with reference to mortality, disappearance of membrane, effect on stenosis, fever, pulse and paralysis were very satisfactory. From his clinical experience he comes to the conclusion that the intravenous method is quicker and more reliable in its action than the intramuscular. Not more than 5,000 units can be given intravenously in children, 8,000 in adults, but as the effect is 500 times as great as when given intramuscularly (at least this has been shown to be true in animals), the dosage is for practical purposes greater than by the latter method. Serum sickness and anaphylaxis have been feared in giving intravenously, but in fifty cases Alber only had one case of serum sickness that was severe enough to influence the patient's general condition.

### Medizinische Klinik, Berlin

*September 27, X, No. 39, pp. 1503-1526*

88 *Psychiatry in the Field. (Versorgung der Neurosen und Psychosen im Felde.) W. Weygandt.
89 Surgery in the Field. A. Köhler. Continued.
90 *Surgery in the Home Zone. E. Heymann. Continued.
91 *Chronic Articular Rheumatism with Enlarged Glands and Spleen. (Chronischer Gelenkrheumatismus; Typus Still-Chauffard.) H. Pollitzer.
92 *Prophylaxis of Epidemics. (Allgemeine Gesichtspunkte der Seuchenbekämpfung.) F. Neufeld.

88. **Nervous and Mental Affections in the Field.**—Weygandt says that contrary to the practice under other conditions, the aim should be to hurry the patient away at once, stupefy him with a narcotic if necessary, and also use force if unavoidable; even a strait-jacket may be needed. The main thing is to get him out of the battle-field environment at the earliest possible moment and the less he remembers of the journey the better. There is no special war psychosis, but war is very liable to fan into a flame a latent predisposition to epilepsy, hysteria, slight imbecility and manic-depressive or catatonic attacks, or a syphilitic brain or spinal-cord trouble. Prompt removal of those affected is important not only for their own welfare but even more on account of the effect on other soldiers. A kind of "mass psychosis" is liable to develop in a time of panic, such as occurred at Kirkilisse and Lule Burgas in recent years. He cites figures showing that psychoses developed in 0.54 per thousand of the German troops during the Franco-Prussian war; in 2.7 per thousand of the United States troops in the Cuban war; in 2.6 per thousand in the British during the Boer war, and in 2 per thousand in the Russian troops during the war with Japan, while the records show only 0.33 per thousand among the Bulgarian troops in the late Balkan campaigns, 0.25 in the Montenegro troops and also in the Servian troops, and 0.097 per thousand among the Grecian troops. He ascribes the difference between the Russian and the Balkan figures to the liquor-drinking among the Russians. He does not offer any explanation, however, for the large numbers among the German expedition corps in southwest Africa, 4.95 per thousand; including cases of epilepsy and hysteria, 8.28 per thousand of the troops were thus affected.

Heat stroke and concussion of the brain require complete rest on the spot; the former may need venesection, cold applications, revulsion, inhalation of oxygen, saline infusion, lumbar puncture, atropin, quinin, ergot, or epinephrin. Massage of the heart might also be considered in case of complete collapse. Rest and analeptics are likewise the best measures for treatment of concussion or commotion of the brain; this may occur merely from the impact of the air from a passing bomb. Unconsciousness with severe shock may be induced by the air alone, as the shell passes, and such severe shock with incontinence generally proves fatal. When there is shock with vasomotor paralysis the head should be placed low and autotransfusion done by tying off the legs and abdomen, applying heat at the same time. He emphasizes the extreme importance for keeping an outlook for symptoms indicating an impending psychosis or serious nervous or mental disease.

90. **The Wounded in the Home Zone.**—Heymann states that the condition in which the wounded reached Berlin has abundantly confirmed the efficiency of the first-aid packages. The wounds were found almost without exception in excellent condition. Even jagged shrapnel wounds healed rapidly. Bullet or stab wounds that bleed wash out any germs in them and the wound heals promptly under the dry clot of blood as was attested by hundreds of cases. Heymann refrains from disturbing even the clotted blood around the wound and scraps of cloth sticking in the clots. They are dangerous only when they are loosely embedded in the clot or the wound continues to secrete. Large scraps of cloth, hairs, slivers of wood or scraps of metal should be removed with tweezers but splinters of bone had better be left unmolested. Although a wound may look very jagged and destructive yet in the depths the various tissues have generally retained their connection with each other and healing may proceed without material disfigurement if their arrangement in the depths is not disturbed. Roentgenoscopy frequently shows the orderly arrangement in respect to each other of what seemed to be a mass of iregular splinters of bone. None of the wounds he has had occasion to treat had been sterilized with iodin, and yet all healed as well as if it had been applied. Some of the wounded had been in the trenches for twenty hours without a chance to apply even their first-aid dressing.

91. **Chronic Articular Rheumatism with Enlargement of Lymph-Glands and Spleen.**—Pollitzer reports two cases of this form of severe chronic articular rheumatism in which there are occasional attacks of fever with enlargement of lymph-glands and of the spleen. The mother of one patient had had recurring articular rheumatism and endocarditis; the mother of the other was tuberculous. Both patients were girls in the twenties with a history of recurring tonsillitis but neither responded to the usual mild tuberculin test. Ordinary articular rheumatism does not affect the lymph-glands, but in these cases the lymph-glands behaved as in tuberculosis, and roentgenoscopy revealed minute areas of destruction in some of the bones, suggesting a tuberculous ostitis. In a third more recent case there was unmistakable evidence of tuberculous ostitis and a history of recurring rheumatoid affections with enlargement of lymph-glands, but the process throughout was of such a torpid nature that it never progressed to the cheesy stage.

The cases suggest Poncet's tuberculous rheumatism but Poncet never mentioned enlargement of glands in his descriptions. The syndrome is like that described by Still and Chauffard, but these deny all connection with tuberculosis.

92. **Prophylaxis of Epidemics.**—This long article is taken from a pocket manual of epidemiology just off the press.

### Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

*October, XL, No. 4, pp. 443-536. Last indexed Aug. 8, p. 517*

93 *Artificial Termination of Pregnancy and Sterilization at One Operation. (Unterbrechung der Schwangerschaft und Sterilization auf abdominellem Wege in einer Sitzung.) E. Anderes.
94 Tuberculosis of Genital Apparatus in Little Girls. G. Graefe. Concluded in No. 5.
95 *Pathogenesis of Eclampsia. O. Vertes.
96 *Treatment of Tumors with Tumor Extracts. G. Schubert.

93. **Artificial Termination of Pregnancy and Sterilization at One Operation.**—In cases in which abortion is absolutely indicated, as in advanced tuberculosis, severe heart disease with failure of compensation, and severe chronic kidney disease, sterilization should be performed at the same time, for it is useless to subject the woman to the dangers of repeated pregnancy and abortion, and there is no hope of the condition improving so that a later pregnancy could be allowed to continue. Anderes formerly terminated the pregnancy by the vaginal route and then sterilized through the abdomen, but he has found that asepsis is more easily preserved by performing both operations at the same time abdominally. The uterus is opened, the contents removed, and it is thoroughly curetted through the incision. Then about 3 cm. of each tube is resected at the uterine end. This is preferable to complete excision of the tube, because it is not necessary to ligate any of the large vessels, and consequently there is less danger of thrombosis. Excessive hemorrhage from the uterus is avoided by previous injection of ergot. There has

been less hemorrhage with this method than with vaginal abortion. He has operated in fifteen cases in this way with good results.

95. **Pathogenesis of Eclampsia.**—Vertes performed a series of experiments which show that animals can be sensitized by their own albumin, as well as by foreign albumin. The symptoms of this hypersensitiveness are practically identical with those of eclampsia, and moreover the organs of the animals showed the same changes post mortem as are found in the organs of patients who have died of eclampsia. He therefore believes that eclampsia is a manifestation of anaphylactic shock. This anaphylaxis is produced by the absorption of chorionic villi, which Schmorl has shown takes place during pregnancy. The albuminuria of pregnancy is not a simple mechanical functional disturbance of kidney function, nor yet a chemical one caused by the products of fetal metabolism, but it is a premonitory stage of eclampsia, which is identical with it in etiology, and is only a more advanced stage of the same condition.

96. **Treatment of Tumors with Tumor Extracts.**—Schubert describes 8 cases that he has treated by Lunckenbein's autolysate method. (See The Journal, Feb. 14, 1914, p. 580. See also p. 2000.) While the results were not brilliant, most of the cases were in such an advanced stage that little could have been expected of any method of treatment. In one case of sarcoma of the tonsil there was marked improvement, but the patient refused further treatment on account of the slight pain of the injection. In a case of cancer of the breast the enlarged glands in axilla and neck underwent marked regression. It would seem, therefore, that this treatment offers hope of further development. It offers the advantage over radiotherapy that it is constitutional in its effect, while the latter is purely local. There was never implantation metastasis at the site of injection. He discusses the question of whether the reddening at the site of injection can be regarded as a positive tumor reaction and be used for purposes of diagnosis. Abderhalden has succeeded in making rat sarcomas disappear by injecting extracts of them into dogs and then injecting the serum from the dogs into the sarcomatous rats. He is now undertaking experiments of the same sort in human beings with serum obtained from horses after the injection of extract of human cancers.

### Münchener medizinische Wochenschrift

*September 29, LXI, No. 39, pp. 1993-2024*

97 *Simplification of Examination with Duodenal Tube. (Klinische Duodenalschlauchuntersuchung.) G. Holzknecht and Lippman.
98 *The Meiostagmin Reaction. (Untersuchungen mit der Meiostagminreaktion—Ascoli und Izar.) N. Blumenthal and E. Fränkel.
99 Leukocyte Inclusions in Scarlet Fever. (Bedeutung der von Doehle beschriebenen Leukozyteneinschlüsse für die Scharlachdiagnose.) R. Isenschmid and W. Schemensky.
100 Digestion of Lymph-Gland Substance Not Specific in Dialysis Serodiagnosis. (Zur Bewertung des Thymus- und Lymphdrüsenabbaus bei Abderhaldens Dialysierverfahren.) H. Beumer.
101 *Serodiagnosis by Protective Ferments in Tuberculosis. W. Ammenhäuser.
102 Injuries of the Eyes. (Ueber Augenverletzungen.) Heine.
103 Beware of Wasting Imported Drugs. (Sparsam mit Ueberseedrogen!) W. Straub.
104 Prophylaxis of Epidemic Diseases. (Zur Seuchenprophylaxe.) F. Rosenthal.
105 Advantages of Varnish Applied to Immobilize Germs. (Behandlung des Operationsfeldes durch Firnisse.) Linkenheld.
106 List of Foreign Proprietaries and their German Equivalents.

97. **Improved Technic for Examination with the Duodenal Tube.**—Roentgenoscopy has shown that the duodenal tube is passed along in the esophagus by peristalsis, but in the stomach it moves forward more under the action of gravity; muscular movements pass it through the pylorus, and after this it moves forward by gravity. Holzknecht and Lippman describe how they utilize these various factors to facilitate the introduction of the tube into the duodenum, having the patient change his position, bend forward, recline on the right side with the pelvis raised, etc., in turn, and state that by this means the tube can be safely in place in the duodenum in from seventeen to twenty-five minutes.

98. **The Meiostagmin Reaction.**—Blumenthal and Fränkel report that the meiostagmin reaction was positive in all but one of 31 pregnant women examined, some in the earliest stages of the pregnancy, while it was constantly negative in 20 normal controls. With cancer of the gastro-intestinal tract, positive reactions were obtained in 92.5 per cent. of 40 cases. The superficial cancers and those of the female genitals seldom gave a positive reaction, but it was positive with mammary cancer in 87 per cent.

101. **Protective Ferments in Diagnosis of Pulmonary Tuberculosis.**—This article describes the application of Abderhalden's dialysis technic to the differential diagnosis of pulmonary and glandular tuberculosis in sixty cases. The results demonstrate that the albumin in the sputum is in part albumin from tubercle bacilli. Also that the blood in pulmonary tuberculosis contains specific ferments which digest lung tissue and tubercle bacilli albumin. In advanced stages these ferments vanish from the blood. In non-tuberculous catarrhal lung affections only lung tissue is digested, not tubercle bacilli albumin. With tuberculous glandular disease, gland tissue was always regularly digested. No specific ferments of the kind were ever found in the blood of the healthy. Ammenhäuser draws attention to these conclusions from his research as indicating that the Abderhalden technic may render valuable service in the early diagnosis of tuberculosis.

### Wiener klinische Wochenschrift

*August 27, XXVII, No. 35, pp. 1243-1258*

107 Influence of Radiotherapy on Production of Protective Ferments. (Einfluss der Strahlenbehandlung auf die sogen. Abderhaldenschen Abwehrfermente.) H. Keitler and K. Lindner.

*September 3, No. 36, pp. 1259-1274*

108 Diagnosis of Concomitant Gastric and Duodenal Ulcers. T. Barsony.
109 Specialist Work for the Troops. (Vorschläge zur Organisation der spezialärztlichen Dienstleistung in Kriegszeiten.) M. Kahane.

*September 10, No. 37, pp. 1275-1290*

110 Injuries from Freezing. (Zur Klinik der Erfrierung.) J. Csillag.

*September 17, No. 38, pp. 1291-1306*

111 Tuberculosis and its Treatment. S. Federn.
112 History of the Organization in Various Countries of Volunteer Assistance for the Wounded and Sick. (Entwicklung der freiwilligen Krankenpflege.) E. Wiener. Commenced in No. 34.

*September 24, No. 39, pp. 1307-1322*

113 Prophylaxis of Epidemic Disease during the Mecca Pilgrimages. (Krankenbewegung am Infektionshospital der internat. Quarantänestation in Tor.) E. Wiener.

*October 1, No. 40, pp. 1323-1342*

114 Modern Surgery in the Field. (Einige allgem. Bemerkungen zur modernen Kriegschirurgie.) A. Fraenkel. Commenced in No. 39.
115 Convalescent Homes for Soldiers. (Soldaten-Genesungsheime.) J. Urbach.

### Zentralblatt für Chirurgie, Leipsic

*September 26, XLI, No. 39, pp. 1513-1536*

116 *Diversion of Lymph from Scrotum. (Die Lymphableitung des Skrotum.) E. Kondoleon.
117 Technic for Treatment of Cleft Palate. (Zur Technik der Uranoplastik.) J. Schoemaker.

116. **Treatment of Edema of the Scrotum.**—Kondoleon writes from Athens to extol the benefit from diversion of the lymph from the scrotum by excising the deep fascia and turning over the tunica vaginalis. In the case reported he excised the fascia, cutting out a piece the length of the lengthwise incision and two fingerbreadths wide. Then he incised the vaginalis and turned it over outward as in an operation for hydrocele and then sutured the skin without draining. This was done on both sides. The procedure is recommended for all cases of elephantiasis of the scrotum in its first stage, when there is merely stagnation of lymph without much sclerosis of connective tissue.

### Zentralblatt für Gynäkologie, Leipsic

*September 26, XXXVIII, No. 39, pp. 1265-1280*

118 *Removal of Uterus Instead of Cesarean Section in Infected Cases. (Die totale Gebärmutterabtragung als Ersatz für den Kaiserschnitt.) S. Recasens.

118. **Hysterectomy in Place of Cesarean Section.**—Recasens declares that to wait a few hours until the fetus has died

before removing it, in case of impossibility of delivery by the natural route, is just as much an intentional killing of the child as if craniotomy had been done at once. In cases of contracted pelvis with infection already installed and living child, he has often done extraperitoneal cesarean section, but the final outcome was frequently disastrous for mother or child or both. His disappointing results in this class of cases led him to treat later cases by abdominal hysterectomy. This spared the pelvis all danger of contamination from infected fluids, and the operation can be done so quickly that the child is promptly delivered alive. In one case the woman was seven months pregnant and had a very large cancer of the cervix. As soon as the uterus was taken out it was carried into another room by the assistant and a living child extracted from it. In a recent case a woman with contracted pelvis had been in labor for two days; the temperature was 39 and 39.5 C.; pulse 120, and the secretions smelt bad. One of her two previous pregnancies had required craniotomy; the other had terminated in a miscarriage at seven months. Recasens decided at once to remove the unopened uterus. The vagina was painted with strong tincture of iodin. As soon as the abdomen was opened the ligaments and arteries of the uterus were clamped before the vagina was entered. A normal male child weighing 3,100 gm. was taken from the uterus, which had been hurried into the next room. He insists that this method should be adopted as the routine procedure when the temperature is high. In cases merely supected of infection, extra-peritoneal cesarean section may render service.

### Gazzetta degli Ospedali e delle Cliniche, Milan

*September 27, XXXV, No. 112, pp. 1217-1232*

119 *Rapid Post-Typhoid Cholelithiasis. P. Ballarin.

119. **Rapid Development of Gall-Stones after Typhoid.**—Ballarin's patient was a girl of 16 who had typhoid with the six other previously healthy members of the family. The temperature did not return quite to normal for a month after the main typhoid symptoms had subsided. During this convalescent period she had several attacks of gall-stone colic and passed two concrements. Typhoid bacilli were cultivated from the center of each, but none was found in the stools during or after convalescence. The gall-stones were of pure cholesterin, pigmented in the center.

### Pediatria, Naples

*September, XXII, No. 9, pp. 641-720*

120 *Stimulation of Gaseous Metabolism during Treatment with Direct Sunlight. (Modificazioni del ricambio respiratorio sotto l'influenza dell'elioterapia.) G. di Cristina.

121 *Purulent Disease of the Urinary Passages in Young Children. (Sulle affezioni purulente delle vie urinarie nell'infanzia.) S. Cannata and G. Caronia. Concluded.

122 Blood-Findings in Kala Azar in Children. (Contributo alla ricerca del parassita di Leishman nel sangue periferico di bambini affetti da Leishmaniosi.) R. Vaglio.

120. **Stimulation of Gaseous Interchanges during Heliotherapy.**—Di Cristina tabulates the findings in regard to the gaseous interchanges in three children during periods of three weeks or more before and during systematic exposures to the direct sunlight in treatment of tuberculous lymph-glands or hypothyroidism. The findings testify to marked stimulation of the oxidative processes and the metabolism in general. The vital processes proceed more vigorously, especially assimilation of the food. The respiratory quotient had averaged 0.927 and 0.792 in the two tuberculous cases but after two weeks of heliotherapy it averaged 1.143 and 1.0632.

121. **Purulent Infections of the Urinary Tract in Infants.**—Cannata and Caronia conclude their long study of this subject by emphasizing the necessity for warding off infection of the urinary tract as it is liable to prove a very serious matter, especially in young infants and all children with an inherited taint. Phimosis and foreign bodies in the bladder should receive special attention in prophylaxis, and every effort should be made to avoid trauma of the bladder, chilling, habitual constipation (in which there is usually elimination of germs by way of the urinary apparatus), and inadequate intake of fluids. Care should be taken to prevent soiling the parts with feces, and during the course of any casual infection the urine should be frequently examined and the child compelled to drink often and freely to prevent clogging of germs in the kidneys and bladder. In diseases known to affect the kidneys, it might be advisable to give small preventive doses of hexamethylenamin in addition to large amounts of fluid. When a cystitis or pyelocystitis is diagnosed, strict bed rest should be enforced and the food be entirely fluid. Even nursing infants should be made to drink copiously. If an infant refuses to drink freely, the water should be poured into the stomach through a tube or injected into the rectum. The diet should be as nourishing as possible; nothing is worse than to let the child's strength run down from lack of adequate nourishment.

They have found hexamethylenamin very useful. Hematuria followed its use in one of the cases; the child was subject to epistaxis and the hematuria promptly subsided on suspension of the drug. In the few cases on record in which hematuria was noticed under this drug, there was evidently a tendency to hemophilia. Salol or salicylic acid may be alternated with it. The doses recommended are from 0.8 to 1.5 gm. hexamethylenamin and 0.5 to 1.5 gm. salol in the twenty-four hours for an infant; older children can take up to 2.5 gm. of each. To favor the disinfectant action of the former, large amounts of an acid drink (hydrochloric or phosphoric acid), extremely diluted, are given with the hexamethylenamin. Local treatment of the cystitis is seldom required. In rebellious cases, serotherapy or vaccine therapy may prove useful. Great improvement was realized with the latter in a case of pyelocystitis from colon bacilli and Fränkel's diplococcus. Anorexia may be combated with five or ten drops of fluid extract of condurango twice a day before meals; or the child may have to be fed through a stomach tube or given nutrient enemas. Scraps of ice in the mouth may arrest vomiting; if not, a teaspoonful of a 2 per cent. solution of sodium citrate as needed.

### Policlinico, Rome

*August, XXI, Medical Section, No. 8, pp. 341-388*

123 *Cholesterin in the Blood and Resisting Power of the Red Corpuscles in Anemic Conditions. G. Antonelli.

124 Lipemia, Especially in Diabetes Mellitus. P. Bosco. Commenced in No. 7.

*September, No. 9, pp. 389-436*

125 *Epinephrin in the Blood and Its Influence on the Cholesterin and Urea Content of the Blood and Cerebrospinal Fluid in Sick and Healthy Children. L. M. Spolverini.

126 Influence of Splenectomy on Experimental Pneumococcus Infection. U. Comelli.

127 *The Hygienic and Epidemiologic Importance of the Gases of Putrefaction. V. Puntoni. Commenced in No. 8.

123. **Cholesterinemia.**—Antonelli tabulates the blood findings in ten cases of anemia from various causes. The cholesterin content of the blood serum ranged from 0.21 per thousand to 1.56, the hemoglobin from 18 to 80 per cent. There does not seem to be any connection between the cholesterin content and the degree of the anemia nor with the greater or less resisting power of the red corpuscles.

125. **Epinephrin in the Blood of Children.**—Spolverini has been investigating the epinephrin content of the blood in various acute infectious diseases in thirty children, with constantly and totally negative findings. Epinephrin was administered to a number of healthy children by the mouth or subcutaneously, and in consequence the proportion of cholesterin in the blood materially increased while that of urea in the cerebrospinal fluid became much reduced. The influence of the epinephrin on the children was manifested in a slowing of the pulse and higher blood-pressure.

127. **Pathogenic Influence of Gases of Putrefaction.**—Laboratory animals forced to inhale gases from putrid matters died in time and severe changes were found in the vital organs, and the virulence of the bacteria in the intestines seemed to be immeasurably enhanced. Puntoni concludes that the gases of putrefaction evidently predispose to intestinal infection, both by rendering the germs more virulent and by injuring the bowel walls.

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# SOME FACTORS TENDING TOWARD ADEQUATE INSTRUCTION IN NERVOUS AND MENTAL DISEASES*

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ST. LOUIS

The earnest effort on the part of the Council on Medical Education of the American Medical Association to raise the standard of medical education in the United States has met a gratifying measure of success. Its beneficent influence has been revealed in several directions. One of its achievements is the formulation of a "standard curriculum" through a subcommittee of one hundred medical educators. This curriculum, however, is intended to be entirely educational and suggestive and the "Council does not consider it in the interest of true progress in education that any standard curriculum whatever shall be uniformly adopted by all medical schools." Even though it was not proposed as a fixed standard, formulated as it was by one hundred prominent educators, it receives general recognition and is bound to be used as a model and thus to have definite influence on medical education in this country.

Medical curriculums are doubtless formulated on the fundamental principle that time and place allotted to a given branch should be proportionate to its importance in the production of competent practitioners of medicine. When we consider the intimate and reciprocal relations of the nervous system with other systems and organs of the body, its highly specialized structures and functions, and, moreover, the conditions and diseases which affect it both primarily and secondarily, the importance of adequate consideration of the nervous system in health and disease in any scheme of medical education becomes obvious.

Does the standard medical curriculum and do the medical schools of this country allot to neurology and psychiatry time and place proportionate to the importance of these branches? This is a serious question and one well worthy of consideration by medical educators generally and particularly by those professing knowledge of the subjects identified with this Section. It would seem that we are justified in answering the question in the negative when we consider the lack of interest by medical students in the clinical aspects of neurology and psychiatry as contrasted with the definite interest in the anatomy and physiology of the nervous system during the first two years of medical school work; the almost universal feeling of incompetence in the recognition of nervous and mental diseases by recent graduates; the apathy, and I may say indifference, toward the easily discernible signs of mental and nervous diseases by medical men generally (excepting by those specializing in these branches and not always by these); the ignorance displayed in our courts concerning them, and the existence and growth of the several "isms" and "cults" which thrive on the credulous, the unbalanced and the nervous.

If we seek to determine the reasons for this state of affairs, two possibilities are at once suggested; either little is definitely known about the nervous system and its diseases or else our medical teaching is inadequate. Surely no one will contend that the general indifference toward neurology and psychiatry existing among the rank and file of the medical profession is due to the state of knowledge concerning these branches. The present state of knowledge is indicated in modern text-books and current literature. Modern text-books on anatomy and physiology devote, respectively, approximately one-fifth and one-third of their pages to the nervous system. In modern text-books on practice fully one-fourth of the total space is allotted to diseases of the nervous system, not including psychiatry, and numerous special works, monographs and journals are devoted to the nervous system and its diseases. Approximately 10 per cent. of the articles published in several leading journals devoted to general medicine, including The Journal of the American Medical Association, are on neurologic and psychiatric subjects. Certainly, the volume of literature does not indicate that little is kown about the nervous system and its diseases. Moreover, the state of knowledge in these fields approaches a degree of exactness comparable to that in other fields. In no other fields are the reciprocal relations between structure and function better known, exemplified and utilized. We have, therefore, for neurology and psychiatry the firmest foundations in the known facts of anatomy and physiology of the nervous system.

Medical knowledge in general is in a state of flux and not all is known in any department that may yet be known. There are many unsolved problems in connection with neurology and psychiatry. But the state of our knowledge concerning the nervous system and its diseases coupled with existing methods of the clinic and the laboratory is so definite that the recognition of, and the differentiation between, the organic and so-called functional diseases are at least among the possibilities of medicine.

The present degree of indifference on the part of the profession generally toward neurology and psychiatry, is, therefore, not due to the inadequacy of knowledge at the present time; hence it would seem that we are justified in concluding that these subjects are not adequately presented in our medical schools.

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* Chairman's address, read before the Section on Nervous and Mental Diseases, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, June, 1914.

If instruction in neurology and psychiatry is inadequate—that is, not proportionate to the importance of these branches—let us direct our attention to some of the factors which appear to be at the bottom of the difficulty. We must recognize defects before we may hope to eliminate them. The chief defects in instruction in our medical schools in these branches will probably be found, first, in instructors and methods; second, in correlation of structures and functions of the nervous system with clinical neurology and psychiatry; third, in correlation of neurology and psychiatry with other clinical branches; and fourth, the time devoted to these subjects and their place in the curriculum.

### I. INSTRUCTORS AND METHODS

"Efficient teaching requires three essential conditions: (1) complete mastering of the subject-matter on the part of the teacher; (2) a clear notion of the aim of the teaching, and (3) well chosen methods of accomplishing the aim" (Jackson[1]). Adequate instruction in neurology and psychiatry can be expected only from those who possess adequate knowledge of the structures, functions and diseases of the nervous system, who are trained in the methods applicable to the investigation of these and who are otherwise thoroughly grounded in the principles of biology and medicine. In the ranks of those who profess knowledge in neurology and psychiatry there are many who approach this ideal. On the other hand, there are many incompetents, some of whom have come from general practice, some directly from medical schools with or without a hospital year or two and not a few who "drift in" after unproductive months or years in sanatoriums and state hospitals. Whether "drifting in" from general practice, directly from the medical school or from the state hospital matters little—the fact remains that such men, without additional training, are not equipped, are not qualified to teach either neurology or psychiatry. And from the unequipped in the ranks come the instructors in these branches in not a few medical schools in this country. The demand for well-equipped instructors in these branches far exceeds the supply. This is another point in evidence of the inadequacy in instruction in the past and emphasizes the importance of better teaching in the future. Better teaching will awaken interest in the student body, and from this interest will come the development of more men better qualified to teach the current knowledge of the subjects they profess—"sifting, analyzing, assorting and laying down principles."

In the medical schools of this country with but few exceptions neurology and psychiatry are combined in one department, and in about one-half the schools this department is an independent department. The importance of these branches and their correlations with each other as well as with every other department of medicine are sufficient reasons for combining them in one department; but there is no valid reason why the two subjects should be taught by the same instructor as is the rule. While it may be possible for one to practice neurology and psychiatry, the volume of previous work in either branch is so great that "sifting, analyzing, assorting and laying down principles" cannot be well done by one man in both branches at the same time. Therefore, it would tend toward more efficient instruction in these subjects if certain instructors in the department confine their energies to neurology and others to psychiatry, because independent instructors could best induct the students into the principles and the practice of the special methods in each branch. The aim of instructors in these branches in the medical school should not be to make "specialists" but to aid the student in the acquirement of such knowledge as will better enable him to recognize disease in general and particularly diseases of the nervous system.

Specialism falls short of its obligations to, and ceases to become a part of, general medicine when its methods of investigation cannot be understood and utilized excepting by the specialist himself. The more specialized clinical branches best meet their obligations to medicine when they contribute their portion in aiding the student to have a better appreciation of the patient as a whole individual. In this age of specialism and short cuts to diagnoses the whole individual is often lost to view. Indeed, he is nowhere more completely buried than in the clinical years in our medical schools. During the fundamental years he is a commanding figure; he awakens interest in the student body; he dominates it. During the clinical years he shrinks into darkness and for many is lost beyond recall—crushed by the weight of specialism, crammed into the tired brain of the student body. The general advance in medical knowledge should render the appreciation of the concept of the patient as a whole individual more thorough, more complete than ever before. That such appreciation is actually less must be due in part to the dominance of specialized branches in teaching during the clinical years. The concept of the whole individual should dominate medical teaching not only in the fundamental but also in the clinical years. The true relations of the parts with the whole should never be lost sight of for a moment.

Vocalized text-book chapters — didactic work — should be largely eliminated; and ready-to-use diagnoses—clinical lectures—should be restricted because neither develops the self activity of the student in the recognition of health and disease. Yet neurology and psychiatry are taught mainly in these ways in most medical schools in this country. This is, probably, one of the most serious defects in instruction in these branches, but the defect is in the instructors and not in the branches themselves.

To train the student in the recognition of disease is the primary aim of medical education. The recognition of disease must precede prevention, and it is the very foundation of all rational treatment. Let there be less teaching of nervous and mental diseases and more of the methods of recognizing them. Let the instructors be counselors and guides and not merely the distributors of ready-made diagnoses. Let their activities be expended mainly in guiding the student in accurate data getting, the very foundation of accurate diagnoses. Let the instructors supply the material made up of normal, functional, organic and mixed states. Let the student do the work and his interpretation of the accumulated data will follow as a natural sequence. It is not to be expected that either his data or his interpretations will always be correct either during his student days or at any time thereafter, but earnest effort in either direction at any time will stimulate his interest and develop his self-activity and his self-criticism. Let the student be guided in simple yet accurate methods in getting data concern-

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1. Jackson, C. M.: On the Improvement of Medical Teaching, Science, April 12, 1912.

ing family, personal and present history; and concerning sensory, special sense, mental, motor, reflex, vasomotor, trophic and autonomic reactions and he will secure for himself a working knowledge of neurology and psychiatry—knowledge which he can apply to a better elucidation of the clinical problems in other departments of medicine because an appreciation of the reactions of the nervous system in health and disease gives him a clearer insight into the individual as a whole.

### II. CORRELATION OF STRUCTURES AND FUNCTIONS OF THE NERVOUS SYSTEM WITH CLINICAL NEUROLOGY AND PSYCHIATRY

Since knowledge of physiology, anatomy, pathology and psychology finds constant application in the interpretation of the symptomatology and physical signs of nervous and mental diseases, students must be able to correlate knowledge of these fundamentals with clinical data. Instruction in each of these, excepting in psychology, is doubtless adequate in the better medical schools. The recognition of the necessity of obligatory work in psychology will doubtless result in speedily remedying this defect in instruction. In the recent Report of the Committee of the American Psychological Association on psychology and medical education[2] it is stated that in the first two years fully 10 per cent. and probably as much as 15 per cent. of the total time is devoted to the study of the nervous system, that is, anatomy, physiology and pathology. The same report disclosed the fact that very few schools are actually giving instruction in psychology though "it appears to be the preponderating opinion both of the best schools and of the schools as a whole, that some instruction in psychology is necessary so that students may understand the mental side of their patients, not only of those who are to be dealt with as insane, but also of many who never reach the extreme conditions which warrant their being sent to an institution for nervous or mental diseases."

In order that knowledge of the fundamentals and of the clinic may be correlated, the principle of relative values should receive greater consideration by instructors in these branches. E. P. Lyon[3] has recently indicated the working of this principle thus: "We should do our best from the multiplicity of facts to supply those most likely to be valuable to our students." Doubtless much could be eliminated in the fundamental and clinical years if instructors would give mainly those facts most likely to be of value in the clinic. If mainly usable facts were taught both in fundamentals and in the clinic, the principle of correlation would become more effective because more simplified. But the instructors in the fundamentals are not as a rule trained clinicians; hence they teach most of what is known about their subjects and necessarily much of little practical value for the clinical years. Moreover, the time which elapses between instruction in the fundamentals and in the clinic is so great that the student will have forgotten much of the useful with the useless knowledge acquired in his first semesters.

To further the teaching of the practical in the fundamentals, conferences should be held between the instructors in the anatomy, physiology and pathology of the nervous system and those in the clinic, and a definite plan of instruction outlined. A few type cases demonstrated in the classes of physiology and anatomy will serve to obviate the evil effects of time on the principle of correlation between the fundamental and clinical years. Neilson[4] has recently asked the pertinent question, "Would it violate any sane principle to have the neurologist give a lecture and demonstrate a case of tabes or one of transverse myelitis when the physiology of the tracts of the cord is studied?" This principle of correlation will be further strengthened by the incorporation of two definite recapitulation courses given by clinicians in the beginning of the clinical years: one consisting in a review of anatomy, physiology and pathology of the nervous system given by the instructor in neurology, the other in a review of psychology given by the instructor in psychiatry.

### III. CORRELATION OF NEUROLOGY AND PSYCHIATRY WITH OTHER CLINICAL BRANCHES

The intimate and reciprocal relations of the nervous system with other systems and organs of the body are the fundamental relations which correlate it with the clinic, which prevent narrowness in those possessing a working knowledge of its structures, functions and diseases, and which render a consideration of its several activities indispensable in the study of the patient as a whole individual. Neurology and psychiatry are unfortunately considered by curriculum makers and the profession generally as belonging to the narrowest and least important of specialties, when in fact these branches are special mainly in methods of investigation. The problems connected with them are identical with those of general medicine. A working knowledge of the structures, functions and diseases of the nervous system finds constant application in the study of the individual patient, whatever his disease may be. Hence adequate instruction in neurology and psychiatry is not only dependent on the working of the principle of correlation in these branches between the fundamentals and the clinic, but it is equally dependent on adequate instruction in, and correlation with, other branches of medicine.

Adhering to the principle of relative values, it seems that the kind of instruction most likely to be of value to the student in the clinical years would be in the technical methods utilized in the several clinical branches in the recognition of health and disease. Instruction in these methods, as already indicated, has not been adequate in the department of nervous and mental diseases, and what is true of the instruction in these branches is in a large degree true of instruction in other clinical branches. As a part of the routine examination of the nervous system, for example, the use of the ophthalmoscope, perimeter and laryngoscope, and methods in discerning pupillary anomalies and in determining the functional activity of certain cranial nerves find constant application; yet it is notoriously true that the instructors in the branches to which these methods primarily belong seldom give them adequate consideration. Now adequate instruction in these methods by the department to which they primarily belong aids in developing the self-activity and proficiency of the student not only in these departments but also in other departments. The use of the ophthalmoscope, for instance, is not merely confined to the recognition of certain diseases of the eye but its use is indispensable in internal medicine, pediatrics, surgery, neurology and psychiatry.

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[2] The Journal A. M. A., March 30, 1912, p. 909.

[3] Lyon, E. P.: Principles of Curriculum Making, Science, May 8, 1914.

[4] Neilson, C. H.: The Teaching of General Medicine, New York Med. Jour., 1914, xciv, 1189.

If methods in the use of a single instrument can find such broad application, how very important it appears that students should be taught methods in data getting in each department for the general recognition of disease and for the correlation of the knowledge in one department with that of every other. The correlation of neurology and psychiatry with other clinical branches can be accomplished by the student only when instruction in method is adequate in each department. Let this obvious principle in pedagogy be practiced, and a working knowledge of the nervous system in health and disease will be within the reach of the future graduates in medicine.

### IV. THE TIME DEVOTED TO THE SUBJECTS AND THE PLACE IN THE CURRICULUM

If it be a fundamental principle in curriculum making to allot time and place to a given branch in proportion to its importance in the production of competent practitioners, what place and what time should be alloted to neurology and what to psychiatry in the clinical years? Remembering that each branch deals with the same underlying structures and similar reactions of the nervous system; that in a neurologic condition the mental reactions and in a mental state the neurologic reactions should always be studied; that a study of the individual patient whatever his disorder may be cannot be complete without investigating the several activities of the nervous system and that mental states are quite as numerous and important as neurologic states, then it would seem that instruction in both branches should commence in the very beginning of the clinical years, and should be allotted equal time, given in parallel courses and continued throughout these years.

However great may be the ability of the instructors in the fundamental and the clinical branches and however excellent their methods may be, if instruction in neurology and psychiatry is confined mainly to the fourth year, as is now the case in most of the medical schools in this country, the student cannot acquire a working knowledge of these branches. On the other hand, if instruction in these branches be given from the beginning to the end of the clinical years, the student will be able to correlate them with all other clinical branches. Unless the nervous system is to continue to be considered a thing apart in the concept of the whole individual, as is now the case in most of the medical schools in this country, instruction in the recognition of its reactions in health and disease must logically begin at the moment the student receives his first conceptions in clinical medicine and continue throughout the clinical years.

The standard medical curriculum allots 150 hours in the clinical years, 60 hours in the third and 90 hours in the fourth year. Provision is made for instruction in neurology in the third and fourth years, but psychiatry is placed in the fourth year and is given only 30 hours—15 hours under "Clinical Conferences" and approximately 15 hours under "Didactic Lectures."

TIME AND PLACE FACTORS IN NEUROLOGY AND PSYCHIATRY IN THE CLINICAL YEARS IN EIGHTY-FIVE MEDICAL SCHOOLS IN THE UNITED STATES

| | No. of Schools in Each Class and Subject Divisions | | | | | Total No. Schools Teaching Neurology and Psychiatry in Separate Courses. Years and Average Hours. | | | | | | | | | | | | | Average Total Hours in N. and P. in Each Class in Clinical Years | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Neurology | | | | | | Psychiatry | | | | | | | |
| Class | Total Schools | N. | P. | N. and P. Comb. | N. and P. Not Taught | Total Schools | Schools 3d Year | Average Hours | Schools 4th Year | Average Hours | Schools 3d & 4th Years | Average Hours | Schools 3d Year | Average Hours | Schools 4th Year | Average Hours | Schools 3d & 4th Years | Average Hours | | |
| A+ | 22 | 20 | 15 | 2 | 0 | 20 | 9 | 49 | 17 | 75+ | 7 | 102+ | 1 | 33 | 15 | 30 | 1 | 42 | 114+ | 2 give elective courses in neurology in the 4th year.<br>4 teach neuropathology in 2d or 3d year; average hours, 25.<br>2 teach psychology in 2d or 3d year; average hours, 82. |
| A | 32 | 21 | 19 | 8 | 2 | 22 | 15 | 44+ | 18 | 54+ | 12 | 81 | 1 | 20 | 19 | 33+ | 1 | 44 | 98+ | 11 teach neuropathology in 2d or 3d year; average hours, 40+.<br>3 teach psychology in 2d or 3d year; average hours, 40. |
| B | 18 | 10 | 7 | 8 | 0 | 10 | 6 | 33 | 10 | 44+ | 6 | 81 | 0 | 0 | 17 | 34+ | 0 | 0 | 97+ | 4 teach neuropathology in 2d or 3d year; average hours, 33. |
| C | 13 | 3 | 1 | 7 | 3 | 3 | 2 | 50 | 2 | 50 | 2 | 100 | 0 | 0 | 1 | 40 | 0 | 0 | 74+ | 1 teaches neuropathology in 2d or 3d year; average hours, 120.<br>1 teaches psychology in 2d or 3d year; average hours, 40. |
| Tot. | 85 | 54 | 42 | 25 | 5 | 55 | 32 | .. | 47 | .. | 27 | ... | 2 | . | 42 | .. | 2 | .. | .. | |

In order to determine what is actually being done in teaching neurology and psychiatry in the clinical years a study was made of the curriculums as disclosed in 1913-14 catalogs of 22 A plus, 32 A, 18 B and 13 C, a total of 85 medical schools in the United States, this number having responded to requests for catalogs. The results of this study bearing on the factors of time and place are shown in the table.

A consideration of the "standard curriculum" shows defects, first, in the preponderance of both time and place in neurology over psychiatry; second, in that no instruction whatever in psychiatry is given in the third year, and third, that both subjects are taught mainly in the fourth year. The same general defects are apparent in the curriculums of most medical schools as is shown in the tabulation.

The tabulation shows specific defects in the following particulars: first, that 5 out of 85 schools give no instruction whatever in either neurology or psychiatry; second, that as far as can be determined from the catalogs, neurology and psychiatry are combined in instruction under the collective terms "nervous and mental diseases" in 25 of the 80 remaining schools; third, that of the 55 schools teaching neurology and psychiatry in separate courses in both third and fourth years, 27, that is, less than half, give a place to neurology and only 2 to psychiatry; fourth, that whereas in these 55 schools 32 teach neurology, only 2 teach psychiatry in the third year; yet in the fourth year 47 teach neurology and 42 teach psychiatry; fifth, that the average total hours allotted to the department of nervous and mental diseases in the schools of each class is much less than the total hours recommended in the standard curriculum.

Is the total time allotted by the standard curriculum sufficient for adequate instruction even though it were properly apportioned between the subjects? This question cannot be answered until after a trial of what seems to be a proper apportionment of time between the subjects and until the subjects are given a logical place in the curriculum. It seems, however, that the importance of instruction in neurology and psychiatry during the clinical years in the production of competent practitioners should entitle these branches to an amount of time in the curriculum équal at least to that devoted to the nervous system in the fundamental years, which is now approximately 10 per cent., or 200 hours.

### CONCLUSIONS AND RECOMMENDATIONS

To the end that an adequate working knowledge of the nervous system in health and disease may come into the possession of a larger number of future graduates in medicine, the following would seem necessary:

1. A better appreciation should be had by medical educators generally of the relations of the nervous system in health and disease to the whole individual.
2. Medical educators should consider neurology and psychiatry as fundamental and not as highly specialized clinical branches.
3. The aim of the instructors in neurology and psychiatry should be to aid the student in the general recognition of disease as well as in the recognition of nervous and mental diseases.
4. Less time should be given to discussion of diseases of the nervous system and more to the practice of simplified yet accurate methods in the recognition of them—thus developing the student's self-activity, self-criticism and proficiency.
5. The principle of relative values should be given greater consideration by the instructors in the fundamental and clinical branches in order that the principle of correlation may be better utilized by the student.
6. More and better apportioned time and a logical place must be allotted to neurology and psychiatry in the curriculums of our medical schools.

Metropolitan Building.

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## ABSTRACT OF DISCUSSION

Dr. Charles H. Hughes, St. Louis: We are in the transition stage in medicine. We have reached a point at which the medical profession is beginning to recognize the value of psychiatry and neurology in general practice. We have become accustomed to locating disease in the different viscera or systems of the organism and from thence judging as to the condition of the patient. As physicians we should consider the mind and brain as well as the other organs, we should consider the patient himself. Neglect of consideration of the patient has built up a lot of "isms" and "pathies" which by proper methods might have been avoided. Neurology and psychiatry in general practice have until recently been much overlooked in general medicine.

Dr. George Dock, St. Louis: Dr. Graves has made clear most and perhaps all of the important points necessary. I am particularly struck by the fact that people still look on the curriculum recommended by the American Medical Association as a standard, but from Dr. Graves' analysis it would appear that, as regards neurology and psychiatry, the medical schools in the country have not caught up with our standard. That perhaps is not the most important difficulty at present. With regard to the time, I differ from Dr. Graves only in the way of stating the matter. The standard curriculum gave two hundred hours, including the time given to formal courses in neurology and psychiatry, and also to practical work in the wards and outpatient department. It is a great disappointment to us who drew up the curriculum that more of that practical work is not done.

The most important part of Dr. Graves' argument is the emphasis laid on the development of technic. The desirability of this is not sufficiently realized in any branch. Neurology and psychiatry are not alone suffering from certain weaknesses in the method of teaching. Dr. Graves is disappointed because the medical undergraduate is not able to conclude his sensory tests or to recognize pupillary and sensibility changes, etc., as he should. We in medicine find men at the end of the fourth year who cannot positively determine albumin in the urine, or find tubercle bacilli in sputum, although they are easily found, and who are not sure of what they find by percussion and auscultation. We who have been long in the mill realize that the trouble depends on our still faulty method. These boys have not had enough technical training and not enough time in which to work in ward and outpatient department

The student may be taught to test sensibility, pupillary reactions, etc., but unless he works at a lot of concrete examples, as Dr. Graves emphasizes, he does not realize how critically he must work; how much more difficult it is, in the clinic, to detect albumin in the urine or sensibility changes, simply because he has not had the lesson. How will the student profit from a hospital year unless he has been taught to work most critically and unless he has more adequate oversight? We do not sufficiently consider the point that Dr. Graves emphasizes—the need of more and better trained teachers. Perhaps not so many young men are willing to go into neurologic work as in other lines, but the fault is not altogether with the lack of young men. The student goes into a clinic and works as best he knows how; but he has nobody over him to point out that his method of investigating the history or of making clinical and laboratory tests is wrong, and to see that he gets proper training. Everybody who has given the subject thought realizes that the need in every branch of teaching is more actual work with patients, with more oversight by a keen, well educated and specially trained teacher in charge.

Dr. E. E. Southard, Boston: From my experience in teaching neuropathology in the Harvard Medical School, I think one of the most important things in teaching the subject of nervous and mental diseases is to keep the student's mind busy during his whole course with something or other of neurologic interest. The injections of neurologic knowledge should be "spaced injections" during the whole course, with something put in every few months; otherwise the student comes to regard the subject as a matter of no importance. This idea—of neurology as a luxury—is entertained by many internists, and the adequate presentation of these topics may be measured by the degree of interest the internists take. If the internists connected with the school are narrow-minded, neurology and psychiatry will never maintain their proper place either quantitatively or qualitatively. One of the great difficulties in the American system has been that neurology has been regarded as somehow foreign to internal medicine. In Germany and England the neurologist is an internist, and, if called on to diagnose pain incidentally, he at least knows whether it is a case of rheumatism or stomach trouble. American neurologists are rather proud of their ignorance of internal medicine. On the other hand, the American internists are often proud of their ignorance of nervous and mental diseases. This is also true of pathologists. The pathologists that I know have a blind spot for the nervous system, while the same degree of detail in the kidney will arouse a singular tremor of autonomic vibration in them. They do not care to learn the somewhat complicated alphabet of our subject. The nervous system can secure proper attention in medical schools when there is a corporate spirit. One method is through "correlation committees" dealing with cognate topics as they are taught in successive years in the schools.

The only point I could add to Dr. Graves' discussion of the subject deals with the courses that lie prior to the courses of neurology and psychiatry. An elaborate course of neuropathology may not, in all cases, be secured in the second year; but the pathologists may be stimulated to take more pride in a neglected branch of their subject. There are many pathologists whose neurologic lore hardly goes beyond the diagnosis of a tabetic spinal cord, yet they know and teach about the Kupffer cells of the liver. If the course in mental and nervous diseases can be preceded with pathology in a sense broad enough to include neuropathology and a broad-minded internist is beside the neurologist, then I think you may get action. The work being done in connection with lumbar puncture is transforming neurologists, and to some extent psychiatrists, into internists and I predict that within two decades neurology, so-called, will have disappeared, because the internists will have learned about it, and, finding it somewhat simple, they will adopt it. I think that psychiatry will increase in importance because it will take many more decades for internists to get the social point of view. When consideration of the individual in his relation to society obtains, psychiatry will disappear, because everybody will be a psychiatrist.

Dr. C. R. Woodson, St. Joseph, Mo.: Dr. Graves did not intimate that it was necessary that all who studied psychiatry or neurology should be finished psychiatrists or neurologists, but that it is important that the present-day graduate should know enough about nervous and mental diseases either to give himself, or to diagnose that somebody else may give, timely treatment. A routine treatment of unconsciousness, whether the result of a cerebral hemorrhage, an embolism or a thrombosis, is too common with the general practitioner. To recognize this trouble and to determine its cause is important, not only to the medical profession, but also to the individual. The recognition of mental disease while on the border line is the important thing. The individual who is told that he has appendicitis or gall-bladder trouble, or some other condition demanding surgical skill of the highest character is hustled to the hospital. The individual, however, who has loaded his carrying capacity beyond a healthful resistance, whose condition is the result of concentration of thought or overattention to business, and who is in danger of losing his mind, who is made up of hesitation and doubt, whose mind dwells on himself, who tells the physician he consults that he thinks of taking his life, is in a condition that should be recognized. And until the physician is sufficiently trained to appreciate the fact that this is important, that this patient does not have the power to decide, is devoid of initiative and that the family as a rule does not want to decide for him, these mistakes in practice will continue. While, in such a case, they hesitate and conclude to leave to the patient that which he has not the power to decide for himself, they will hustle the surgical case to the hospital; but the mind of this patient is as necessary as the kidney, the gall-bladder, an arm or a leg. The thing to do is to get him to some place where he can be treated or where they know how to treat him while he is still curable. There is a disposition on the part of many in the medical profession to treat paralysis with strychnin; but in a hemorrhage of the brain inject strychnin, and what will happen? The diagnosis is the important thing. It may be said equally truly of other branches of the profession that students do not come out in four years, capable; but they ought to come out with sufficient ability and knowledge to diagnose a case.

Dr. Walter B. Swift, Boston: I have met the problem of methods of instruction in nervous diseases. When I was made instructor in neuropathology in the Tufts Medical School, I found the students brought very little from courses below which they could use in my course. And the courses below were not to blame. One trouble was this lapse of time of which Dr. Southard speaks. I can add that with charts, lectures and diagrams the students carried little to the courses above mine. I met this problem with success by the introduction of two ideas, repetition and visualization. By repetition I mean this: I repeated in my course all the essential data they should have brought up from other courses, anatomy, histology, pathology. Of four months put on the course, three were spent in review before ever mentioning the new and finer parts of neuropathology. Then one month on that subject. Visualization, however, is the secret of making neuropathology easy. Dispense with all charts, diagrams, didactic lectures preceding demonstration, and first show the tissues; get this well pictured in the mind and afterward dilate in words, but only to enhance that visual picture.

Dr. Charles R. Ball, St. Paul: Formerly mental and nervous diseases to the ordinary medical man were not very attractive. I think now, however, we all realize that conditions have changed. The neurologists have illuminated the subject so well that both surgeons and internists are beginning to look in our direction. We should regard this as distinctly complimentary. Since the excellent work which we have done on the subject of nervous syphilis, syphilographers have united with the internists and show a desire, also, to enter this field. As yet, however, the subject of psychiatry does not appear to be so much encroached on. With regard to medical education, the greatest fault that can be laid against it is the failure thus far to teach students to recognize and treat in an intelligent manner functional nervous diseases. In our method of dealing with this class of patients more reproach has undoubtedly been brought on our profession than in any other class of cases. I hope Dr. Graves' paper may give the impulse to decided reforms in the teaching of neurology and psychiatry in medical schools.

Dr. Hugh T. Patrick, Chicago: In my opinion this lack of interest in neurology and psychiatry and the feeling of inadequacy on the part of the graduate is due to the enormous amount of malpractice which has taken place in the chairs of these departments. I know of no other chairs in medical schools which have maintained as much abuse as have the chairs of nervous and mental diseases. When the subjects of neurology and psychiatry are adequately and properly presented to a medical class, the members evince as keen an interest as they do in any other subject. In present-day medical classes there is a beautiful keenness and anxiety to learn and to acquire a knowledge of the nervous system and its diseases. And I believe that any lack of attention is due to the man in the chair. Therefore the criticism that I would make against medical schools is that they have not always picked out the man who is able properly to instruct and to hold the attention of the medical students, but have selected a teacher for reasons of expediency. Or a man is sometimes given a chair not because he imparts knowledge well, but because he is eminent in his department. That is entirely the wrong basis for putting a man into the work of teaching. He may be head of the department, but he should not be given work for which he is not amply fitted.

Concerning Dr. Southard's remarks, in the school with which I am connected we have tried to carry on this continuity. In the second year the students have a course on physiology of the nervous system given by a member of the clinical staff; in the third year they have a text-book and recitation course, the aim being to give them a clear conception of nervous diseases. That prepares them for the clinical work in the fourth year. And the thing that I think is of most importance in all these things is not to try to teach too much. The teaching is inadequate, as Dr. Graves has said, but, in my opinion, it is because an effort is made to teach too much. For instance, the teacher himself is interested in some of the refinements of nervous diseases, and he, naturally, teaches what he is interested in. That is a matter of self-indulgence. A teacher must adjust himself to the man on the bench: What can the boy hold in addition to what all the other departments teach? In the next place, give him the fundamentals, the real things he must know. When a teacher of neurology gives his students twenty symptoms of tabes, he is guilty of malpractice. There are only a half dozen symptoms the boy ought to know, but those he must know absolutely; but loaded with too much, he does not know what are the essentials and what are the superfluities and refinements.

Dr. William W. Graves, St. Louis: The burden of my complaint is that because instruction in neurology and psychiatry is put off until the fourth year in many medical schools in this country, the student does not have a chance to learn that it is necessary to consider the nervous system and its reactions in the recognition of health and disease. This is, of course, a serious defect in medical education. To remedy this defect neurology and psychiatry must be given logical place in the curriculum; that is, from the beginning to the end of the clinical years and the subjects must be given adequate time, that is, one hundred and fifty hours at least during the clinical years.

# PRESENT-DAY PUBLIC HEALTH ACTIVITIES *

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Perhaps in no other field of scientific progress is the axiom that "the luxuries of yesterday are the necessities of to-day" more true than in that of public health.

Let us apply this to the laboratory alone and we will have the verification. What was formerly scorned as indicative of ignorance is now used as a matter of necessity.

So various have become the branches of the many activities in public health work that their mere enumeration with but slight comments would occupy the scope of this paper. I will devote brief attention only to those in the limelight.

Complaint is frequent, and sometimes justly, that there is too much paternalism, that too many persons exist at the expense of the public and that the number who slip through life from birth to death without worry as to who pays the bills is constantly increasing. Legislation and private philanthropy combine to assist. While they do not give the comforts they at least provide the necessities.

In many cities, and this is especially so in Buffalo, there is a close cooperation between the Department of Health, Police and Education, and the various private philanthropies. While formerly it was considered proper to tell your troubles to the police, it is now essential to transfer them to the Department of Health. Such messages by mail and telephone are so rapidly increasing that with us it has become a part of our regular work.

Some of the work formerly done by the police has been transferred to the Department of Health, notably that of caring for the insane. Forcible restraint has been replaced by medical care.

Permit me to enumerate some of the most important activities.

## VITAL STATISTICS

For many years this country has been too busily occupied with what was considered more important matters, and for that reason many details had to be neglected. As the country grows older it learns much by experience. Many of our customs and laws are the result both of experience and evolution. Vital statistics is one of these. No great importance was attached to this subject; births and deaths were considered as part of the laws of nature. It was not even considered unusual that pedigreed animals should be registered and accurate records kept. This was a question of commerce and justified on that ground, but when it came to vital statistics, the making of a record of every child born, and a record of every human being who died, it was considered red tape. Experience gradually showed that this was not red tape, or the effervesence of some officious mind, but an actual necessity. As this feeling gradually grew on the public they began to comply, and in the greater part of this Union it is an obligation, not only recognized but made mandatory by law.

The question as to how this can best be accomplished is a debatable one, and the answer to this must also rest to a great extent on experience. It has been shown that so long as the registration of births and deaths is left discretionary, just so long they will be incomplete. Incomplete records are worse, at least for statistical purposes, than none at all. It is a public delusion. The public believe where a registration is in force that all vital statistics are recorded. Where it is discretionary perhaps the very records that are sought will not be found. Therefore, the only way to ever obtain correct records is to make registration mandatory and to provide an adequate penalty for neglect. This was the contention which we, in Buffalo, made for the past twenty-four years, and under which we succeeded in getting perfect records of deaths and almost perfect records of births. For many years other communities disputed this point with Buffalo and said that it savored too much of European autocracy.

It is a pleasure, however, and a justification of Buffalo's course to note that the model vital statistics law, which has been adopted by the state of New York and certain other states, is based on this theory as being the only one by which accurate vital statistics can ever be obtained.

## ISOLATION AND CONTROL OF COMMUNICABLE DISEASES

Nothing in public health activities has made greater progress and nothing has undergone greater evolution than is shown in the question of communicable diseases. Those of you who have been in public health work for the past twenty years or more will agree with me that there is no comparison between the methods employed then and now. While even at that time epidemics were no longer looked on as the visitation of Providence, yet some of the methods in use were still remnants of the same theory. In no other line of public health work has science played a more important part. With the aid of the laboratory, we have learned the cause of most diseases, and with this knowledge came the result in methods. We no longer quarantine diphtheria for an arbitrary period, but only so long as the germ manifests itself. As in diphtheria

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so in other communicable diseases, our knowledge has spread and gradually our methods have changed.

### COMMUNICABLE DISEASE HOSPITALS

Hospitals for communicable diseases are more and more coming into general use. I do not care to discuss this subject at any great length except to express the belief that they will be a great factor in the control of the diseases mentioned.

### HOSPITAL SOCIAL SERVICE

Among the great changes in hospital work, none is more important than recognition of the vicious relationship between poverty and disease. Many maladies are dependent on the attributes of poverty, insufficient food, want, bad housing, etc. Remedying the disease and returning the individual to the same condition is a labor lost, and the method of following cases to their environment and bettering conditions there is a movement in a direction that is corrective in a true sense of the word, and will be productive of results in the highest sense of the word.

### TUBERCULOSIS

It is a sad commentary on the many and great activities both by public health authorities and by many private philanthropists throughout this country, that in spite of their varied activities hardly any impression is made on pulmonary tuberculosis. This statement may be disputed by some. With the amount of energy concentrated in this one direction it would seem that a corresponding amount of results ought to be accomplished. During the past few years many societies have organized to assist their respective localities in exterminating this disease. Public sentiment has been worked up to a degree never before witnessed. With the cooperation of the public, everything that the human mind and medical science can advise is being done. Consumption has been made a reportable disease. Its victims are looked after, instructed, provided for, isolated, segregated, and the public in general has been carefully instructed as to all the questions involved. Hospitals and sanatoriums have sprung up almost like magic in city and country for the exclusive treatment of this disease.

And yet in spite of all this we stand aghast and note with consternation the fact that consumption claims as many, and sometimes it seems even more, victims than it did before.

Here is a subject for reflection. Here is food for thought. I will not attempt to enter into a discussion as to the reason why. I leave it for you. For you, who represent every section of this great country, to take this thought home with you to look over the situation as it pertains to your own locality to compare with that of others and if possible to offer a solution. I can state, however, that I can almost see that the next generation will surely reap the benefits of this constant warfare on the white plague. So let us keep at it unflinchingly.

### CLEAN-UP WEEK

The yearly municipal clean-up week, a distinctive American innovation, is an activity that has come to stay.

In addition to its material benefits, its educational feature is not to be overlooked. For weeks, the press, with its characteristic liberality, heralds its approach, and sings a daily song of cleanliness and health that is not lost; the scholar brings home a lesson to the household with the moral weight of its source, and the Boy Scout, now an active and important participant, receives an education in civic duty that cannot but influence the man of to-morrow.

The experience of Buffalo is that the clean-up week is yearly growing more popular, and its beneficent results in proportion.

### SWAT THE FLY

Stimulated by results obtained in making the Panama Canal region safe, the world awoke to the possibilities of exterminating the mosquito and fly. The results have been marvelous. The slogan "swat the fly" superseded that of "the fly that does not wipe its feet" — the former is shorter, but the latter more expressive. "The Fly That Does Not Wipe Its Feet" was the heading of an article printed in the *Bulletin* published by the Buffalo Department of Health in 1908. It was copied extensively from the Atlantic to the Pacific and in some European countries. There is no doubt as to its effect. The many fly campaigns waged everywhere are sufficient evidence. Permit me simply to emphasize one thought. I would suggest the selection of "catch the fly" to replace all others. In our experience the question of fly extermination depends chiefly on catching the flies and the best way of so doing is by fly traps set at places where flies mostly abound whether it be in the house, the barn, the manure heap, or the garbage pail. It is useless to swat the individual fly and let the million escape. It is also useless to inaugurate fly campaigns for the purpose of rewarding those who produce the greatest number of dead flies. There are many unscrupulous enough to create fly hatcheries for this special purpose in order to receive the remuneration.

Therefore "catch the fly," and catch him with a fly trap.

Aside from this, "prevention" has become the great goal of all public health activities. The old axiom about an ounce of prevention had a beautiful sound, but seldom with a tangible response. This has been replaced by the popular cry of "safety first," and by common consent public health authorities have been shouldered with the responsibility of general prevention. This summarizes the entire question of isolation and control of communicable diseases. It is not a question of education or publicity so much as a question of authority to act.

### VENEREAL DISEASES

The treatment of venereal diseases has too long been left in the hands of charlatans and leeches who suck out the gold while they frighten their victims into a silence. Their victims are numbered by the thousands. Why this disease, which always has and always will exist, should be left in the hands of quacks and unscrupulous persons, rather than treated by reputable physicians or assisted by municipal authorities, is explainable only through the delicacy felt by the unfortunate victims. At one time patients suffering from cancer or tuberculosis considered the same privacy as essential, and in some places this condition is still met, but it is gradually fading. We can readily understand why a man or a woman, who either innocently or otherwise, has acquired a venereal disease, should shrink from permitting that fact to become public property. For the same reason they do not always consult their family physician whose counsel and help would be inestimable. In order to preserve their secret they usually consult advertising quacks and learn, when too late, that they have done the very thing they sought to avoid. The quack who can thrive only by fraud, deceit, and everything that is unscrupulous, throws out such alluring baits, both as to his guarantees to cure and his work without pay, that the victim allows him to proceed. It is soon found that these guarantees and promises must be met by the patient with the required amount of cash and the patient finds that this is but the beginning of a continuous blackmail. Is it any wonder that we have hereditary syphilis, that our asylums are becoming more and more crowded, and that our suicides increase?

In many parts of the country, health departments or private philanthropies, or both, have started reactionary measures, such as making venereal diseases reportable like other communicable diseases, making free examinations for gonorrhea and syphilis, providing hospital care for those in need, and what will perhaps be the most efficient of all, the inauguration of a system by which the influence of the venereal quack is minimized. This is done by a systematic meeting of the quack's methods. Public water closets, which are plastered with venereal advertisements, are decorated with warning cards. Public advertisements in the press are offset by other advertisements issued for the purpose of calling attention to the impossibilities of fraudulent advertisements, the impossibility of curing as guaranteed, and the impossibility of any person existing and continuing to do business under heavy expense without proper remuneration, and, therefore, the impossibility of treatment without pay, and finally advising such unfortunates what to do. All these methods are valuable. Each has its advocate, and each must leave an impression.

From many years of observation I maintain that nothing will be accomplished until authority is vested where it belongs, namely, in public health departments. My first plan would be to make it impossible for any person to practice a medical fraud. It would seem that there is already sufficient law covering this point, but it is difficult to enforce. The influence of the quacks, through the millions which they spend in advertising is so great as to render it extremely difficult to put them out of business. In Buffalo we have succeeded in abolishing a few of the worst ones by merely obtaining a fraud order from the Postoffice Department by which it was impossible for the quack to receive mail, and which also made it impossible for the papers containing his advertisement to be mailed. Under this procedure alone it seems to me that the entire army of quacks could be wiped off the map. No community will tolerate another person who advertises deceit and fraud, and why the medical quack should be given preference is difficult for the ordinary person to comprehend. Not only this, but it is an insult to the common decency of every community.

### MEDICAL SCHOOL INSPECTION

Although this is one of the newer methods employed in various cities, yet its popularity has been so immediate that every town or city of any pretention whatever has some form of medical school inspection, especially in the state of New York, where it has been made compulsory by state law. The Fourth International Congress on School Hygiene, held in Buffalo in 1913, and whose proceedings have just been issued from the press, has greatly advanced this public health activity. It is therefore unnecessary to enter into this subject at length, but merely to say not only that much has been accomplished, but also that it is difficult to see how we were able to get along without it. Medical school examiners, school nurses, dental inspectors, dental dispensaries, eye, ear and throat infirmaries, are now all looked on as necessary adjuncts of school life. The question has been raised as to whether medical school inspection properly belongs to the health or school authorities. In Buffalo we have formed a combination of the two and consider this the best solution.

Open air schools have likewise swept the country, but as far as I know Buffalo again has the distinction of having the first school in which tuberculous children are treated, and at the same time educated. If there be any class of children whose minds should be cultivated while their bodies are treated, it is the tuberculous. Physically handicapped, it will be necessary for them in adult life to depend more on their mental abilities, and for this reason, if for none other, their mental requirements should be attended to at the same time that their bodies are made well.

### THE SUBNORMAL CHILD

The segregation of mental defectives, better called the subnormal children, is another great question worthy of more attention than has thus far been given to it. As a rule when these unfortunates become too old to attend special classes they are turned loose into the world to become criminals. Suitable provision should be made whereby they can be restrained and cared for until they become self-sustaining.

Does medical school inspection and school nursing deprive the regular practitioner of his legitimate work? At first glance it would seem so, but in Buffalo the opposite holds true. In the course of a year's inspection thousands of pupils are discovered with various physical conditions or diseases requiring treatment. These are all sent to the family physicians, instead of being cared for by the medical school inspectors. Most of them would have escaped for years, perhaps forever, to their own detriment, and to the loss of others; and instead of remaining a community liability became valuable community assets.

### CLOSING SCHOOLS IN EPIDEMICS

With our present knowledge of treating communicable diseases it seems strange that many physicians of experience should still hold to the obsolete theories of checking an epidemic by closing the schools. In my mind there is not a single justification for such an act. We have many schools in our city containing from one thousand to three thousand pupils each. Take one of the latter for instance: If we had one hundred cases of any one infectious disease in it, why should 2,900 pupils, who are not ill, be deprived of their privilege? As an illustration let me tell you of an epidemic of diphtheria which occurred in one of our largest schools last fall. Case after case was reported within a comparatively short time, and the medical school inspectors were instructed to locate the source. Every child showing any symptoms of coryza or any clinical evidence of diphtheria was culturized, and, if the culture was positive, excluded. Still new cases cropped up daily, and as a result every person in the school, from the principal to the janitor, was culturized. In that way a number of diphtheria carriers were found and excluded. This broke up the epidemic at once. Had the school been closed the carriers would have remained at large undetected and would have continued to spread their disease. What holds good in diphtheria is also applicable to other diseases.

### FREE PUBLIC BATHS

Buffalo has the distinction, as well as the honor, of being the first city in the world to establish and maintain absolutely free public baths. Several so-called "free baths" existed prior to ours, but inasmuch as they charged a penny for soap and towel, they could not be considered free, even if the charges were only nominal. We have two such baths situated in different parts of the city, in buildings erected especially for this purpose, with separate quarters for males and females, and each bathing establishment also containing a laundry where the bathers may wash their garments, place them in a steam dryer, and find them ready for wear by the time they are through with their bath. That these free baths and laundries are appreciated is shown by the fact that over 300,000 men, women and children make use of the baths annually, and over 10,000 make use of the laundries.

The city of Buffalo considers this a splendid investment. Only shower baths are used, there being no plunge. By standing under a shower there is no possible chance for personal contamination, and each bather is given a piece of soap and a clean towel on entering, which they are again required to deposit on leaving. Prior to that time we had free bathing on the beaches of the lake and river, which was limited to the short period of summer. For those who could afford it we had public bathing establishments and private clubs. Within recent years, however, a number of our public schools have had swimming pools and bathing facilities added, which are likewise free; but in spite of all this the popularity of our free public baths continues.

### EDUCATION IN PUBLIC HEALTH

This subject ought to be added to the curriculum of every medical college. Workers in public health appreciate this. Many a student receives his degree of Doctor of Medicine who cannot even make out an acceptable birth or death certificate. The Buffalo Department of Health has offered the medical department of the University of Buffalo all the facilities at its command, whereby the students are given opportunity to study the methods of our department in all its phases, from the conduct of the general office to the inspection of schools, tenements, etc. Every medical student is now obliged to take this course, which is bound to bring most excellent results, and be of great value especially to those who in the future will become health officers in the various localities where they may practice after graduation.

### LABORATORIES

Preventive medicine, serum therapy and laboratory findings are rapidly displacing the healing art and is giving way to the preventive art, and individuals are treated as much as their ailments.

In this connection no factor plays so important a part as the laboratory, and no practitioner can do justice to the responsibilities in the absence of its aid and resources.

All organized departments maintain a bacterial and chemical laboratory in the interests of the public health and available to the profession where located. So important are its functions that they are made available to nearby communities who are not able to maintain so expensive an equipment.

In addition to its use in medicine, such equipment, especially the chemical division, is made use of largely in commercial lines. Much money may be saved by subjecting materials to analysis to determine their character, fitness and compliance with specifications; cement, rubber, paint, oil, coal, gas and various other commodities can be subjected to tests under such circumstances. The school, public works, and fire and water departments avail themselves of the facilities and the methods adopted by our large industries can be utilized to the best advantage.

### ANTITYPHOID VACCINATION

One cannot refer to bacterial work in relation to public health without having in mind the use of the typhoid bacterin administration, its high value and efficiency; this is before the country at this time.

At present our army is and has been assembled for months under the same conditions that obtained during the Spanish-American War, when there were about twenty thousand cases of typhoid and about fifteen hundred deaths. On the frontier and in Mexico since the troops have been gathered, there have been practically none (one or two, I believe, at the utmost) all due to enforcement of the antityphoid vaccination order.

It is accepted that typhoid is contracted in many other ways than by water, through contamination of farm products, milk, etc., and inasmuch as control over this etiologic factor is not as yet as it may be, it appears indicated without question that its administration should be urged, much as with vaccination in small-pox. Buffalo's health department for the past two years has been administering free antityphoid bacterin to all applicants, especially urging it to the physicians, nurses, commercial travelers and all those who spend their vacations in the country, or where the water supply is not beyond suspicion.

### SANITARY CONTROL OF FACTORIES AND INDUSTRIES

Many factories and industrial establishments are conducted more or less in an avoidable insanitary manner.

Among causes determining this are the absence of ordinances with specific requirements, indifference of owners in allowing sufficient time for the purpose of cleaning, poor adaptation of buildings, indifference to consequences, and the custom of adapting ordinances to conditions instead of conditions to comply with ordinances.

Many advances, however, have been made, ingenious devices and appliances offset unhealthy occupations, poorly ventilated and lighted factories are growing less, dressing room and other facilities are being supplied, while many of the large representative places are ideal in their equipment.

The operations of the new New York State labor law are bringing about advantageous changes in all these matters.

Conditions in the retail food industry, however, are a fertile field for activity, particularly in the closely congested sections with recent arrivals to this country, and in the case of small places. Fly and dust protection and improper association for foods is most difficult to secure, by reason of ignorance, and the want of appreciation of the significance, especially as the enemy (germs) is an invisible foe and the distinctions in cleanliness do not appeal.

### MILK

While the protection of foodstuffs is one of the foremost works of the day, the activities in milk work are distinctive.

Its importance as a food, it's peculiar characteristics and susceptibility to contamination, its intimate association with infant mortality and with tuberculosis, render the duties of conserving it one of great importance and responsibility. It justly occupies a foremost place in the activities of all highly equipped departments. Its consideration here must of necessity be brief, and will be limited to a reference to Buffalo's activities the past few years, and some thoughts in connection therewith.

Six years ago Buffalo was supplied by about two thousand uninspected dairy farms in all sorts of conditions; it was brought to the city under unprotected transportation, distributed by about three hundred dealers, and for reasons beyond control at the time was without systematic inspection, and much of the milk was characterized by a bacterial count in the millions with colon, and much of it unfit.

The work by my direction was placed under the supervision of W. H. Heath, a former officer of the Public Health Service, and now chief of the Bureau of Food and Drugs, with instructions to systematize it with safeguarding requirements and get results.

The changes were radical. The inspecting corps was increased, a dairy farm inspection service established, a standard for production and for admission adopted, which included a bacterial limit of five hundred thousand and no colon, and ordinances were enforced.

As a consequence of rigid enforcement and administration the findings to-day are that it is produced by but fourteen hundred dairy farms (600 being discontinued) under routine inspection, distributed by but 250 dealers under routine inspection and living up to ordinance requirements.

The milk is examined as it comes from the producer and compared with findings as delivered to the consumer, and discrepancies as to character and contamination are acted on in accordance. As high as 95 per cent. comes in under requirements for admission. Poor milk is the rare exception. Fewer activities are characterized by a more satisfactory evolution from the detrimental to the desirable.

Within but a few years milk inspection was from a commercial point of view, and the influencing factor with the public was the cream line. All milk looked alike, and the important matter of its contamination and possibilities were unknown and unconsidered. Through department activity and dissemination of knowledge through the press, settlement workers and other factors, a different attitude is in evidence, and there has been a general awakening on the part of the householder in regard to milk notwithstanding which, however, there is not, as yet, that sympathetic interest which should obtain.

It has been said that a community can obtain as safe a milk as there is demand for and money to pay with, but this can come only through enlightenment, and an appreciation of the conditions. To that end, therefore, as public health is largely a purchasable commodity, a department should advertise, make use of the daily press and talk to the entire community. Provision should be made for space and at stated intervals pertinent information on health matters and guiding information on foodstuffs and the industries should be made public. Advantage should also be taken of other methods of getting to the public, and street-car advertising, by methods that appeal to the eye, are suggested.

### THE MILK BOTTLE AN EDUCATOR

It has also occurred that the milk bottle could be made use of; that it could have a mission and carry a message in its daily entrance to the household. It could carry a label or tag furnished the distributor by the department, with brief epigrammatic information how to care for milk, what to do when the baby is sick, the danger from flies and the like. In other words, make the milk bottle an educator as well as a carrier. The message day by day could not but awaken interest and make an impression.

The value of inspection is largely educational, and to that end, an inspector must have the knowledge and be able to convey it to others. A department should conduct, to my mind, a system of instruction for its inspectors, that they can cover this phase of the situation with efficiency. Such action is now in vogue at the present time in the department over which I am in charge.

### LICENSING AND EXAMINATION OF MILK DEALERS

In this connection other thoughts have occurred to me. No industry has greater potentialities for detrimental consequences than the milk industry. The careless or ignorant druggist may poison one or two; the plumber through defective work cause sickness of the family; the butcher prostrate a single household through bad meat, but the ignorant or careless milk dealer may, before he can stop, carry infection and sickness to every home on his route.

If the law demands plumbers to be licensed, a drug clerk and even a barber to be licensed and to determine fitness in protection of the public interests, is it not much more important to license a milk dealer?

It is believed that no man should be eligible for a permit to engage in the milk business unless he holds a license to be a milk dealer and engage in such business. A certifying board similar to the board that certifies to the fitness of plumbers should pass on the fitness of those who desire to handle this important commodity. Applicants should at least have a rudimentary knowledge of the relation of milk to sickness, of its possibilities in its relation to the public health, elementary knowledge of what is meant by contagion, the A B C of sanitation, the reasons for cleanliness.

This will eliminate the ignorant and often stupid individual who, at the present time, with the command of a few hundred dollars, may engage in peddling a few cans of milk, and who may be more or less of a constant menace. Such certifying board might be composed of a representative milk dealer, a member of the health department and an outside business man, and could be appointed by the county judge.

### PASTEURIZATION OF MILK

When it is considered that a proportion of the milk herds are tuberculous, and that the disease is transmissible, especially in the case of children, a problem is presented that is as cogent as important. As elimination of the infected cow is not feasible from an economic standpoint, and as pasteurization is practicable and efficient, the question of pasteurization of the city's milk is one of the indications of to-day, and should be adopted by every community.

In view of all the circumstances attendant on such procedure, an important proposition is as to whether a city of moderate size should not maintain a pasteurizing plant in the interests of the public welfare.

The subject is beyond the scope of this paper, but for some time it has been in my mind that the principal contaminating utensil, the milk can, should be sterilized under municipal control, and such action is under contemplation.

If there were a municipal sterilizing and pasteurizing plant available to the industry, it would go far toward eliminating some of the most serious of the detrimental possibilities.

It is my intention at an early day to bring this matter before your attention, as I believe it would justify your consideration.

### REGULAR SOURCE OF PUBLICITY

Nothing adds more to the value of public service than publicity. It can seldom be overdone. The public has a right to know not only what the law requires, but also what the health department does. I have often noted the serious results obtained through concealment. The public has a right to know that an epidemic exists just the same as it has a right to be proud of the fact that the community is free from disease. In my department I have employed three principal methods—a regular monthly bulletin published by the department containing twelve pages and having a circulation of ten thousand with each issue. I have found this bulletin sufficiently large to give in a condensed form the activities of the various bureaus of the department, as well as giving much information pertaining to public health which I know the public appreciates. These bulletins are issued free and mailed to the physicians, dentists, undertakers, midwives, clergymen, school principals and teachers residing in the city of Buffalo, and to other residents who apply for it.

All information contained in a department publication should be authentic, should be up-to-date, and should be edited by some person familiar with public health work, having the confidence of the medical profession and considered authority on such matters. In this way only can the confidence of the public be reached and maintained.

The other method which I have adopted and found to be of great value is to disseminate information through the daily press. In a large city so much occurs continuously that it would be impossible to wait for the issue of its monthly bulletin, much less to crowd in all that should go. The daily press therefore becomes a necessary adjunct. Like other news the health department information thus reaches the public while it is yet news, and is therefore of greater value. The influence of the daily press is also a matter of common knowledge, and this influence is a necessary adjunct for any public health department.

The third method is the distribution of small hand circulars of the most concise nature. These are printed in the several languages most commonly used in the municipality.

I am not much of a believer in voluminous medical articles in weekly or monthly magazines. These contributors often write against space, at so much per line, with a corresponding loss of the value of their production.

### INFANT MORTALITY

Not so many years ago infant mortality and "the survival of the fittest" were always associated in the minds of the public. Parents took it for granted that a certain number of children were born to die in infancy. As civilization advanced, the number of births gradually reduced, but the number of deaths was not reduced in the same ratio. Then it was that the question of infant mortality received such consideration that every feature entering into the cause was carefully investigated. It was found that this was not an ordinary result of natural conditions but a simple question of cause and effect. Efforts were then started toward preventing the cause, and the effect is becoming apparent everywhere. The percentage of deaths in every well-organized community is annually growing smaller. Wherever this is not the case it indicates carelessness or inactivity. Most of you can recall the time when long tube nursing bottles were common in every household when milk was permitted to remain at the most convenient place; when flies were if not a welcome at least a necessary adjunct; when garbage and filth were thrown out of the nearest store or window and permitted to accumulate; when no attention was paid to food and drink; when nobody ever thought of investigating dairies or examining cows; when milk was milk and that was all there was to it.

I might continue to multiply this list, but my only object is to show what was and to call your attention to its elimination. We may summarize it all by "cause and effect."

While education played an important part in these results, I am afraid that it gets more credit than it deserves. When you ask this question, I am sure your answer will be the same for your locality as it was for mine—that while education and publicity play important parts. the chief credit is due to adequate laws by which the health departments are enabled to back up their demands in an efficient manner. People are the same the world over. As much as they may agree to the justness of your request the majority will never comply unless your request becomes a demand and that demand can be properly enforced by law.

This is what has made the great impression on infant mortality and has reduced it from what, years ago, was a blot on the country and a criminal insult to our intelligence to a state which, while yet far from ideal, can at least be called satisfactory.

### FUTURE ACTIVITIES

Now that the reduction of infant mortality has been properly looked after, let us devote some attention toward the reduction of adult mortality. Far too many die during the best years of their lives from organic diseases. Their activities are cut short at a time when their services, or at least their experience, is worth the most. However, this subject is so great and so important that to enter into it properly would again carry me beyond my time allowance. Let me only say that I consider this one of the greatest of future activities in public health work. I believe that we ought to reduce the various organic troubles of adult life as we have reduced the causes of infant mortality.

In thanking you for your attention, I beg your indulgence. The responsibilities of a department with widening sphere of action, the many claims on time incident thereto, have necessitated the hurried preparation of these remarks, at a time usually devoted to sleep and rest. If, however, they will awaken some interest and elicit discussion, their purpose will be more than fulfilled.

Municipal Building.

## ABSTRACT OF DISCUSSION

Dr. W. A. Evans, Chicago: I know of no separate statistics in this country that are in greater need of standardization than the baby death-rate. It is so easy to show the cause of death of babies under 1 year of age, that some years ago I accepted the conclusion that, in considering the infant death-rate we must totally disregard the cause of death as given on the death certificate—it was so thoroughly undependable. The question then arises how we shall estimate the death-rate of babies living less than a year. In view of the faulty birth registration in most of our communities, probably the most accurate method is to estimate the death-rate on the basis of population under 1 year of age. It would be difficult for me to conceive so rapid a drop in death-rate; and I must believe that a good part of it is due to the fact that the attention drawn to it served to change in the direction of greater accuracy the cause of death as it appeared on the death certificate. When I went into the department of health in the city of Chicago, one of the things needing serious attention was what should be done about the baby death-rate. Men who were engaged in caring for babies told me that, in their judgment, the evidence from a clinical point of view did not indicate that infantile diarrhea was to be handled as a bacterial disease. We know that, from the point of view of bacteriology, proving a bacterial cause for infantile diarrheas has met with indifferent success. As the result of our investigation the situation developed to include milk (which came under the auspices of the health department), and nursing (which is, in the main, extragovernmental). Our death-rate has not improved, though the milk-supply has.

Dr. J. W. Trask, Washington, D. C.: What Dr. Evans says with regard to the method of calculating mortality rates is all too true, especially for this country. Improved registration of births will give an apparently decreasing or falling infant mortality; and that applies to the whole country.

Dr. W. S. Rankin, Raleigh, N. C.: Dr. Evans has suggested that the fall from 134 to 92 deaths from diarrheal diseases of infants per hundred thousand population is due to greater accuracy of the physicians in making out the death certificates. The evidence bearing on this suggestion will be found in the relation of the drop in the special death-rate to changes in the general death-rate. If there is a similar decline in the general death-rate, the evidence is against Dr. Evan's suggested explanation; if, on the other hand, there has been a decline in the special death-rate without any similar decline in the general death-rate the evidence favors Dr. Evans' suggestion.

Dr. C. Am Ende, New York: I have been for several years in charge of the children's clinic and I have found that, usually, in the summer time the cases of diarrhea that come to me are largely affected by the incomplete sterilization of condensed milk; and when I explain to the mothers that they must boil the condensed milk, together with the water they use in its dilution the diarrheas stop promptly.

Dr. C. Hampson Jones, Baltimore: If we can get away from the idea of having any special day or special week for city cleaning, it will be better. In Baltimore we have been trying to do this for some time; and I think we are approaching success. A large number of the police force are in the day service, and constitute a moral rather than an active force in the control of violations of law. We have obtained the cooperation of the police commissioners in having the day policemen perform sanitary work in the direction of constant inspection of the yards, cellars and alleyways of properties on their respective beats, with power to enter whenever they choose to instruct the people what to do; and, if those instructions are not carried out, to invoke the law and to arrest. I don't know how successful it is going to prove; we believe that it will be excellent; and, finally, it will do away with the piling up of filth until the cleaning-up day.

Dr. Charles J. Hastings, Toronto, Ontario: I have always taken decided exception to this "clean-up day" or "clean-up week"; my idea is to make the clean-up process a continuous one. It is not possible to depend on the complaint system; because in the parts of the city that it was most needed the inhabitants were practically all in the same ship, and therefore were not going to complain of each other. Complaints usually come from the better districts of the city. Therefore, I had the city divided into (twenty, at present) sanitary districts, and one man held responsible for each district, and he patrols it regularly. In addition to that, we have the cooperation of the police officers of the city, who are required to make a note of any insanitary conditions they see, and are furnished with blanks on which they report to the department of health. While, as Dr. Fronczak says, there is an educative value in drawing the attention of the public generally as in a general spring house-cleaning, yet I feel that if we want to get our cities cleaned up and keep them clean, we must divide them into sanitary districts and have competent men in control over those districts.

Dr. Davis Furman, Greenville, S. C.: I live in a small town and have been connected with the health board there for some time. Quite recently we provided for a clean-up week. We have a pretty good corps of officers, whose duty it is to look around town and see that everything is clean; but the clean-up week brought to the surface tons and tons of hidden garbage; and it was evident that whitewash, soaps, varnish and disinfectants were freely used, even by the negroes. We made it a little more interesting by offering some premiums for the cleanest ward.

Dr. Francis E. Fronczak, Buffalo: The idea of having a clean-up week is not to have the city clean that particular week only. The purpose is to arouse in the ignorant and those who are, as a rule, slovenly and uncleanly, ambition to fall in line and do, during the clean-up, what others are doing the entire year. Clean-up week not only is a forcible reminder to the people that they should keep clean their houses and homes, but gives the idea of adorning their surroundings; and, of course, there is a friendly, neighborly competition in this regard. One neighbor after clean-up week will have a fine lawn prepared; soon you will see others doing the same. This is our experience in the last few years. For the clean-up week we interest the population for about a month; we get the police department, the fire department, the boy scouts, the women's organizations, the housekeepers' leagues, the business men, the chamber of commerce and others to cooperate. The chamber of commerce officials told me that during the last clean-up week they found a great number of fire risks in the factories and stores that would never have been found had it not been for clean-up week. This is the result of negligence on the part of the employees. Store employees throw everything in the cellars and forget to remove it; factories sweep the dirt in a corner and leave it. This clean-up idea starts the employees to clean up, and they do it completely. The city is divided into sanitary districts, and these are kept clean all the year round so far as can be seen by an ordinary examination, but in the clean-up week we preach the necessity for cleaning up the nooks, corners, attics, barns, etc. I believe that at some future time there will be no necessity for clean-up weeks, because everything will be as clean as it ought to be, because of these educational campaigns.

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**The Importance of Discoveries in the Field of Infectious Diseases.**—The discoveries which have transformed the face of modern medicine have been in the field of infectious diseases, and in no other department of medicine could new knowledge have meant so much to mankind, for the infectious diseases have a significance to the race possessed by no other class of disease, and problems relating to their restraint are scarcely less social and economic than medical.—Welch.

# DISEASE AND POVERTY*

J. N. HURTY, M.D.
INDIANAPOLIS

It seems fair to assume that the normal person will not sink into poverty. It also seems fair to assume that illness, disease, deformity and weak-mindedness are subnormal. David Starr Jordan says: "Strong men seek education and make opportunity," and to this might be appropriately added, "They bring things about; they make events occur." Weak men are the opposite of this, and by weak I mean not strong in body or in mind. It is by their works ye shall know them. Disease is itself not an evidence of physical or mental strength. Syphilis is a great cause of poverty, as it is also of insanity. "We were getting along splendidly" said the poverty-stricken woman, "until my husband took consumption." And who must be told of the great poverty that trails consumption? A farmer died of typhoid fever when the mortgage, given in part payment for his farm, was only one-half paid off. His wife and little daughter took the disease and survived only finally to fill fuller the slums of a city where she went with the child when the rich man foreclosed the mortgage. Yellow fever prevented the French from building the Panama canal, and thousands who had invested their all in canal shares were pauperized.

In Mexico there are thousands who have been made blind and pauperized by small-pox, and a writer says there are at least two million blind beggars in China, all made blind by small-pox. It is only when epidemics come, when the greater proportion of lives are threatened, that we realize the meaning of sickness and disease. The ramifications of disease are so complex and far reaching we can have but a hazy idea of what disease means.

And what is disease? Whence comes it? Infectious diseases come to us from previous cases. Syphilis, out of which inefficiency, crime, insanity and pauperism flow in increasing streams, is a disease which is acquired through sin.

A virtuous and a righteous race would not have syphilis and gonorrhea.

It is curious to note that, because of our stupidity, one's very industry may bring poverty. This is illustrated by the occupational diseases. Until very recently society permitted greed to force phossy jaw on workmen who afterward in many instances became paupers. To rear and protect industries, one product of which is poverty, is a queer condition. The prevention of phossy jaw will certainly also prevent all the poverty which might come from it.

Hernia has more than once brought an industrious citizen to poverty.

Cigar-makers, printers and tailors, are especially afflicted with tuberculosis; and on the pauper records appear the names of hundreds who have followed these occupations. A proprietor who does not surround his employees with the best conditions of health is a breeder of disease, poverty and crime.

Feeble-mindedness is a disease condition and produces a world of poverty. One from a thousand stories illustrate this. A feeble-minded girl, born of self-supporting parents, who, nevertheless, carried the taint of feeble-mindedness in their blood, was admitted to the Indiana School for the Feeble-Minded. She was there taught how to cook and to wait on the table, and to a casual observer seemed well fitted for self-support. Fertile as a rabbit, she was turned loose in the world. She mated with a male carrying her taint. In all, eight feeble-minded children appeared and the entire family of ten sunk deep into poverty. There is no cure for feeble-mindedness; it may only be prevented; and there are only two rational methods for its prevention, neither of which society will adopt. And so it happens, as we "blunder on through love and hunger," that the highest services of medical science are rejected, prevention is disregarded and disease follows civilization with its ever lengthening train of degeneracy, defectiveness, delinquency and dependency.

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

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# TUBERCULOSIS AS A CAUSE AND RESULT OF POVERTY*

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It is needless to state before physicians that direct bacillary transmission of tuberculosis is possible. Tubercle bacilli have been found in the placenta of the tuberculous mother and in the new-born babe; but when we deal with the social aspect of tuberculosis we can consider the occurrence a negligible factor because of the relative rarity of direct tuberculous heredity.

Tuberculosis in childhood we have learned to ascribe mainly to a postnatal infection from a tuberculous parent, particularly the mother, and in a small percentage (about 10 per cent.) of the cases among artificially fed babies, to bovine tuberculosis. The predisposition to tuberculosis, which is surely and often inherited, comes from what may be called a physiologic poverty. A child of a tuberculous father or a tuberculous mother brings with it as a heritage a general weakness, its entire physical make-up having the imprint of diminished resistance. In other words, it is poor in its physiologic make-up and has no natural immunity to an invasion of disease. It is particularly prone to tuberculosis and when placed in a tuberculous environment contracts this disease very easily.

It is, however, by no means necessary that both or either parent should be tuberculous in order to produce this physiologic poverty. A badly nourished mother or father, living and working under insanitary conditions, overworked and underfed, will as surely transmit a physiologic poverty to their offspring as any tuberculous parent. Numerous and rapidly repeated pregnancies, particularly in the working woman who must often labor until a few days before and resume her work a week after confinement, are also sure to produce children physiologically poor and ill adapted to resist the ever-present tubercle bacillus.

There are other diseases, such as venereal diseases, alcoholism, etc., which, when present in the parents at the time of conception, will leave the imprint on the offspring. This imprint means great susceptibility to all kinds of diseases and particularly to tuberculosis. A general debility of either one or both parents, especially when it is added to an insufficient income to support the family so that there is want of food, clothing, or proper housing, is sure to result in the physiologic poverty of the children.

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

In large families of the poor it is usually the later-born child or children (fifth, sixth, seventh, eighth, etc.), who contract tuberculosis. This is primarily due to a purely physiologic condition in either father or mother, or in both. The parents are older and less vigorous, the mother particularly is worn out by the frequent pregnancies. Very often as a result of her own debilitated condition the mother cannot nurse the child, and artificial feeding, which is always worse for the child's natural growth than the healthy mother's milk, must be resorted to.

The second reason why the later-born children contract tuberculosis more frequently than the first-born is purely an economic one. So long as the family is small the father earns enough for all and the mother can devote her time to the care of the children. With the increase of the family there is very rarely a corresponding increase in the earnings of the father. The mother often has to help in the support and even then there is less abundance and less good food for the many mouths to be fed, less care can be bestowed on the later-born children, and all have to be contented with more crowded and poorer living quarters. In taking the history I always make it a point to inquire of the patient whether he was the first, second, third, fourth, fifth, etc., born in the family, and the statistics I have gathered in this way show that the later born in large families contract tuberculosis more frequently than the first-born.

Child labor, the curse of our nation, still prevalent in some of our states, impairs the physique and is in many instances the cause of tuberculosis in our young people. When the earnings of the parents are small the children will be forced into this sort of work so long as it is not absolutely prohibited by law, and when, because of tuberculosis in a family, children at the age of 8, 10, or 12 years must help in the support, working at home or in factory, they are almost certain to become victims of the disease.

We know that the housing problem is most closely allied to the tuberculosis problem. There is enough statistical evidence to show that tuberculosis is preeminently a disease of congestion. This evidence is to be found in the "lung blocks" of our large cities and the congested cheap lodging-houses, in labor camps, prisons, reformatories and schools.[1] The carefully collected statistics of the great city of Berlin show that 42 per cent. of all the cases of tuberculosis occur in families occupying but one room, 40 per cent. where they occupy two rooms, 12 per cent. where they have three rooms, and 6 per cent. where they have four or more rooms.

Maurice Fishberg[2] of New York investigated the housing condition of 217 families living in New York, the greatest and wealthiest city of our continent.

> These families consisted of 1,369 persons of whom 1,129 lived at "home" in 717 rooms and slept in 658 beds. That is about two to a bed and 1.57 people to a room including kitchens. Of the 274 tuberculous persons only 112 had separate rooms and only 136 had separate beds. Some consumptive mothers slept on chairs or on the kitchen floor.

Fishberg very justly says that this state of affairs is usual in all industrial centers of the United States.

Is it any wonder that we come to look on every child born in such environments as a candidate for tuberculosis?

Not only in the homes of the poor but also among the homeless, who must be still poorer, bad housing conditions are responsible for much tuberculosis and its concomitant misery. The Health Department's statistics of New York show that the lodging-houses with an accommodation of only 17,500 people furnish in tuberculosis hospitals and clinics combined, 1,504 cases, or 8.8 per cent., of the total number reported in Manhattan, although the lodging-house population is only 0.75 per cent. of the total population. Mr. Charles B. Barnes in the *Journal of the Outdoor Life* for April, 1914,[3] shows that the lodging-house population is eleven times more subject to tuberculosis than the average population. In connection with this, I cannot help quoting from Mr. Barnes the following impressive words: "It is easy to see why so many men with tuberculosis gravitate to the cheap lodging-house. When the friendless or near-friendless man gets so weakened by his disease that he can earn little or no money, he is perforce compelled to go to a cheap place."

All cheap lodging-houses in small or large cities are evidence of poverty, misery and degradation. Those who have ever visited this class of habitation, in reality usually unfit to be inhabited by any human being, will realize that cheap lodging-houses are veritable breeding-places of tuberculosis. Many lack light, all of them lack air and proper ventilation, and not one of them is either sanitarily constructed or conducted. The tuberculous visitor to these lodging-houses will leave the traces of his tuberculosis in the form of dried sputum on the floor, wall, or blanket. The underfed, badly clad, non-tuberculous lodger, who will next occupy this cubicle, the enclosure supposed to represent a room, is almost certain to contract the disease.

The percentage of tuberculosis in our prisons and reformatories[4] is six times as high as among the population outside the prisons, which means that 6 out of every 100 prisoners, besides being condemned to serve a certain time in prison, are at the same time condemned to contract tuberculosis. And this we allow to continue in spite of our modern conception of phthisiotherapy and penology.

Congestion is of course equally detrimental in workshops, sweatshops, factories, offices and stores, and the only reason why sufficient attention is not paid to congestion in these localities is the difficulty of obtaining satisfactory statistics.

Dr. Bertram H. Waters, in a recent contribution,[5] showed how very frequent tuberculosis is among the garment workers of New York City, the majority of whom work in our crowded and insanitary sweatshops or so-called factories, located mainly in the tenement-house districts.

That tuberculosis is most prevalent among the poor, or as I may more justly express it, among those who receive low wages, is too well known to need statistical evidence; however, it is interesting to recall here the oft-quoted statistics of Hamburg which show that the highest mortality is in families with a maximum earning of $300 per year, being three times as high as in families whose income is $1,250, and about four times as high as in families earning $6,000 a year.[6] If such statistics concerning congestion and wage earning would be taken in the United States, I am sure the fact that tuberculosis is a disease of low wage would be amply shown. In the experience of a single charity society, the New York Association for Improving the Condition of the Poor, it has become very evident that the prevalence of tuberculosis is in the majority of instances the result of insufficient earning on the part of the head of the family.

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[1] Knopf, S. A.: Tuberculosis and Congestion, New York Med. Jour., Sept. 4, 1909.

[2] Fishberg, Maurice: A Study of the Child in the Tuberculous Milieu, Arch. Pediat., February, 1914.

[3] Barnes, Charles B.: Tuberculosis Among Homeless Men and in Lodging Houses, Jour. Outdoor Life, April, 1914.

[4] Knopf, S. A.: The Tuberculosis Problem in Prisons and Reformatories, International Prison Commission, Fifty-Eighth Congress.

[5] Waters, Bertram H.: A Statistical Review of the Work of the Tuberculosis Clinics, New York Med. Jour., Oct. 28, 1911.

Thanks to the courtesy of Mr. William H. Matthews, director of the Department of Family Welfare, I have come into possession of the advance sheet of a report soon to be published, from which I will quote the following:

> The low wages of many of the men whose widows and orphans had to be taken care of by the society may well be given as one of the reasons why many of the families were more or less dependent before the husband's death. Again, the result of the low wage, insufficient to supply the food, clothing and shelter necessary to healthful existence undoubtedly meant that the bodies of the men, women and children were exposed to diseases that especially prey on underfed, poorly clothed and badly housed people. Tuberculosis cut short the lives of 40 per cent. of these men.

Their minimum wage was $8 and their maximum wage $18 per week.

In the letter accompanying this report Mr. Matthews says:

> Generally speaking, as I read relief-case records and go in and out of the houses of our families, I am constantly depressed as I note the amount of poverty and want that comes through the presence of this disease (tuberculosis), and again with the fact that poverty seems responsible for the quick hold which it gets on so many of our families; that is, it appears in terms of both cause and effect, and it is often difficult to determine where the line between the two may be drawn.

When tuberculosis has entered the homes not only of the absolutely but even of the moderately poor, or the families of the well-to-do, it proves to be one of the most costly of all diseases, particularly if for one reason or another the patient cannot enter a public institution. In the best and most economically conducted public institutions the maintenance of a tuberculous patient costs at least $10 per week. If the tuberculous invalid happens to be the principal breadwinner of the family, poverty and suffering of all is sure to be the result, and unless the disease has been discovered early and a speedy cure is accomplished, the poverty of the family is liable to become as chronic as the disease itself.

The fallacious belief, still prevalent among the masses, that whisky will prevent and cure tuberculosis has produced a goodly number of alcoholics; while, as is well known, instead of being a preventive, alcohol is a strong predisposing factor to the disease. Of course, just as poverty may be the cause or the result of tuberculosis so alcoholism may be the cause or result of poverty. The drunkard who spends his earnings for alcohol will become a pauper. But in justice to many unfortunate sufferers among the poor, it must also be said that it is because of the horrors of sickness and poverty that some cannot resist the temptation to seek forgetfulness in the cup.

I believe what has been said thus far suffices to show that tuberculosis is as often the cause as it is the result of poverty. But whatever little merit my humble contribution may have through presenting these facts to the medical and the lay world, unless I can offer some remedy, the mere reiteration of what is known to all physicians and laymen interested in the tuberculosis cause will have little value.

Before making any suggestions, however, a word should be said on the subject of the annual cost of tuberculosis in the United States which, were it not for our vast resources, would be enough to impoverish the nation. A very careful and conservative estimate of the economic cost of tuberculosis in the United States was made by Professor Irving Fisher in 1912.[7] He estimated the number of deaths at only 155,000 per annum and considered a minimum estimate of the monetary losses which these deaths represent as follows:

| | | |
|---|---|---|
| Loss to the patients | | $665,000,000 |
| By sickness | $145,000,000 | |
| By death | 520,000,000 | |
| Loss to others | | 570,000,000 |
| By sickness | 220,000,000 | |
| By death | 350,000,000 | |
| Total | | $1,235,000,000 |

As Professor Fisher told me afterward, he had not in this estimate included the cost of tuberculosis in childhood. In a paper which I presented before the Section on Hygiene of Infancy and Childhood of the International Congress on Hygiene and Demography in the same year,[8] I estimated the average duration of the life of the 50,000 children who die annually from tuberculosis in the United States as about 7½ years, and figuring the cost to parents and community for each life at only $200 per annum, the financial loss thus represented is $75,000,000; and these children have died before they have been able to give any return to their parents and the community. Add these $75,000,000 to Dr. Fisher's estimated cost of tuberculosis in adult life, we find that we are spending $1,310,000,000 for a preventable and curable disease.

Now let us see briefly what would be our financial gain if we treated all the patients, young and old, at the right time and in the right place, while the disease is still curable.

I recently attended the celebration of the tenth anniversary of the Gaylord Farm Sanatorium at Wallingford, Conn., with which it has been my privilege to be affiliated since its inception. The institution, which is supported partly by philanthropy and partly by state aid, exists for the purpose of curing the incipient and early cases of tuberculosis and restore the patients to their full earning capacity. Here is the result of ten years work, and the figures speak for themselves:

| | | |
|---|---|---|
| Gaylord Farm Sanatorium, Actual Earnings of discharged patients up to May 1, 1914 | | $1,400,000.00 |
| Total expenditures to May 1, 1914, Lands, Buildings and Equipment | $195,958.08 | |
| Interest on above at 5 per cent. | 55,178.94 | |
| Total maintenance | 345,298.64 | |
| | | $596,435.66 |
| Excess patients' earnings over expenditures | | $803,564.34 |

These statistics are carefully compiled by Dr. David R. Lyman, the able superintendent of the sanatorium, and I vouch for their accuracy.

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[6] Gottstein, R., in Brauer, Schröder and Blumenfeld: Handbuch der Tuberkulose, i, Johann Ambrosius Barth, Leipsic.

[7] Fisher, Irving: A Revised Estimate of the Economic Cost of Tuberculosis, Tr. Nat. Tuberc. Assn., 1912.

[8] Knopf, S. A.: Tuberculosis and Other Diseases in Schools and Colleges, New York Med. Jour., Jan. 25, 1913.

It is by carefully tracing and watching over the patients discharged from the institution that Dr. Lyman and his co-workers have been able to gather these statistics. It is by keeping tab on all the patients who pass through tuberculosis clinics, dispensaries, and hospital sanatoriums that an infinite amount of good in the aftercare of the cured patients or those in whom the disease is arrested can be accomplished. I go even further, however, and say that in order that our institutions, sanatoriums, hospitals, clinics, dispensaries, and preventoriums for the tuberculous adult or child shall be really effective in diminishing the number of cases and thus prevent tuberculosis from becoming the cause of still more poverty, the home of the patient should be visited by a social worker, not only after the tuberculous patient has passed through the sanatorium and graduated therefrom, but on the day of entrance. By an investigation of the home life of the individual admitted to an institution we should find out why that man, this woman, or this child became tuberculous, and immediate steps should then be taken to remove the cause and thus prevent other members of the family from contracting this costly disease with its wake of suffering, misery, and death.

The next and most important thing for us to do is to teach the masses that quality is better than quantity in the raising of a family. A universal and periodic examination of all citizens for tuberculosis and other poverty-producing diseases should be made obligatory; the poor should be examined free and the well-to-do should pay a reasonable fee. All individuals discovered to be tuberculous should be placed under medical care. Predisposed children should be educated in preventoria and open air schools. The pregnant woman should not be allowed to work as a wage earner for two months before and for one month after confinement.

In view of the fact that thousands of grown-up men and women are seeking work, there is not the slightest excuse for the continuation of that abomination and disgrace to our nation known as child labor. State and municipal labor bureaus should be established to send those seeking work where workers are needed. A minimum wage law should be established and be framed so as to assure a living wage to every living citizen.

To improve the housing conditions of the masses we must have better housing laws and their more rigorous enforcement. But that alone will not suffice. Our philanthropists, big and little, must listen to the call of duty and help to build more model tenement houses or individual sanitary homes for which the rent shall be low, and not keep the land unoccupied for speculation until greater congestion shall have increased its money value.

For the homeless man, there should be decent public places where for a reasonable sum he may find sanitary living quarters by day and by night. The employers of men and women in factories, workshops, stores, and offices must bear in mind that light and air and reasonable working hours increase efficiency and make their employees more loyal and helpful. Our brothers and sisters, morally diseased and confined in prisons, should also be thought of in our combat of tuberculosis. Congestion, underfeeding, bad sanitation, and bad treatment of our prisoners will react inevitably on the health, happiness, and prosperity of the community. The more sanitary are our prisons, the less crowded and congested they may be, the more humane we are in the treatment of the inmates, the more of these unfortunates will be redeemed. In short, unless there is more humanity and social justice, a more wise administration of all 'round state and municipalities, a greater willingness of our well-to-do citizens to help in overcoming tuberculosis as a disease of malnutrition, bad housing, and low wage, we will continue to have tuberculosis as a most frequent cause of poverty, and poverty again causing tuberculosis, and we will continue to lose 200,000 valuable lives annually, representing a loss of nearly a billion and a half dollars to the community.

It should be considered the duty of every municipality to teach the masses temperance, sanitary living and how to prepare nutritious food.[9] This should be done by means of popular literature, lectures and demonstrations. To relieve the underfeeding of the masses, I favor such institutions as are known in Germany as *Volksküchen,* that is to say, public kitchens where substantial, nutritious meals for an entire family can be purchased at a minimum price.

I cannot conclude this report on tuberculosis as a result and cause of poverty without referring to one feature which has been thought of very little, except perhaps by those who look on the tuberculosis problem in all its aspects from a medicosociologic point of view and which was expressed eloquently and forcefully in a recent address by Deputy Health Commissioner Haven Emerson of New York.[10] Many corporations, employers of large bodies of men and women and even some state and municipal departments now require a physical examination for tuberculosis before they accept any one in their employ. By this precaution these corporations, employers and governmental departments surround themselves with those physically best fit to do their work. What is the result of this ever increasing and from some points of view most laudable practice of examining all candidates for employment and excluding the suspected or tuberculous? Are we are creating a large army of persons declared by this exclusion unfit for the struggle of life? Tuberculosis must then also be held responsible for this source of increasing poverty among the seemingly unfit. It is a tremendous problem which thus confronts our statesmen and political economists, and indeed all of us. At this time I feel myself not prepared to suggest any other solution, except the inauguration of universal and obligatory insurance against disease, infirmity and old age (including, of course, tuberculosis) by state government or by private insurance companies under state control, similar to those in Germany for all working men or women earning less than $1,000 per year. There should be also encouraged a voluntary insurance by those earning more. For the insurance for the former class the employer should be held responsible.

As an additional means to provide sufficient sanatorium and hospital facilities, a special tuberculosis tax should be levied on house and factory owners enabling the municipal authorities to construct, equip and maintain such much needed institutions, because of the very beneficent examination for tuberculosis of many employees and workers and their exclusion if found afflicted with the disease. Lastly, I would wish to make as strong and as earnest an appeal as possible to statesmen and philanthropists for the establishment of industrial colonies in which such unfortunate workers may have an opportunity not only to support themselves and their families in decency, but by which the opportunity for their complete reestablishment to health and vigor may also be afforded.

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[9] Lusk, Graham: The Fundamental Basis of Nutrition, Yale University Press.

[10] Emerson, Haven: Address at the dedication of the Mt. McGregor Sanatorium for Tuberculosis Employees of the Metropolitan Life Insurance Company.

As a conclusion to this necessarily rather meager report on a great and overwhelming theme, permit me to quote the following paragraph from the "Tuberculosis-Day Prayer" of my inspired friend, Professor Walter Rauschenbusch of Rochester, N. Y.:

> O God, we pray Thee for all whose vigor is being drained by slow and wasting illness. . . . Since we are all jointly guilty of the conditions which have bred their disease, may we stand by those who bear the burden of our common sin and set the united will of our community against this power that slays the young and the strong in the bloom of their life. May this death that creeps from man to man be a solemn reminder that we are all one family, bound together in joy and sorrow, in life and death, that we may cease from our selfish indifference and together seek Thy kingdom and Thy righteousness which will bring us health and life.

16 West Ninety-Fifth Street.

## ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. KNOPF AND HURTY

Dr. **Woods Hutchinson**, New York: Poverty is a medical problem, first, because of the heavy part that disease plays in its production. The most laborious and carefully thought-out report of the recent English Royal Commission on Poverty states that, in the commissioners' judgment, at least from 55 to 60 per cent. of the poverty in Great Britain is due to one cause—sickness. The same finding has been repeated time and again by other investigators; for instance, the Charity Organization Society of New York investigated cases of unemployment and destitution. In one winter, of 2,200 families investigated, 35 per cent. were found to be in destitute condition on account of tuberculosis, and 25 per cent. more on account of other diseases. A committee of equalization, to see that every child born into the community shall have everything that it needs in the way of food-supply and education before anybody is allowed to have too much seems to me very urgently called for under the circumstances. As disease and ill-health are such important factors in the causation of poverty, attempts have been made, in most of the civilized countries of Europe, to provide for the medical care of the poorer and less successful elements of the population by some form of government health insurance. It is only a question of time before some such process is brought up for consideration and action in this country. We ought to prepare ourselves to meet that movement and have a body of facts on which we can base our view of what we think ought to be done that every individual may get the best possible medical attention and the protection against disease to which he is entitled. I would suggest that it should be made in some way possible for physicians, particularly younger men, to experiment with some form of annual contract or health insurance on terms to be determined by this organization, including a physical examination at stated intervals, and an inspection of the home and place of work. It can be done for a comparatively small sum because it brings under contribution the considerable percentage, ranging anywhere from 15 to 25 per cent., of the community whose medical care we now perform for nothing through charity, or hospitals, or through uncollectable bills, etc. If we could devise some scheme by which the poorer classes of working men who often cannot afford to pay a $2 fee for a visit can have the benefit of a physician's care by coming into some organization provided and planned by the doctor himself it would be a great addition to the health of the community. This Section should appoint a committee, or should request the House of Delegates to appoint one, to study this problem and see under what conditions some voluntary system of yearly or contract practice could be entered into. The sum that could be fixed for those in poorer circumstances is really much smaller than one would readily believe. The amount fixed under the Lloyd-George bill in England was 8 shillings and sixpence a year—a little over $2; and the physicians of England were making a rate of 5 shillings a year in voluntary organizations of their own and made fairly good and so-called remunerative incomes out of their private clubs.

Dr. **Edward O. Otis**, Boston: Dr. Knopf has said that tuberculosis is preeminently a disease of congestion of population. I should like to modify that statement and say, it is a disease of the conditions which congestion produces. I think it is a mooted question with us whether or not people can keep in health under congested conditions of city life. One thing is sure, we are never going to get the poor of our larger cities out into the country, and I think that what we must do is to make living conditions wholesome under congested conditions in the cities. We have found out now that it is not foul or stagnant air that is particularly injurious, provided we can keep it moist and in motion. We have learned, also, that tuberculosis may exist quite as extensively in the country districts as in the congested city. I was told some years ago by the commissioners of Minnesota who were appointed to look into the question of tuberculosis with the idea of establishing a sanatorium, that the largest amount of tuberculosis that existed in Minnesota was not in the two cities of St. Paul and Minneapolis, but among the Scandinavian farmers. I have practiced among the poor, as my friend Dr. Knopf has, for a great many years, in a large city among the people of the slums in dispensary work, and I have often found, as I dare say all have who have had similar experience, that the number of children in a poor family was the salvation of that poor family; that when the father was disqualified from working for one cause or another, he was kept from poverty by the children taking up the burden of the family support. I agree with Dr. Hutchinson, that if we can only give the children of these large families a fair chance, they will grow up as healthy and well, and as useful citizens to the community, as the one child of quality, so to speak, in the one-child family, who is not infrequently a failure. Indeed, with us in Boston, unless we had had the immigrants and the large families of the immigrants, the population, so far as the Anglo-Saxon portion of it was concerned, would have been a decadent one, for the purely American race is rapidly dying out. I think we have great hope in the large families of the poor if we can only make their congested condition of living wholesome ones.

Dr. **S. A. Knopf**, New York: I can but disagree with my friend, Dr. Otis, when he thinks that the so-called modern idea that we can dispense with fresh air so long as the air is in motion and properly saturated is a correct one. I for one will not subscribe to it, and I consider it a dangerous doctrine to teach, at least when we deal with tuberculous patients. Granting even that the exhalation of carbonic acid gas from our lungs is not as injurious as we formerly considered it, there is something decidedly beneficial in outdoor fresh air which cannot be found in the confined air, no matter how much it may be in motion; hence I would strongly protest against any change in our conception of the danger from congestion and I would equally protest against teaching that outdoor fresh air is not so essential to our well-being or the treatment of tuberculosis as was formerly thought. On the contrary, let us continue to preach and practice outdoor sleeping and outdoor living as far as possible. I have no time to enter into lengthy discussion as to the advisability of small families among the poor, the undernourished, and the tuberculously inclined; all I can say is that in my experience among the tenement dwellers in New York I found that in larger families among the poor, particularly where there was tuberculosis, the children die young, but not before they have caused their parents a good deal of sorrow and anxiety and cost the municipality a good deal of money, and all in vain. This, to my mind, is more race suicide than the prevention of conception in a tuberculous mother. To prevent such a conception I believe is the physician's duty, and I am willing to take the responsibility before the law and my God for every time I have prevented the procreation of a tuberculous offspring and thus perhaps have, if not saved, at least prolonged the life of a mother.

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# SOME EXPERIENCES WITH ALCOHOL INJECTION IN TRIGEMINAL AND OTHER NEURALGIAS *

WILFRED HARRIS, M.D.
LONDON, ENGLAND

It is a great pleasure to me to be enabled, through the courtesy of the officers of your Section, to place before you the following observations on the alcohol injection treatment, and I hope to learn much from your experiences and criticism. Schlösser's brilliant idea of injection of the main branches of the fifth nerve at their deep foramina, with strong alcohol, has now been on trial for ten years by workers in all countries, and clear indications for its use, and when to avoid it, are now capable of formulation. My personal experience of the method now dates back six years, the first case in which I used it being literally equivalent to a laboratory experiment on a human nerve.

A woman suffering from strong hemiplegic contracture of the fingers was unable to use her extensor muscles of the wrist and fingers, on account of the strong flexor spasm instantly induced. Under local anesthesia with eucain, I therefore dissected out the median nerve above the elbow, and injected it with 5 minims of 80 per cent. alcohol, using a fine hypodermic needle. Instantly the flexor spasm and contracture were relaxed, and she was able at once to extend her wrist and fingers; at the same time analgesia to pin-prick and anesthesia to cotton-wool developed over the anatomic distribution of the median nerve on the hand, while a week later typical reaction of degeneration to electrical testing became evident in the flexor muscles and thenar eminence. Such a result was as good evidence as can be required of the destructive effect of strong alcohol, both in sensory and motor nerve-fibers, and impressed on me, which is by no means yet well understood, that alcohol must not be injected into a mixed motor and sensory nerve, such as the sciatic, for the treatment of pain, on account of the motor paralysis and foot-drop which will certainly ensue.

Many patients who have thus been operated on have escaped paralysis by their good fortune of the operator missing the nerve-trunk and making the injection outside the nerve-sheath. When using this injection in the treatment of chronic trigeminal neuralgia, it is only the third division which contains any motor fibers, and the paralysis of the masseter, temporal and pterygoid muscles resulting from a properly placed injection in the foramen ovale is of small account, owing to the mandible being served by the corresponding muscles of the other side, and also to the fact, when the third division on one side is made completely anesthetic on the lower jaw, lower lip and half of tongue, such patients invariably eat on the other side of the mouth entirely.

In two patients with bilateral trigeminal neuralgia in whom I have injected the foramen ovale on each side at the same sitting, there has been difficulty in chewing and closing the jaw for a few days.

I have had experience with some 200 cases of *chronic trigeminal neuralgia*. The first division, in this type of neuralgia, is very seldom involved alone, pain in the second division being its invariable accompaniment sooner or later, though I have known the neuralgia limited to the supra-orbital distribution for three years before the second division became involved. In one such case, a woman whom I injected four years ago, I first injected the second division at the foramen rotundum, causing deep and complete anesthesia on the cheek, upper lip and upper gum; pain ceased from that moment in the second division, but continued severely above the eyebrow and on the top of the head. I then injected the supra-orbital nerve at the notch, causing deep anesthesia on the forehead and top of the head, with the resultant loss of all pain except over a small area, the size of a shilling, at the back of the anesthetic area on the top of the head, at its junction with the great occipital distribution; here the pain continued in unabated paroxysms, which ceased entirely and permanently with a hypodermic injection of alcohol under the scalp at this area. She is now, four years afterward, still perfectly well and free from pain. This is the only case I have seen of chronic trigeminal neuralgia in which such a local painful area persisted at the extremity of the anesthetic area.

Somewhat resembling the latter case, however, was that of a woman who struck the top of her head a violent blow against a low doorway.

Though feeling very shaken, she went out to dinner that night, but had to leave suddenly owing to faintness and vomiting. Ever since that time she became subject to paroxysmal attacks of intense pain, every few days, referred to the exact spot on the top of the head which she struck. When I saw her two years later, this area was slightly tender, and pressure on it started a slight attack of pain. I therefore recommended her doctor to inject this area hypodermically with strong alcohol, which he did twice, with a week's interval. This cured her pain, and she has never had another attack.

The supra-orbital is the only branch of the first division which I attack, and I have never attempted to reach any other branch within the orbit, as I consider this both dangerous and unnecessary.

The second division, or superior maxillary nerve, may be injected with advantage, either at the foramen rotundum in the sphenomaxillary fossa, or at the exit of the infra-orbital nerve on the cheek. The latter foramen is usually quite easy to find, a needle 3 cm. long being pushed through the cheek at the level of the upper border of the ala nasi, and 0.5 cm. external to it. The needle usually finds the foramen in a direction upward and outward from this point.

A certain amount of swelling and edema of the lower eyelid and cheek always result from this injection, lasting from one to two weeks. This injection may be sufficient to abolish all the pain in certain cases of trigeminal neuralgia affecting the second division, in which the pain is limited to the skin of the ala nasi and lip, when the lightest touch on the lip or nose may start paroxysms.

In the majority of cases, however, the pain is also referred to the upper jaw, and sometimes to the palate, and in these cases the destruction of the infra-orbital nerve will fail to give complete, or even much relief. The superior maxillary nerve must then be attacked farther back at its exit from the foramen rotundum, in order to inject it at a point before it has given off the posterior dental branches, and the sensory branch to Meckel's ganglion and the palate. This is a difficult injection to perform properly, so as to cause deep anesthesia of the whole nerve, and it is more difficult to be sure of one's results after the infra-orbital nerve has already been made anesthetic by the peripheral injection. If, therefore, a second division neuralgia clearly involves the upper jaw, as well as the skin of the nose and lip, as it does in the majority of cases, attempts should be made to inject the nerve at the foramen rotundum before injecting the infra-orbital canal.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

I use two routes for this posterior injection; the first, and preferably, through the cheek in front of the coronoid process and behind the superior maxilla. Sinking the needle as close as possible to the bone at a point about 6.5 cm. measured from the middle of the external auditory meatus, a 3 inch needle, 0.8 mm. caliber, is directed upward at an angle of 40 degrees, and backward in a line with the ascending orbital process of the malar bone. At a depth of about 5 cm., the needle either strikes the external pterygoid plate, or slips in front of its anterior border into the sphenomaxillary fossa. The pterygoid plate is a useful landmark, as the foramen rotundum lies barely more than a centimeter internal to its anterior border; if, therefore, I find that my needle slips into the fossa without first striking the plate, I withdraw my needle slightly and feel backward with the point for the plate, noting then the depth to which my needle has been sunk. Then maneuvering the point in front of the edge of the plate, I push the needle onward in the same line to a further depth of not more than 1.5 cm. If the needle has been fortunately directed, the nerve will be struck, the patient indicating this by flinching slightly and complaining of pain either deeply at the site of the needle, or else referred to the nose, lip or cheek. It is, I think, quite as common for the twinge of pain to be referred only deeply, and not along the distribution of the nerve. I then inject 3 or 4 minims of 5 per cent. novocain solution, the patient instantly feeling a sensation of a spray over the face, and after two or three minutes light anesthesia will develop on the lip and cheek. Whether this is so or not, I change syringes now, and inject a few minims of 90 per cent. alcohol, taking great care to hold my needle perfectly steady.

Certain difficulties may be encountered in attempting this route for injection of the second division, owing either to the coronoid process of the mandible coming far forward, or to the bulging backward of the antrum in the maxilla. Indeed, it may be impossible to direct the needle between these parts, and in front of the external pterygoid plate, so as to enter the sphenomaxillary fossa. In these cases I then try for the nerve from behind the coronoid process, passing my needle through the cheek about 4 cm. in front of the middle of the external auditory meatus, on the line drawn from the incisura notch to the bottom of the ala nasi, so as to pass over the bottom of the sigmoid notch on the lower jaw. The needle must be pushed in slightly upward and forward, the external pterygoid plate felt for and so on, as already described. With this route there is probably less risk of hematoma from wounding the internal maxillary artery, though the nerve will be hit usually in front of the branch to Meckel's ganglion, instead of behind. Consequently there will be in these cases no anesthesia produced of the palate.

In some cases in which the pain appears limited entirely to the second division, the neuralgia may continue unabated after a successful injection of this division, and disappears only and finally when the third division has also been injected at the foramen ovale. Thus, a man, aged 71, had the infra-orbital nerve divided and torn out for second division neuralgia; after complete freedom for three years the pain then returned in the nose, lip and upper gum with great severity, though the skin of the cheek and lip was totally anesthetic. I tried injection of the second division, both posteriorly and at the infra-orbital foramen, but failed to make any impression on the neuralgia. I then injected the third division at the foramen ovale, causing complete anesthesia of its distribution, the pain disappearing from that moment for two years, since when slight warnings of pain are recommencing.

Much more certain than injection of the superior maxillary nerve is injection of the third division at the foramen ovale.

For this I use roughly Levy and Baudouin's line. Here again, as I have mentioned for the second division, perhaps more often than not when the nerve is struck by the needle, the patient complains of pain situated deeply where the needle is, rather than in the lower lip, jaw or tongue. If my needle is in the right direction, very slightly backward and upward, and at the right depth, varying from 1⅝ inches to 2½ inches, according to the width of the head and fatness of the cheek, when the patient flinches I carefully withdraw the brass wire stilet from my needle, and inject a few drops of 5 per cent. novocain. If any resistance to the push of the piston is felt, the needle may be within the nerve; but if not, I push the needle slightly deeper, and inject a few more drops. I then, after a minute or so, change my syringe and inject a few drops of 90 per cent. alcohol, as already described. Then, after half a minute or so, testing with a pin the lower lip and tongue, the presence or absence of anesthesia is a sure test, as to whether the nerve has been properly injected or not, and the needle must be slightly withdrawn and tried in a fresh direction, until deep anesthesia results from the injection. Rarely is there any risk of hematoma in this method of reaching the foramen ovale, the only artery liable to puncture being the middle meningeal; but I have never known it give any trouble. The internal maxillary artery is usually well protected, as it turns inward well below the level of the sigmoid notch.

When working with the needle to find the nerve, the stilet should always be kept pushed within it up to the point, in order to keep any drop of blood from entering the caliber of the needle. When it is thought that the needle is correctly placed, and the stilet is taken out in order to fit on the syringe, if blood should drip from the needle, the needle should be instantly withdrawn and washed out with saline, as its point cannot have been within the nerve, and if alcohol were then injected through the needle it would instantly cause firm clotting to occur within the needle, so that no further injection could be done. If the needle is directed too far backward, pain may be complained of deep in the ear, owing to the needle pricking the eustachian tube. When this occurs, the needle should be at once withdrawn slightly, and the nerve searched for a little more forward. Care should be taken never to inject alcohol into the spot when pain is complained of deep in the ear, as complete deafness of that ear, due to eustachian obstruction, may be produced, lasting for many months. This characteristic pain must be distinguished from pain referred to the external ear, which is sometimes produced when the auriculotemporal branch of the third division is struck by the needle close to the foramen ovale; in the latter case the needle should be thrust in for another millimeter, and the novocain and alcohol injected, as already described, when anesthesia will probably soon be produced over the whole area of distribution of the third division.

It may be that all this time the needle has not touched bone at all, but I prefer to feel the under surface of the sphenoid with the point of the needle, as it is a good landmark for the level of the foramen, and the needle may be sometimes slipped along it into the lips of the foramen. Two other bony landmarks I also find of service. Posteriorly, the needle will engage the spine of the sphenoid at less than the required depth, and the bone will be felt to slope deeply inward. This may be used as a guide to the foramen, which lies just in front and above. In a few cases even prolonged searching does not discover the nerve at the foramen, when the usual direction has been first explored, and another bony guide which may then be tried is the external pterygoid plate, by pushing in the needle in a slightly anterior direction, when it should be struck at a depth of 4 or 5 cm. Then, with a slight sawing movement, the point of the needle should be made to slip off its posterior edge, when the foramen may be reached above and behind this point. Occasionally, in abnormally shaped skulls, the foramen may be found much farther in front of the ordinary line than is usual, and in yet others, particularly in small heads of women, the line to the foramen may be directed backward at a much greater angle than usual, quite 30 degrees. In the latter type difficulty may be experienced on sinking the needle in the usual direction, by the point of the needle striking bone, which seems to block the needle in every direction. This is the external pterygoid plate, and the needle must be turned considerably more upward and backward to reach the foramen ovale. Before I recognized this condition, I mistook this bone for the spine of the sphenoid, and in two cases, while searching forward for the foramen ovale, my needle slipped in front of the external pterygoid plate, and struck a nerve, which I then injected, and found to my astonishment that I had produced anesthesia of the second division, when I had been searching for the third division at the foramen ovale.

Another small accident that may be met is that when the needle is directed too low, without taking the under surface of the sphenoid as a guide, the wall of the pharynx may be punctured. The patient will indicate this by complaining of pain in the throat, and if the injection of alcohol be made now, he will at once complain of burning sensation on the back of the tongue. The needle should be at once withdrawn a centimeter or more, and I have never known any harm to result from this.

Although in certain cases, peripheral injection of the infra-orbital nerve may control for a time neuralgia of the second division, I do not consider that injection of the mental foramen is of any real service in neuralgia of the third division. It is a very difficult foramen to find, and even though it be properly injected, the resulting anesthesia of the lower lip and chin does not in any way diminish the pain in the lower jaw, ear or tongue. I never therefore now inject this foramen, but always attack the third division at the foramen ovale.

### INJECTION OF THE GASSERIAN GANGLION

When first I practiced injection of the foramen ovale on the dead body using the method already described below the zygoma, I found, practically invariably, that when the needle point was placed within the nerve at the lips of the foramen, without pushing the needle through the foramen, injection of solution of methylene blue infiltrated the whole gasserian ganglion, the stain even surrounding the walls of the cavernous sinus, and even spreading down the anterior surface of the pons. Clinically I have thus injected the ganglion in scores of cases, anesthesia first appearing over the third division, and as more alcohol is injected, a few drops at a time, the anesthesia spreads over the second and first divisions until, after using 1 to 1.5 c.c., the whole territory of the fifth nerve has become anesthetic. The patient indicates this spread of the alcohol by slight burning pain being felt around the eye and top of the head, and on testing with a pin there will be found total anesthesia to pin-prick and to pressure over the whole front of the head on one side, including the eyeball. If the alcohol has been slowly injected a few drops at a time, the anesthesia being tested after each injection, this total anesthesia will begin to fade away after a lapse of five or ten minutes from the first and second divisions, and an hour or so later, or the next day, there will be found slight analgesia on the forehead and cheek only, while total anesthesia persists over the third division.

It is important not to inject more than a few drops of the alcohol at a time, and to wait at least two minutes for testing the anesthesia on the forehead before pushing in any more alcohol. As soon as total anesthesia develops over the forehead and eyeball, there is a possibility that the damage to the ganglion-cells may be so great that the total anesthesia does not evaporate, as is usually the case, though in the majority of cases as much as 0.5 c.c. alcohol may be further injected after total anesthesia appears, without risk of its being permanent. When a total of more than 1.5 c.c. has been injected, this risk is a very real one, and if total anesthesia still persists half an hour after the injection, the eyelids should be closed by rubber plaster and a pad and bandage, in order to prevent the risk of keratitis developing, which is certain to appear on the following day if total anesthesia is still present. If, however, sensation is returning on the first division and pressure on the eyeball can be felt definitely, then the risk is past. When, however, the anesthesia is still complete on the following day, then it is practically certain to persist for weeks or months, and the eyelids should be sewn up, leaving a chink at either canthus for washing out the palpebral cavity with saline. So long as the lids are kept closed, keratitis will not develop, and even a certain degree of keratitis which had developed, previous to the sewing up of the lids, will clear up. I have been forced to have this treatment adopted in seven patients whose ganglion I had injected by this method. The cure of the neuralgia is, however, certain, and likely to be permanent, though my first case of injection of the ganglion dates back only four years.

In many subjects it is possible to push the needle through the lips of the foramen ovale into the ganglion itself, though this is rarely necessary. A curious point, which I am unable to explain, is that after the ganglion injection which I have described, the anesthesia on the first division is more intense and more lasting than even on the second or third divisions, a point which is peculiarly unfortunate, owing to its dependent keratitis.

In over sixty cases in which I have thus injected the gasserian ganglion, in one case slight diplopia, due to sixth nerve weakness, developed immediately, and did not disappear entirely until three months had elapsed. This was presumably, due to alcohol infiltrating the outer wall of the cavernous sinus. In one other case a curious result occurred which I cannot explain. In a woman aged 64, with chronic trigeminal neuralgia affecting all three divisions on the left side, which had begun three years previously with neuralgia limited to the first division, I injected the third division and the ganglion as described above. As total anesthesia developed, she became giddy and swayed slightly to the left, and coarse rotatory nystagmus toward the right side, with left facial paresis and total left nerve deafness, appeared. There was no trace of loss of consciousness, and the vertigo disappeared after a few minutes; the nerve deafness had disappeared within an hour, and the next morning the facial paresis and nystagmus were scarcely noticeable, and both had completely disappeared in five days, and she felt perfectly well. Though it is possible to conceive that the alcohol might spread along the ventral surface of the pons and involve the seventh and eighth nerves, yet the nystagmus would suggest a central lesion, cerebellar or nuclear.

### PATH OF THE TASTE FIBERS

One of the striking results of my series of injections of the third division at the foramen ovale and of the gasserian ganglion has been the very large proportion of cases in which immediate *loss of taste* has developed on the anterior half of the tongue on that side. With almost monotonous regularity my experience has been to find loss of taste to all forms develop immediately on the anesthetic half of the tongue, in proportion to the depth of the anesthesia. I have taken the utmost care in the testing of these patients, and there can be no possible doubts of my results. This loss of taste, as I have said, develops immediately, and the sensation of taste remains absent so long as the anesthesia of the third division persists, and I have seen loss of taste well marked twelve months and two years after injection. In three or four cases I have seen sensation of taste partially present, though obviously diminished, when the tongue showed deep anesthesia, though the auriculotemporal portion of the third division had escaped almost entirely. In five cases only have I seen almost normal acuity of taste persist when all three branches of the third division were deeply anesthetic.

With one exception, in all my cases of injection of the gasserian ganglion in which deep anesthesia of the whole fifth area was produced, there was complete loss of taste on the half of the tongue.

Curiously, in the last ganglion case I injected, four days before I sailed, although there was total fifth anesthesia, taste was scarcely affected, though the anesthesia was total and persistent, necessitating sewing up the eyelids, on account of commencing keratitis.

Leaving these cases aside for the moment, the immediate loss of sensation of taste produced by injection at the foramen ovale is certain proof that in the large majority of persons, the taste fibers from the tongue pass along to the gasserian ganglion by the third division, since the result is immediate and cannot therefore be due to any vascular changes, the result of nerve degeneration, as Cushing has tried to explain the loss of taste he has found after gasserectomy. At the same time, we know that the taste fibers do not pass with the lingual nerve, but leave that nerve by the chorda tympani and run in conjunction with the facial nerve in the middle ear, to the geniculate ganglion. So far the afferent course of these gustatory fibers is beyond dispute, and it is their path from the geniculate ganglion to the pons which has been the subject of much argument. Various routes have been given for these fibers, the one now most in favor being along the pars intermedia of Wrisberg to the gustatory nucleus of the glossopharyngeal.

There is really no clinical evidence for this statement whatever, indeed, what evidence there is is entirely against it, and the chief reason in support of the statement is an analogy between the geniculate ganglion and the pars intermedia of Wrisberg on the one hand, and a spinal posterior root and its ganglion on the other. Now, my results show that in at any rate the majority of cases, the normal path for these taste fibers lies in the third division of the fifth nerve at the foramen ovale. Therefore the gustatory fibers must pass from the geniculate ganglion to the foramen ovale, and the only possible path appears to be along the small superficial petrosal nerve to the otic ganglion.

In some cases I have found that taste was also completely absent on the back of the tongue and palatal arches as well as on the front of the tongue; in others taste was notably diminished on the back of the tongue, and in a few, perhaps one-third, there seemed no loss of taste at the back. Since I have found in three of my cases of complete third division anesthesia that taste on the tongue was scarcely interfered with, I can only assume that in a small proportion of persons, the gustatory impressions from the tongue must pass from the geniculate ganglion along a different route, either by the pars intermedia of Wrisberg, or by the tympanic plexus and the glossopharyngeal nerve.

*Bilateral Trigeminal Neuralgia.*—True chronic trigeminal neuralgia is occasionally bilateral, in ten of my patients, or 5 per cent., this being the case. In four of my patients it affected both sides before any injection or other operative treatment had been done. In two others it appeared on the right side nine years and four years after gasserectomy had been performed on the other side. In two of the foregoing four cases I injected the foramen ovale on each side for bilateral third division tic at the same sitting, causing total anesthesia of the front of the tongue. This interferes considerably with articulation for a few days, one of the patients—a man—being unable to make his words intelligible for several hours. In the other patient—a woman—paresis of the masticatory muscles was more noticeable, she being unable to close her mouth the first day, and for a week or ten days she could not chew her food.

*Geniculate or Otic Neuralgia.*—My attention was first drawn to this form by reading the most interesting work of Ramsay Hunt on the sensory supply of the seventh cranial or facial nerve, and also the description by Pierce Clark and Taylor of their case of obstinate tic said to be cured by division of the pars intermedia of Wrisberg. Excluding those cases, not very uncommon, in which severe neuralgia in front of the ear accompanies facial palsy, or herpes within the auditory meatus, possibly due to geniculate inflammation, I have encountered two patients who suffered from almost identical paroxysmal neuralgia, which had lasted for eleven and ten years, respectively, in which the paroxysms of pain began in the throat or posterior palatal region on one side, and spread into the ear and in front of the ear on to the cheek, and down the side of the neck. The sudden onset and intensity of the pain, and the recurrent paroxysms closely resembled chronic trigeminal neuralgia, but the distribution of the pain made me doubtful as to their dependence on the fifth nerve, and in each case no alleviation was produced by a successful injection of the third division of the fifth. One of these patients was a man of about 48, who had suffered eleven years, the other an old lady of 87, who had had the attacks for nine years.

I have known the pain following geniculate herpes to be most intense and prolonged for many weeks, in a man of 44, without any facial paralysis. This case was sent to me by an aurist, and the herpetic vesicles were still visible on the tympanum and posterior wall of the meatus, ten days after the onset of the pain.

*Postherpetic Neuralgia.*—This should never be treated by alcohol injection, or by any other operative measure. The most frequent cases that are thus sent to me are the cases of frontal herpes affecting the ophthalmic division of the fifth. Sometimes the destruction is so great that total anesthesia of part of the forehead and top of head is produced; in others only slight numbing and sensation of tightness is felt. The pain varies in severity from a feeling of crawling and similar paresthesias to quite severe paroxysms, though less sudden and severe than in the case of chronic trigeminal neuralgia. Any injection or operative treatment in my experience makes these patients worse, though there may be apparent improvement for a day or two. The same may be said for postherpetic neuralgia affecting the second and third divisions, and the whole of the fifth, which are less common, and also postherpetic neuralgia of the trunk.

I have not yet performed injection of the gasserian ganglion for severe posthepetic neuralgia of the fifth, though theoretically it might effect a cure, yet not certainly so, as the lesion may be partly central and not only in the ganglion, as I have known division of posterior spinal roots fail to give relief in postherpetic neuralgia of the trunk.

*Chronic Fibrositis.*—This condition of the shoulder, back, buttock and sole of the foot may sometimes derive almost magical relief from alcohol injection. In many cases in which the pain had continued for years, seven years in one case, I have seen it disappear instantly and permanently after alcohol injection. This is perhaps most striking in the cases of plantar fibrositis following rheumatism, the patients being hardly able to stand or hobble about for months, owing to the pain produced by their weight stretching the plantar fascia and ligaments. In five such cases I have produced instant relief, so that the patient could not only walk with comfort, but jump about within five minutes of the injection. My method is to search for points of deep tenderness on pressure and mark them carefully. Then after sterilization with iodin, I sink a fine needle vertically down to the bone, injecting a few drops of novocain on the way. After half a minute 10 drops of 90 per cent. spirit is injected and the needle withdrawn, and the puncture sealed with collodion gauze. Sometimes three or four spots have to be injected, and occasionally a repetition is necessary next day or later, owing to the whole of the affected area not having been covered.

I do not find that this method is of any value in cases of diffuse tenderness, excepting when definite spots of intense tenderness are found. This is sometimes the case in fibrositis of the buttock and occasionally it may accompany a true sciatica. When using this treatment by alcohol injection for fibrositis of the buttock, great care must be taken not to inject the sciatic nerve itself with the drug. I may mention that I also use the treatment of injection of the sciatic nerve itself in some sciaticas with novocain and saline from 50 to 100 c.c.

In chronic *brachial fibrositis,* which is less common, I have also successfully used alcohol injection in six cases; here again precautions must be taken against injecting a nerve-trunk with alcohol. My method, after sinking the needle to the bone in the required spot, is to inject a few drops of novocain 5 per cent., and if no motor weakness or anesthesia has appeared within a minute, I then follow it with the alcohol. In suitable cases of this type the benefit and relief are immediate and most striking.

We are now in a position to weigh our results and to give a definite opinion as to the beneficial effects, or otherwise, of alcohol injection for neuralgia. In certain cases of chronic fibrositis of the buttock, trunk, shoulder, forearm and sole of the foot, it may effect an immediate and lasting cure of the pain, and, when properly used, never does any harm.

Among the cranial neuralgias, periodic supra-orbital neuralgia, such as the postinfluenzal form, with daily recurrences of pain for hours, may be completely cured by a single injection. The pain of inoperable carcinoma of the tongue may also be completely relieved by injection of the third division at the foramen ovale. Migrainous neuralgia, though often mistaken for chronic trigeminal neuralgia, is only rarely benefited by this treatment. Postherpetic neuralgia, whether of the face or trunk, should never be treated by alcohol injection. It is in chronic trigeminal neuralgia that the largest proportion of cures are wrought by this means, and practically its only rivals are neurectomy and gasserectomy. The former gives us no longer relief than neurolysis by alcohol injection, and the treatment cannot be repeated at the same place. With gasserectomy there is the necessity of a severe operation under an anesthetic, with a permanent scar, and the possibility of facial palsy, the frequency of keratitis and of permanent injury to the brain, such as hemiplegia, paraphasia, alteration of character and loss of mental ability. The latter symptoms are to my mind such dangerous and not infrequent possibilities of gasserectomy that I believe the operation should never be performed for the relief of chronic trigeminal neuralgia until alcohol injection has been fully tried by an experienced man. The permanence of the relief from pain in the majority of (not all) cases of gasserectomy is insufficient to weigh against the necessity for reinjection with alcohol that is likely to be necessary at intervals of one to four or five years.

Lastly, let me reiterate the necessity of taking one's time, with absence of all hurry, in performing the injections. Trial and test is, I am certain, the only safe method, and I am never satisfied until I have produced deep anesthesia, for then I know, if my diagnosis of chronic trigeminal neuralgia has been correct, that the patient will have many months' freedom, and in quite a large number, three, four and five or even more years' immunity from pain.

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## ABSTRACT OF DISCUSSION

Dr. Charles R. Ball, St. Paul: I first obtained inspiration for making these injections of alcohol in facial neuralgia about six years ago from Dr. Patrick. The irregularity in the distribution of the branches of the fifth I think often accounts for the difficulty in making some injections. I tried repeatedly in one case to inject the third branch but always failed. One day while attempting to inject the second branch the patient complained of severe pain in the area supplied by the third branch. I immediately injected alcohol at this point and secured a perfect anesthesia in the part supplied by this branch, with complete relief of the pain. The danger in making this injection would not seem very great. In an experience with hundreds of injections, I have had only two accidents which, at the time, seemed apparently serious but eventually came out all right. In a severe and intractable tic douloureaux involving all three branches of the fifth nerve, I was attempting to inject the third branch when I noticed the development of a facial paralysis on the side I was injecting. My patient, who was past 80, became unconscious, went into a state of collapse and for a period of half an hour it seemed as though she might die on the table. My first thought was that she had had a stroke of paralysis, but afterwards it became clear that I had passed the needle up into the foramen ovale and injected the ganglion. Some of the alcohol had infiltrated back as far as the seventh nerve and induced the facial paralysis. After the patient returned to consciousness I found that a complete anesthesia involved all three branches of the fifth nerve. In another case, in attempting to inject the second branch, I got a severe hemorrhage. The eye, on the same side, began to come forward, just as though some unforeseen and mysterious force were pushing it out of the head. The pupil became dilated and the patient for an hour was unable even to see light. This patient also recovered without any serious injury to the sight. In my experience, Dr. Harris' method of injecting the gasserian ganglion from the point of entrance for the injection of the third branch is more practical and simpler than the method proposed by Härtel. In repeated trials on the cadaver I have been able to place the needle in a better location in the foramen ovale from the point recommended by Dr. Harris than the one proposed by Dr. Härtel. In cadaver injections, with Dr. Härtel's method, the chief difficulty seemed to be in entering the foramen at one side and causing the needle, instead of penetrating nerve tissues, to go through the dense fibrous tissue which lines the bony borders of the foramen. In this location the fibrous tissue makes a complete barrier, and absolutely prevents the alcohol from reaching the nerve or ganglion.

Dr. Peter Bassoe, Chicago: Dr. Harris rightly says that the injection method should not be used when the lesion causing the neuralgia is known to be proximal to the point at which the nerve can be injected. I believe there is one exception to this rule, however, namely, herpetic neuralgia. I saw immediate relief follow injection of the supraorbital nerve in a case of frontal pain which had existed for several months following a severe herpes with corneal involvement. I presume that the explanation for the relief must be that such a large portion of the neuron was peripheral to the point of injection that the entire neuron became impaired. In other words, we may assume that a retrograde degeneration took place. Dr. Harris' remarks concerning supraorbital pain at regular hours as being due to malaria, influenza, etc., are of interest. For the benefit of those who have little experience in neuralgia cases, it might be well to state that probably most pain of that kind is due to frontal sinus disease. I have frequently had sent to me for treatment by alcohol injection cases of frontal sinusitis and pressure within the nose. Dr. Harris said he has seen no good result from injecting the mental foramen. In one case, which happens to be the last one in which I injected alcohol, it seemed to be of value. It was a case of neuralgia of the middle branch, but pain in the middle branch area could be started by rubbing the lower lip. There was no pain in the distribution of the inferior division but after successful injection of the middle branch, rubbing the lower lip still would start pain in the middle branch area. I injected the mental foramen, producing analgesia of the lower lip, and pain could no longer be started by rubbing the lip. What is Dr. Harris' opinion concerning the rôle of previous peripheral operations in making the alcohol injections less efficacious? French observers, particularly Sicard, have claimed that alcohol injections are less successful in cases in which nerve resections have been made. I have sometimes had trouble on account of the foramina having been plugged with amalgam, screws, or other foreign bodies, and even after deep nerve injections it was necessary to remove these foreign bodies to get relief.

Dr. C. D. Camp, Ann Arbor, Mich: Dr. Harris is the pioneer of the injection of the gasserian ganglion with alcohol through the foramen ovale. I read Dr. Harris' first paper shortly after it was published and, after some experiments on a cadaver, I concluded that the operation was an entirely feasible one. I have made three successful injections of the ganglion, using the Harris technic. The details of these cases I published in the *Medical Record,* July 20, 1914. In all of these cases the neuralgia was relieved. My experience differs from that of Dr. Harris with respect to the sense of taste. In all of my cases the sense of taste was preserved in the anterior two-thirds of the tongue, although there was complete analgesia in this region. There were no cases of keratitis in this series. Of course, the usual precautions were taken to prevent any foreign matter from irritating the cornea. The injection of the gasserian ganglion is quite a different proposition from the injection of the peripheral divisions of the fifth cranial nerve, but it is hoped that the destruction of the ganglion will not be followed by recurrence of the neuralgia.

Dr. George A. Moleen, Denver: I have seen most of the neuralgias in the clinics and in the practices of other physicians. I find in about 1,500 case records not over a half dozen trifacial neuralgias. Among those there are probably four or five of what might be termed postmalarial, supraorbital neuralgias that were distinctly amenable to appropriate treatment. I question whether or not the altitude may have something to do with determining the susceptibility of the trifacial nerve. I do not believe that in the entire Rocky Mountain region we have anything like the percentage of cases reported in any one neurologic clinic at sea level. Does Dr. Harris confine his injections, even in the milder cases, to alcohol, or has he, in the case of specific neuralgia, found any relief from the use of salt solution? We see in Colorado quite a number of peripheral facial paralyses, and I have noted, even with careful testing, that taste is not only abolished in the anterior two-thirds of the tongue on the same side in these cases, but also on both sides. Whether that is due to disturbance in the attention, faulty technic, or what not, I am not able to say, but it may account for the loss of taste discovered after these injections. I am quite certain that taste was lost on both sides, having been prompted to test the other side after having found it absent in the ipsolateral side.

Dr. Wilfred Harris, London, England: Answering Dr. Ball, who referred to injection of the seventh nerve with alcohol, I would say that this was the first use to which injection of this agent was put originally by Schlösser in order to relieve the painless form of facial spasm. These unilateral facial spasms are not common, and they are rarely so severe as to cause total paralysis of the face. As to using alcohol in these cases, I have injected this agent a few times, but not recently. I was interested in the first case cited by Dr. Ball, in which in injecting the ganglion through the foramen ovale, he produced facial paralysis and collapse. I have recently seen a somewhat similar condition in a hospital patient aged 60. Total anesthesia developed over the whole fifth nerve area. The woman began to slip over and fall toward me as I was working on the left side, she had nystagmus toward the opposite side, and her face became paralyzed on the side on which I was working. For a moment I thought, Have I possibly injected the seventh nerve peripherally? It was quite plain, however, that I had not done that. When I had finished I investigated more carefully. There was more or less facial palsy, and, a point Dr. Ball did not refer to, she had total nerve deafness as well as this facial palsy. She had nystagmus to the opposite side. In two days there was no trace of the trouble which had developed so acutely and which alarmed me much for a moment. I have never seen any such severe hemorrhage as occurred in the second case mentioned by Dr. Ball, but have read records of severe hemorrhages having occurred; and I am certain that the moment any such sign of hematoma develops the only thing to do is to withdraw the needle and hold on tight, using firm pressure for ten minutes. If this is done the hemorrhage will cease. Dr. Bassoe referred to injection in postherpetic neuralgia. I do not believe this is advisable treatment in those cases. The lesion is proximal to the point where the injection can be placed. Theoretically it cannot be defended, and in practice no good results obtained; on the contrary the patient is made worse. The majority of persons have had that experience in this trouble, and it has been certainly my experience with alcohol injections in those cases. Dr. Bassoe says his patient recovered. Some of these patients do recover spontaneously. I do not find that scars make any difference in the result in peripheral operations, if they do not interfere with getting the needle in the right place. Dr. Cramp referred to anesthesia of the drum membrane. That is a striking symptom. You can touch the tympanic membrane without the patient flinching or objecting, but there is not complete anesthesia because several nerves supply that part. The question as to preservation of taste will, I think, never be settled, but there is no getting away from the results. In about seventy instances I have seen total loss of taste in two-thirds of the tongue on the same side on which the patient still recognized taste acutely on the opposite side; but now and again one comes across a case in which taste does remain unimpaired on the same side, in spite of anesthesia to pain and touch.

# THE RELATION OF PHYSICAL THERAPY TO THE HOSPITAL PATIENT FROM THE POINT OF VIEW OF THE INTERNIST *

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The purpose of this paper is to emphasize the rôle of physical therapy in its relation to patients admitted into a general hospital.

It seems proper at this time to indicate wherein the general hospital more completely realizes what hospitals are expected to accomplish. In its physical plant, well-organized medical, and efficient nursing staff, it should represent in highest efficiency the essential coordinating factors for conserving the patient's best welfare.

The primary function of the hospital is to cure disease, and to relieve suffering. A hospital which fails to cure a patient, who is theoretically curable, fails to that extent to perform its proper function.

The subject of hospital care and treatment is the patient and not the disease, so that the hospital should include in its physical equipment and in its medical organization the means of dealing with any pathologic condition, or complication of disease, expected or unexpected, in any individual patient.

The general hospital exemplifies the spirit of modern medicine; consequently, the hospital patient fares best in it, and it is better for the education of the medical student and medical intern to be in the atmosphere of a general hospital.

It may be further said that the establishment of real general hospitals will quicken medical research and investigation, will place adequately equipped laboratories at the disposal of clinicians generally, will facilitate sound medical teaching, will insure a more adequate training of nurses, and will tend to standardize the general efficiency of hospital work.

No hospital can give satisfactory service in all emergencies which does not represent in its clinical and laboratory organization, and in its therapeutic equipment, all that modern medicine is able to contribute of technical skill and expert knowledge to the investigation and treatment of disease.

Physical therapeutic methods have now become an essential part of the treatment of patients in any general hospital. There can be no sympathy with the employment of physical therapy purely for the psychic effect on the patient, for when we consider physical therapy, we are not thinking in terms of psychology, because for such purposes the ingenious physician will find or indicate his own medium.

There must be a definite purpose in the use of all physical agents, as in the application of any other therapeutic procedure.

It is of particular interest to note that the average patient admitted to the general hospital presents a distinct type, in so far as he or she is often in the terminal stage of a vicious cycle (of a nutritive disturbance), whether it be an example of cardiovascular renal disorder, of chronic nephritis, of diabetes, visceroptosis or neurasthenia, it seems so often but an expression of a chronic nutritional disorder. This means usually that an attempt must be made to improve nutrition and to reestablish function, and it will tax the best efforts often to bring about a circulatory, nutritive, or psychical balance, so that even though a cure may not be possible, subsequent living will be more comfortable.

It is but rarely in this class of patients that a special surgical procedure, or definite medical treatment, is the essential requirement; as a rule a more prolonged stay in the hospital is necessary, and this permits a better cooperation of diet regulation and other forms of therapeutic procedure with physical therapy so as to promise the greatest degree of improvement.

It is not the purpose of this paper to consider in detail the different physical methods of treatment, and in fact only a very small proportion of patients coming into the hospital will require the employment of more than one or two, yet it is highly necessary that hospitals should be so equipped as to be able to respond to the demands that any condition may require. The best expressions of physical therapy are not always the most elaborate and costly, and often quite as valuable work can be done with improvised apparatus, accompanied by good sense.

### HYDROTHERAPY

Man from his advent has daily experienced the beneficent action of water. As symbolism has characterized all primitive mental expression, so it has been

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but natural that man used water not merely when ministering to his bodily cleanliness, but also as an effort to convey ideas of moral purification. In this way hydrotherapy developed under sacred auspices, and the use of water as a healing agent acquired the dignity of a religious ceremony. Certain waters in the old world gained more or less of a reputation for special efficacy, and to the testimonials of their wonderful cures eminent physicians have at times added their endorsement.

Aside from the mysticism that has enshrouded water as a therapeutic agent, it has always been regarded as a most valuable adjunct in the treatment of various diseased conditions.

There has been a common error to restrict the term "hydrotherapy" to the remedial use of cold water alone, when it should include the application of water in any form, from the solid and fluid to vapor; from ice to steam, internally and externally; again hot water is as important a hydriatic agent as is cold water.

The mineral constituents of water do not often add to the effects produced, since the latter are often the result of the judicious adaptation of the mechanical and thermic influence of water alone.

It is needless to emphasize that every hospital should afford ample material for the thorough mastery of the Brand bath in the treatment of typhoid fever.

The benefit of the Brand bath is not confined to the reduction of temperature alone, and the idea that high temperature is the chief determining cause of fatality in typhoid fever must be abandoned, for it seems justifiable that the failure of heart power is less an effect of high temperature than of other concomitant conditions. The lessened perspiration, the renal disorders, disturbed sensorium and digestive disturbances are all favorably influenced by the Brand bath when properly applied.

In all the pyrexias of infants and young children the warm bath and pack is an equally potent means for reducing temperature, besides assuaging pain and relieving nervous debility, without materially interfering with any of the functions. For this purpose there is no remedial agent which can compare with a full bath of 98 degrees, reduced perhaps to 90 degrees for eight to ten minutes, combined with gentle friction.

Hot baths constitute an important factor in the treatment of every case of cerebrospinal fever, in exerting a modifying influence on symptoms and the course of the disease. In accordance with the contributions of Rosenow, the *Streptococcus rheumaticus* is favored in its development by cold surroundings and inhibited by warm, so that the application of the warm pack to affected joints in acute rheumatic fever not only relieves pain, but may likewise have an inhibitive action on the infective process.

The prolonged warm bath has attained a special place in dermatologic conditions; promoted by Hebra it has proved valuable in extensive burns, while in skin affections like pemphigus foliaceus, it tends to relieve pain, mitigates the fever and restores sleep and digestive functions.

The continuous bath is likewise useful in different forms of cerebral irritability, such as acute delirum and mania; in the bedsores of tabes, myelitis, cerebral and spinal tumor, the advantages of the water-bed will be best appreciated by those who have treated such cases without it.

The value of the warm bath, hot pack and different forms of sweating procedures in the different types of nephritis is generally recognized. In recent years the significance of albuminuria as a manifestation in nephritis has lost some of its import, while more emphasis is being placed on renal insufficiency in the elimination of nitrogen, chlorids and water. The result of this more practical and broader view has been a more intelligent regulation of the hygienic environment of the patient and his diet.

Directly connected with the application of hot water is the hot-air bath in enhancing the reactive capacity of patients subjected to hydriatic procedures.

Experimental and clinical observation reveal a pronounced and often considerable increase in diuresis and elimination of all products of tissue change on the bath days. There is often a decided relief from retention symptoms, the hypertension is modified, headache disappears and gradually the nutritive as well as the circulatory balance can be reestablished.

There is often no more effective measure of relieving the distressing headache of hypertension than the evening hot foot-bath.

We all know that dry heat applied as sand bags, sacks of hot salt and hot bran affords decided relief to various forms of neuralgia, myalgia or other localized pain.

Dry heat of high temperature is not employed for any considerable number of purposes, but a lesser degree of heat is employed in what is termed the baking process used for neuritis, myalgia and the different forms of chronic arthritis. The only drawback to its more general use has been the expense of the necessary apparatus, but it is to be hoped that before long more simple equipment can be obtained at a lesser outlay.

### MASSAGE AND EXERCISES: MECHANOTHERAPY

It is only within the past thirty years that massage has been employed to any great extent in this country, and it is largely due to Dr. S. Weir Mitchell in his employment of it in his famous rest cure, that it has begun to receive serious consideration.

At the present time it is a well-recognized therapeutic measure, and has proved valuable not only in combating certain nutritional disorders, but also in surgical conditions. When employed in connection with systematic exercise it is of value in various conditions coming properly in the field of the orthopedist. A practical knowledge of anatomy and physiology, besides the necessary manipulative skill, is highly essential in its application, so that it requires a proper training of the nursing staff or employment of special masseurs by the hospital to obtain the best results.

Massage exercises certain physiologic effects, and on these its application in disease conditions is based. It has a favorable influence on the circulatory apparatus in promoting increased activity, reflex stimulation of the heart, and slight temporary rise of blood-pressure, and aids respiration by lengthening the excursions of the diaphragm.

There is probably no branch of medicine which offers so large a field to massage, or in which more satisfactory results have been obtained, than in the treatment of nervous disorders. Its usefulness may be considered under two heads, one being as a general tonic and stimulant to muscular tissue and the other as a sedative agent.

In the particular individual often referred to as the Stiller type, or habitus asthenicus, in which visceroptosis or splanchnoptosis is the distinctive feature, systematic massage seems often the only remedial measure that promises any relief. A combination of general with abdominal massage exerts a favorable influence on the general state of myasthenia that exists, and thus relieves the distressing abdominal symptoms which form such a prominent feature of this condition.

Various conditions are specially responsive to a judicious combination of massage and gymnastic exercises; among these should be mentioned the different occupation neuroses, and conditions presenting atrophy or muscular spasm occurring in cerebral lesions affecting the motor areas or its cerebral and spinal tracts.

Massage constitutes an important part of the palliative treatment of tabes, and the reeducational movements in ataxia as formulated by Fraenkel have been employed with gratifying success.

In this connection reference should be made to the use of carbonated baths in heart disease, as represented by the Nauheim baths, combined with the passive resistance exercises of the Schott method, or the graduated exercises of Oertel.

In discussing the value of baths and exercise on heart diseases, consideration must be given to what is expected of the treatment. In all methods of cardiac therapeutics, there are three main purposes, namely, those which spare and soothe the heart, those which solicit or revive it and those which repair it.

Rest is an example of the first, digitalis of the second, while baths and exercises belong to the rebuilding kind, and if our demands here overtax the remnant of cardiac capacity, we shall exhaust the heart or overthrow it. We are aiming to make new heart muscle, and to appreciate this possibility in all cases is a task of no little difficulty, so that the application of the Nauheim method should always be made with careful discrimination.

In many disease conditions a systematic combination of several forms of physical therapy is necessary to promote the best result.

There are other forms of physical agents as represented by light, electricity, radio-active substances, and the Roentgen ray, which are effective in certain conditions, yet many of the virtues ascribed to them are more or less speculative, and a complete equipment in all these lines in a general hospital in the light of present knowledge is not absolutely required.

Physical therapy should always be regarded as an adjunct in the therapeutic measures for the relief of disease conditions, and therein lies its main argument for a close relation with a general hospital, since here only is afforded a proper cooperation of a well-organized staff to promote the best results.

The establishment of special institutes for physical therapy is unfortunate, since it offers the same objection as the specialist in relation to general medicine, in that it tends to a restricted point of view as to disease conditions, and often leads to an exaggerated conception of the therapeutic virtues of some particular form of physical therapy.

There can be no question that as physical therapy loses its proper relation to the general hospital, it favors the establishment of separate sects, of pathies based on the use of one or other physical means of therapy. These are distinctly undesirable, not alone in the interest of scientific medicine, but also for the welfare of the unfortunate patient.

Equitable Building.

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# SIX YEARS' EXPERIENCES AT THE MEDICOMECHANICAL DEPARTMENT OF THE MASSACHUSETTS GENERAL HOSPITAL *

C. HERMANN BUCHOLZ, M.D.
BOSTON

The medicomechanical department of the Massachusetts General Hospital was founded ten years ago by the gift of sixty-three Zander apparatus from a benevolent lady. For the first three years it was in charge of Dr. Max Boehm, now in Berlin. For the last six years the department has been conducted by me. The accompanying tabulation gives an idea of the number of patients treated and the amount of work done during these six years. The steady growth of the number of new patients shows how the department has become more and more an important factor of the hospital; particularly the surgical and medical departments use it to a considerable and steadily growing extent. These numbers would still be larger, if the nerve room had not enlarged its own department for massage and exercise.

CASES TREATED AT THE MEDICOMECHANICAL DEPARTMENT FROM APRIL, 1908, TO MARCH, 1914

| | |
|---|---|
| Fracture of humerus, scapula, clavicle | 182 |
| Fracture of elbow | 227 |
| Fracture of forearm and hand | 161 |
| Colles fracture | 305 |
| Fracture of spine, ribs, pelvis | 19 |
| Fracture of thigh and patella | 100 |
| Fracture of leg, ankle, foot | 226 |
| Fracture with delayed union | 38 |
| Total fracture | 1,258 |
| Dislocations | 128 |
| Stiff joints (except fingers) | 180 |
| Stiff hands and fingers | 174 |
| Arthroplasties | 9 |
| Contractures and deformities | 118 |
| Contusions and sprains | 166 |
| Subdeltoid bursitis, a. o. bursitis | 331 |
| Myositis | 12 |
| Infectious arthritis | 370 |
| Septic hand | 212 |
| Gonorrheic arthritis | 86 |
| Villous arthritis and arthritis deformans | 120 |
| Total arthritis | 788 |
| Sacro-iliac and back strain | 208 |
| Weak back and faulty posture | 197 |
| Lateral curvature | 276 |
| Total back cases | 681 |
| Feet | 265 |
| Neurosis | 94 |
| Hemiplegia | 112 |
| Infantile paralysis | 131 |
| Other paralysis | 110 |
| Other nerve diseases | 100 |
| Total nerve diseases | 547 |
| Diseases of the circulatory system | 33 |
| Diseases of the respiratory system | 16 |
| Diseases of the digestive system | 38 |
| Other internal diseases, including debility and convalescence | 60 |
| Total internal diseases | 147 |
| Miscellaneous | 100 |
| Grand total | 4,904 |

The medicomechanical department consists of a large room with the Zander apparatus, a balcony for the special corrective work, two small rooms for massage and manual exercise as well as baking, and an office for examination and manual treatment. As to the distribution of room, the apparatus part of the work is markedly favored, a condition which is not

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in accordance with the needs of a general hospital such as ours, and, indeed, in the plans for a new building much more room has been provided for the manual work. Since I frequently meet in practice erroneous ideas of patients as well as of physicians in regard to the value of apparatus, I shall explain the comparative value of manual and apparatus treatment. A differentiation as to the massage and exercise and as to the local and the general effect of the treatment must be made. As to the massage, it cannot be doubted that the manual work holds the first place. Mechanical massage can be only a very poor substitute, except vibration and, to a certain extent, tapotement. The other manipulations, effleurage, kneading and friction, demand a thorough training and a full understanding of what we have under our fingers. Massage properly done requires a good deal of brainwork.

Machines are a good compensation for the exercise in many ways, but they are by no means a full substitute, nor are they, in my opinion, indispensable in obtaining the local effect. Most of our surgical and orthopedic patients have to begin their treatment with the manual methods of passive and active, assistive and resistive exercise, and become ready for apparatus treatment only when they have gathered sufficient strength to control the apparatus. In those cases the greatest value of the apparatus is that they spare the time of our assistants. On many days sixty, eighty and even up to 100 patients are to be treated in from three to four hours. The average time of one treatment being considered as twenty minutes, which is rather short, we would need at least seven or eight trained assistants, a heavy burden for a charity hospital. The apparatus do not necessarily require a trained attendant, though of course an intelligent and expert supervision is desirable.

For certain local effects apparatus are of particular value, as in furnishing symmetrical stimulations in many paralytic and other nervous conditions. And the so-called promotive exercises in which the moving power is furnished by a turning wheel, a pendulum or an electric motor are of extreme value and cannot be very well carried out by manual exercise.

For the general effect on the circulatory, respiratory, digestive and nervous systems and on the general metabolism the apparatus are of great value and have a decided preference over the manual treatment. It should not be said that we necessarily depend on apparatus, and patients living too far or being too sick to go to the outpatient department could not have proper exercise treatment. Nor would I like to give you the impression that we can do everything with the apparatus. Also in this class of cases the manual exercise has its definite place and cannot be missed.

In close connection with the medicomechanical department is a hydrotherapeutic department in my charge. These departments cooperate freely in that many patients get both hydrotherapeutic application and treatment with Zander apparatus on the same day or on alternating days. Of Bier's methods only the baking is used to a large extent. Bier's congestion by a rubber bandage has been of much value in treating ward patients, but is a method far too difficult of application and too dangerous to be satisfactory in outpatient cases.

The various methods of electrical treatment which represent another branch of physical therapeutics are distributed among the Roentgen-ray and nerve departments. If necessary patients are treated at the medicomechanical and any one of the other departments on the same or alternating days.

The Zander room is a subsidary department in that outpatients have to belong primarily to one of the regular clinics and are sent to the Zander room for treatment. Thus the medical man, the surgeon, the orthopedist or the nerve man makes the indication as to the treatment in the medicomechanical or hydrotherapeutic department. He also may suggest the form of treatment which he considers best, or he may leave this to the surgeon in charge. But it must be insisted that the director of such a department has absolutely free hand to decide as to the form and amount of treatment, as well as to refuse treatment if he considers it not a suitable case. Frequent consultations with the other departments favor a mutual understanding in this direction.

At present the surgeon in charge of the medicomechanical department is holding a position as orthopedic surgeon to the outpatients, while his assistant holds a place as assistant at the same department. This personal union of the orthopedic department and the department for physical therapeutics is in my opinion of greatest value not only to the orthopedic cases, but also for the whole hospital, and becomes more and more so with the growing field of orthopedic work. The value of this union is also acknowledged by the university in the appointment of the surgeon in charge as assistant in orthopedics and physical therapeutics at the Harvard Graduate School of Medicine. We meet the same union in many German university clinics and hospitals as well as in the field of the most important orthopedic journals abroad.

### TREATMENT OF STIFF JOINTS BY MASSAGE AND EXERCISE

Before we consider the various lesions which we have to treat, a few words should be said about the treatment of stiff joints in general by massage and exercise. Massage has the purpose to stimulate the circulation and nutrition of the affected limb, to hasten the absorption of edema and waste matters about the joints, within the muscles, tendon-sheaths, bursae, etc., to loosen adhesions between the various layers, to favor the function of the skin. Most useful for these purposes are the long stroking over the muscles, the kneading and pressing of the fleshy parts and the friction of the smaller parts. With any irritation or tenderness still present the friction should be done with a great deal of ease and should not cause any pain. The kneading of the muscles should generally cause an agreeable feeling of relief; it is particularly indicated after the exercises.

Far more important than the massage is the exercise. To be brief, exercise consists of passive and active movement in its infinite varieties. In the treatment of stiff joints the active movement is of much greater value than the passive. This seems a plain, simple statement, hardly worth mentioning, but daily experience shows me that this great principle of functional therapy is not sufficiently understood. Many patients who are sent to the department for the treatment of stiff joints following fractures or other lesions bring a note from their surgeon prescribing passive exercise. Furthermore, we sometimes have the following experience: A patient with a stiff joint being treated at our department reports to the surgical department. The surgeon, not satisfied with the speed of the progress, gives a few more or less forced passive movements which in almost every case cause an irritation sufficient to interrupt the so far steady progress. Occasionally I have had a chance to prove this observation by exact measurements. Also among so-called trained masseurs the passive movement enjoys a better reputation in the treatment of stiff joints than it deserves. About every one of them who has come to work with us has had to learn this anew.

A joint is not a door hinge, but a complicated and extremely sensitive living mechanism. Its proper function depends on many conditions, inside and outside. A rational therapy should be preceded by a thorough examination clinically and by the Roentgen ray. The examination should find out the condition of the articular cartilage, the thickening of the capsule, any relaxation or retraction of ligaments, adhesions of tendons and tendon sheaths, retraction of the muscles and their perimysium and everything else which might come in question in the individual case. On this examination depends not only the prognosis, but also to some extent the therapy, although the functional principle holds good for all. A type of cases very frequently seen at our department is that which I have described as the traumatic hand, a change likely to come on after injuries of any part of the arm and shoulder. The clinical features of the traumatic hand are, to be brief, marked thickening and tightening of the soft tissues of the fingers, especially around the interphalangeal joints, and in the roentgenogram a marked atrophy of the bony structures. The function of such a hand is always more or less restricted, often the hand is very badly crippled. It is evident that the limitation of function is caused by a severe alteration of the tissues which may be most precisely termed as lack of elasticity. Whether or not normal conditions will be restricted depends on the amount of alteration which has taken place, and on the recuperative power of the patient's tissues in general. Our therapy must do whatever possible to aid Nature's attempt in restoring proper conditions. First of all we should try to improve the circulation and by that the whole nutrition and metabolism of the limb; our best means are baking, massage and especially functional stimulation. The passive exercise if done alone neglects this most valuable factor. It is liable to cause irritation and inflammation, resulting perhaps increased stiffness, as we have frequently seen.

One might maintain that such active movement may be done by the patient himself and he would not need any treatment for this purpose. This is perfectly true, and I think it is much better to leave such a patient alone than to push him through the misery of a poorly managed treatment which might do him more harm than good. Nature is not likely to cause so much damage as a masseur's hand might do, if it is not guided by a thorough understanding of physiologic and pathologic laws. But experience shows that the proper application of assistive and resistive exercise with all the wise suggestions of the Swedish system as to measuring and localizing the active movement can help the patient along in a marvelous way.

Another point of importance in our work is the educative effect as well as the influence on the mind of the patient. I have found many times what an encouraging and stimulating effect it has when you teach your patients how to do things which their crippled joints have not accomplished before.

### FRACTURES AND DISLOCATIONS

Relatively the greatest number of our cases consists of fractures. Treatment of fractures is composed of two parts, the proper healing of the bones and the restoration of the function, or, as we may briefly say, the anatomic and the functional parts. In the clinical lectures as well as in most text-books the functional side of the question is considerably neglected. The impression which I have from my experiences may be somewhat pessimistic, since I usually see the worst cases, but even so, I venture to say that much fault will be seen in the end-result of fractures, unless the functional treatment meets that consideration which it deserves.

This is particularly true of the fractures involving or near to joints and it is in this great group of cases that the functional treatment of Lucas-Championnière has had its best results. The idea of this great surgeon has been to follow Nature's example. Now what do we do with a fractured limb? We put it in a plaster cast or on a splint for at least that amount of time which is generally required for the union of the bones and often much longer. Then when we remove the splints we see in a great many cases the involved joint stiff; often joints in the neighborhood and not rarely all joints of that extremity more or less affected, the muscles and all the tissues including the bones much atrophied, the limb useless. A damage is seen which at least frequently is not the direct result of the injury, but is more or less brought about by the treatment. When such a case is referred from the surgical to the medicomechanical department for after-treatment the surgeon should be conscious that he carries the responsibility for the definite outcome.

The separation of the anatomic and the functional part has its practical value, but it is liable to bring up a certain danger. Kocher's word that the function of the limb depends on the good position of the bones is right in only one sense and only to a certain degree. A bad position is liable to disturb the function, but it is not the only, and frequently it is not the main cause of stiffness. On the other hand, that good position may be accompanied by a poor function can be proved by many examples from our records. It is not the place here to discuss the possibilities of carrying out the functional treatment of fresh fractures in a general way. Its principles are sound, though we do not mean to adopt it so far as to leave off fixation even in fractures of the diaphyses. It is often the exaggeration of an otherwise rational treatment which has delayed its general use.

Among the 1,258 fractures there are thirty-eight with delayed union. Many of these patients had been treated a long time before they were sent to our department. In some of them the conditions urged operative interference, but in the majority the treatment with massage and exercise has proved very satisfactory in that bony union was obtained during a reasonable time, while at the same time the function was more or less restored. Reports of a number of these cases were published in 1909. Of the later cases one deserves particular notice:

A man aged 25 years, with a 9-month-old compound fracture of the humerus between the middle and lower one-third. The fragments were very loose and there was a sinus over the point of the fracture. All joints of the left arm and hand were greatly limited in motion. When the patient was referred to me for consultation as to the advisability of an operation I hesitated because of the sinus and because I was afraid of further delay of the functional cure by fixation after the operation. I therefore asked to refer the patient to the medicomechanical department where he was treated by massage and exercise. After four to five weeks the fragments were practically solid and the sinus was closed. The hand and fingers and to some extent the shoulders had been very much improved in motion and only the elbow did not make good progress. The patient has been under treatment for a long time and his arm has been strong and useful except for the elbow, which showed only about 30 degrees of motion. Had that form of treatment been started seven or eight months earlier, we might have obtained a full functional cure within a much shorter time.

The functional principles in the treatment of dislocations do not differ very much from those of fractures. In the uncomplicated cases functional treatment may be started very early. There is no reason to hold such joints in casts or splints for four or six weeks as we see it done so frequently.

A few words need to be said about the dislocation of the elbow. In these cases there is a certain danger of ossification along the tendon of the brachial muscle. Since the injured periosteum is readily subject of extravagant production of bone tissue, any irritation must be carefully avoided. This is also necessary in the treatment of fractures near joints where an abundant formation of callus may do much harm.

### STIFF JOINTS

Under the head of stiff joints are classified joints affected by operations, wounds, burns, etc. They do not need any separate discussion, but a word may be said about the time when it is wise, in my opinion, to begin the after-treatment in cases of suture of tendons of the hand. Most of those cases had been splinted for four to six weeks after the operation. When they came to us the hand was stiff and often required a treatment of many months to make it limber again. It seems to me that ten or twelve days after the operation gentle exercise can safely be started provided the wound is well healed.

The same mistake of too long a fixation is invariably made after the radical operation of Dupuytren's contracture. Splinting such a case for four or five weeks, as I have frequently seen, without giving the patient at least a chance to move his fingers is dangerous and has led in some of our cases to a prolonged stiffness, some having never well recovered. This is all the more dangerous, because the patients are usually of an advanced age. In a case like that I apply a splint for two weeks constantly and for another month over night and begin with gentle active and passive movements on the third or fourth day after the operation.

The same experience I have had with tendon transplantations. Several patients came for after-treatment as much as three and four months after the operation. During that time the transplanted tendon had become firmly embedded in scar tissue and the hope of obtaining any active function of it was entirely gone. There is no reason why the exercise treatment in such a case should not be started three or four weeks after the operation at a time when the tendon is still movable. Then we need the functional stimulus for the formation of a new tendon sheath which is necessary for the definite function. About the other affections in this column everything necessary for the understanding of the treatment is included in the previous paragraphs and in that on arthritis.

### ARTHRITIS

The value of physical therapy in the treatment of the various forms of arthritis is generally recognized. We may distinguish an effect as to the actual cure of the disease and as to the restoration of the function of the affected joints. In regard to the infectious arthritis in its various manifestations we maintain the modern point of view in that it is our first duty to study each case in order to find the focus of the disease. We know that with the elimination of such a focus the case may clear up according to the amount of pathologic changes. The place of physical therapy, therefore, in regard to this indication must be a secondary one, but nevertheless its tonic effect is frequently of great value in strengthening the patient's lowered resistance against the known or unknown enemy.

With any acute inflammation still present the affected joints must be kept quiet, but gentle massage applied to the muscles centralward acts often decidedly pain lessening and relieving. Baking is not advisable in the acute stage; it may irritate the joint and aggravate inflammation. Bier's congestion treatment has given us sometimes excellent results. We have had a number of cases with infectious arthritis of the gonorrheic type and others in which the patient had not slept for several nights because of the intense pain and the application of the elastic bandage stopped the pain almost immediately. The technic of this method is perfectly simple, but in my experience, frequently misunderstood.

The most difficult question perhaps is how soon to begin with the exercise treatment in order to restore the limited function. Doubtless many cases clear up without any particular after-treatment, but there are others, probably of the fibrinous type, in which a marked degree of stiffness may remain, when fixation is sustained for too long a time, and sufficiently gentle exercise treatment can certainly shorten the time of disabling very much. When to begin in such cases must depend on the experience of the physician and on his technic to carry out such a treatment. It needs a well-trained hand to treat such joints effectively and carefully at the same time.

The treatment of arthritis deformans in its various manifestations as hypertrophic and atrophic arthritis is a difficult and discouraging chapter of medical therapy, but of all that we can do for such patients the physical therapy occupies a prominent place. Hydrotherapy, thermotherapy and balneotherapy, massage and gentle exercise have given us at times encouraging results although we usually get our patients with anatomic alterations so far advanced that anything like a cure is out of the question. We have had quite a number of patients at the Zander department who showed a distinct improvement in mobility and strength. Even in old neglected cases it is worth while to make a trial, provided the patient can furnish the necessary energy and endurance.

### BACK CASES

With the change which the explanation of sciatica and lumbago has undergone in recent years, following the well-known investigation of Goldthwait and others, the treatment of these widespread conditions has become more rational than before. A better understanding has led to a clearer application of an etiologic therapy, instead of the purely symptomatic treatment which heretofore has largely been used. A revolution in ideas like that, however, often causes neglect of methods which have deserved their merits from experience. This has been the case in our clinic in regard to the application of physical therapy, especially massage and exercise. The number of cases of this type referred to our department is very small in relation to the large material treated at the outpatient department. Such neglect is very much to be regretted, because appropriate application of physical therapy has sometimes given us very satisfactory results even in old cases in which all orthopedic measures have in vain been exhausted. However, we recognize the difficulty of thoroughly carrying out this treatment in outpatients. These results are not surprising in the light of the modern theories. We have learned that in many cases of sciatica and lumbago the pain is referred from lesions of the sacro-iliac, lumbar and lumbosacral regions which may be intra-articular or extra-articular. When we consider the effect of rational physical therapy in many other articular or periarticular affections elsewhere in the body, we cannot be surprised to meet similar effects in the treatment of this class of cases.

Next are to be considered the cases with round shoulders, faulty posture and lateral curvature. It might be of interest to report briefly the development which the treatment of these cases has had in our clinic during the last six years. When I took charge of the department it had been the custom to treat these patients almost solely with Zander apparatus. Very soon I added to this form of treatment special exercises, which were directed by me and given by my assistant. Since the number of patients steadily increased, an extra class was formed under a teacher trained in orthopedic corrective gymnastics. This class has now a very large frequency. One of the Boston Normal Schools for physical education furnishes us with volunteer assistants. The idea of the treatment is the individual training and education. Zander apparatus are in use only in addition to the individual exercise. A systematic record as to the frequency of visits, weight, height and the kinds of exercises used, and in the most severe cases, stereoscopic photographs taken after the manner described by Osgood and myself form a useful material for scientific observation. The exercises are all given with the patients' back exposed, thus allowing a good control of their various movements and postures.

### FOOT CASES

Of the 265 foot cases at least 95 per cent. belong to the type of weak pronated feet; in about 20 per cent. a distinct peroneal spasm was present. Not counted in this rubric are the traumatic flat feet following fractures or sprains, or those foot troubles which are caused by infectious arthritis, or the paralytic deformities of the foot. If all those cases were included the total number would be at least twice as large. As to the indication of exercise treatment in the typical flat foot, I cannot share that enthusiasm which is shown by some authors. I do not believe that exercise treatment is ever able to cure a flat foot, but it has its definite place as an educative factor. It should be carried out as individual training in a similar way as in the treatment of lateral curvature. The patient should learn how to use his feet properly. If you accomplish so much, you can materially compensate and assist the usual orthopedic treatment.

Pain is not always a contra-indication for exercise treatment. We have had a number of patients with painful feet who for some reason had no other treatment besides and were relieved of their pain by massage and exercise while the strength and balance of their feet was at the same time improved. Occasionally we have tested the comparative strength of the adductors and abductors with Osgood's apparatus and have found a definite steady gain in favor of the adductors.

In peroneal spasm massage and exercise alone is able to relieve the condition, but I prefer to add strappings or casts and later plates to the exercise treatment.

### NERVE · CASES

For a long time physical therapy has been the faithful servant of neurology, and countless are the indications for its various branches. There is no need of discussing the preference of the one over the other, whether massage is better than electricity in a case of paralysis; all have their fields and their limits. To begin with neurosis, there is hardly any field in medicine in which physical therapy can celebrate such great triumphs in the one case and can be so disappointing in the other, though the indications may seem to be just the same. It is better to make a careful prognosis and not to use too many kinds of treatment at once in order to be able to change from one form to another when it seems wise. I begin, as a rule, with general massage to which I add exercise with or without apparatus, hydrotherapeutic applications, high frequency, static electricity, etc.

General massage has given us excellent results in cases of severe hysteric convulsions. Two of those cases had been under observation at the hospital for several weeks without showing any improvement. Soon after massage was started a distinct relief could be noticed and the patients were discharged clinically cured within two or three weeks. Exercises on Zander apparatus have not proved so efficient in this particular class of cases, but they are to be recommended in the depressive forms of psychoneurosis. The effect will be still increased if a strong personal influence can be added to the simply mechanical effect of the exercise. In private cases of that type we always welcome the personal assistance of the physician who sent in such a patient. As to a general indication I would like to say that the anemic cases should be handled with particular precautions.

### PARALYTIC CONDITIONS

I have already called attention[1] to the various indications of the exercise treatment of paralysis. I have said that we should consider the effect of the treatment on: (1) the primarily affected neurons; (2) those neurons which are in a functional connection with the former, and those which furnish possibilities of substitution for the destroyed parts; (3) the musculature; (4) the joints and the bones; (5) the internal organs and general health, and (6) the mind of the patient.

In many of the paralytic cases apparatus are of great help in addition to manual massage and exercise. Particularly in the one-sided lesions, as hemiplegia, the use of the bilateral exercise apparatus for active and passive movements and especially those for promotive exercises is of a very definite value. To obtain the desired effect, however, it is necessary to control the patient carefully while he is doing this exercise.

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[1] Bucholz, C. H.: Exercise Treatment of Paralysis, Am. Jour. Orthop. Surg., May, 1912.

A few words need be said in regard to the prognosis of infantile paralysis. The longer we have had a chance to observe patients the more have we become impressed with the possibilities of improvement in cases of long duration. Many of these patients had not noticed any improvement during years before they started systematic exercise treatment, and it has been sometimes surprising to see how much unused power was stored in muscle groups which at the first glance seemed to be extensively paralyzed. With such experiences we have felt a great deal more optimistic in encouraging the patient to undergo a treatment which certainly will require a good deal of patience and persistency.

Exercise treatment on the one side and operative or orthopedic mechanical treatment on the other should not be considered as excluding each other, as I see it not rarely done in practice. To cite a case recently seen of a girl aged 10 who was operated on in another hospital for spastic paraplegia: So far as I could find out Stoffel's operation had been done on the obturator nerves. As her mother said, there had been a distinct improvement during the first few months after the operation, but the child was left to herself without any attempts of after-treatment, and she is worse now than before, probably also with the prognosis made worse. I thoroughly agree with men like Biesalski, Foerster, Lovett and others that, unless such a patient, after either a simple tenotomy or Foerster's or Stoffel's operation, can enjoy a careful after-treatment in the way of educative individual exercise given with the full understanding of the situation, the operation should better be omitted.

Of other nerve lesions not grouped under neurosis and paralysis, we have had to treat spasmodic torticollis, paralysis agitans, multiple sclerosis, and once in a while a case of tabes. In a few cases we have given Frenkel's treatment for locomotor ataxia, but have never had a chance to carry it through a sufficiently long period. The value of Zander exercise in this class of cases is from our experience not very great.

### INTERNAL CASES

Last of all I come to speak of the internal medical cases. The statistics presented in the table show a very small percentage of medical cases, compared with surgical, orthopedic and nerve cases, a percentage which is in a striking contrast to German institutions of the same kind. It is very much to be regretted that our medical men do not make a wider use of massage and exercise in the treatment of their cases, although publications of authorities in physical therapeutics as well as our own experiences have been very encouraging. Without going into details of a theoretical discussion, I should like to call your attention to the most important indications.

In cardiac cases exercise is of value in that stage when compensation has been reestablished. The stout persons are better subjects for exercise treatment than the slender anemic ones, and indeed, in the first group of cases we have seen some very suggestive results. One patient of middle age with a severe myocarditis and adipositas recovered during three months of faithful treatment by exercise and diet to his full power and strength, while he lost at the same time 35 pounds in weight. Frequently we combine the exercise treatment with carbon dioxid baths, thus making a combination which is known under the name of Nauheim treatment. The greatest difficulty in prescribing exercise treatment is the exact measure. We know that the effect of massage and exercise on the blood-pressure and on the pulse rate differs within wide limits according to the localization and amount of massage and according to the speed, time and amount of exercise. It was the desire to obtain an exact measurement and dosage that led Zander in planning and constructing his apparatus, and we believe that for cardiac cases the exercise treatment with Zander apparatus or with apparatus of a similar construction is superior to any other form of exercise treatment. Instruction in the use of the apparatus and a certain amount of control and supervision are necessary. In every medical case we have the pulse recorded before and after treatment and, if indicated, once or twice between.

Occasionally we take the blood-pressure before and after treatment, an examination which is done as a rule before and after the Nauheim bath.

Among the affections of the respiratory system the chronic bronchitis, the chronic adhesive pleuritis, and the late postoperative stages of empyema are especially suitable for exercise treatment. We have had some of those patients recover in a very satisfactory way. In one-sided pleuritic lesions asymmetrical exercises play a prominent rôle. In bronchial asthma and emphysema the exercises favoring expiration have proved to be of a decided value.

Of abdominal affections, chronic constipation has long since found particular attention from the point of view of physical therapy. Massage, gymnastics and hydrotherapy have been equally well recommended and all have a very definite value. But I believe that in a condition like this we should not depend on one or the other form of physical treatment without paying sufficient attention to the whole mode of life, the diet, the habits, etc. We must consider that in many of these cases the trouble is perhaps not so much local as constitutional and that an improvement is often far from a real cure, that relapses are apt to follow, unless radical changes in the whole life are made. But keeping these factors in mind, massage and exercise may become of greatest help. A number of Zander apparatus are particularly constructed for abdominal massage. I do not depend on this form of massage, which is in my opinion very much inferior to an intelligent manual kneading of the abdomen. But aside from this, Zander apparatus are very useful in the treatment of chronic constipation. It is necessary to keep up the treatment for a considerable length of time, if possible, to make it a kind of habit. This is particularly true for cases of chronic constipation, connected with adipositas and poor circulation of the internal organs, patients who are sitting most of the time, and do not have enough exercise. In German Zander institutions I have seen many elderly men of that type who came for exercise three times a week the whole year round.

### CONCLUSION

I am at the end. It has been my purpose to show you the many and various ways in which a medicomechanical department can serve a large general hospital. It is not enough to have just a number of apparatus running, but the whole mechanism of massage and exercise treatment must be set to work; the treatment must be conducted not as a routine, but with the full understanding of physiologic and pathologic laws. Finally, and this is the most important point, such a department must have the intelligent and wilful support of the whole hospital and all physicians must feel that it is not an institution for the worst type of cases, but that it can show good results only when the indications for which the patients are sent are wise and the previous treatment has been the best.

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## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. BIERRING AND BUCHOLZ

**Dr. A. B. Hirsh**, Philadelphia: We send patients to European specialists who use physical remedies, find that the former return much benefited, often cured, and then, uninfluenced by this evidence, still proceed with our old methods of strict drug therapy. On the other hand, certain features of physical treatment have hitherto been resorted to by those without scientific training, or who, if they had any technical knowledge, used modes of exploitation that aroused the antagonism of ethical practitioners. At least four large Philadelphia hospitals have modern hydrotherapic plants, those in charge being properly taught; one of these has a special building for hydrotherapeusis. Some private institutions, also, have introduced this and other newer modalities, all largely due to the wise propaganda of Simon Baruch. One can agree with Dr. Bucholz that, too often, patients are sent us for electrotherapic measures by medical men, who, unfortunately, are not informed on this and kindred measures. For instance, a patient was referred for obesity with the recommendation that vibrassage be applied over the abdomen, when, instead, oscillation and the static wave current were plainly indicated. Another case was that of a badly sprained ankle with much organized inflammatory deposit for which again vibration was insisted on. In these cases only failure could result, the mistaken methods asked for naturally getting the blame. When Dr. William B. Morton in the early eighties came back from Charcot's clinic in Paris where he had seen, through application of a static wheel of the simpler type, the value of even that small machine in nervous disease of plainly organic type, the outcome of his thinking was the modern American high-frequency static apparatus. By means of this a group of physicians over the country, scientific, ethical, are now treating patients referred to them by confrères with results practically unattainable by other methods. Why not apply this plan in each hospital rapidly to awaken the medical public to its possibilities? Some time ago I was asked whether I would care to create such a department in a large hospital in Philadelphia and as many assistants were offered as might be required. My answer was that, until those young graduates could be properly trained in the physical laboratory, the responsibility of treating the variety of cases met there would be too great, because blame for the inevitable mistakes and failures must finally fall on the chief. One must have accurate knowledge of the physics of electricity before apparatus of this high voltage can be correctly applied. When the undergraduate schools realize this fact, more bright students will go into these departments of hospitals and develop their opportunities. We must realize that there is no special field in medicine that must not have added to its armamentarium some phases of the more recent changes in physical treatment. In a few years we shall see the scientific basis of this important part of physical therapy generally recognized.

**Dr. C. Hermann Bucholz**, Boston: There is a danger in special institutions of physical therapeutics. We have this danger in Germany as well as here, but we must use the help of the man who is more trained in his special line of work. The danger of such special institutions lies in the fact that the man in charge often has cases sent to him with the wrong indication but treats them nevertheless. In our Massachusetts hospital we accept private cases and sometimes they are not properly diagnosed. In a case of chronic urethritis nothing had been done to find the focus. There was a most important indication overlooked in that case. I believe that someone who calls himself a specialist in physical therapy treated that case nevertheless. Meyer of Dresden, one of the greatest German authorities on this subject, says there should not among physicians be a specialist in that line; there should only be a specialty as to the teaching. I thoroughly agree with that. Another point is the training of young physicians in this subject. It is surprising how difficult that is. In our orthopedic department, where about fifteen or twenty physicians are working, there are a lot of young men, who, I am sure, would have the time, but when asked what they would do they could not tell. I tell them they ought to be ashamed to call themselves orthopedic doctors and not know anything about this treatment.

# COUNTY HEALTH ORGANIZATION IN THE UNITED STATES*

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County health organization in the United States is especially significant in relation to the problems of rural sanitation. The campaigns of the last three decades have resulted in the establishment of active and fairly efficient offices of health in the cities. The concentration of people into the cities and the larger financial resources of these communities have made such service absolutely necessary and possible. In the country, on the other hand, the need for efficient health work is apparently not so imminent, funds are not as available, and as a result, this phase of community work has been slightly developed. With few exceptions, there is very little health control in the rural sections of the United States. It is the purpose of this paper to suggest a system of county health organization which, it is believed, will help to coordinate the several health functions of the state and to lay firmer foundations for the control of rural sanitation.

COMPARATIVE DECLINE IN URBAN AND RURAL MORTALITY (IN REGISTRATION STATES AS CONSTITUTED IN 1900) FROM ALL CAUSES

| | Death Rates per 1,000 of Population | | | | | | Decline in Death Rate '12 from '00 | |
|---|---|---|---|---|---|---|---|---|
| | 1900 | 1905 | 1910 | 1912 | Av'ge '01-'05 | Av'ge '05-'09 | Actual | Pct. |
| Registration states .. | 17.2 | 15.9 | 15.6 | 14.6 | 15.9 | 15.5 | 2.6 | 15.1 |
| Rural part of registration states ........ | 15.2 | 14.4 | 14.7 | 13.9 | 14.1 | 14.2 | 1.3 | 8.6 |
| Cities in registration states ............ | 18.9 | 17.1 | 16.2 | 14.9 | 17.4 | 16.4 | 4.0 | 21.2 |

A few statistics will help to a clearer understanding of our subject. The death rate has materially declined. In 1900, it was 17.2 per thousand living in the registration states and in 1912, the rate for the same states was only 14.6, a reduction of 2.6 per thousand, or 15.1 per cent. This decline in mortality, however, was much more pronounced in the cities, where the rate fell 21.2 per cent. in the twelve years under discussion, as against a decline of only 8.6 per cent. in the country districts. These figures (given in the table and chart) do not portray an accidental condition but are descriptive of a pronounced tendency in American mortality in the urban and rural sections of the country.

These death rates, to be sure, do not contain any allowance for the differences in age and sex composition of the population in the rural and urban districts. But the importance of this fact must not be overemphasized, for when the rates are standardized, the changes will be found to be slight and will scarcely affect the comparative rates of decline. There are other and more important elements of population composition than age and sex that should be considered in this connection. The country districts are the homes of the native stock of America, while the cities receive annually hordes of emigrants from Europe, whose mortality is and has been for years much higher than that of our American stock. In like manner, the colored race with its high mortality rate is almost twice as largely represented in the cities of the registration states as in the rural sections. If, therefore, a complete standardization were made of the death-rates presented in the chart we should find that the small advantage still in favor of the rural area in 1912 would be still further reduced if not entirely obliterated.

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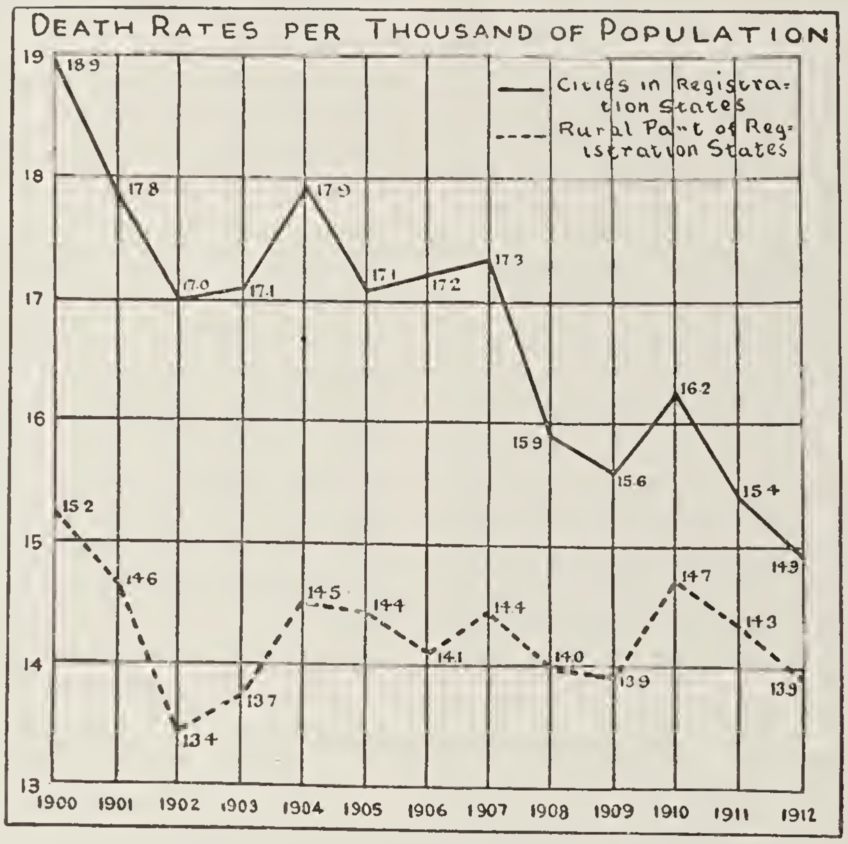
The explanation of the conditions we have just observed in the death rates of the city and the country lies largely, I think, in the differences in the efficiency of their health services. Yet it is in the rural section of the country that more than one half of the people of the United States still live. In 1910, 53.7 per cent. of our population were located in centers with populations under 2,500. In spite of the growth of our cities, America is still, and by necessity must long remain, largely rural in character. It is to the country side, therefore, that we must turn for many years for our most profitable life conservation work. No greater opportunity awaits the American Medical Association and other bodies interested in improving health conditions than to concentrate their energies to this section of the country and to accomplish, if only in a limited manner, what has been done in the American cities.



A comparison of urban and rural mortality (in registration states as constituted in 1900) from all causes.

The key to the solution of the problem of rural hygiene lies in the development of efficient county health organizations in the United States. In most states, the chief unit of local government is the county. There are 2,953 counties in the United States. The typical county is one of about 600 square miles in area with a population of about 20,000 so that every point of it is readily accessible from the county seat. Five-sixths of these counties are rural in character; fully 10 per cent. have no incorporated places and about half contain no towns with as many as 2,500 people. The American county, however, has not as yet been aroused to the fact that it has distinct health functions to perform and that it is the only governmental unit that can properly and efficiently perform such functions. The county health officer should be the most important single factor in conserving American public health, but is practically the weakest link in our entire health system.

To obtain a more intimate view of county health organization in the United States, a questionnaire was sent by the Statistical Bureau of the Metropolitan Life Insurance Company to the executive health officers of all the states. We inquired into the provisions of the state health laws; into the organization of the departments; whether there were any county health officers and whether they were full-time officials; how these men were compensated; the amount of their compensation; and to whom they were responsible. Finally, we inquired into the need for full-time county health officers in the several states.

From our replies it was at once evident that we were concerned with a vital question. The answers were usually complete, clear and to the point and indicated that the subject of our inquiry was in many states the chief concern of the health authorities. The following is a brief summary of our replies:

Health administration is organized on the county plan in thirty-one states out of the forty-one that replied. Yet only five had arranged for full-time county health officers in any of their counties. These were Oregon and Washington, which have one full-time county health officer each; Colorado and Florida, which have two each, and North Carolina which has eleven. In the other states, county health officers are part-time officials, if in existence at all.

In most states the compensation of the county health officers is determined by the local county commissioners or supervisors. In Louisiana, health officers are paid by the police jury of the parish and in Missouri by the county court. The county health officers of Florida are the only ones reported to be on the payroll of the State Board of Health. From all replies, however, we could infer that these health workers received entirely inadequate compensation. In many cases $100 a year was the total salary paid. In one state, fifty-six out of one hundred health officers received less than $200 annually, and this state has recently made considerable progress in its provision for county health service.

The county health officers of more than one-third of the states are responsible to local authorities only. Training in public health and sanitation is not required as a prerequisite for office. There is little, if any, provision for laboratory work. Tenure of office is insecure and the machinery is political rather than scientific.

The one encouraging note in our replies was the almost unanimous demand for full-time county health officers. In this connection the health executive of one of our Eastern states expresses the opinions of almost all of our correspondents when he says: "Yes. We feel the need for full-time county health service every day — all day."

We may, therefore, conclude from these answers to our several questions that full-time county health officers are an absolute necessity in most of our states; that very few such officers exist; that they are insufficiently paid; that responsibility to the centralized authority is lacking, and that county health work is only too often intimately connected with local politics. The present system of county health administration in the United States is inefficient and not conducive to the public welfare. The health officer of a large Western state aptly struck off the whole situation when he said: "The present system is not efficient and never can be."

What then is the solution to the problem presented by county health administration in the United States? It must be obvious that no system will be equally applicable to all the states. A plan that is practicable in New York may very well prove ill adapted because too expensive for a number of our Western or Southern states. Local conditions, both geographical and economic, will largely determine the details of organization. It is agreed, however, that certain fundamental considerations apply equally to all the states which have extensive rural populations, the local control of which is on the county plan. I propose to review briefly some of these requirements.

1. The county health organization of a state must be an integral part of the state health administration and be responsible to it. Public health protection is primarily a state function. The county health officer and the county board, whenever there is one, should, therefore, hold themselves in readiness to enforce orders from the state department. They should, moreover, be subject to removal by the state department for cause. The state, on its part, however, must recognize this dependence of the local organization through state subsidies to help cover the necessary expenditures for county health work.

2. The county health officer must be a full-time official. He must be one whose sole interest is in the community, to the exclusion of private interest, be it his own or that of private individuals or groups. We all know too well how often the part-time health officer who has a private practice to maintain must choose between the performance of public duty and the loss of his practice. This situation should not arise. He should never find it necessary to compete with those whom it is his duty to supervise.

3. The county health officer should be trained in the science of sanitation and public health. Most practicing physicians are not well enough equipped to administer a progressive health office. The protection of the public health, as now conceived, is a science with its own data and formulas. The larger medical schools, such as those at Harvard and at the University of Michigan, for example, have organized special postgraduate courses leading to the degree of Doctor in Public Health. It will be a great day in American public health affairs when medical officers will, as a class, qualify by study in such postgraduate courses.

4. The tenure of office of the health officer should be coextensive with his efficient service. The successful health officer is made, not born. With a proper background of training, every year of added experience makes him a more useful servant of the state. The health officer should, therefore, be assured of a continuous tenure of office. He should in no way be a pawn in the political game. A period of six to eight years has been suggested as a sufficient term. Health officers who have made good should then be considered for reappointment, although the state may reserve the right to dismiss in shorter time those who are incompetent or neglectful of their duties.

In view of these requirements, it should hardly be necessary to point out that county health officers must be reasonably compensated for their services. Surely, if full time is required, the compensation must be sufficient to attract and to keep good men in the service without inflicting hardships on them or their families. It is folly to set high standards and to make them impossible of attainment because of inadequate compensation or uncertainty of tenure. Salaries must be adequate to attract able men and to maintain them in a state of comfort consistent with their important duties.

Permit me to point out more definitely the character of the return that awaits the states on their investment in full-time county health officers. In spite of all our preconceived ideas as to the healthfulness of the country, the rural sections suffer severely from the ravages of tuberculosis. Such typically rural states as Kentucky and North Carolina (using these as examples) suffer a death-rate from tuberculosis higher than that for the registration states taken as a whole, and higher than for the registration cities. It would be the first duty of a full-time health officer to address himself to the tuberculosis problem of his rural communities.

The typhoid problem is equally urgent. In 1911 the death rate from this disease was 22.2 per hundred thousand in the rural section as against 18.6 in the cities of the registration states. These figures in themselves clearly indicate the many sanitary dangers incident to life in the country. Typhoid fever is always, to the health engineer, an unerring signal directing him toward polluted water supplies, infected food products and unsupervised typhoid carriers. These are a constant menace to the entire state through their effect on milk and other food supplies. All of these sources of typhoid infection, including the disposal of dangerous waste products, lend themselves to the concerted efforts of modern sanitary science. Indeed, no disease has shown such a ready response to control as this preventable filth disease. The full-time health officer, supported enthusiastically by his community, would in the course of his first administration, earn many times his cost in reducing sickness and death from this cause alone.

The full-time health officer would of course participate in other lines of health work. His influence would soon become evident in reduced rates of sickness and death for the other preventable diseases. In no one respect, however, would the services of the full-time officer be more constructive and remunerative to the community than his active participation in child hygiene. In the larger cities throughout the country, this phase of health administration is now permanently established. In the country, on the other hand, this work has not received any serious attention. Children are not so well housed or so well fed in the country as in the city, and school buildings are so poorly constructed that the children are often exposed to conditions of weather and infection which bring about disease. It would be the function of the full-time county health officer to work in cooperation with the school authorities of his community and to see that each child in his jurisdiction is examined for physical defects, at least once a year. If there were no better excuse than the need for some local authority to carry on intelligent and modern work in child hygiene, the states would be justified in appointing full-time county health officers for this purpose.

I need hardly point out to this audience the multitude of ways in which a well-trained and full-time county health officer would serve the state. I need only refer, in addition, to his influence on the vital statistics of his county. While no attempt should be made to burden him with the duties of local registration, his very presence, especially when fortified with an efficient laboratory, would serve to bring together most valuable records of the incidence of the communicable diseases, as well as to improve the registration of births and deaths.

In closing, may I suggest that the committee of your section which has been appointed to study this problem cooperate with the committee of the American Public Health Association with a view to formulating a model bill on the subject of county health administration? This task should not be a difficult one at this time. A number of states, including Kentucky, Maryland, Georgia and Kansas, have either passed laws for county health service or are actively engaged in studying the question. Other states, judging from the character of the answers to our questionnaire, are intensely interested. It should be possible, through conference and study, to determine what a county health bill should contain, and the endorsement of such a measure by this body at a subsequent meeting should be most helpful in placing it on the statute books of a number of states. I can conceive of no more promising field of work for the American Medical Association and especially for the Section on Preventive Medicine and Public Health.

## ABSTRACT OF DISCUSSION

Dr. Wm. M. Perkins, New Orleans: With the major argument of Dr. Dublin's paper I agree most heartily. The necessity for more definite organization is apparent. We are fighting the health campaign very much as an untrained mob would fight. That more definitely trained and equipped health-officials are needed is not disputed; nor that there is a necessity for permanent health-officials who thus would have some encouragement to undertake this special work. A health-official cannot be, as a rule, a practitioner at the same time. The health-officer is forced to come into such relations with the rest of the medical profession of the state that whenever political changes remove him he is put in a very bad position with regard to resuming practice. Therefore, men everywhere are hampered in their health-work by the necessity of making a living when the powers that be remove them. There is no more apparent root of evil in the health administration of the present than the constant political changes of health-officers and their domination by politics, and the insufficient guaranty of reward for faithful, persistent and trained effort. With regard to the organization of a proper health army, it has two aspects. One would be to enlarge the powers, duties and responsibilities of the county health-officer as far as possible; then the state health-officer could, to the limit of the state's powers, take up those things which the county health-officer was not empowered to handle, and could leave to the national health-service the matters beyond his own jurisdiction. I am strongly in favor of enlarging the present bureau of public health into a full set of furniture, making it a department, and giving the national health-service as many powers, duties and responsibilities as may be required. The state health-officer then would carry the work as far as he was able, and the local health-officials would be left as little as was necessary. Instead of putting the burden on the lower officials and building up, I think it should be put on the higher officials and built down. I doubt whether the wording of the phrase "full-time county health-officer" is exactly correct. "Full-time health-officer," by all means; but probably it would work out better if the scheme were adopted to a district rather than the county, as Dr. Dublin suggests. In Louisiana we recently tried the plan of suggesting a movement to redistrict the state, cutting out the forty-odd parish or county health-officers, and putting in a small body of full-time district health-officers. The very element of politics and the ambition that men have to hold positions of county health-officers—to which they give little time, little training, and from which they accomplish, many times, little result,—rendered these positions so attractive, and of such honor and glory, that the incumbents fought vigorously not to lose them.

Dr. W. H. Sanders, Montgomery, Ala.: The question of securing adequate compensation to command the entire time of health-officers for the counties is being agitated in all of our states, and the outlook for the early future is growing brighter and brighter.

For eight or ten years, in my state, we have been working to this end. All we need to accomplish our object is to convince the people of the value of such an officer. Eight or ten years ago we secured a law laying down a minimum below which the authorities of a county could not go in fixing the salary of the county health-officer; but we put no limit above. They have had the right for all these years, and enjoy it now, of providing a salary adequate to command the entire time of a health-officer for the county; and we hope, in the near future, to see a number of the counties in my state availing themselves of their privilege, one county having already done so. The only obstacle is the lack of education of the people as to the need of such an officer and what he may do for them. I am glad to say that we are not confronted or surrounded by any of the difficulties mentioned by Dr. Perkins. We in Alabama, fortunately, are absolutely divorced from politics in our public-health administration. The election of health officers is vested in the organized profession; the doctors, in their organized capacity, name every health-officer in Alabama, from the state health-officer down to a health-officer for the smallest municipality. Our people approve this feature of our system, and we have never had any difficulty in maintaining it. With us it is simply a question of the education of the people as to the need of full-time county health-officers.

Dr. W. S. Rankin, Raleigh, N. C.: Dr. Dublin called attention to the fact that our state had more full-time health-officers than any other state that he had replies from. We have eleven whole-time county health-officers in North Carolina. There are 100 counties in the state. We could have had, if we had pushed our campaign along quantitative rather than qualitative lines, twenty or thirty counties. I believe what I say with regard to the counties of North Carolina would apply to the counties throughout the South. There is comparatively little difficulty in persuading a county to employ a whole-time man and to appropriate from $2,500 to $3,500 for the salary and expenses of such a health-officer, requiring him to own an automobile. Of course, a whole-time man with an automobile is worth two without one. To get whole-time health-officers in the counties is easy, and I will give our methods to anybody that wants them. After the officer is obtained, the troublesome thing is to get him to do the right kind of work. Dr. Dublin recommends that the state shall have power to require the whole-time officer to perform certain duties. That is about the only way that this system of county health-work will amount to anything. My first idea was, after the whole-time men were elected, to have them take three or four days to confer concerning their four or five definite fundamental duties; then for them to adopt some system of work embodying these duties. The report should be such that, when published by the state board of health, it would be comparative. I derived my idea from the work of the Rockefeller Commission in the South. Their men are all doing the same kind of work, making the same kind of report and using similar report blanks; at the end of each week the results are published in such a tabulation as to make a comparative showing for each man. Instead of statutory power to compel these men to do certain things, we simply wanted to use that powerful law-enforcing power in American life—the power of publicity—to make them do their duty. If we could have gotten them to adopt a uniform standard of work and a uniform monthly report, and then published the work of each man, each month, in the health bulletin distributed throughout the state, and in the newspapers, we would have all the power that we need.

When the whole-time men came together, however, they decided that, inasmuch as some of them were inexperienced in health-work and the whole thing was experimental, they had better not establish any uniform plan to begin with, but rather should spend six or eight or twelve months in the field and find what work was needed, then later, perhaps, adopt a uniform standard of work.

Dr. J. W. Trask, Washington, D. C.: I think both Dr. Dublin's paper and its discussion show distinct progress in the evolution of health administration in this country. It is especially interesting, in my opinion, as showing the approach of the second step in health organization. I believe it is logical to assume that the state, being the larger unit of population and the larger political jurisdiction, will develop an efficient health department before the counties do. I take it that Dr. Dublin presupposes full-time state health-officers. Unfortunately, that is not so throughout all the country; but I do not believe that the development of the county organization should be delayed on that account. The position of state health-officer is not only one that requires an able man, but requires all his time. I do not believe that it is compatible with proper state health administration that the state health-officer should be devoting his attention to other things and his official work constitute a side line. Dr. Dublin's logic is sound, and, assuming that the necessity of full-time state health-officers has been established, it is time to strengthen health administration in the next smaller political subdivision of territory. It does not necessarily mean a county. I think that the county, however, having already a political organization, will in most instances be found the most suitable and convenient. The progress of health organization is undergoing a natural evolution. It was first appreciated that the state needed all the time of its health-officer. It is now apparent that the county also needs a full-time health-officer. In time further needs for full-time health-officials will undoubtedly be found in territorial subdivisions smaller than counties where the population is sufficiently great.

Dr. S. A. Knopf, New York: We have heard a good deal of the duties of the health-officers, but nothing of their rights. It seems to me that any health-officer without police power is but a feeble power in his community. I had occasion recently to examine some country schools, and, to my amazement, I found that the hygiene in those schools is sometimes many times worse than in cities. In many communities I have found that the health-officer has no control over the tuberculous patients who, because of ignorance or indifference, infect not only the members of their own families but their close neighbors and friends. If the health-officer of any community is not empowered to remove such dangerous patients to a place of safety, I mean where they will not be allowed to spread their disease, I cannot see the utility of the office in relation to tuberculosis. Unless the health-officer can order an unsanitary school to be made sanitary, he is but a weak factor in his community. I highly approve of all Dr. Dublin's suggestions. I hope those in power will propose bills and help in the enactment of laws whereby the health-officer of any community, small or large, shall be given police power to enable him to enforce the sanitary regulations whereby the whole community is to benefit.

Dr. A. T. McCormack, Bowling Green, Ky.: I want to express my appreciation of Dr. Dublin's excellent work. I think nothing went further in showing the members of our recent general assembly the wisdom of legislation creating full-time health-officers than the publication which Dr. Dublin distributed in Kentucky. The value of such essays distributed to the people has been greatly emphasized in our state, and I am glad to express the gratitude Kentucky feels to the Rockefeller Sanitary Commission for the Eradication of Hookworm Disease for the opportunities it has given to the people of Kentucky to see actual demonstrations of what a full-time health-officer can do. The health campaigns which have been conducted in Kentucky in connection with this commission, this dispensary work, with a trained sanitary inspector in charge, with expert microscopists, with the trained workers in the warfare against tuberculosis conducting campaigns of from three weeks' to three months' duration in many counties, carrying the lessons of better health and longer life into the rural homes and country stores and schools and churches, are in this way best enabling the people themselves to realize what would be possible if each county could have a man devoting his entire time and energy to this work, assisted and supported, as he would be, by the organized medical profession and an educated public opinion. There was not an intelligent or thinking member of our recent legislature from a section in which these dispensaries had been held who was not only in favor of the creation of a full-time health-officer, but was more in favor of this legislation than any other matter before the general assembly. In Kentucky more than 200,000 men, women and children have been examined for intestinal parasites, and nearly half of them have been found to harbor hookworms or some other variety. If the Rockefeller Sanitary Commission had accomplished nothing else, if not one of those infected had been treated (and practically all of them were treated), the change of sentiment brought about by the demonstration to our people of the accurate sanitary methods of modern medicine, their increased confidence in their family physicians, their increased desire for better and more practical education in preventive medicine, would have justified the expenditure of all the money and energy which has been put into the work.

L. I. Dublin, Ph.D., New York: Dr. Rankin's experience should prove most valuable to every state health-officer. It seems to me like a hopeless task to begin with the idea of local autonomy, although there is always a great temptation to do that. As Dr. Rankin has pointed out, there is the strong possibility that a group of county health-officers will combine for selfish purposes and defy the state department to compel them to do the right thing under the law. Unless they are appointed subject to the approval of the state department and can be removed from office by the state department, the administration of the county health service is very likely to become political and of little value. I therefore hope most sincerely that the committee appointed to report a bill for full-time county health-service will have in mind a system in which the state is the central authority, the several county officers being at all times responsible to the state and subject to its control. A bill which will have the approval of your organization and that of other national organizations like the American Public Health Association will have great weight with the state legislatures and is very likely to be enacted into law.

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**The Need of a Knowledge of Anatomy.**—A disease must always have a relation to a healthy action, or healthy structure of parts, for it is only a deviation from them; so that a knowledge of disease would appear to rest on a knowledge of the body in its healthy state. It is in this point of view that anatomy and physiology become so very important, as being most likely to afford the means of relieving the body when suffering under disease. If anatomy, then, be of so much use in physic surgery, it ought to be earnestly cultivated by those who really wish to know their profession, and to become respectable in it. This is not a trifling matter. Justice and humanity require every exertion where the lives of our fellow-creatures are concerned. There are many professions where negligence or inattention may be reckoned a folly; but in medicine it is a crime. There is nothing that renders a person more fit for the discovery of new diseases, than a knowledge of anatomy.—Matthew Baillie.

# A REVIEW OF CURRENT HOSPITAL TOPICS *

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After considering various topics on which to address you it appeared to me that the interests of the Section on Hospitals would be best served by an effort to emphasize further the importance of certain matters affecting the conduct of hospitals which are of special interest to the hospital administrator, and worthy of the consideration of the medical profession generally, and with which you are already more or less familiar.

The object in thus bringing them to your attention is to stimulate this Section to interest itself further in them as a body, to the end that it may exercise the influence for greater hospital efficiency of which it is potentially possessed, and which I believe to be its greatest function.

If the Section on Hospitals is fully to justify its existence it must assist, so far as possible, in promoting the aims of the other component parts of the parent organization. In return it may expect of them a fair consideration of and cooperation in the problems peculiar to itself.

While some of the matters to which I shall refer are not of recent origin, it is only during the last few years that their importance has come to be so generally recognized as to result in active efforts to secure their realization. These efforts have been inaugurated in part through the initiative of individuals who have been directly concerned in hospital administration, and partly as a result of certain demands arising from without the domain of hospital management.

Most prominent among the latter are the demands of medical education for larger and more efficient hospital facilities for the purposes of instruction in the clinical branches of medicine. These demands have been met in different places in various ways; but in no instance without involving hospital organization and standardization. These, I believe, are the most important subjects concerning hospitals of mutual interest to the different sections of the American Medical Association to-day. They are interdependent, and the ideal of hospital efficiency for which we are aiming cannot be realized without giving them the careful consideration which their importance indicates.

It is not my purpose to discuss the relative merits of different types of organization, or to suggest that the subjects of hospital organization and standardization should be approached from the point of view of medical education alone, but rather to urge, since they are of such great importance to hospitals, that they be considered and acted on in a broad way.

It must be admitted that the relationship between medical education and hospitals is such that the one cannot develop higher ideals and standards without the assistance and cooperation of the other. Hence, the problems of medical education become, to a great extent, the joint problems of the hospital administrator and those directly concerned in medical education.

Therefore, the best types of organization for the different classes of hospitals and the principles and methods to be employed in the general standardization of hospitals can best be determined through the cooperation of those representing the different interests involved. For this reason it would seem just and desirable that the Section on Hospitals be represented on the Council of Medical Education, and I would recommend that action be taken at this session to secure such representation.

A study of different hospital organizations which have recently been effected demonstrates that there are differences of opinion as to what type of hospital organization best serves the interests of medical education, but there is no disagreement on the proposition that, generally speaking, organization can be improved on.

Justification for the present existence and further extension and development of hospital organization of a type which brings the public wards, at least of the larger hospitals, in closer affiliation with medical schools is found in the experience of those hospitals in which such organizations have been in effect. The fact that the hospital so organized is benefited by such close relationship has been amply demonstrated. Just why the idea that the admission of medical students to the wards of hospitals for the purpose of receiving clinical instruction under proper supervision is inimical to the welfare and proper care of patients should have obtained so long in this country is not clear, especially in view of the fact that intimate connection between medical schools and hospitals has existed for centuries in England for precisely that purpose.

It may be said that, so far as medical education is concerned, the ideal hospital organization is that suggested by Abraham Flexner in his report on medical education in the United States and Canada. In this connection he says:

> The patient's welfare is ever the first consideration; we shall see that it is promoted, not prejudiced, by the right kind of teaching. The superintendent must be intelligent and sympathetic; the faculty must be the staff, solely and alone, year in and year out. There will be one head to each department—a chief—with such aides as the size of the service, the degree of differentiation feasible, the number of students, suggest.
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> The professor of medicine in the school is the physician in chief to the hospital; the professor of surgery is surgeon in chief, the professor of pathology is hospital pathologist.

That the difficulties which may be, and usually are, met in attempting to apply an organization of such general character to large public hospitals are not wholly insurmountable is evidenced by the type of organizations planned for the new municipal hospitals of Cincinnati and Louisville.

The municipally supported or privately endowed hospital which, given the opportunity to affiliate through its organization with a medical school of recognized standing, does not avail itself of the privilege, is not fully discharging its obligations to the community it serves.

The value of one thing in connection with hospital organization deserves special emphasis. The larger hospitals at least should each include, as a part of the staff organization, a committee, the chief function of which should be to promote professional and administrative efficiency. This committee should be made up of a staff member from each hospital service, or division, and the superintendent or his representative. The membership thereof should be as small as practicable. The suggestion for, as well as a reference to the importance and value of. such a committee was

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* Chairman's address, read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, June, 1914.

included in the address of Dr. F. A. Washburn, president of the American Hospital Association, last August. This matter is also urged on us by the Committee on the Standardization of Hospitals of the Clinical Congress of Surgeons of North American in connection with another matter which will be referred to presently.

Concerning the general standardization and classification of hospitals, progress has been made. The questions involved have been ably presented and discussed at various times by many, including the secretary of this Section, who has been actively engaged with others in promoting plans for its accomplishment, and to whom much credit for the advance is due. The action already taken in this direction by the Section on Hospitals was approved by the adoption of a resolution presented at the last meeting of the American Hospital Association by Dr. Hurd, providing for the appointment of a committee to consist of three of its members to act with a similar committee of this Section and cooperate with it in promoting the measure.

Any standardization which is to become effective and acceptable must of necessity be based primarily on a classification of hospitals and the character of the service which each renders to the community it serves. To adopt methods of standardization which overlook the opportunities to assist the smaller, worthy hospitals to effect still higher standards would be unfortunate. On the other hand, the principles and methods employed must be sufficiently comprehensive to put the so-called hospitals which permit or condone objectionable or criminal practice in a properly designated class by themselves. That such hospitals do exist is a recognized fact which must not be overlooked in the determination of principles and methods of standardization.

That some system of periodic, competent inspection of hospitals is desirable is generally admitted by hospital administrators. How best to obtain this is a matter with which the Section on Hospitals should concern itself. Some system of inspection must precede any standardization undertaken, and be continued permanently thereafter if the desired results are to be obtained and perpetuated.

The Council on Medical Education has wisely considered the whole subject of hospital standardization in a general way from the point of view of medical education and is now preparing for publication a provisional list of hospitals acceptable from the standpoint of furnishing satisfactory training for interns. This provisional list will shortly be published and will amount to a temporary standardization of hospitals in that direction. In this connection the Council has arranged for the appointment of advisory committees in different states to assist in this work, and the provisional list will later be revised on the basis of reports submitted to the council by these several committees. What action, if any, will be taken by the Council with reference to the further and more general standardization of hospitals remains to be seen. Obviously it is not within the province of the Council on Education to concern itself to any great extent in the direction of those hospitals in which clinical instruction cannot, for one reason or another, be undertaken.

The program of this meeting of the Section on Hospitals bears testimony that there are other things requiring attention in the direction of standardization.

Who of us has not noted the diversity of surgical technic exhibited by surgeons equally competent in diagnostic ability, surgical judgment and operative skill? Why should two or more equally competent and reliable surgeons demand different types of surgical apparatus, equipment or instruments to accomplish the same result in a given case? If such a diversity of technic were essential to the welfare of the patient no question could or would be raised concerning it. That it is not essential is amply shown by the statistics of certain hospitals wherein differences of surgical technic obtain.

Since autostandardization of the surgeon is being attempted, the least the hospital administrator can do is to afford every facility possible to make its accomplishment both sure and rapid. The measures which have been institutel in this direction, notably the creation and organization of the American College of Surgeons, are based on a recognition of the fact that there is still ample opportunity for improvement, notwithstanding the marvelous progress made by surgery in recent times. These measures conscientiously followed out will ultimately result in the further elevation of the surgeon, and incidentally the hospitals, in the confidence of the public.

A criticism of the statistics usually embodied in the reports of general hospitals has recently been made from at least two sources. That ultimate results of the care and treatment of the patients covered in most reports are not indicated, is plain. There is a demand, on the part of the profession, for a revision of the form of these reports based on a follow-up system. The report of the Committee on Standardization of Hospitals of the Clinical Congress of Surgeons of North America covering this matter was adopted at the meeting of the congress last year and the report has been generally circulated. Statisticians are also free in their criticisms of the form of most hospital reports, and the criticisms from both sources are just. We, as hospital administrators, would do well to act on the suggestions for improvement in this direction already made and put them into effect as promptly as possible.

Details of hospital construction are never without interest to the hospital administrator. Our attention is called to the necessity of ascertaining certain scientific facts on which intelligently to base standards for the ventilation of hospitals. This matter will be brought to your attention in detail during this session and the Section requested to lend its influence by supporting some measure looking to an investigation and report on the subject by a properly constituted body.

One cannot consider the subject of hospital construction in this country without being impressed by the vast amounts of money which have been and are now being expended in the erection of buildings for hospital purposes. There is a well-founded belief in the minds of some that beauty of architecture has been achieved in many instances at the expense of thoroughly practical utility. In formulating plans for a hospital it should be remembered that beauty is only skin deep, and that the prime object of the hospital is the efficient, economical care of patients coming to it. The increasing demands on the part of the public for greater free hospital facilities, together with the difficulties frequently experienced in securing the necessary funds to meet these demands, causes one to wonder, if, in the construction of the large modern hospital of today, we always realize the largest practical and efficient facilities possible for the expenditure involved. The hospital administrator engaged in planning buildings should duly consider the opinions and desires of the staff, but he will frequently be shocked by the unreasonableness thereof, both as to space desired and equipment asked for. It is then his duty and province to evaluate their demands and bring them into proper relation with the whole on the basis of modern medical knowledge and principles and methods of administration.

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# THE TONSILS AS A HABITAT OF ORAL ENDAMEBAS

## POSSIBILITY OF SYSTEMIC COMPLICATIONS OF ORAL ENDAMEBIASIS *

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In connection with work recently carried on by Smith and Barrett in the pathologic laboratories of the University of Pennsylvania[1] indicating that the parasitic amebas of the mouth hold an important relation in the etiology of pyorrhea alveolaris or Riggs' disease, and that by the use of emetin (alkaloid) as an amebicide these organisms may be destroyed and the pyorrheal lesions cured, we have sought to determine whether these protozoa may not find their way also into the tonsils and there perhaps be of importance in determining or in maintaining certain of the inflammatory lesions of these structures, at least with or without associated systemic complications. To the present time only the first of these propositions can be said to be proved, that is, that these parasites actually at times involve the tonsils. The conditions of the tonsils of persons in whom they have been found infested, and the behavior of several positive cases with systemic complications after the administration of emetin, however, are decidedly suggestive and encouraging to continued investigation now in hand.

In the work of Smith and Barrett the endamebas encountered in pyorrhea pockets have almost invariably been of the species *Endamoeba buccalis* Prowazek, 1904 (probably identical with *Endamoeba gingivalis* Gros, 1849 and *Endamoeba buccalis* Steinberg, 1869); two of their cases to date being regarded by them as *Endamoeba kartulisi* Döflein, 1901. They are uncertain, but regard it not improbable that of the instances held primarily as *Endamoeba buccalis*, certain ones may represent a third, as yet unclassified species. These organisms have been long known, but have been hitherto uniformly held to be non-pathogenic parasites of the mouth, on the supposition that they do not penetrate the tissues, are merely surface habitants, and are found in normal as well as in pyorrheic mouths. Barrett in his report of their work records the uniform discovery of endamebas in the pus of pyorrhea pockets in forty-six patients, without exception; offers as controls seven mouths free (after careful dental examination) from pyorrhea, and free also of amebas; and records to the date of his report before the Pennsylvania Dental Society (July 1, 1914) thirteen cases of Riggs' disease treated with emetin either with complete cure or with marked progress toward recovery. Since then all of these patients have fully recovered and numerous additional cases have been collected showing the presence of endamebas in pyorrhea pockets and the effectiveness of emetin in their destruction and in the cure of the suppuration.

In the latter part of July, 1914, before the American Dental Society of Europe, in session at the time in Paris, Dr. Angelo Chiavero,[2] a dentist of Rome, in a paper devoted to the morphologic and systematic study of *Endamoeba buccalis*, records his invariable discovery of the parasites in twenty-two cases of alveolar pyorrhea, its frequent presence in the soft deposits on sound teeth not kept in good hygienic condition, its absence from carious dental cavities in active process of decay and its absence from hard tartar. In his conclusions, however, he states his belief that these organisms are of no pathogenic influence, but that he regards them, from the fact that they feed on bacteria, as adjuvants to autodisinfection of the mouth.

Still more recently Bass and Johns[3] of New Orleans have announced their discovery of these endamebas in eighty-five out of eighty-seven cases diagnosed as Riggs' disease which they have had the opportunity of examining, and declare the curative efficiency of emetin administered hypodermatically. The results which have been obtained from the use of emetin, whether employed locally or administered hypodermatically, constitute an appealing argument for the actual pathogenic importance of these protozoa, an argument short only of ideal proof by successful inoculation of pure cultures[4] and surely of equal significance to the old "therapeutic tests" with mercury and iodids for syphilis and with quinin for malaria.

When one realizes the readiness with which along with the purulent discharge these parasites may emerge from the pyorrhea pockets, and the favorable circumstances for their active and passive distribution over the surface of the oral mucous membrane and of the teeth, there is little reason for wonder and no strong force of argument in the fact that they are found on these surfaces. There is as little reason to hold the frequency of their occurrence as human parasites as an objection to their pathogenicity if one remembers that it is commonly held by the dental profession that pyorrhea alveolaris is, with the exception of dental caries, the most frequent disease which affects humanity and that with careful examination by competent dentists an overwhelming proportion of all persons applying for all sorts of dental affections are found to have in obvious or in less degree some suppurative peridental lesions. Even if trivial, these may be the habitat of amebas and the source of those found on the free surfaces. It would be as reasonable to contend that because the endamebas of dysentery are found in the dejecta they do not also penetrate the tissue of the colonic wall. The pyorrhea pockets may very properly be held the analogs of the ulcerous excavations found in the mucosa and submucosa of the colon in amebic dysentery; and, while it is equally true of both locations that the endamebas which are actually at a given moment on the surface of the mucous membranes are not at that particular time causing disease, each species in its place by penetrating into the tissue produces a suppurating excavation, a "pocket" or an ulcer. The precise rôle in each instance of associated bacteria cannot be asserted; but there is reason to suspect their conjoined importance and, too, an important symbiotic relation between the protozoa and the bacteria.

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* From the Pathological Laboratories of the School of Medicine, University of Pennsylvania, and the Department of Clinical Medicine, University of Wisconsin.

[1] For preliminary report, see Barrett: Dental Cosmos, August, 1914.

[2] Chiavero, Angelo: Abstr., Dental Cosmos, September, 1914.

[3] Bass and Johns: New Orleans Med. and Surg. Jour., 1914, lxvii, 456.

[4] Smith and Barrett (personal communication) have succeeded in obtaining indifferent and always bacterially contaminated cultures on fresh egg albumin, but have not succeeded in isolating the amebas so as to make inoculation experiments practicable.

Believing that from their proximity to pyorrhea pockets and their favoring anatomic structure the tonsils might be invaded and form another habitat for these endamebas, we made a number of examinations of tonsils to determine their occurrence in these organs. In examining the tonsils for parasitic amebas, because of the difficulty occasioned by want of technical skill in obtaining from these organs a proper amount of material for examination, the search was restricted at first to freshly excised tonsils, the examination being made directly in the operating room as quickly as the tonsils were removed. All the tonsils thus examined were removed by Dr. Ralph Butler of Philadelphia, to whom we wish to express our feelings of indebtedness. The excised tonsil was squeezed to discharge the more superficial contents of the crypts; and after this had been removed, by firmer pressure the deeper contents of the crypts and perhaps some of the interstitial juices were forced to the surface and examined on a warm slide, diffused in a small drop of warmed normal saline solution. Seventeen cases were thus examined, five of the number showing motile amebas of the type of *Endamoeba buccalis* Prowazek, and regarded by us as this organism. In the material obtained from a sixth case an ameboid type of cell, with multiple long slender almost filiform pseudopodia composed of clear material, and with a granular body roughly measuring 20 micromillimeters in diameter, non-vacuolated and with a small and clearly visible body regarded as the nucleus, was found. It was not unlike *Amoeba gracilis* (a form once encountered by one of us in a subphrenic abscess). No motility could be determined, however, and while it is believed to have been an ameba, uncertainty is acknowledged and the case is not included in the list of positive tonsillar infestations. All of these seventeen cases were instances of some type of chronic tonsillitis, usually with tonsillar hypertrophy. The tonsils of the five persons in whom these organisms were demonstrated were all large, with pouting crypts; and were removed from young persons presenting the usual local and general symptoms of chronic tonsillitis with irregularly occurring exacerbations. The cases were not followed up beyond the point of determination of the parasitism, since, at the time, the establishment of this as a fact was the prime purpose in hand.

During the same time attempts were made, but in no instance with success, to obtain material from the tonsils *in situ* by scraping out the contents of enlarged crypts with a suitable pointed instrument. Later, however, with a fine pointed glass pipet to which was attached a strong suction bulb it was found comparatively easy to withdraw a small amount of semifluid material from the depths of the crypts, sufficient for microscopic examination. The tonsils are practically insensitive to the operation, and the point of the pipet may be introduced without discomfort into the crypts to such a depth that when suction is applied numerous red blood-cells are withdrawn in the viscid fluid which enters the lumen of the tube, indicating that more than mere cryptal contents are obtained. This is placed, with or without dilution, in warmed normal saline solution, on a warmed slide, covered, and examined without further preparation for the moving amebas. Permanent preparations may of course be made by fixing the film, preferably in warm Schaudinn solution, and staining with Giemsa's stain or with iron hematoxylin; but for diagnostic purposes the recognition of the moving parasites is advantageous and satisfying. We have thus far not found the organisms in this tonsillar material in numbers comparable to those ordinarily noted in the material from pyorrhea pockets, but believe that with better methods of withdrawal of material they will be found more frequently and in larger numbers.

Riggs' disease has for years been suspected of primary relationship to various systemic disturbances, including particularly certain chronic or recurrent arthritic affections, and possibly, too, some of the anemias of obscure origin and degenerative lesions of various parenchymatous organs; and even greater suspicion, amounting almost to certainty, has attached to tonsillar affections in relation to such systemic complications. Following these ideas, which are essentially those of Hunter[5] and others, the possibility of more generalized influences must necessarily occur, the effects of either the endamebiasis or of the associated bacteria, or both. Direct extension of the inflammatory processes, or lesions due to metastasis by lymphatic or hemic convection, or due to the effects of swallowed or absorbed toxic products are, logically, at least to be thought of.

In several instances in the series of cases treated for pyorrhea by Dr. Barrett, there has been noted, after the cure of the pyorrhea, the disappearance of symptoms of gastric and intestinal disorders. Similar experience has been related to us by several dentists following emetin medication; and while perhaps in a few cases this may be due to the happy effect of a coincidence of pyorrhea and amebic dysentery (as in a case communicated by Dr. F. C. Narr of Philadelphia to us), this explanation can be accepted only in exceptional instances. It would rather suggest that the cure of the oral lesions has diminished the bacterial and other poisons which previously had been swallowed and had been causative of some grade of gastritis.

During the latter part of the summer in the wards of Dr. B. F. Stahl in the Philadelphia General Hospital six cases of chronic arthritis were examined, in four of which endamebas were discovered in material thus obtained from the tonsils. These were all adults.

Case 1.—A white male patient had been recently admitted with a history of arthritis of ten months' duration, in one knee, an ankle and both shoulders. The tonsils were not especially enlarged, but showed prominent crypts with the tissue immediately surrounding them turgid, boggy and red, giving the crypts a pouting appearance. There was a history of recurrent, mild, apparently causeless sore throat. Under treatment with salicylates the conditions in the tonsils and joints cleared fairly promptly; and two examinations thereafter failed to show the presence of endamebas, which at first were readily encountered along with numerous spirochetes and bacteria.

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[5] Hunter: Brit. Med. Jour., Nov. 19, 1904.

Case 2.—The patient, a white man, was admitted with a subacute arthritis of supposed Neisserian origin, affecting the right ankle. The tonsils were of the same type as in the preceding case, and material removed by pipettage showed occasional amebas. The case cleared up symptomatically on ordinary treatment in about four days, succeeding which period three examinations on different days failed to show the persistence of any endamebas.

Cases 3 and 4.—Both patients were afflicted with chronic arthritis, but presented no appreciable tonsillar lesions. Material taken by pipettage from the retrotonsillar space in front of the faucial pillars revealed no endamebas in either. (We regret that tonsillar puncture was not performed for obtaining material, as we believe that the proper material, suggested by the blood-cells always obtained in the pipet, is really not merely of cryptal but also of interstitial source.)

Case 5.—A white woman, with typical rheumatoid arthritis, with the small joints of the hands and feet, the joints of the jaw, elbows, ankles and knees and of the spinal column affected, gave a history of recurrent sore throat. Her tonsils were fibroid; the tonsillar tissue on the right side just anterior to the posterior pillar red and beefy in appearance. Amebas have been found repeatedly from material from the latter situation.

Case 6.—A white man with chronic arthritis (involving both knees, ankles, wrists and elbows, and the small joints of the hands and feet) had cryptal enlargement in both tonsils, with a deep red boggy appearance of the pericryptal tissue of the tonsils, this more marked on the left than on the right side. Amebas were readily found in the material withdrawn from the tonsils.[6] Originally this man had an attack of acute articular rheumatism eighteen or twenty years ago, with persistence of subacute symptoms for six months afterward. In the interim, while suffering from occasional twinges of pain in various joints (never disabling) he was free from acute symptoms until four months prior to his present admission to the hospital; and at irregular periods had a recurrent sore throat usually without appreciable cause. In the spring of the current year he developed a septic thrombophlebitis of the right internal saphenous vein for which he was treated in the Philadelphia Hospital, being kept in bed almost continuously for six or eight weeks. He was thereafter discharged from the hospital; but until his readmission about eight weeks later he was never free from pains in his joints, although able to move about without much difficulty, but with many of his joints showing permanent enlargement. He was readmitted to the hospital in a state of intoxication and was assigned to the "drunk ward," where he soon developed an acute exacerbation with arthritic involvement as stated above, and with moderate swelling and redness evident about many of the involved joints. For a week he was actively treated with sodium salicylate and bromid of sodium, but without appreciable effect on the arthritic condition. At this time endamebas were found in the tonsils (and too in pyorrhea pockets); and from August 6 the patient was given thrice daily 1/6 grain of emetin hydrochlorid (by mistake by the mouth, although ordered hypodermatically). August 9 he was entirely free from pain in the joints and from the redness and swelling except in the knees. From the last date he was given 1/3 grain of emetin daily hypodermically, and on August 12 he was free from all acute arthritic symptoms, but with persisting enlargement of the joints. Thus improved he was discharged.

Case 7.—A somewhat similar case was communicated to us by Dr. Gibson Smith of the intern staff of the Murray Hospital of Butte, Mont. The subject, a white adult, a miner, had had subacute arthritic symptoms involving the joints of the neck, elbows, wrists, fingers, knees, ankles and toes for five or six months continuously, with irregular exacerbations through this period. He had had his upper teeth removed fifteen years before, presumably because of pyorrhea, and has had pyorrhea about the lower teeth at least ever since. Numerous motile endamebas were found by Dr. Smith in pus from the pyorrhea pockets. No examination of material from the tonsils was made, these organs appearing normal grossly. The pyorrhea was treated locally with emetin hydrochlorid, and in addition the drug was administered hypodermatically. Within four days the gingival suppuration had ceased and the amebas could no longer be found in scrapings from the pockets; the joint symptoms had subsided and the patient was able to return to his employment for which he had previously been incapacitated more or less of the time. No report has been received to indicate whether or not the improvement has continued.[7]

Two other cases, one referred through the kindness of Drs. Krumbhaar and Gerhard from the medical dispensary of the Pennsylvania Hospital, the other a patient in the medical ward of the University Hospital examined by permission of Dr. Stengel, have been found to have amebic oral infestation.

Case 8.—The first of these, A. A., a white woman, aged about 40 or 45, was regarded by the dispensary physicians as having chronic toxic arthritis, and had been referred to the throat dispensary of the hospital, where it was advised that removal of one of the tonsils be performed because of a diffuse interstitial tonsillitis. Endamebas were found in pyorrhea pockets about several of her teeth, and in the affected tonsil. Emetin treatment was suggested for trial; but difficulty in obtaining the drug for use in the dispensary postponed for several weeks its employment, and no report has thus far been afforded.

Case 9.—The second case, that of A. R., a white woman in Dr. Alfred Stengel's wards in the University Hospital, presented the usual features of long-standing arthritis deformans. She was found to have a marked case of pyorrhea with endamebas in the pockets; but no parasites were found in the tonsils. Emetin was to have been used in the case, but on trial caused an unpleasant nausea and it was at once suspended.

In the original series of cases reported by Dr. Barrett as treated by local administration of emetin hydrochlorid for pyorrhea there was a young white woman with a marked but unstudied anemia, poorly nourished and in a depressed condition of general health. Since her recovery from the pyorrhea, a matter of about three months, she has acquired an excellent color, has added 15 pounds in weight and is now in excellent general condition. This case suggested the possibility that some of the obscure anemias, especially those suspected of being of hemolytic origin, might find their explanation in oral endamebiasis. Thus far we have had the opportunity of examining the mouths in three cases regarded as pernicious anemia and in all three have found *Endamoeba buccalis* in the gums and in one of the three also in the tonsils. All three of these patients have been receiving treatment with other remedies, and it is quite impossible to know whether the emetin applied locally and hypodermatically to two of them has had any influence or not. One of the two, improving under sodium cacodylate and iron, has improved continuously and apparently especially after local treatment of his pyorrhea and hypodermic administration of emetin hydrochlorid. A less marked but distinct temporary improvement was noted in the second, although at present the blood-picture has receded; here, too, the emetin was only incidental to treatment with sodium cacodylate and iron citrate.

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[6] The rapid hemolysis of a freshly englobed red blood-cell in one of these endamebas is noted in this case, and is of interest; disappearing without fragmentation by solution in the course of five minutes. The same phenomenon has been seen in endamebas from pyorrhea pockets by Smith and Barrett.

[7] Reported Oct. 15, 1914, that after recurrence of arthritis with well-marked redness and swelling on September 16, an intramuscular injection of 2 grains of emetin hydrochlorid was promptly followed by disappearance of all arthritis symptoms, without any return to date of report.

We freely acknowledge that the scant data here presented can in no wise be interpreted as proving that oral endamebiasis is surely a factor of generalized intoxication in the production of arthritis or anemia. We believe, however, that the positive finding of the parasitism in connection with these conditions and the favorable features mentioned as met after administration of emetin in these few isolated cases are sufficiently suggestive to warrant further trial. In study of the possible relation it would be illogical to suppose that the toxic states determining either the arthritides or the anemias must either entirely or always be due to the oral condition; at best, if there be a relation, that can be true only in individual cases. Efforts to determine a relationship are sure to fail frequently, and failures are bound to be recorded (even if we are correct in our suspicions) until sufficient knowledge and experience are had to select properly, directly or by elimination, the appropriate cases. It is illogical to even suspect that, granted the existence in an individual of oral endamebiasis, there must necessarily be systemic complications, or that such complications must be of uniform character. Much must depend on the local circumstances governing absorption, and much, too, must depend on the number and type of associated bacteria. Whatever other relation may obtain between the amebas and the accompanying vegetable micro-organisms, one may be certain that the amebas feed largely on the latter; and in this bacterial phagocytic action they doubtless set free from this and from that organism different endotoxins. Doubtless bacterial toxins thus originating play a more important part than do toxins from the amebas themselves, if there be amebic toxins; and the end-results of toxic absorption are sure therefore to vary, now manifesting as hemolysis, now as cellular degenerations or necroses of fixed tissues, now as inflammatory changes as of synovial or serous membranes.

# CROTALIN IN EPILEPSY*

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On account of the wide publicity given through the lay press to the supposedly wonderful results to be obtained from the use of crotalin in the treatment of epilepsy, we feel that we owe it to the profession to present to it the results obtained from this treatment at the Epileptic Colony at the State Hospital at Dix Hill.

First, we wish to state that this treatment has been given under and by the direct advice of Dr. Thomas J. Mays, one of its chief advocates, and to say further that his instructions have been faithfully carried out.

The advocates state that the principle on which this treatment depends is the fact that crotalin decreases the coagulability of the blood, and they assert that the coagulability is increased in epilepsy. We wished to confirm or refute this and very readily did so by making use of a Boggs coagulometer, which was first carefully tested out on normal blood at a temperature of from 60 to 65 F., the temperature at which the abnormal blood was tested. The mean coagulation time for this particular instrument was 6 6/17 minutes. The mean coagulation time for the blood of nine epileptics who had received no crotalin was 12 7/9 minutes. The mean coagulation time for the blood of eleven epileptics who had received about forty doses of the remedy was 9 3/11 minutes, while the mean coagulation time of the blood of thirteen epileptics who had been given eighty or more doses was 7 4/13 minutes. These findings would indicate that the exact opposite to the assertions of the advocates is true, and this is further in accord with the well-known serologic principle that the injection of any foreign substance into the blood causes the formation of antibodies.

That this condition of the blood is exceedingly transitory seems probable, as in three patients who had taken no crotalin in three weeks (though they had previously received over one hundred doses) the mean coagulation time was 14 1/3 minutes.

In a more recent paper, Dr. Mays states that he uses crotalin on account of its pharmacologic effect, saying that its action is very similar to that of the cyanids. Let us hope that he is nearer right in this than in his former contention. We are afraid, however, that even this is not entirely true, as practically all of the patients assert that they get decided stimulation from the therapeutic dose of this drug, and the cyanids have never been accused of any such action. In poisonous doses it does cause convulsions—whether or not for the same reasons that the cyanids do—remains to be proved. He tells us that the homeopaths have been using snake-venom by mouth for many years for epilepsy and by inference we are led to suppose that he has been converted to "the hair of the dog is good for the bite" theory. In this dissertation he further attempts to explain the nature of epilepsy, with the usual result.

CONVULSIONS DURING TIME OF OBSERVATION

| Period | Dosage | Time | Number of Convulsions | | | |
|---|---|---|---|---|---|---|
| | | | Men | Women | Tot. | Gr. Tot. |
| Three months before treatment | No crotalin | January ... | 215 | 135 | 350 | |
| | | February .. | 241 | 190 | 431 | |
| | | March .... | 280 | 214 | 494 | 1,275 |
| First three months of treatment | 10 minims twice a week | April ..... | 277 | 267 | 544 | |
| | | May ...... | 333 | 286 | 619 | |
| | | June ...... | 231 | 246 | 477 | 1,640 |
| Second three months of treatment | 10 minims once a week | July ...... | 263 | 282 | 545 | |
| | | August .... | 209 | 289 | 498 | |
| | | September . | 244 | 260 | 504 | 1,547 |
| Third three months of treatment | 5 minims once a week | October ... | 253 | 235 | 488 | |
| | | November . | 250 | 233 | 483 | |
| | | December . | 275 | 247 | 522 | 1,493 |
| Three months' treatment discontinued | ............ | March ..... | 157 | 201 | 358 | |
| | | April ..... | 274 | 250 | 524 | |
| | | May ...... | 257 | 222 | 479 | 1,361 |

Differential blood counts in nineteen patients who had received from forty to one hundred doses showed a tendency to slight eosinophilia with a slight increase in mononuclears, with no apparent effect on the total number of leukocytes or on the red blood cells, nor did the hemoglobin seem to be affected. In two cases with abscesses the septic factor was present, as would be expected.

The drug is supplied in solution, 5 minims of which equals 1/100 grain, and the directions are to give it hypodermatically twice a week, beginning with 4 minims and increasing to 10. Later advices were to give no more than 5 minims. The hygienic and dietetic treatment was the same for these as for other patients.

To determine its effects on the number of convulsions, it was decided to record accurately every convulsion occurring during the three months preceding its use and to compare the number of these with the number occurring during the first, second and third periods of three months each while the treatment was being given, the doses being different in each of these periods, and further to compare this number with the number occurring during the three months after the treatment was stopped altogether.

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* Read before the North Carolina Medical Society.

The treatment was begun the last week in March, 1913, and forty-nine patients were treated. During January, February and March there were 1,275 convulsions. During April, May and June, the first period of treatment, when 10 minims were given twice weekly, there were 1,640 convulsions. During July, August and September, the second period of treatment, when 10 minims once weekly were given, there were 1,547 convulsions. During October, November and December, the third period of treatment, when 5 minims once weekly were used, there were 1,493 convulsions. The treatment was discontinued some time in February, 1914, and sterile water used in place of the venom so as to retain any psychologic effect there might be, and the number of convulsions during March, April and May was found to be 1,361. This would indicate that not only does the medicine not decrease the number of convulsions, but actually increases them and in direct proportion to the amount given.

As to the effect on the mental condition of the patient, there has been no more improvement in those taking crotalin than in those taking the usual treatment.

It is only fair to state that a large majority of the patients brought to the colony for treatment are in bad shape both mentally and physically, and that many of these improve markedly in these respects after they have had the usual treatment here, while quite a few have fewer convulsions, owing to the regular life, and careful hygienic and dietetic management, together with freedom from worry and irritation from the outside. This effect is obtained in spite of the fact that they get practically no bromids when compared with the amount they receive before admission.

As a result of our observation, it would appear therefore that:

1. The blood of epileptics is less coagulable than that of normal persons, and the coagulability is transiently increased by the use of crotalin.
2. The number of convulsions is increased by its use and in direct proportion to the amount used.
3. Its use seems to have no effect on the mental condition of the patient, all of which is absolutely contrary to the claims of the advocates of the treatment. Its use does, however, to a certain extent, satisfy the abnormal craving for medicine which all epileptics have.

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**Health as a Social Ideal.**—The New Health, as a social ideal, signifies that in our day, because of our new knowledge, our new science of sanitation, our new conscience, our new spirit of brotherhood, our new democracy, our new social intimacy of understanding, we are coming to feel about the public health as our fathers have felt about religion, education, liberty and nationality. We are to feel that health is fundamental and inalienable, that it imposes sacred obligations, calls us to willing service, becomes the object of our constant concern, makes us ashamed of inefficiency, stupidity and graft, because they mean disease, raises us to a new level of brotherhood.—Edward T. Devine, *Journal of Outdoor Life*.

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# A COMPARISON OF THE WASSERMANN AND LUETIN REACTIONS IN 744 INDIVIDUALS

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The tests here recorded were performed at the U. S. Soldiers' Home at Washington D. C., in the course of an investigation to determine the prevalence of syphilis in that institution.

The inmates of the Soldiers' Home are all discharged soldiers who have served twenty or more years in the army, or who have been discharged for some disability incurred in the service. Practically all of the inmates, therefore, suffer from some disability or chronic disease, and the great majority are well along in years, 80 per cent. being between the ages of 50 and 80. There are a fair number of cases of locomotor ataxia, and a considerable number suffering from circulatory disturbances, liver diseases, etc. Under such circumstances it might reasonably be expected that a large proportion of these men would show evidences of having suffered from syphilis. This was, therefore, considered an exceptionally good opportunity to test the relative efficiency of the Wassermann reaction and the luetin test.

Both tests were accordingly performed on as many men at this institution as possible. No selection of cases was made, but all the men in each building were taken in order.

The luetin was furnished by Dr. Hideyo Noguchi of the Rockefeller Institute. The luetin was injected according to the prescribed technic, and three readings were made at weekly intervals thereafter. Double plus was used to indicate a very severe reaction; plus to indicate a strong reaction; plus minus to indicate a slight reaction. Only the double plus and plus reactions were considered to be diagnostic of syphilis.

The Wassermann reactions were performed by one of us at the Army Medical School following the technic described by Captain Craig, M. C.[1] A human heart cholesterin antigen, prepared according to the method of Walker and Swift,[2] was used.

This antigen has been criticized lately by several workers, notably by Thomas and Ivy,[3] who state that many false positives have been reported following the use of this antigen. As it is not within the scope of this paper to discuss the technic of the Wassermann reaction, it will be sufficient to state here our belief that when this antigen is used with a proper technic, it will give no more false positives than other antigens. This opinion is based on 4,588 reactions that have been performed up to date in cases in which the history and clinical symptoms were available as a check, and out of this number of cases, we have so far had only two cases in which a false positive (double plus) has been returned. These were both cases of diabetes. The plus reaction is never considered diagnostic except as corroborative evidence in the presence of a history or physical signs indicating syphilis. We may add that possibly the reason Thomas and Ivy obtained so many false positives with the cholesterinized antigen was that they appear to have used it with only one unit of complement and amboceptor. Most workers have held that two units of complement and amboceptor should be used as a factor of safety. At any rate this was the system in which this antigen was used by Walker and Swift, and it is obviously unfair to the antigen to condemn it as giving false positives after cutting down the hemolytic system to half of that used by Walker and Swift. In our tests, the complement has always been accurately titrated and two units of both complement and amboceptor have been used.

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[1] Craig and Nichols: Studies of Syphilis, Bulletin 3, War Dept., Office of the Surgeon General, p. 72.

[2] Walker and Swift: A Study of the Addition of Cholesterin to the Alcoholic Extracts of Tissues Used for Antigens in the Wassermann Reaction, Jour. Exper. Med., 1913, xviii, 75.

[3] Thomas, B. A., and Ivy, R. H.: Use of Cholesterinized Antigens in the Wassermann Reaction, The Journal A. M. A., Jan. 31, 1914, p. 363.

The results of this examination are shown in Table 1.

TABLE 1.—RESULTS OF EXAMINATION

| Reaction | ++ | + | ± | — | Total |
|---|---|---|---|---|---|
| Wassermann .......... | 100 | 56 | 123 | 465 | 744 |
| Per cent. ............ | 13.30 | 7.52 | 16.53 | 62.50 | |
| Luetin ............... | 45 | 194 | 165 | 340 | 744 |
| Per cent. ............ | 6.04 | 26.07 | 22.17 | 45.70 | |

Tables 2 and 3 bring out still more clearly the relation between the luetin and Wassermann tests.

TABLE 2.—COMPARISON OF WASSERMANN AND LUETIN TESTS

| | Luetin | | | |
|---|---|---|---|---|
| Wassermann | ++ | + | ± | — |
| 100 ++ = ....... | 8 | 27 | 21 | 44 |
| 56 + = ....... | 6 | 16 | 13 | 21 |
| 123 ± = ....... | 8 | 26 | 29 | 60 |
| 465 — = ....... | 23 | 125 | 102 | 215 |
| 744 ................ | 45 | 194 | 165 | 340 |

TABLE 3.—COMPARISON OF LUETIN AND WASSERMANN TESTS

| | Wassermann | | | |
|---|---|---|---|---|
| Luetin | ++ | + | ± | — |
| 45 ++ = ....... | 8 | 6 | 8 | 23 |
| 194 + = ....... | 27 | 16 | 26 | 125 |
| 165 ± = ....... | 21 | 13 | 29 | 102 |
| 340 — = ....... | 44 | 21 | 60 | 215 |
| 744 ................ | 100 | 56 | 123 | 465 |

From these tables it is evident that the Wassermann and luetin reactions do not give corresponding results. The plus reaction to the luetin test, as we read it, may undoubtedly be considered a positive reaction. The plus Wassermann, on the other hand, is very suspicious but not diagnostic unless confirmed by history or physical signs. But even if we count double plus and plus reactions as a positive indication of syphilis for both the Wassermann and luetin tests, and plus minus and negative reactions as negative, it is apparent that while by the Wassermann reaction, we have only 156 positive out of 744, or 20.82 per cent., by the luetin test we have 239 positives out of 744, or 32.11 per cent. The luetin test is, therefore, more delicate than the Wassermann as a routine test in the class of cases that we examined, or else it is giving a number of false positives. We are convinced that the former is the correct explanation from the accumulated experience of other observers as well as our own. We have performed the luetin test on a considerable number of persons in whom syphilis could be excluded and have never obtained a positive reaction. The great majority of the patients in this series who have a positive luetin reaction had some history or physical signs indicating syphilis.

It may further be seen that of 588 cases (465 — and 123 ±) negative by the Wassermann, 182, or 32.6 per cent., of the 588 cases were positive by the luetin test. While of the 505 cases (340 — and 165 ±) negative by the luetin test, 99, or 19.6 per cent., of the 505 cases were positive by the Wassermann. It is therefore clear, providing the results of both the luetin and Wassermann tests as we performed them are accurate and reliable, that these two tests complement each other to a certain extent. In other words, had we used the Wassermann reaction alone, and counted both double plus and plus reactions, we would have found 156 positive, or 20.8 per cent., of syphilis; if we had used the luetin reaction alone, we would have found 239 positive, or 32.1 per cent., of syphilis. But by using both tests, we find 338 positive (156 positive by Wassermann, 239 positive by luetin, minus 57 positive by both tests), or 45.4 per cent., of syphilis.

It is also interesting to note that there were only 57 cases, or 7.66 per cent., that were positive to both tests, while 406 cases, or 54.57 per cent., were negative by both tests, leaving 281 cases, or 37.76 per cent., that were positive by one test but negative by the other.

The latest estimation of the practical value of the luetin reaction by Noguchi[4] confirms the opinions previously expressed, that the Wassermann reaction is much more constant in primary and secondary cases, but that the luetin reaction gives a higher percentage of positives in tertiary, latent and treated cases. Our experience amply confirms the latter statement. Eighty per cent. of the men in this series were between 50 and 80 years of age, and when syphilis was present it was with rare exceptions in the tertiary or latent stages.

It is believed that the use of a cholesterinized antigen renders the Wassermann reaction more efficient, and that a number of undoubted syphilitics who give a negative reaction with other antigens will give a positive reaction with a cholesterinized antigen. But even if this be granted, it is apparent that in tertiary, latent and treated cases, the luetin test is considerably more efficient in detecting syphilis than the most efficient Wassermann reaction. A test of so much value would be of great assistance to the general practitioner, and it is to be hoped that some arrangement may be made whereby a supply of luetin may be made available for general use.

We wish to express our thanks to Dr. Noguchi for his courtesy in supplying us with an ample amount of luetin, and to Lieut.-Col. James D. Glennan, the surgeon at the Soldiers' Home, for the encouragement and cooperation which made this investigation possible.

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[4] Noguchi, Hideyo: Practical Application of the Luetin Test, New York Med. Jour., 1914, c, 349.

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**The Medical Schools in Belgium.**—The University of Louvain was founded in 1426 and ranked only second to Paris during the middle ages, but it was abolished by the French in 1797. In 1835 it was revived as a Roman Catholic institution. The medical department at the opening of the current year had seventeen professors, including the neurologist, A. Van Gehuchten, and two docents. The medical department of the University of Liége included fifteen professors and six docents. Familiar names on the list are the surgeon, von Winiwarter, Fraipont, Schiffers, Beco and Malvoz. The University of Brussels is the best equipped in Belgium, and among its twenty-five professors and thirty-one agrégés are the surgeon, Depage, who presided over the International Surgical Congress in New York last spring, and Bordet, whose research provided the basis for the Wassermann reaction, etc. The medical faculty of the University of Ghent numbers eighteen and includes Van Ermengem, sponsor of botulism.

# THE DIAGNOSTIC VALUE OF THE SPHYGMOMANOMETER IN EXAMINATIONS FOR LIFE INSURANCE *

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Prior to 1907, little or no use was made of the sphygmomanometer except in clinical cases. Three years ago in a paper delivered before the Medical Directors Association, I said:

> No practitioner of medicine should be without a sphygmomanometer. He has in this instrument a most valuable aid in diagnosis. The sphygmomanometer is indispensable in life-insurance examinations, and the time is not far distant when all progressive life-insurance companies will require its use in all examinations of applicants for life insurance.

TABLE 1.—ACTUAL MORTALITY TO AUG. 1, 1913, AS COMPARED WITH THE EXPECTED, ACCORDING TO THE ACTUARIES' TABLE AND MEDICO-ACTUARIAL TABLE OF MORTALITY IN CERTAIN BLOOD-PRESSURE CASES *

| Years | Number of Lives | Actual Deaths | Expected Deaths (Actuaries' Table) | Per Cent. (Actual to Expected) | Expected Deaths (M.-A. Table) | Per Cent. (Actual to Expected) |
|---|---|---|---|---|---|---|
| 1907 | 216 | 10 | 19.625 | 50.96 | 13.486 | 74.15 |
| 1908 | 651 | 31 | 53.760 | 57.66 | 36.386 | 85.20 |
| 1909 | 957 | 17 | 59.302 | 28.67 | 38.889 | 43.71 |
| 1910 | 837 | 27 | 39.639 | 68.11 | 25.205 | 107.12 |
| Totals . | 2,661 | 85 | 172.326 | 49.33 | 113.966 | 74.58 |

* Mortality of accepted risks with systolic blood-pressure of 140-149 mm. Hg with an average of 142.43 mm. Hg—all ages.

To-day this prediction is practically fulfilled, and no up-to-date practitioner is without this very valuable aid in diagnosis, much of which has been due to the requirements of life-insurance companies in insisting on their examiners using the sphygmomanometer in examinations for life insurance. I have received hundreds of letters thanking me for insisting on its use in examinations for the company and testifying to its very great value in private practice.

TABLE 2.—MORTALITY OF ACCEPTED RISKS WITH SYSTOLIC BLOOD-PRESSURE OF 150 MM. HG AND OVER: AVERAGE 152.58 MM. HG—ALL AGES

| Years | Number of Lives | Actual Deaths | Expected Deaths (Actuaries' Table) | Per Cent. (Actual to Expected) | Expected Deaths (M.-A. Table) | Per Cent. (Actual to Expected) |
|---|---|---|---|---|---|---|
| 1907 | 87 | 8 | 8.154 | 98.11 | 5.726 | 139.71 |
| 1908 | 212 | 17 | 18.812 | 90.37 | 13.023 | 130.54 |
| 1909 | 161 | 4 | 12.173 | 32.86 | 8.357 | 47.86 |
| 1910 | 65 | 4 | 3.660 | 109.29 | 2.419 | 165.36 |
| Totals . | 525 | 33 | 42.799 | 77.10 | 29.525 | 111.77 |

The use of the sphygmomanometer demonstrates in many cases that a supposedly normal person may have an abnormally high blood-pressure and present no symptoms or pathologic changes discoverable by any of our present methods of diagnosis, thereby suggesting a careful study of the case before any symptoms of disease are discoverable, thus rendering the sphygmomanometer a valuable and indispensable aid in diagnosis. Clinicians for some time considered a blood-pressure of 180 mm. Hg as of little significance; now a pressure of 160 mm. is regarded as one that calls for further study of the case, while the statistics presented herewith show that a blood-pressure of 150 mm. Hg gives a higher mortality than an average risk accepted by conservative life-insurance companies, and this covering a period of only a comparatively few years. I am firmly of the opinion that a persistent blood-pressure of 15 mm. Hg above the average for the age of the applicant should at least excite suspicion and call for further careful and painstaking investigation.

TABLE 3.—MORTALITY OF APPLICANTS REJECTED WITH AVERAGE SYSTOLIC BLOOD-PRESSURE OF 161.44 MM. HG—ALL AGES

| Years | Number of Lives | Actual Deaths | Expected Deaths (Actuaries' Table) | Per Cent. (Actual to Expected) | Expected Deaths (M.-A. Table) | Per Cent. (Actual to Expected) |
|---|---|---|---|---|---|---|
| 1907 | 46 | 14 | 4.816 | 290.70 | 3.443 | 406.62 |
| 1908 | 118 | 18 | 10.817 | 166.40 | 7.565 | 237.94 |
| 1909 | 213 | 22 | 15.464 | 142.27 | 10.509 | 209.34 |
| 1910 | 221 | 12 | 13.250 | 90.57 | 8.973 | 133.73 |
| 1911 | 318 | 7 | 10.809 | 64.76 | 6.707 | 104.37 |
| 1912 | 668 | 9 | 10.295 | 87.42 | 5.589 | 161.03 |
| 1913 | 386 | 1 | 1.749 | 57.18 | .904 | 110.62 |
| Totals . | 1,970 | 83 | 67.200 | 123.51 | 43.690 | 189.97 |

The Northwestern Mutual Life Insurance Company, in the year 1906, in order to test the diagnostic value of the sphygmomanometer in examinations for life insurance, made use of the instrument in its examination of applicants for insurance at its home office. The results were such that in August, 1907, it was deemed advisable to require its use by our examiners in the field who possessed an instrument or could be induced to secure one. The result was that in a number of the larger cities we were enabled to secure its use in examinations for the company. By the first of the year 1912, 90 per cent. of the examiners of the company were using the instrument in their examination of applicants for insurance. At the present time there are very few examiners of the company who do not possess an instrument.

TABLE 4.—MORTALITY OF APPLICANTS REJECTED WITH HIGH BLOOD-PRESSURE (AVERAGE 164.77 MM. HG) AND ONE OR MORE OTHER IMPAIRMENTS

| Number of Lives | Actual Deaths | Expected Deaths (Actuaries' Table) | Per Cent. (Actual to Expected) | Expected Deaths (M.-A. Table) | Per Cent. (Actual to Expected) |
|---|---|---|---|---|---|
| 888 | 43 | 32.422 | 132.63 | 21.409 | 200.85 |

The blood-pressure was required by the company (except in special cases) only at ages from 40 to 60 (the company does not insure persons whose insurable age is over 60). Since November, 1911, it has been required at all ages and irrespective of amount of insurance applied for.

Our company has rejected 405 applicants, up to June 1, 1914, under the age of 40, who had a persistent

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*Read before the American Association of Medical Examiners at Atlantic City, June 22, 1914.

blood-pressure of 15 mm. or more above the normal for their age, without any other impairment recorded on the blank, and 1,036 (ages 40 to 60), without any other impairment. In my opinion, the results fully demonstrate the value of the use of the sphygmomanometer in examinations for life insurance on applicants under the age of 40. Dr. Cabot[1] makes the statement that "slight increase of systolic blood-pressure is (fortunately for our diagnosis) rarely encountered. As a rule, if we find the blood-pressure high it is very high (160-250 mm. Hg) and not in the more dubious immediate regions (140-160 mm. Hg)." He undoubtedly refers to clinical cases only—persons who are ill and consult physicians for relief. They are not seeking life insurance. The class of cases encountered by the life-insurance examiner are those who have not as yet reached that stage. They suppose they are normal, believe they are in good health, and are seeking life insurance for the protection of their families. We frequently encounter men who are running a very high blood-pressure who declare they are feeling perfectly well and who consider themselves normal in every respect.

TABLE 5.—IMPAIRMENTS RECORDED ON APPLICATIONS AT TIME OF MEDICAL EXAMINATION OF THE 888 CASES RECORDED IN TABLE 4

| Arteriosclerosis Atheroma | Heart Murmur | Heart Hypertrophy | Albumin and Sugar | Albumin in Urine | Sugar in Urine | Albumin and Casts | Casts in Urine | Nervous Symptoms | Prostatic Disease | Miscellaneous | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 109 | 216 | 53 | 15 | 259 | 37 | 21 | 12 | 30 | 16 | 120 | 888 |

By reference to Table 1, it will be seen that the company accepted 2,661 risks in the years 1907-1910, with an average blood-pressure of 142.43 mm. Hg at ages 40 to 60, and that the mortality is about the same as the general average mortality of the company for the same period, while Table 2 shows 525 risks accepted in 1907-1910, with an average blood-pressure of 152.58 mm. Hg (an increase of practically 10 mm. Hg blood-pressure over the foregoing), showing a mortality of over 30 per cent. in excess of the general average mortality of the company.

TABLE 6.—MORTALITY OF APPLICANTS REJECTED WITH HIGH BLOOD-PRESSURE ONLY (AVERAGE 159.90 MM. HG)

| Number of Lives | Actual Deaths | Expected Deaths (Actuaries' Table) | Per Cent. (Actual to Expected) | Expected Deaths (M.-A. Table) | Per Cent. (Actual to Expected) |
|---|---|---|---|---|---|
| 1082 | 40 | 34.778 | 115.02 | 22.281 | 179.53 |

Table 3 shows a mortality on 1,970 applicants rejected with an average blood-pressure of 161.44 mm. for the years 1907 to Aug. 1, 1913, with a mortality of 190 per cent. of the medico-actuarial table, which is considerably more than double the average mortality of the company. Table 6 is a record of 1,082 applicants rejected with no other impairment recorded on the blank at the time it was received at the home office. These had an average blood-pressure of 160 mm. Hg. All of these persons would have been granted insurance, with a mortality of more than double the mortality expected, had it not been for the high blood-pressure.

TABLE 7.—IMPAIRMENTS SUBSEQUENTLY DISCOVERED OR DEVELOPED IN THE 1,082 CASES RECORDED IN TABLE 6

| Arteriosclerosis Atheroma | Heart Murmur | Heart Hypertrophy | Albumin and Sugar | Albumin in Urine | Sugar in Urine | Albumin and Casts | Casts in Urine | Nervous Symptoms | Prostatic Disease | Miscellaneous | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | 29 | 6 | 6 | 136 | 8 | 91 | 38 | 8 | 1 | 18 | 355 |

| Number of Lives | Actual Deaths | Expected Deaths (Actuaries' Table) | Per Cent. (Actual to Expected) | Expected Deaths (M.-A. Table) | Per Cent. (Actual to Expected) |
|---|---|---|---|---|---|
| 355 | 15 | 12.600 | 119.05 | 8.184 | 183.28 |

It should be stated that the company's average mortality is only 80 per cent. of the medico-actuarial table. The mortality in connection with the number of deaths which have occurred since August last, to date, in Tables 2 and 6, has not been computed, as it was found that it would not materially change the ratio. Five additional deaths have occurred in Table 2 and twelve additional in Table 6.

TABLE 8.—MORTALITY OF APPLICANTS REJECTED UNDER AGE 40—HIGH BLOOD-PRESSURE ONLY (AVERAGE 151.19 MM. HG)

| Ages | | | | | Total | Actual Deaths | Expected Deaths (Actuaries' Table) | Per Cent. (Actual to Expected) |
|---|---|---|---|---|---|---|---|---|
| Under 20 | 20 to 25 | 25 to 30 | 30 to 35 | 35 to 40 | | | | |
| 6 | 43 | 56 | 52 | 84 | 241 | 2 | 2.108 | 94.88 |

We have received but little diagnostic value in our work from the low pressure. Occasionally a low blood-pressure with a marked tuberculous family record leads us to decline a risk. We are, however, tabulating the risks accepted with a pressure of 100 mm. or less. We seldom insure a risk with a reading below 85 mm. Hg.

TABLE 9.—IMPAIRMENTS SUBSEQUENTLY DISCOVERED OR DEVELOPED IN THE 241 CASES RECORDED IN TABLE 8

| Arteriosclerosis Atheroma | Heart Murmur | Heart Hypertrophy | Albumin and Sugar | Albumin in Urine | Albumin and Casts | Casts in Urine | Miscellaneous | Total |
|---|---|---|---|---|---|---|---|---|
| 1 | 6 | 1 | 1 | 36 | 12 | 5 | 1 | 63 |

The same may be said of the diastolic pressure. We record it, however, in our examinations at the home office and require it of most of our examiners in the larger cities. As to what diagnostic or prognostic value may be attached to it, the future will reveal when our data are tabulated.

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[1] Cabot: Physical Diagnosis, Ed. 5, 1912.

The mortality on the rejected risks as shown in the tables is undoubtedly much lower than the exact figures would show, were it possible to secure a record of all deaths. When the risk is not insured in this or other companies, we must depend on the solicitor and medical examiner to notify the company of the death of those risks which we rejected with a high blood-pressure.

The blood-pressure should be taken with the person in a sitting posture, with the arm resting on a table or other convenient rest, which will relax the muscles, at the completion of the applicant's declaration, and before the physical examination is begun, and again after the physical examination is complete. At least two, or better, three readings should be made at each test, and the average of all recorded on the blank.

TABLE 10.—CAUSES OF DEATH IN RISKS ACCEPTED (TABLE 2) AND RISKS REJECTED (TABLE 3)

| | Accepted* | Rejected† |
|---|---|---|
| Anemia, pernicious | .. | 1 |
| Aneurysm, aorta | .. | 1 |
| Angina pectoris | 1 | 3 |
| Apoplexy | 4 | 18 |
| Appendicitis | 2 | 2 |
| Arteriosclerosis | 1 | 10 |
| Cancer | 2 | 3 |
| Cerebrospinal meningitis | 1 | .. |
| Cirrhosis of liver | .. | 2 |
| Consumption | .. | 1 |
| Diabetes | .. | 2 |
| Duodenal ulcers | 2 | .. |
| Gall-stones | 3 | 2 |
| Heart disease (organic) | 4 | 16 |
| La grippe | 1 | .. |
| Locomotor ataxia | .. | 1 |
| Nephritis | 3 | 16 |
| Paralysis | .. | 2 |
| Peritonitis | .. | 1 |
| Pneumonia | 3 | .. |
| Prostatic hypertrophy | 1 | .. |
| Railway accident | 1 | .. |
| Rheumatism (acute) | 2 | .. |
| Stokes-Adams disease | .. | 1 |
| Suicide | 2 | 1 |

* Average blood-pressure of those who died was 152.42 mm. Hg.
† Average blood-pressure of those who died was 172.93 mm. Hg.

TABLE 11.—THE AVERAGE SYSTOLIC BLOOD-PRESSURE ACCEPTED RISKS, AGES 15-60*

| Ages | Number | Mm. Hg of Pressure | Average Blood-Pressure |
|---|---|---|---|
| 15-20 | 281 | 33,679 | 119.85 |
| 21-25 | 785 | 96,365 | 122.76 |
| 26-30 | 791 | 97,805 | 123.65 |
| 31-35 | 689 | 85,258 | 123.74 |
| 36-40 | 2,111 | 268,005 | 126.96 |
| 41-45 | 6,740 | 866,518 | 128.56 |
| 46-50 | 4,471 | 583,795 | 130.57 |
| 51-55 | 2,371 | 313,282 | 132.13 |
| 56-60 | 1,100 | 148,261 | 134.78 |
| Totals | 19,339 | 2,492,968 | 128.91 |

*Compiled from 15,014 records of this company and 4,325 records of the Mutual Benefit Life Insurance Company.

Many of our examiners furnish us with both the palpatory and auscultatory readings. A difference of about 6 mm. higher in the latter method will be shown.

A high blood-pressure is found in about 6.5 per cent. of all applicants declined for insurance by the company.

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**"The Partisan of Truth Alone."**—I avow myself the partisan of truth alone; and I can indeed say that I have used all my endeavors, bestowed all my pains on an attempt to produce something that should be agreeable to the good, profitable to the learned and useful to letters.—William Harvey.

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# THE NEUROLOGIC EXAMINATION OF MENTAL CASES *

JULIUS GRINKER, M.D.
CHICAGO

At this moment when the light of rational medicine is beginning to penetrate into the darkest corners of psychiatry, when chemical and biologic laboratories are uniting to displace the new psychosexual philosophy, it is most timely to make a plea for the thorough physical examination of the mentally afflicted. To just the extent that one whiles away precious time in deciphering dreams and reveling in the free associations of interesting neurotics, does one fail to learn all that can be known of a patient's physical constitution. If we are to achieve therapeutic and diagnostic success, the physical investigation of the insane must receive at least as much attention as, for instance, the devotee of the new psychology gives to psychanalysis.

That even competent observers may occasionally fail to recognize true neurologic conditions has been conclusively shown by E. E. Southard, who analyzed sixty-one cases in which the diagnosis of general paresis was made, forty-one of which were considered clinically certain and agreed to by all of the staff members at the Danvers State Hospital, while six were cases that had been wrongly diagnosed, the essential histologic features of general paresis having been absent. In place of these he discovered the changes of meningomyelitis, subcortical encephalitis, tabes with non-paretic cerebral disease, arteriosclerotic brain disease with involvement of the cerebellum, and cerebellar sclerosis. Instances abound in the literature and the unpublished cases are even more numerous—in which competent men have missed the neurologic diagnosis in a supposedly mental case, because no importance was attached to what seemed to them insignificant neurologic symptoms. It appears that in those cases the mental picture had completely overshadowed the neurologic aspect.

Though it is possible for even the most skilled examiner to mistake a neurologic disease for a case of frank insanity, the mistaken diagnoses are usually made by those who neglect the neurologic examination entirely. Of prime importance is it, therefore, to keep in mind the necessity for these examinations in all forms of mental disease. Since a neurologic examination has become part of the routine examination of every new arrival to an institution for the insane, it may appear unnecessary to plead for one. But every one who has had the privilege of witnessing such institution examinations can testify to their incompleteness, and these are not infrequently the only examinations made of the patient during his entire stay at the hospital. Unfortunately, the record made at a patient's entrance is seldom again referred to for the purpose of making additional notations.

The important organic nervous diseases not infrequently mistaken for insanity are brain tumor, cerebral arteriosclerosis, syphilis and non-specific vascular brain disease. Of the so-called functional nervous disorders not rarely diagnosed as insanity in private practice may be mentioned drug addictions, postinfectious and post-traumatic deliriums, and the psychoneuroses.

An error most humiliating to the physician and fraught with possible harm to the patient is the mistaken diagnosis of insanity in a case of brain tumor. Even after a thorough examination one may overlook the mental symptoms of a case of brain tumor, but it is next to impossible to give a patient a neurologic examination and then to diagnose a case of brain tumor as one of insanity. Knapp of Boston, in his statistical review, "The Mental Symptoms of Cerebral Tumor," informs us that not infrequently patients who were considered only insane have died from brain tumor. "The mental syndrome during life was so pronounced," says he, "that neurologic symptoms had been overlooked, until the post-mortem examination revealed the presence of neoplasm." Of the 104 cases from the literature which he had collected, there were mental disturbances sufficiently marked to attract attention in seventy-nine, a trifle over 75 per cent. of the cases. Schuster of Berlin, from a similar study of 775 cases culled from various sources, found a condition of simple mental weakness, dulness, somnolency and dementia in 423 cases, while 352 cases presented some active symptoms of mental disorder, among which he mentions those of general paresis, chronic paranoia, melancholia, Korsakoff's psychosis, hallucinatory delirium, circular states, mental weakness with excitement, senile dementia, and a number of minor types of insanity. In these cases it was noted that mental symptoms were more prevalent in left-sided brain tumor and that the larger the growth, the more pronounced were the symptoms. Further, he believes that tumors situated in the corpus callosum and frontal lobes are capable of producing mental symptoms which have a close resemblance to simple dementia. Tumors presenting the syndrome of general paresis with or without the delusions of grandeur have also their probable localization in the frontal lobes. Though some authors dispute the view that the frontal lobes are the seat of the higher psychic functions, the majority still favor this view, while it is generally admitted that the frontal lobes are not the only psychic centers. Since Monakow has so plausibly explained many of the otherwise inexplicable somatic brain symptoms by the theory of diaschisis, we may reasonably assume that coordinate intellectual function is likewise conditioned by the harmonious cooperation of several widely separated centers in the brain, each of which is capable, when diseased, of throwing out of commission the entire mental machinery. Thus, it appears that the occipitotemporal region, the zone of language, and the corpus callosum constitute important contributory streams to the higher mental life which has its fountain head in the frontal lobe.

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* Read before the joint meeting of the Chicago Neurological Society and the Illinois State Hospital Society, Jan. 29, 1914.

This simple enumeration of the variously localized brain tumors capable of simulating true insanity may suffice to impress one with the importance of making careful search for the well-known tumor syndrome in every case of supposed insanity.

To mistake Korsakoff's psychosis for general paresis or confusional insanity is easy; but to commit this error after an examination of the reflexes, sensation and motion, is almost unbelievable.

That vascular brain disease, before and after the insult, is capable of producing the most manifold symptoms, some of which mimic the well-known syndromes of the classical psychoses, is familiar to all. To take the blood pressure, examine the urine and inspect the retinal vessels is equivalent to avoiding some hard falls.

With the advent of salvarsan therapy the differentiation between the non-specific psychoses and those produced by brain syphilis has assumed practical importance. Thanks to the laboratory which has furnished us the "four reactions" and a gold-sol test, we are now in a better position to diagnose syphilitic nervous disease than formerly, but we must be ever mindful that the laboratory still is, and probably always will remain, the handmaid of the clinician.

In referring to the functional disorders which occasionally assume the mask of true insanity, we may state that the drug-addictions, including alcoholism, easily lead the rest. Mention must also be made of the post-infectious and posttraumatic deliriums as well as the psychoneuroses.

In a recent paper Alfred Gordon states that from his study of 171 cases he came to the conclusion that the chronic forms of opium and cocain poisoning resemble many forms of insanity. He finds that "some cases simulate melancholia, mania, manic-depressive insanity and even catatonia, though none of them give the typical pictures of these psychoses. Among the well-recognized symptoms of those drug-intoxications are hallucinations of sight and hearing. While the delusions of this type are mostly transient, fleeting and fragmentary in character, at certain periods of their evolution they may assume the form of systematized delusions, reinforced by hallucinatory images. Thus, some of them may present a picture closely allied to paranoia. A characteristic symptom is the gradually oncoming dementia which develops insidiously and increases with years, until a complete psychic decrepitude is established."

Though many of the insanities have alcoholic excess as an important contributing causative factor, there are several types of psychoses which appear to be produced entirely by chronic alcoholism. Because of their resemblance to other well-known forms of insanity, they are spoken of as alcoholic paranoia, pseudoparesis, etc. In most cases the careful search for somatic evidence, past or present, of the stigmata of chronic alcoholism will lead to a correct diagnosis, while the disregard of a physical and neurolgic examination often avenges itself by complete failure. As the ultimate prognosis of even moderately advanced alcoholic psychoses is infinitely better than for instance that of dementia praecox, paranoia or arteriosclerotic dementia, the timely recognition of the alcoholic character of a psychosis is an advantage of no mean value.

Most gratifying to the clinician are the cases of acute insanity following trauma or infection, provided a correct etiologic diagnosis has been made. Not a few of these patients can be treated at home. Much damage both to patient and physician has resulted from mistaking such curable psychoses for the incurable ones. Likewise many a case of psychasthenia, hysteria and even neurasthenia has been diagnosed as insanity, because of the examiner's predilection for short cuts.

In conclusion I may be permitted to repeat Charcot's statement that more mistakes are made by not examining than by not knowing.

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**Heredity.**—An infection, an habitual intoxication of the parents, a maternal disease during pregnancy, can determine perversion of development, which though so slight and uniform as to be quite unobservable at birth, comes to the surface with the progress of years in the shape of unexpected failures of certain fundamental functions of intelligence, of eccentricity of character and of perversion.—Lugaro, Problems in Psychiatry.

# BLINDNESS, CAUSED BY OPHTHALMIA NEONATORUM *

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The part played by ophthalmia neonatorum in producing blindness is a sadly conspicuous and leading one. It enlists our sympathetic interest because its victims are, in the vast majority of instances, the "little ones," who are powerless to prevent its occurrence and powerless also to make known the early manifestations of a disease which is destroying their sight. In consequence of its ravages, the lives of these defenseless unfortunates are blighted irrevocably, and they are forever consigned to a future of unending darkness. No writer can be charged with unseemly reiteration, no medical tongue accused of boresome repetition, no matter how often or how insistently he dwells on this painful, humiliating truth, namely, that the vast majority of these little ones could have been spared their sad affliction if only the simplest elementary precautions had been observed at the proper time.

Statistics are numerous, indicating the frequency and the proportion of blindness caused by the disease. A study of these, collected by different observers, warrants the conclusion that one-eighth of blindness from all causes is due to this disease, and one-fourth of the blindness among children is attributable to the same cause.

A comparison of statistics from different sources is shown by Tables 1 to 6.

The "Special Reports on the Blind and the Deaf, 1900, Department of Commerce and Labor, Bureau of the United States Census," present the following statistics and comments:

> Excluding congenital statistics and injuries, accidents and operations, there are 2,556 who lost sight after birth, but under 1 year of age, and in 644, or 25.2 per cent. of these cases, the cause of blindness was probably ophthalmia neonatorum, or "babies' sore eyes," since other diseases of the eye causing blindness under 1 year of age are extremely rare. The importance of these figures lies in the fact that

TABLE 1.—CENSUS RETURNS (ENGLAND AND WALES), 1901

(Harman: Preventable Blindness)

THE BLIND

| Sex† | 1891 | 1901 | Condition as to Marriage, 1901 | | Ages | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Under 5 | 5-10 | 10-15 | 15-20 | 20-25 | 25-35 | 35-45 | 45-55 | 55-65 | 65-75 | 75-85 | 85,over |
| ♂ | 12,281 | 13,136 | Single | 5,583 | 280 | 373 | 590 | 611 | 573 | 949 | 747 | 553 | 439 | 290 | 151 | 27 |
| | | | Married | 5,360 | ... | ... | ... | ... | 30 | 372 | 854 | 1,133 | 1,262 | 1,053 | 576 | 80 |
| | | | Widowed | 2,193 | ... | ... | ... | ... | ... | 8 | 55 | 157 | 417 | 658 | 685 | 213 |
| ♀ | 11,186 | 12,181 | Single | 5,563 | 201 | 296 | 488 | 455 | 503 | 863 | 709 | 621 | 532 | 466 | 335 | 94 |
| | | | Married | 2,525 | ... | ... | ... | 1 | 14 | 181 | 322 | 525 | 636 | 60 | 257 | 29 |
| | | | Widowed | 4,093 | ... | ... | ... | ... | ... | 13 | 63 | 239 | 624 | 1,262 | 1,439 | 453 |
| Total | 23,467 | 25,317 | | | | | | | | | | | | | | |
| | | | | | BLIND FROM CHILDHOOD‡ (INCLUDED IN FOREGOING) | | | | | | | | | | | |
| ♂ | 2,194 | 2,468 | Single | 2,028 | 280 | 373 | 216 | 264 | 220 | 310 | 185 | 81 | 57 | 31 | 11 | ... |
| | | | Married | 389 | ... | ... | ... | ... | 7 | 89 | 110 | 91 | 61 | 23 | 7 | 1 |
| | | | Widowed | 51 | ... | ... | ... | ... | ... | ... | 10 | 11 | 12 | 9 | 8 | 1 |
| ♀ | 1,811 | 2,153 | Single | 1,954 | 201 | 296 | 164 | 188 | 192 | 332 | 217 | 178 | 99 | 56 | 26 | 5 |
| | | | Married | 143 | ... | ... | ... | 1 | 6 | 41 | 37 | 37 | 14 | 7 | ... | ... |
| | | | Widowed | 56 | ... | ... | ... | ... | ... | ... | 7 | 10 | 21 | 12 | 5 | 1 |
| Total | 4,005 | 4,621 | | | | | | | | | | | | | | |

† In this column ♂ denotes males, and ♀ females.

‡ One-third of patients "Blind from Childhood," were blinded by ophthalmia neonatorum (approximately 1,500).

TABLE 2.—PROPORTION OF CASES OF OPHTHALMIA NEONATORUM IN DISEASES OF THE EYE

*Illinois Charitable Eye and Ear Infirmary, Chicago*

(Years 1909-1910)

(Reports Illinois Charitable Eye and Ear Infirmary, Chicago, 1909-1910)

| | |
|---|---|
| Total cases eye diseases treated | 10,361 |
| Total cases ophthalmia neonatorum | 145 |
| Percentage of ophthalmia neonatorum | 1.30 |

*Massachusetts Charitable Eye and Ear Infirmary, Boston*

(Year 1913)

(Reports Massachusetts Charitable Eye and Ear Infirmary, Boston, 1913)

| | |
|---|---|
| Total cases eye diseases treated | 28,652 |
| Total cases ophthalmia neonatorum | 298 |
| Percentage of ophthalmia neonatorum | 1.04 |

*Manhattan Eye, Ear and Throat Hospital, New York*

(Year 1913)

(Reports Manhattan Eye, Ear and Throat Hospital, New York, 1913)

| | |
|---|---|
| Total cases eye diseases treated | 21,280 |
| Total cases ophthalmia neonatorum | 72 |
| Percentage of ophthalmia neonatorum | 0.3 |

*New York Eye and Ear Infirmary, New York*

(Years 1912-1913)

(Reports New York Eye and Ear Infirmary, New York, 1912-1913)

| | |
|---|---|
| Total cases eye diseases treated | 24,922 |
| Total cases ophthalmia neonatorum | 20 |
| Percentage of ophthalmia neonatorum | 0.08 |

TABLE 3.—COMPARATIVE TABLES SHOWING BLINDNESS CAUSED BY OPHTHALMIA NEONATORUM

(Norris and Oliver: System of Ophthalmology, iii.)

| | Cases | Per Cent. |
|---|---|---|
| Magnus' table of 2,528 cases of blindness in Germany: Ophthalmia neonatorum caused blindness in | 275 | 10.876 |
| Trousseau's table of 625 cases of blindness in France: Ophthalmia neonatorum caused blindness in | 29 | 4.60 |
| Oppenheimer's table of 572 cases of blindness in the United States: Ophthalmia neonatorum caused blindness in | 18 | 3.10 |

TABLE 4.—THE CAUSES OF BLINDNESS IN LONDON SCHOOL-CHILDREN

(Harman: Preventable Blindness)

| (Based on 362 Cases) | Per Cent. |
|---|---|
| Congenital defects | 25.34 |
| Ophthalmia of new-born | 36.36 |
| Congenital syphilis | 17.60 |
| Optic atrophy | 9.36 |
| Purulent ophthalmia | 2.20 |
| Small-pox | 0.82 |
| Sympathetic ophthalmia | 2.75 |
| Phlyctenular ophthalmia | 1.95 |
| Malignant disease | 0.27 |

TABLE 5.—STATISTICS GATHERED BY VARIOUS WORKERS OF BLINDNESS PRODUCED BY OPHTHALMIA NEONATORUM

(Harman: Preventable Blindness)

| | Per Cent. |
|---|---|
| Reinhard. Germany, Austria, Denmark, Holland | 40 |
| Claisse, Paris | 46 |
| Magnus, Breslau | 34 |
| Katz, Berlin | 41 |
| Compare with L. C. C. blind schools | 36.36 |

TABLE 6.—CASES OF OPHTHALMIA NEONATORUM FROM THE MASSACHUSETTS CHARITABLE EYE AND EAR INFIRMARY

(Massachusetts Charitable Eye and Ear Infirmary Reports, 1913)

| Year | Number Under Observation | Number Made Partially Blind | Per Cent. |
|---|---|---|---|
| 1907-1908 | 46 | 12 | 26 |
| 1908-1909 | 116 | 29 | 25 |
| 1909-1910 | 119 | 13 | 10.9 |
| 1910-1011 | 107 | 11 | 10.2 |
| 1911-1912 | 108 | 9 | 8 |
| 1912-1913 | 142 | 23 | 16 |

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* Read at a joint meeting of the Chicago Medical and Chicago Ophthalmological societies in a "Symposium on Preventable Blindness," May, 1914.

this disease, which is very malignant and which attacks the infant at birth or immediately after and almost always results in total destruction of the sight—usually of both eyes—or in very seriously impaired vision, is now considered preventable, and if proper measures had been instituted at the time of birth, few or none of these cases would have occurred. It is not pertinent in this connection to discuss the means of prevention, which are well known; but it can at least be pointed out, with emphasis, that the so-called "sore eyes" of babies is a highly dangerous affection, and that its treatment should be prompt and energetic and carried out by a thoroughly competent person.

The New York Association for the Blind in a pamphlet[1] on this subject says:

> The official census of the blind for the state of New York, taken in 1906, gives a total of 6,200 blind persons in the state. Of these the cases of preventable blindness numbered 1,984, or 32 per cent., of the whole. And of these preventable cases there are 620 classified as blindness caused by ophthalmia neonatorum, or 10 per cent. of the whole number of blind persons in the state of New York. This means that to-day there are over 620 blind persons in this state who would never have been blind had a harmless preparation (Credé's method) been put into their eyes when they were born.

From the same instructive pamphlet Tables 7 and 8 are taken.

Table 7 shows the number of new pupils admitted into ten of the principal schools of this country during the year 1907, and the proportion of those admitted who had lost their sight from ophthalmia of the new-born.

TABLE 7.—NEW PUPILS IN 1907 BLIND FROM OPHTHALMIA

| Schools for the Blind | New Admissions | Ophthalmia of New-Born | Per Cent. |
|---|---|---|---|
| N. Y. State School for the Blind, Batavia, N. Y. | 13 | 4 | 30.76 |
| Penn. Institute for the Blind, Overbrook, Pa. | 27 | 9 | 33.33 |
| Perkins Institute and Mass. School for the Blind, Boston | 43 | 13 | 30.23 |
| Colorado School for the Blind, Colorado Springs | 7 | 3 | 42.85 |
| Western Penn. Institute for the Blind, Pittsburgh | 28 | 8 | 28.57 |
| Missouri School for the Blind, St. Louis. | 19 | 6 | 31.57 |
| Conn. State Board of Education for the Blind, Hartford | 8 | 1 | 12.50 |
| Ohio State School, Columbus | 36 | 7 | 19.44 |
| Maryland School for the Blind, Baltimore | 13 | 4 | 30.76 |
| Ontario Institute for the Blind, Brantford, Ont. | 23 | 5 | 21.73 |

The average of new admissions in these ten schools for the blind shows that 28.14 per cent. were victims of ophthalmia of the new-born. More than one-quarter of the new pupils admitted during 1907 were therefore needlessly blind.

Table 8 shows the admissions for eight years, 1900-1907, to one school, the Pennsylvania Institute for the Blind, at Overbrook, Pa., and the percentage of pupils admitted each year who had lost their sight from ophthalmia neonatorum.

TABLE 8.—PUPILS BLIND FROM OPHTHALMIA ADMITTED TO PENNSYLVANIA SCHOOL FOR THE BLIND

| Year | | Per Cent. |
|---|---|---|
| 1900 | 11 out of 25 = | 44 |
| 1901 | 10 out of 28 = | 35 |
| 1902 | 9 out of 39 = | 23 |
| 1903 | 14 out of 50 = | 28 |
| 1904 | 15 out of 58 = | 25 |
| 1905 | 21 out of 42 = | 50 |
| 1906 | 12 out of 38 = | 31 |
| 1907 | 9 out of 34 = | 26 |
| 1908 | 11 out of 29 = | 37 |
| 1909 | 15 out of 34 = | 44 |

Average for ten years 33.68 plus per cent. needlessly blind.

It is instructive also to note the statistics given in this pamphlet relative to the activity of midwives in obstetric practice:

> In Chicago, in 1904, we find 86 per cent. of all births, principally among Italians, reported by midwives. In Buffalo, N. Y., with a population of about 400,000, nearly one-half of the births, in one year, were attended by midwives. In New York City, in 1905, 43,834 births, or 42 per cent., of the whole number, were attended by midwives, employed largely by Italians, Austro-Hungarians, Polish Jews and other immigrants. For the year 1907, in New York City, there were 68,186 births reported by physicians, and 52,536 reported by midwives. In September, 1908, the registered midwives in the five boroughs of New York City numbered 1,382.

The author of these reports well concludes:

> In the face of these figures it is idle to talk of the elimination of the midwife. . . . Let us see to it that our midwives are trained, controlled and made fit for the responsible duties they undertake to perform.

The economic side of the question is likewise a matter of considerable moment. It is estimated that it costs the state $3,000 to educate a blind child. The proper equipment and maintenance of blind schools, etc., likewise require a considerable expenditure. To these sums may be added the loss to the individual in earning capacity, the curtailing of "avenues of opportunity," etc., which his affliction necessarily imposes.

The disease itself—its etiology, pathology, clinical course and treatment—while not properly within the scope of the present consideration, may be given a brief reference.

Ophthalmia neonatorum is an acute purulent conjunctivitis occurring in the new-born. The cause of the infection is the gonococcus of Neisser. Bacteriologic examination has demonstrated that cases occurring before the end of the third day are almost always due to the neisserian infection. Later infections are usually produced by the Koch-Weeks bacillus, the pneumococcus, the Klebs-Loeffler bacillus, etc.

It is generally admitted that infection, as a rule, takes place from the vaginal secretion of the mother entering the conjunctival sacs during the period of the passage of the child's head along the genital tract. Ante-partum infections are recognized as of rare occurrence; post-partum infections from soiled linen, etc., also occur.

The appearance of an eye suffering from ophthalmia neonatorum varies according to the stage of the infection. At the outset, the conjunctiva is reddened; by the third day the lids are glued together with mucopus, the lids become swollen, and as the process develops, the discharge changes to a copious, creamy pus; the ocular conjunctiva becomes greatly swollen, and difficulty is experienced in separating the lids; the cornea may become hazy and ulcerated; gradually the process subsides, the swelling and discharge diminish, and the disease passes into a subacute stage.

The distinguishing characteristics of the disease are the swollen condition of lids and conjunctiva, and the purulent discharge. Corneal involvement, with its sequelae, is the danger that threatens the integrity of the visual function. It may be accepted as an axiom that a discharging eye is always a dangerous eye; and in the case of an infant, such a discharge occurring within the early days following its birth demands prompt identification and energetic treatment.

As far as the treatment of the disease itself is concerned, the recognized procedures all have this in common, namely, to negative the action of the invading organism, to keep the eye freed from the purulent secretion, to anticipate corneal involvement, to assist the reparative process and prevent the spread of the infection.

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[1] New York Association for the Blind, Special Committee on Prevention of Blindness.

The greatest field of opportunity, however, lies in the prevention. To accomplish the highest degree of success in this direction two important factors must be carried out: first, the utilization of prophylactic measures; second, early recognition and prompt treatment of the disease.

As to prophylactic measures, obstetricians advise—as a routine procedure—the rendering of the genitals and genital tract aseptic by suitable measures; and such procedures, it is recognized, may prove of especial importance in preventing an infection.

The value of the Credé method as a prophylactic measure is generally admitted. At birth the child's eyes are gently cleansed and one drop of 2 per cent. solution of silver nitrate instilled into each eye. Credé, at the Leipsic Lying-in Asylum, had averaged 10.8 per cent. of cases of ophthalmia; after the introduction of this prophylactic method he found that the infections were reduced to from 0.1 to 0.2 per cent.

If this method of prophylaxis were in universal use, it is certain that the proportion of ophthalmia neonatorum cases would be greatly reduced; and if, in conjunction with the method, practical measures might be devised to insure the early recognition and early treatment of the disease, it is not unreasonable to assert that such infections might be almost entirely eradicated.

A survey of the foregoing facts, which embody the observations and the views of numerous earnest workers in this humanitarian field, causes one to pause and reflect on the colossal problem of prevention which is presented. The committee of the Chicago Opthalmological Society is determined to do what little it may in ameliorating the conditions and, if possible, inaugurate in the state of Illinois a practical campaign of prevention.

A cursory study of the situation discloses many perplexing problems which only patience, perseverance, discretion and cooperation may overcome. The plan proposed and carried out by the New York Association for the Blind appeals to our committee as one most likely to accomplish the largest measure of success, and at present we are engaged in attacking the problem along the lines suggested.

This plan is described by the New York Association for the Blind as follows:

> The methods of work for the suppression of infant ophthalmia may be divided into the following groups:
>
> 1. Educational.
> 2. Legislative.
> 3. Cooperative.
>
> *Educational.*—Through the preparation, publication and dissemination of printed matter, emanating from the committee or approved by it; through public lectures, addresses and exhibits; and by means of the press, on whose generous assistance the committee greatly relies.
>
> The object sought is to spread among the general public the knowledge that infant ophthalmia is a dangerous, infectious disease, fatal to sight unless checked at the time of the birth of the child, easily preventable then if simple precautions are taken; to inform parents, more especially, of the dangers which threaten the sight of their children at birth, and the preventive measures which should be taken; and to advocate the universal adoption of such measures.
>
> *Legislation.*—To promote such legislation as may be needed to accomplish the object in view—the prevention of the unnecessary blindness of infants.
>
> *Cooperation.*—In furtherance of the same object, the committee seeks and invites cooperation with medical societies, health officers, ophthalmic, maternity and other hospitals in which children are born, dispensaries, city missions, settlements; with schools, institutions and associations for the blind, and with all societies engaged in work for children and for social betterment; with district visiting nurses, and with all persons who are already engaged in this work or who desire to help in it.

The foregoing "plan of campaign" appears logical and practical, and in conducting the work along these lines our committee is sanguine that a measure of success will be attained which shall serve to place our own state in a creditable position on the question of the prevention of blindness due to ophthalmia neonatorum. Even a small measure of success will be a distinct accomplishment, and will contribute a not inconsiderable part toward sparing many little ones the sad ravages which this baneful disease inflicts.

104 South Michigan Avenue.

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# MANAGEMENT OF DELICATE AND PREMATURE INFANTS IN THE HOME *

H. M. McCLANAHAN, M.D.

OMAHA

The premature or delicate infant has an equal right to life with the robust. Indeed, its frail condition should insure it every possible care, since because of its feebleness its life's prospect is not nearly so good. While I have no available data, such at least is my personal experience. The fact that I have seen several striking examples of the possibilities of saving the lives of some of these cases and believe that not sufficient care in their management is practiced, is my excuse for presenting this brief paper.

The two general requirements in the care of premature infants are the maintenance of body heat, and proper nourishment.

## I. THE MAINTENANCE OF BODY HEAT

In order to sustain life, body heat must be maintained and also the rapid dissipation of heat prevented. Heat is given off from the body by the excretions and feces and urine, by the lungs in the form of vapor, and from the skin. Vierordt states that 73 per cent. of body heat is eliminated by radiation and conduction from the skin. This heat loss can be greatly limited. My experience in a number of cases with the modern incubator has not been satisfactory. The infants live a few days and then die even when they are not losing weight. For the last several years I have adopted the following method. It is not at all original and the method is described in some of our modern text-books.

I direct that an ordinary clothes-basket 24 inches long be procured. This can be purchased in any village. The bottom is padded so that the basket has a depth of 8 inches. It is then lined with white oilcloth and over this a layer of cotton batting held in place by being stitched through the sides of the basket. This in turn is covered with white flannel. The flannel covering for the basket is fastened over the top by means of safety-pins so that the upper portion can either be turned back or fall about the neck of the infant, leaving the body surrounded by an air-space.

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* Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

Heat is maintained by means of hot-water bottles. I always direct that these be covered by flannel. The 12-ounce citrate of magnesia bottle is convenient, as it has a rubber cork and a wire fastener that insures against leaking. Five of these bottles are sufficient to maintain proper temperature. A thermometer is kept in the basket and the heat maintained at from 90 to 95 degrees. During the night when the room temperature is lower it may be necessary to cover the basket with a rubber sheet in order to maintain the temperature. It will be noted that while the body is in a warm atmosphere the face is exposed so that the infant breathes the atmosphere of the room. As the room can be well ventilated it breathes, I think, a better air than when confined in an incubator.

The body of the infant is anointed with olive-oil, wrapped in a layer of cotton batting—loosely applied—and this in turn in a soft flannel blanket. The infant can be fed in the basket without being removed. Indeed, it need be taken out only when it is necessary to oil the body. Absorbent cotton pads can be used for napkins.

As soon as the infant begins to gain in weight the temperature of the basket can be lowered and in my experience in from two to three weeks the hot-water bottles can be dispensed with.

### II. NOURISHMENT

This is vitally important because of the caloric needs of the infant. Breast-milk of course is the best food, but as emphasized by Drs. Holt and Morse, breast-milk should be diluted. Many of these infants are not strong enough to draw milk from the breast and there is no doubt in my mind that physicians and attendants are frequently deceived in believing that because the infant takes the breast it is getting nourishment. Only recently I was able to demonstrate to the attendant by weighing the infant before and after a breast-feeding that there was no appreciable gain in weight. In these cases the milk should be pumped from the breast regularly, diluted with an equal quantity of water, and fed to the infant. If it does not retain this dilution then the milk should be further diluted. Whatever dilution the infant takes, the food should be rapidly increased in strength. There are cases in which the infants are not strong enough to nurse from the bottle and in these cases some other method must be adopted. In these cases I have found the Breck feeder a life-saving appliance. At the Child-Saving Institute this method of feeding is frequently employed with normal infants who refuse to take the bottle. It seems to me superior to the medicine-dropper and certainly requires less skill than gavage.

For the first two or three days at least, food should be given every hour; after this the feeding interval should be lengthened. When it is not possible to procure breast-milk, then the feeding becomes very important. In two recent successful cases I began with the following:

| | |
|---|---|
| Whey | 5 parts |
| Water | 5 parts |
| Milk-sugar | 1 part |
| Lime water | 1 part |

In one of the two cases the infant vomited this food. I directed that the whey be made from skimmed milk, when it retained its food. As soon as it retains this formula nicely, the strength should be increased by the addition of either milk or cream.

### CONCLUSIONS

1. The premature or delicate infant may develop into a strong individual. I have in mind three of these cases. One patient was normal in weight at 5 months. The other I had the privilege of examining at the age of 3 years. It was in every way a normal child. The third is now a young man in his twentieth year. He is normal physically and above normal in his intellectual attainments.

2. Among dangers to be guarded against are the regurgitation of food in the throat and the suction into the larynx. I have seen one fatal case from this cause. Temperature should be taken in order to guard against fever. In a recent case that I saw with the physician, the temperature reached to 105, due as I believe to the excessive external heat. In every case a thermometer should be kept constantly in the basket. The most frequent mistake, however, is letting the infant take the breast and assuming that it is actually getting food, or if it vomits assuming that the breast-milk does not agree with it.

3. Finally, the hopeful symptoms are a gain in weight and normal yellow stools.

Brandeis Building.

## ABSTRACT OF DISCUSSION

**Dr. Henry Dwight Chapin**, New York: I wish to emphasize what Dr. McClanahan has said concerning incubators. I treated about 150 babies in different incubators and almost all of them died. While we gain in one factor, that is, heat, we lose in a vital factor, and that is fresh air. Most of them do not deliver sufficient fresh air to the infant, and these premature infants are unusually susceptible to lack of air. I think incubators should be abandoned entirely. I have used such appliances as Dr. McClanahan suggests. In the hospital I have two modern incubators but I do not use them. These premature infants have great difficulty in swallowing. Some of them are so difficult to feed I have been obliged to resort to gavage. I have saved one or two that I am sure would have otherwise been lost, by feeding in this way. One or two have died suddenly. Necropsy showed food had gone into the larynx. The nurse must be warned about slow feeding with any kind of a feeder.

**Dr. John Zahorsky**, St. Louis: Most of us who have had experience with expensive apparatus for warming babies have discontinued its use. One method is valuable in the ordinary home; that is, to use an ordinary soap-box, and an ordinary steam or hot-water radiator, and put the box with one side to the radiator so that the heat from it will pass into the box. The heat can be regulated by putting the box nearer or farther away from the radiator. This method can be used with the ordinary stove, with which, of course, someone will have to see that the fire is uniform. The distance will regulate the amount of heat the baby gets. Especially are mistakes made in the amount of heat to which the baby is subjected. Some nurses seem to think the warmer the baby is kept the better. The most common injury to the baby is from too much heat, which will produce injury that it may take a few days to overcome. It often produces cyanosis and death. A good rule is not to keep the temperature over 90. From 86 to 88 is usually sufficient. Watch the baby's rectal temperature, and if it goes lower than 96 degrees do not heat the incubator but warm the baby with a hot bath. Heating by hot air is a slow process. Most premature babies that are not sickly in any way die of exhaustion because they are not sufficiently fed. After the third or fourth day they get attacks of cyanosis, which means exhaustion of the respiratory center. In some way the baby must get enough food or it will die. The premature baby should have one-fifth of the body-weight in mother's milk daily. Commence on one-twentieth of the body-weight the first day—do not wait three days as we do with the normal baby, but commence to feed at once. It has no reserve store to sustain life. Every day the amount should be increased until it reaches one-fifth of the body-weight. It is best given with a dropper, a spoon, or, as Dr. Chapin has emphasized, with a catheter. One may get it down in six feedings, or it may take ten, twelve or even twenty-four, but the baby must receive one-twentieth of its body-weight during its first twenty-four hours.

L. R. DeBuys, New Orleans: The principal problem we have is to maintain the body temperature, and in doing this we have to be careful not to get it too high. A plan I have used is to make a gown of two layers of Canton flannel with one layer of cotton batting between. The baby is put in this and the warmth put externally—either hot bottles or hot-water bags. Covering all is a blanket. Another point that has not been mentioned is the placing of a thermometer inside the top covering and external to the baby's gown, to which it is pinned. You can tell then whether you are giving the baby enough or too much heat.

Dr. S. M. Hamill, Philadelphia: I, also, protest against the use of the older type of incubator, and emphasize one point in Dr. McClanahan's paper that seems to me important in the case of the premature infant, namely, supplying a sufficient amount of fresh air. I have not used an incubator for some years. I have been following much the same course that Dr. McClanahan has outlined. I had an experience a year and a half ago, which demonstrated that at least one premature infant was able to breathe an air of low temperature without detriment. I had the infant forced on me in the children's ward of the Polyclinic Hospital. None of the small rooms in the hospital were then available. Being an advocate of fresh air, I keep the windows open constantly, winter and summer. Having had this child brought into that ward it became necessary either to rob the children in the ward of their usual amount of fresh air, or to keep the windows open and endeavor to maintain the body-heat of the premature infant while at the same time letting it breathe the cold, fresh air of the ward. On the principle of doing the greatest good to the greatest number, I chose the latter course, and put the baby in a specially prepared clothes-basket close to a radiator. I succeeded in maintaining the heat about the body of the baby at from 90 to 95 F., whereas the temperature of the ward often fell as low as 50 or 55 F. at night. That baby did better than any premature baby I have ever seen. I have had experience in keeping these babies in room temperature of from 65 to 70 degrees for a short time, but never before at such a temperature as that above indicated. I am not advocating this as a proper procedure, but it illustrates the fact that these babies can breathe an air at low temperature without harm.

Dr. F. B. Talbot, Boston: Concerning the conservation of energy in the new-born, the new-born baby maintains his own body-heat after birth by using up the glycogen which has been deposited in the liver. In a certain number of instances when all the glycogen is used up, the body-fat is converted into sugar, and is used in this form. If the mother's milk comes in on the third day, and often later, they may not use their own body-fat at all. Under those circumstances they do not lose weight. If it does not come until five or six days they lose a good deal of body-fat and weight. The obvious conclusion to draw from this is that if the baby has not much fat, is not well developed, is a weak baby, it must be fed early to give it energy to keep its life, and to maintain its body-heat. This discussion goes with accurate scientific measurements of heat and determination of the respiratory quotient.

Dr. F. N. Rogers, Manchester, N. H.: One point I would bring out that Dr. McClanahan mentioned in his clothes-basket arrangement is that the weight a child would lift by respiration is simply the displacement of air. When cotton batting and pads are put about the child, there is apt to be more or less weight to be displaced, which takes energy.

Dr. Henry F. Helmholz, Chicago: In those cases with syncopial attacks during the first or second day, I have used in two cases 6 per cent. dextrose solution with excellent results. The child in one instance was practically moribund, but responded quickly to an ounce of 6 per cent. dextrose solution. That was kept up at five-hour intervals. There was no breast-milk available and the child from that time on did very well. The following day we were able to obtain some breast-milk, and the child recovered. The dextrose was administered hypodermatically.

Dr. H. M. McClanahan, Omaha: Some years ago I bought what I thought was a model incubator, and all our premature babies died about the fifth or sixth day, until I became discouraged. In all the cases I cited in my paper I was called to the home. Gavage is not as convenient there as in the hospital. The infant should not go too long without food. I believe a thermometer should be constantly present in the basket, and the temperature of the basket should not go above 90 or 95. Secondly, I emphasize, also, the danger of letting a baby's temperature go to 104, 105 or 106. In the last child I lost, one I saw an hour before it died, the temperature was 106, I believe due to the carelessness of the nurse in letting the temperature of the basket get too high. The temperature should be taken as a routine measure every twenty-four hours at least.

# INTRACRANIAL HEMORRHAGE IN THE INFANT

## WITH HISTORY AND NECROPSY REPORT OF A CASE

J. W. Shuman, M.D., Sioux City, Iowa

Recently I was called to conduct a necropsy in the case of an infant succumbing to some obscure lesion, and through the kindness of the attending physicians, Drs. J. W. Flageolle and G. S. Browning, the following clinical history was obtained:

*History.*—Dr. Flageolle was called Aug. 18, 1914, to see baby G. W., aged 6 weeks. The child had not been well since the sixteenth, but not ill enough to need medical attention. The history was negative as to traumatism or syphilis. He found the baby irritable when disturbed. There was considerable tenderness over the lower abdomen but no distention; the mother stated that the baby cried in his sleep and also when she attempted to pick him up. There had been no spasms, the Cheyne-Stokes respiration was present, the temperature was 98.6, pulse 90, and as no bowel movement had been secured since August 16, attempts were made per enemata to empty the bowel, but without satisfactory result. The following day at 9 a. m., Drs. Browning and Flageolle examined the child noting the following: pupils unequal (left dilated, right, "pin-point"); Cheyne-Stokes respiration, clonic spasms, some cervical rigidity and Kernig's sign positive. The clinical diagnosis of cerebrospinal meningitis was tentatively entertained. Death occurred without any change in symptoms at 1 p. m., of the same day.

*Necropsy.*—Necropsy was held at 4:30 p. m., the same day, showed a well-nourished child, with slight bulging of the fontanelles and rigor mortis pronounced; an elongated prepuce with pin-point opening was noted. There were bluish-red discolorations on the back and left leg (post-agonal).

The thoracic and abdominal findings were negative except as to the colon, the mucous membrane of which was dotted with numerous small ecchymotic areas, extending from the ileocolic valve to the anus, with a slight membrane present, which was easily washed away.

No ecchymosis or other evidence of traumatism on the scalp or exterior surface of the skull. On incising the dura mater the brain substance exuded, denoting increased intracranial pressure. The consistency of the brain tissue was extremely soft and pulpy rendering it impossible of manipulation; the cranial bones were normal. On removing the cerebrum subdurally and left posteriorly a well organized, dark blood-clot (1½ ounces) was found compressing, but not attached to the brain. The brain substance was so soft that definite localizing with it was impossible; no communicating vessel could be observed. A small amount of blood-tinged cerebrospinal fluid was present; smears made from it and examined proved negative for micro-organisms; the cerebellum and medulla evidenced no abnormalities and were normal in consistency.

*Pathologic Diagnosis.*—Cause of death (1) cerebral pressure, due to (2) subdural hemorrhage (left posterior); (3) cause (?); (4) mucocolitis (mild).

This instance is reported to call attention to the fact that a necropsy is invaluable in checking up the clinical diagnosis and in making a correct finding of the "cause of death." The greatest interest, however, centers in the question as to the cause of the hemorrhage. As noted, there was no sign of traumatism to the head nor was there any fever to indicate acute meningeal infection or brain abscess.

Had there been severe trauma during delivery sufficient to cause hemorrhage, symptoms would have developed before six weeks, but up to that time the child had been apparently normal. With no previous derangement, as convulsions or severe coughing to increase the intracerebral blood pressure, and no traumatism to the head, the cause of the hemorrhage remains an unsolved problem.

Choyce (A System of Surgery, iii) quoting Karl Henschen (Verhandl. d. Deutsch. Gesellsch. f. Chir., 1912) states that it is only comparatively recently that the head injuries that the child is liable to during birth have received due attention from diagnosticians and surgeons and that the frequency of intracranial hemorrhage in the newborn has been observed in several long series of necropsies and results have differed considerably. Some observers have found hemorrhage in 2 per cent. of all post-mortem examinations of young infants; others in as many as 12 to 13 per cent. It is certainly far from an uncommon injury and it must be remembered that probably a large number of infants recover from it with or without persistent symptoms. The frequency of the so-called congenital and infantile hemiplegias and diplegias confirms this view.

It is further claimed that the commonest lesion is the subdural hemorrhage; laceration of the veins entering the longitudinal sinus and laceration of the tentorium are the chief sources of the bleeding. Even abnormally quick labor and cesarean sections have been followed by it. The hemorrhage usually occurs at or in a few hours following birth, but may not manifest itself for days or even weeks, clinically, and it is probable that convulsions occurring within a few weeks of birth are due to traumatic lesions of the brain. The newborn's brain is very tolerant of compression and consequently the symptoms are apt to be slight or obscure. Definite localizing symptoms are frequently, perhaps usually absent. The tendency to hemorrhage not uncommonly present, especially in syphilitic infants, is probably an important factor in many cases.

**A Suggestion Concerning Passive Congestion in Rheumatism.**—I desire briefly to call attention to a little procedure commonly used by surgeons with benefit in treating infections and which may be useful in the treatment of acute articular rheumatism. I refer to passive congestion produced by constriction of an extremity or otherwise. Acute articular rheumatism is a systemic infection with particular affinity for joint structures, and this procedure, which aids Nature by flooding the involved portion with Nature's own antibodies, is sound in principle. Venous congestion does more than this, however, when salicylates are being administered. The ingested salicylates exist in the alkaline blood and tissues only as salicylates, and these have no germicidal action. However, in the presence of greatly increased carbon dioxid tension, some salicylate is converted into salicylic acid, and this is a powerful germicide. It is supposed that in the congestion of an inflamed joint this conversion takes place. Thus if the salicylates do have any direct effect on the organisms causing the disease, that effect is increased by retarding the venous circulation of a part involved.—J. S. Lancaster, M.D., Los Angeles.

# Therapeutics

## PREVENTION IS GREATER THAN CURE

(*Continued from page 1671*)

### VIII

### DUST

We have already briefly referred to what is now understood as pure air, and the effect of stagnant and overmoist air on the individual. The injury caused by dust or impure air, however, has not been sufficiently emphasized.

The excellent discussion of this subject two years ago by Prof. Charles Baskerville of the College of the City of New York[1] has been used as a basis for this article.

For practical purposes the impurities of the air may be divided into two classes, dust, and fumes or gases. In the cities the dust contains pulverized excreta of human beings and animals, the material which is constantly being worn from the buildings and pavements, the waste from houses, stores and factories, micro-organisms, leaves, remains of fruit, and other parts of plants and trees. It is interesting to know that the air of subways contains many minute angular particles of iron.

In the country the dust consists to a larger extent of particles worn from the road. The substances of which the road is composed are more or less pulverized by the traffic. This dust is especially increased by heavy carts and automobiles. The country roads are disintegrated in part by the frosts of winter, in part by the wind, by the action of the falling rain, and by the transporting power of water. Oiled roads, as soon as they dry, give rise to particles of crude, irritant tar-oil which are wafted with the dust.

These components of the dust are all more or less irritating, not only to the mucous membrane of the respiratory tract, but also to the eyes. When the amount of dust is small the irritation may be slight, but when the amount of dust is large and when there is a considerable amount of tar-oil present, the irritation may be very troublesome.

The prevention of this dust is accomplished by care in the building and in the maintenance of the roads. The best structure for a roadbed and top dressing must be decided by the region, by the variations in climate, by the geography of the locality, and by the character of the traffic. There is doubtless no one best roadbed.

There is no question of the necessity for a city to water its streets. There, also, seems to be no question of the advantage of oiling turnpikes and country roads, if they are built of material that allows of oiling. Whether or not a city should oil its streets is a subject for discussion.

Baskerville suggests as a suitable disinfectant and agent for the diminution of dust a very dilute chlorinated lime solution. The chemical is cheap, and any outlay entailed would be more than covered by the decrease in dust-borne diseases. He also calls attention to Dr. Nesbit's work in ridding Wilmington, N. C., of flies by sprinkling the streets five times with an attenuated mixture of water with light pine-oil. An incidental effect of the suppression of the flies was the stamping out of a typhoid fever epidemic.

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[1] Baskerville, Charles: New York Med. Jour., Nov. 23, 1912, p. 1061 and Nov. 30, 1912, p. 1119.

The other part of the impure air problem has to do with noxious fumes and gases, and is especially important in cities. There may be mentioned first the danger from illuminating gas. The chief poisonous constituents of this are "ammonia, hydrocyanic acid, hydrogen sulphid, carbon disulphid, other gaseous sulphur compounds, and carbon monoxid." The danger from the inhalation of concentrated illuminating gas, such as is often taken with suicidal intent, are too well known to require repetition, but the hygienic importance of good ventilation and the constant renewal of outside fresh air to a room where illuminating gas is constantly, or for a long time, burning is not sufficiently understood. Also, the depressing influence and the actual blood disturbances, even anemia, caused by the constant inhalation of the gas from an illuminating-gas leak in a house or building is not sufficiently noted, and is not investigated by boards of health as it should be. Leaks of illuminating gas, which occur so constantly and frequently in tenement houses, stores and factories, have not been sufficiently considered as a menace to health.

The atmosphere outdoors in manufacturing towns is contaminated extensively with the smoke produced by the combustion of large quantities of coal. The combustion gases from this source are of a highly poisonous nature. They may be diminished to a considerable extent by proper management of the fires by skilled firemen. An important constituent of this smoke is the soot, which is due to incomplete combustion, and which may be "formed partly by the mechanical removal of dust by the chimney draft, and partly by the decomposition of the fuel, such as takes place in the process of destructive distillation. It consists mainly of carbon, tar and ash or mineral matter together with small amounts of sulphur and nitrogen compounds, and often possesses an acid character." The sticky properties of soot are due to the tar which it contains.

Sulphur dioxid is one of the most important impurities of city air, especially in manufacturing towns, and this is derived to a large extent from the combustion of coal and of coal gas. Its presence in the air has a serious effect on susceptible persons, and particularly damages the respiratory organs. It tends to cause anemia and bronchitis. Various efforts are made to discourage the dissemination of smoke in communities. It has been suggested that more might be accomplished if the matter were placed by municipalities and boards of health "in the hands of men qualified to assist manufacturers to suppress the nuisance without causing them difficulty." Methods have been invented whereby much of this waste combustible material may be collected with profit to the manufacturer and with health and happiness to the surrounding community. The smoke nuisance should be most seriously considered by all cities.

The dust which is present in the air of many shops and factories, and which is produced incidentally to the various processes employed in the mechanical arts, is a factor of considerable importance in connection with the health of the workmen.

These dusts may be divided into three classes: (1) insoluble inorganic dusts; (2) soluble inorganic dusts, and (3) organic dusts.

The first class, the insoluble inorganic dusts, includes metals such as antimony, arsenic, type metal, brass, bronze, copper, aluminum, iron, steel, lead, manganese, silver, tin and zinc, in a state of fine division; also various ore dusts such as that from iron ore, silica, sand, emery, flint, glass powder, carbon, graphite, diamond, coal, soot, brick dust, marble, granite, cement, terra cotta, lime, gypsum and plaster.

The second class, the soluble inorganic dusts, includes substances which may be swallowed and absorbed, such as metallic particles like lead, brass, zinc, arsenic, mercury and silver, and soluble inorganic salts.

The third class, or organic dusts, includes "sawdust, fur, skins, feathers, broom and straw, grains and flours, jute, flax, hemp, cotton, wool, carpet dust, street sweepings, tobacco and tobacco-box dust, hides and leather, felts, rags, paper, horsehair, etc."

These various dusts affect chiefly the respiratory organs, but to a less extent the eyes and the skin. In the lungs they produce a condition of fibrosis of the lung to which Zenker gave the name "pneumonokoniosis." Various forms of this disease have been described, depending on the nature of the irritant producing the fibrosis. Among them may be mentioned anthracosis, or coal-miners' disease, caused by the inhalation of the dust from anthracite coal; siderosis, caused by the inhalation of the dust from metals, especially from iron, and chalicosis, caused by the inhalation of mineral dusts, resulting in the so-called stone-cutters' phthisis and grinders' phthisis. The inhalation of iron dust diminishes the respiratory efficiency of the lungs by causing a lessening of their elastic property. It may also reduce the resistance of the lungs to invasion by harmful bacteria. That form of disease distinguished as siderosis exists with special frequency among metal polishers, knife grinders and others engaged in metal work.

Among the diseases caused by the organic dusts may be mentioned flax dressers' disease, a kind of pneumonia due to the inhalation of particles of flax and alkaloidal poisoning from African boxwood, seen in workmen engaged in shuttle making.

The prevention of these various forms of disease incidental to various forms of industry without unduly interfering with the profits of the business is often an exceedingly difficult problem. Among the suggestions which have been made, and which are employed with more or less advantage may be mentioned:

1. The removing of the dust from the room in which it is produced by forcible suction applied at the seat of its production. This is especially applicable in the trades of grinding and polishing.

2. When irritating dust affects the eyes, glasses for their protection should be worn by the workmen.

3. Those engaged in sorting rags in paper factories, workmen on threshing machines, millers, mixers in glass factories, stone cutters, sculptors and all others in factories where there is irritating dust should wear respirators over the mouth and nose to prevent the dust from entering the respiratory organs.

4. Those employed in the manufacturing of oxidizing agents or lead workers should change their clothes before leaving the factory.

5. The dust on the floors of printing, type-casting, metal-working and similar establishments should be laid by means of certain preparations adapted for this purpose. Probably the best are mineral oils which accomplish this result very satisfactorily.

6. General ventilation of the shop should be employed as far as practicable to dilute the unavoidable dust and remove it as far as possible.

7. The value of vacuum cleaning for factories should be emphasized as much as it is for office buildings, stores and private houses.

### MINE SANITATION

While this subject is not of much general importance, it is of great importance to some of us, and should interest all. New methods of saving life and of avoiding accidents, and the condemnation of criminal carelessness should ever be subjects worthy of careful review, if not of individual study.

Mine problems, so well understood by some physicians, but so little by the majority, are splendidly outlined in an article by Dr. N. P. Brooks[2] which it would be well for all interested to read carefully. The main points for consideration are proper and scientific ventilation, proper lighting methods, methods to diminish dust, proper drainage, proper disposal of excreta of men and animals, and a greater care of the personal hygiene of the miners.

Briefly, the gases in coal mines are as follows:

$CH_4$, methane or marsh gas, is "colorless, odorless, tasteless, lighter than air, in a pure state burns with a blue flame, and is very explosive when mixed with certain proportions of air." When breathed in a pure state it affects the individual not unlike laughing gas, and does not cause harm when inhaled as long as the supply of oxygen is sufficient.

CO, white-damp or carbon monoxid, "is a colorless, odorless, tasteless gas, lighter than air, combustible, and explosive when mixed with a certain proportion of air." This gas is very poisonous, and if 1 per cent. of it is breathed for any length of time it produces dyspnea, headache, loss of sight, soon paralysis, beginning with the lower extremities, and finally unconsciousness. When unconsciousness is caused by carbon monoxid the patient may not be resuscitated at all, or if he is, his mentality may be seriously injured. A positive indication that this gas is accumulating in dangerous amount is shown by the death of white mice or other small animals, that should be kept in the mines where their condition can be readily observed by the miners.

$CO_2$, carbonic acid gas, carbon dioxid, "is a colorless, odorless, tasteless gas, heavier than air, and a non-supporter of combustion." The presence of this gas in abnormal amount is readily detected by the dimness of the oil lamps. The first symptoms of a poisonous amount of this gas are increased heart action, lassitude, and headache. If the amount of the gas is very considerable the individual may fall unconscious without even a cry. Men subjected to this poisoning may remain unconscious for some hours, provided they get a sufficient amount of oxygen, and still be resuscitated. "Suffocation ensues when there is 1 volume of this gas to 12 volumes of air."

$H_2S$, hydrogen sulphid, stink-damp, does not frequently occur in mines, but is very poisonous. Its obnoxious odor causes it to be quickly detected.

Lighting, ventilation and methods of diminishing dust are too technical to be discussed here. Carelessness in the drainage of mines, from the effect that bad drainage can have on the miners, should not be tolerated. Miners who must work all day with wet feet are certainly rendered liable to colds, joint affections and neuritis, if not to more serious illnesses. If they are barefooted, in certain regions, they are liable to acquire the hookworm disease. If they work in rubber boots, the sweating and general lack of elasticity caused by standing all day in rubber is a distinct disadvantage to the individual.

The care of the excreta in mines should certainly be under the control of the boards of health in the regions in which the mines are located, and sanitary measures, now well understood, should be established in every mine. The clothing and cleanliness of the miners and their drinking habits should all be subject to careful supervision, the two former for their individual welfare, and the latter not only for their own welfare but for that of others, as carelessness is an important factor in mine disasters.

As first aid to the injured in accidents and mine disasters must frequently be rendered by fellow miners or their foremen, instruction should be given to all in artificial respiration, in methods of stopping hemorrhage, in the first antisepsis and dressing of injuries, and in the action of the different poisonous gases. Foremen should pass an examination on such subjects.

*(To be continued)*

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[2] Brooks, N. P.: Month. Cyc. and Med. Bull., April, 1913, p. 203.

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## New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

**NORMAL HORSE SERUM** (See N. N. R., 1914, p. 243).

Slee Laboratories, Swiftwater, Pa. (The Abbott Alkaloidal Co., Chicago).

*Slee's Normal Horse Serum.*—Marketed in vials containing 100 Cc.

**SERUM ANTIDIPHTHERICUM AND ANTIDIPHTHERITIC GLOBULINS** (See N. N. R., 1914, p. 236).

Memorial Institute for Infectious Diseases, Chicago.

*Diphtheria Antitoxin.*—Marketed in packages of 10,000 units, both in syringes ready for use and in bottles.

Frederick Stearns & Co., Detroit, Mich.

*Concentrated Diphtheritic Antitoxin.*—Marketed in separate syringe packages containing respectively 500, 1,000, 2,000, 3,000, 4,000, 5,000 and 7,500 units.

**BACILLUS COLI VACCINE** (See N. N. R., 1914, p. 247).

E. R. Squibb and Sons, New York City.

*Bacillus Coli Communis Vaccine.*—Marketed in boxes of 6 ampoules containing respectively, 100, 100, 500, 500, 1,000 and 1,000 million killed bacilli, with a syringe.

**STAPHYLOCOCCUS VACCINE** (See N. N. R., 1914, p. 254).

E. R. Squibb and Sons, New York City.

*Staphylo-Acne Vaccine.*—Marketed in boxes of 6 ampoules containing respectively, 100 million killed staphylococci, and 20 million killed acne bacilli, 100 million killed staphylococci and 20 million killed acne bacilli, 500 million killed staphylococci and 50 million killed acne bacilli, 500 million killed staphylococci and 50 million killed acne bacilli, 1,000 million killed staphylococci and 100 million killed acne bacilli, and 1,000 million killed staphylococci and 100 million killed acne bacilli, with a syringe.

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SATURDAY, NOVEMBER 14, 1914

## THE CEREBROSPINAL FLUID

The importance which attaches to an expansion of our knowledge of the functions of the cerebrospinal fluid in relation to many problems in surgery and medicine has been well summarized in a recent paper by Drs. Frazier and Peet[1] of the University of Pennsylvania. We are impelled to quote their own words because they emphasize so plainly the directions in which progress is demanded. The accumulation of cerebrospinal fluid in abnormal quantities, we are reminded by the Philadelphia investigators, is a factor which must be reckoned with in many intracranial diseases. It is accountable not only for many subjective and objective disturbances, but it is often the determining factor in the fatal cases. How essential it is in diagnosis, prognosis and treatment will be realized by the mere mention of such morbid conditions as hydrocephalus, brain tumors and meningitis. In the treatment of these, so far as it concerns the damaging effect of excessive secretion or inadequate absorption of cerebrospinal fluid, we are helpless and wofully unsuccessful. It is of the utmost importance, therefore, that investigation of the cerebrospinal fluid should be continued until the fundamental principles of secretion and absorption are thoroughly understood, in the hope of finding some effective means of controlling oversecretion or diminished absorption.

Not long ago we discussed some evidence that the cerebrospinal fluid is a typical secretion initiated in the "choroid gland" or choroid plexus of the various ventricles of the brain.[2] Frazier and Peet[1] have been able to elucidate the problem of the secretion and absorption of the cerebrospinal fluid by the production of artificial hydrocephalus. So long as the fluid is widely distributed throughout the subarachnoid and subdural spaces of the brain and cord, it is not easy to ascertain the location of changes in its make-up and movements. The fluid is produced almost entirely within the two lateral, the third and fourth ventricles. This was shown by effecting a closure of the lower end of the aqueduct of Sylvius whereby intracranial pressure is developed. A moderate hydrocephalus may arise without any signs of meningitis. Although the cerebrospinal fluid is without doubt secreted mostly, if not entirely, within these brain cavities, absorption from the ventricles is practically negative and does not take place until the fluid has escaped. The lateral ventricle, therefore, is merely a receptacle, like the bladder, for the storage of fluid. Frazier and Peet agree with Dandy and Blackfan[3] in believing that it is possible to differentiate different types of hydrocephalus from the point of view of etiology, for instance, those with from those without obstruction of the ventricles, by introducing a detectable substance like phenolsulphonephthalein into the ventricles and watching the rate of its reappearance in the excreta. In obstruction this will be extremely slow.

Dixon and Halliburton[4] venture the belief that some product of the brain's metabolism passes to the choroid plexus, and that this stimulates the secreting epithelium, which causes the plexus to become active. This is essentially the postulation of a "hormone" regulation of the production of cerebrospinal fluid. The normal rate of secretion was found by Frazier and Peet to vary widely under normal conditions. It has been suggested that the secretion of cerebrospinal fluid may be controlled by ligation of the common carotid arteries, and this operation has even been recommended in the treatment of hydrocephalus. It is, of course, very desirable to know the effect of disturbance of the cerebral circulation on the rate of secretion in order to place any indicated operative procedures on a sounder scientific basis. In Frazier and Peet's experience, in an observation on man, the rate of secretion was practically uninfluenced by so profound an interference as the ligation. We are inclined to urge, therefore, until contradictory evidence is forthcoming, that the operation of ligating the common carotid arteries should not be endorsed with the expectation of influencing favorably the hydrocephalus that is either of congenital origin or the accompaniment of brain tumors.

Inasmuch as the venous circulation appears to be concerned with the absorption rather than the production of the cerebrospinal fluid, it is not to be expected that disturbances of its mechanism would affect the secretory output of the choroid plexus. Impaired absorption might be expected under certain of these conditions, especially since it has been found that the lymphatics play at best an inconsequential part in the absorption of cerebrospinal fluid. Frazier and Peet remind us that pressure on the sinuses and obstruction to the venous circulation is no doubt a factor in the accumulation of cerebrospinal fluid so frequently associated with brain tumors, especially of the posterior fossa. As the major portion of the venous circulation of the brain, including the cerebral veins and dural sinuses, leaves the cranial cavity from a point in the posterior fossa, the jugular foramen, it is readily understood why posterior fossa tumors are so frequently and at a comparatively early stage associated with increased intracranial tension which comes from the accumulation of cerebrospinal fluid. In other words, obstruction to the venous outflow is immediately followed by a rise in venous pressure, by the accumulation of cerebrospinal fluid, and a resulting increase in intracranial tension.

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[1] Frazier, C. H., and Peet, M. M.: Factors of Influence in the Origin and Circulation of the Cerebrospinal Fluid, Am. Jour. Physiol., 1914, xxxv, 268.

[2] Compare: The Production of Cerebrospinal Fluid, editorial, The Journal A. M. A., March 28, 1914, p. 1018.

[3] Dandy, W. E., and Blackfan, K. D.: An Experimental and Clinical Study of Internal Hydrocephalus, The Journal A. M. A., Dec. 20, 1913, p. 2216.

[4] Dixon, W. E., and Halliburton, W. D.: The Cerebrospinal Fluid, I, The Secretion of the Fluid, Jour. Physiol., 1913, xlvii, 215.

The cerebrospinal pressure has been observed by Frazier and Peet to vary with the pressure of the venous sinuses and to be practically identical with it. Under normal conditions, there are certain oscillations which are due to the effect of inspiration and expiration on venous pressure, but they may be arrested by slight increase of intracranial tension. Closure of the carotid circulation causes an immediate, though only transitory, fall of cerebrospinal pressure; but obstruction of the venous circulation is followed by an increase in pressure more or less constant.

Dixon and Halliburton[5] have now added to their earlier investigations[4] a consideration of the effect which marked changes in cerebrospinal pressure produce on other functions. A relatively small increase in cerebrospinal pressure causes stimulation of the respiratory, vasomotor and cardio-inhibitory centers. The stimulating effect is least marked on the respiratory center. When the pressure is increased to a height considerably above the normal arterial pressure, respiration ceases in a few seconds, but the other two centers remain active and the arterial pressure rises enormously in spite of the slow heart; a little later the cardio-inhibitory center is paralyzed, and the continued activity of the vasomotor center still further raises the arterial pressure. This represents, as Cushing[6] has pointed out, a protective mechanism which continues to force the blood along the compressed blood-vessels. Ultimately, however, if the high cerebrospinal pressure is kept up, paralysis of the vasomotor center ensues, and the arterial pressure then falls.

The results of Dixon and Halliburton in relation to the early depression of the respiratory center as the result of cerebral compression accord with the views of Horsley and his colleagues. Cushing has not quite agreed with them on the primary importance of respiratory failure. He regarded the cessation of breathing as the result of fatigue or failure of the vasomotor center which allows the blood-pressure to fall below the intracranial pressure. Anemia of the respiratory center consequently ensues, and respiration, already embarrassed, immediately ceases. At this stage, unless relief is given, the blood-pressure sinks to a level which represents irrevocable paralysis of the respiratory center. The English surgeon, regarding the respiratory center as the most sensitive to mechanical pressure and shocks, recommends that in cases in which death is imminent, in cases of intracranial pressure, artificial respiration should be immediately performed and the skull opened freely.

## HIGH SCHOOL ATHLETICS

The Journal has freely expressed the view in the past that the competitive athletics of our American colleges and universities often harbor unsuspected dangers in that they encourage overdoing on the part of the participants. No one would gainsay that systematic and even strenuous exercise may exert a most wholesome effect on the human organism. But the win-at-any-cost exertion, taxing vital organs to the very limit of their endurance, exceeding the factor of safety in physiologic functions, and sometimes carried to the breaking strain, represents a sort of unjustifiable self-sacrifice that may properly be made for one's country but is never called for to uphold the glory of one's college. The sooner it is realized that there are better tests of manliness than the ability to endure a 4-mile race in the college boat or to complete the football season in spite of acquired injuries, the more wholesome will American college life become.

Unfortunately, there is a widely manifested tendency for the pupil of the high school to ape the performances of his older brother in the college. This is shown in the introduction of Greek letter societies and social functions into the secondary schools, tending to counterbalance some of their wholesome features of social intercourse with the snobbery of exclusiveness and the deteriorating influence of late hours and tiring distractions. Even more baneful, however, is the growing custom of allowing the same sort of intense competitive sports in the high school that are the cause of complaint in respect to their dangers to the older college student.

We are glad to note a spirit of protest awakened in various parts of the United States against all the forces, social and athletic, which tend to deteriorate the American boy (or girl) at the adolescent age of the high school period. One health officer has recently made a public announcement that proper exercise in a well-equipped gymnasium, under the guidance of a trained instructor, is good for any one, but that competitive athletics, requiring most strenuous exertion.

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[5] Dixon, W. E., and Halliburton, W. D.: The Cerebrospinal Fluid, III, The General Effect of Increasing the Cerebrospinal Pressure, Jour. Physiol., 1914, xlviii, 317.

[6] Cushing, H.: Bull. Johns Hopkins Hosp., 1901, xii, No. 126; Am. Jour. Med. Sc., 1902, cxxiv, No. 3; Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1902, ix.

long and tedious training and self-denial, is positively bad for any one before full development, and that all such overacts tend to impair the keenness of the mind and interfere with school work proper, as well as to injure the body. The competitive interscholastic games which require great physical exertion and mental tension should be done away with and a good gymnasium, under the direction of one trained in physical culture, should be provided and work according to the condition and need of each pupil assigned.[1] We agree, further, that mild and well-timed athletic exercise and occasional social functions will tend to relieve the monotony of school life and invigorate body and mind; but overindulgence is likely to be detrimental.

The dangers referred to are not insignificant; they are real. Prof. C. R. Bardeen of the University of Wisconsin has pointed out, in connection with the participation in athletics in his institution, that the increasing amount of cardiovascular disease noted in this country by life-insurance companies and others makes it important for the physician to make himself acquainted with the chief causes responsible for these conditions so that he can protect his patients. Overexertion in competitive sports, especially in schoolboys, is one factor. From 5 to 10 per cent. of freshmen entering the state university have cardiac hypertrophy with dilatation attributable to athletic sports. While in most cases there is good compensation, in many there are mitral murmurs and a myocardial irritability which not only keeps these students out of college sports, but to some extent hampers their scholastic work in college. Practically all college students taking part in the major sports have hypertrophied hearts. While in many cases compensation is good, in a large number there is a myocardiac irritability, sometimes accompanied by mitral murmurs, which indicate somewhat serious lesions. In the past two years there have in addition been four cases of acute cardiac dilatation among the relatively few members of teams in the major sports to one case among the far greater number of students not members of teams. In the latter case the dilatation occurred while the student was running in the gymnasium.[2]

Criticisms of this sort are never welcomed when they contravene established customs. Yet there is an obvious contradiction in directing the energies and funds of the state toward the prevention of disease and the establishment of habits of right living in the earliest years of our public schools, only to permit their undoing at a subsequent period. School doctors and school nurses in the primary departments have come to stay for some time, at least. Why not more healthful school customs in later years?

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[1] Wright, Frank W.: A Plea for More Healthful School Customs, Bull. New Haven Board of Health, 1914, xli, No. 10.

[2] Bardeen, C. W.: The Effect of Athletic Sports on the Heart, The Journal A. M. A., Nov. 1, 1913, p. 1657.

## FOOT-AND-MOUTH DISEASE

In view of the recent outbreak of foot-and-mouth disease in the Mississippi Valley, the most extensive as yet in the United States, a brief consideration of the principal features of the disease may be of interest. It is an acute, highly infectious disease, which occurs chiefly in cattle, sheep, goats and swine, though other animals such as the horse and dog, as well as certain wild animals are attacked also, and it may affect human beings. In animals it is characterized especially by the eruption of vesicles in the mouth and on the feet, in some species more in the mouth, in others more on the feet. In cattle the incubation period averages from three to five days, whereupon a moderate fever with loss of appetite and other general symptoms sets in. In two or three days small blisters appear on the lining of the mouth, and now the fever usually subsides. At the same time one or more feet may show tenderness and swelling of the skin, soon vesicles form here also, and the animal goes lame. In the mouth the blisters may reach half an inch or more in diameter, but usually they are smaller; the contents, at first clear, become turbid, and as the covering bursts, small painful erosions are produced which either heal quite promptly or turn into ulcers that heal more slowly. Usually the milk is altered and reduced in quantity; blisters and ulcers may form on the udder. There is marked loss of weight, as the animals do not eat because of the pain. In this, the ordinary form, in which the death-rate is very small except among the young, the symptoms fade away in from ten to twenty days or so, except when complicating local secondary infections delay recovery, but there are also severe forms with extensive infection of the respiratory tract and gastro-intestinal inflammation, which frequently end in sudden death. In such severe cases ulcers are found in the stomach and intestines. In sheep and swine, lesions of the feet predominate. The disease is transmissible to the fetus in utero.

The cause of the disease is present in the contents of the vesicles, the discharges from the ulcers, the saliva, the milk, the urine and feces, but as a rule not after the tenth day. It is stated that animals having had the disease may carry the virus for months.[1] Any susceptible species may infect any other susceptible species. Infection occurs not only through direct contact, but also indirectly, as the virus retains its virulence for some little time, at least outside the body. Contamination of fodder, of stalls, of feeding and drinking troughs, of milk and milk products and of the hands and clothes of drovers serves to spread the disease, which often travels over wide stretches of country with remarkable rapidity, as shown by the present outbreak. As from 25 to 50 per cent. of the cattle exposed to infection may become sick, there results great loss from fall in the production of milk, from reduction of vitality and fecundity, and from deaths as well as on account of the measures adopted to stamp out the epizootic.

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[1] Moore: The Etiology of Infectious Diseases in Animals, 1906.

The immunity produced by an attack seems to be feeble, as animals are said to suffer sometimes more than one attack within a short time. So far no practical method of protective inoculation has been developed.

Our knowledge of the cause of foot-and-mouth disease is limited to the fact that it concerns a filterable virus, as yet invisible and incultivable. It was in 1897 that Löffler and Frosch made their classical experiment, showing that the disease is caused by a living, proliferative virus that passes filters which do not permit bacteria to go through, an experiment that has served as a model for all the subsequent work on the many other forms of filterable virus recognized since then. Foot-and-mouth virus may remain active for months if kept cool and moist, but is destroyed rapidly by drying, by heat at 60 C. (140 F.) and above, by formaldehyd and by phenol (carbolic acid). The wide range of virulence of this virus among animal species has been indicated, and as stated, the disease may affect human beings, especially children, being transmitted by milk from diseased cows (experimentally verified) and by butter and cheese made from such milk as well as through wounds and in other ways. While the course usually is favorable, an epidemic described by Siegel had a mortality of 8 per cent. The manifestations are fever, digestive disturbances and vesicular eruption on the lips, the oropharyngeal lining ("aphthous fever") and sometimes on the skin. Where there is danger of contamination of the milk with the foot-and-mouth virus, thorough pasteurization of all milk and milk products is doubly indicated.[2]

## THE ACTION OF IODIDS ON THE BLOOD-VESSELS AND HEART

Recently we commented[3] on the use of sodium as compared with potassium salts, and noted that in most cases potassium salts are given not for their potassium content but for the therapeutic effects produced by the negative or acid radical, as for instance in the case of acetates, tartrates, carbonates, bicarbonates, iodids, etc. We stated also that probably the corresponding sodium salts might prove equally and sometimes even more serviceable since the sodium ion has a less depressing action on the heart and central nervous system than has the potassium ion.

In the case of such salts as quinin arsenate[4] and ferric arsenate,[5] the reports of the Council on Pharmacy and Chemistry have emphasized that both the acid radical and the basic group are therapeutically active. Not enough of one of the constituents of these can be given without perhaps a dangerous overdose of the other constituent. In general, however, we are inclined to forget that in almost every salt the effects of both the kation or positive radical and the anion or acid radical must be considered. A new investigation of D. I. Macht[6] has an important bearing on this subject.

For some years the iodids, especially potassium iodid, have been credited with having a vasodilator or blood-pressure lowering action and have found extensive application in the treatment of arteriosclerosis. Aside from cases with a luetic basis, however, no satisfactory explanation of the supposed usefulness of the iodids in arteriosclerosis has been offered; in fact, many have doubted the value of the iodids in this condition.[7] The only experimental basis for the belief that iodids lower blood-pressure seems to have been chiefly animal experiments in which potassium iodid had been injected intravenously and in which the relative parts taken by the potassium and iodid ions were not differentiated. That the potassium ion when present in the blood even in weak concentration (0.08 per cent., for example) leads to an almost instant stoppage of the heart has been known for some time and has led to unwarranted fears of possible dangers from the oral administration of potassium salts; as a matter of fact, potassium leaves the blood so rapidly, passing to the tissues or being excreted by the kidneys that, provided the latter are efficient, there is little or no danger from the administration, by the mouth, of even very large doses of the potassium salts.[8]

Macht now reports careful experiments on the heart and blood-vessels in which the relative parts taken by the iodid radical and the other (basic) constituent of the salt were carefully differentiated. In some experiments the potassium chlorid of the nutrient fluid was replaced by potassium iodid or, if a greater concentration of iodid was desired, part of the sodium chlorid was replaced by an equivalent amount of sodium iodid. By such experiments the relative amounts of potassium, sodium, etc., remained unchanged and if the modified fluid had an action on the organs different from that of the original fluid, it was due to the presence of this iodid ion. Such experiments showed that the iodid ion instead of having a depressing action on the heart and vessels, as has been assumed, has a marked stimulating action. This stimulating action, however, is somewhat inhibited by a combination of the iodin with the proteins of the blood. The sodium ion was found to have a slightly stimulating action, whereas the depressing action of the potassium ion was confirmed.

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[2] See Miscellany, "Foot and Mouth Disease," this issue, p. 1783.

[3] Sodium versus Potassium Compounds, The Journal A. M. A., Sept. 19, 1914, p. 1034.

[4] Quinin Arsenate Refused Recognition, The Journal A. M. A., July 16, 1910, p 235.

[5] Rep. Coun. Pharm. and Chem., 1912, p. 30.

[6] Macht, D. I.: Action of Potassium and Sodium Iodids and of Iodin Ion on the Heart and Blood-Vessels, Bull. Johns Hopkins Hosp., September, 1914; abstr., The Journal A. M. A., Oct. 10, 1914, p. 1325.

[7] See for example the summary of the opinions of many prominent German clinicians as given by J. Schwalbe in the Deutsche medizinische Wochenschrift, 1914, Nos. 14 and 15.

[8] Parenthetically it may be remarked that even the oral administration of large doses of potassium salts to patients suffering from severe nephritis must be regarded as distinctly dangerous and their use in intravenous or intraspinal injections in the doses in which sodium bromid, for example, has been used might prove fatal.

The action of the iodid ion on the heart and circulation, therefore, is that of stimulation. If an iodid has an action other than this it is due to the effect of the kation (potassium, etc.) with which the iodin is combined and should be attributed to it. The same effect may be obtained when this kation is combined with anions other than iodin. If conditions are such (intravenous injections, for example) that potassium iodid causes a fall of blood-pressure, this result is due solely to the potassium ion and could be equally well obtained with other potassium salts (potassium chlorid, for example).

Such analyses of the action of common drugs will do much to clarify and simplify our materia medica. While bromid is used in the form of its potassium, sodium, ammonium and even strontium, lithium, rubidium and cesium salt, investigation will no doubt show that one of these deserves general preference when bromid action is desired. Such experiments will also emphasize the unscientific character of many hodge-podge official and proprietary mixtures in which an assortment of metallic salts of a therapeutically active acid radical are combined and from which physicians are inclined to believe that they may obtain effects far beyond those obtainable from any single salt.

## SIMPLE NITROGENOUS COMPOUNDS IN NUTRITION

Among the seemingly radical suggestions that have lately found expression in discussions on nutrition is that of the possible utilization of such simple compounds of nitrogen as urea and ammonium salts in the animal organism. Even the nitrates have been drawn into consideration in this respect. The entire subject, while by no means entirely new as a topic for experiment and speculation in physiology, has more recently provoked a lively controversy in which Abderhalden in Halle, Grafe in Heidelberg, and Underhill in New Haven — to mention only a few of the more prominent participants — have taken an active part.

At first thought, those who have not followed at close range the trend of current nutrition investigation might see in the attempt to attribute nutrient virtues to a waste product like urea a symptom of ridiculous presumption. Nowadays, however, science does not content itself with *a priori* indications or teleologic arguments. The truth needs to be demonstrated beyond the point of conjecture. To have insisted, a few years ago, on the preeminent importance of such simple protein derivatives as the amino-acids in the functions of nutrition would have seemed at that time like contending for something both improbable and contra-indicated. The day of demonstration had not yet arrived.

So it may seem now in the contemplation of the nutrient claims for simple nitrogen compounds of the sort enumerated above. There are several ways in which they may be assumed to behave in the organism. In the first and foremost instance they may serve as a pabulum for the alimentary bacteria, which in turn are destroyed in large numbers in the digestive tract and can furnish a yield of perfect protein synthesized from simple compounds like urea and the salts of ammonia. It is generally admitted that in certain species like the herbivora, in which bacterial processes have a free play in the gastro-intestinal tube, the contribution of dead bacterial bodies to the intake is by no means negligible. Small animals have actually been kept in nitrogenous equilibrium on a diet containing bacterial bodies or yeast cells as the sole source of protein in the food. The factor here referred to is one that is never easy to exclude in any discussion of nutritive values; yet it is not commonly taken into consideration.

The feeding of urea or ammonium salts might lead to an apparent nutritive advantage by depressing or inhibiting the usual breaking down of nitrogenous compounds in metabolism. This would accord with the belief that the products of cellular waste themselves tend to impede cellular metabolism. Now that the synthesis of amino-acids from ammonia and carbohydrates has been accomplished directly or indirectly in the laboratory, the possibility of a similar reaction in the body must be reckoned with. Finally, the alleged utilization of urea and other simple nitrogen derivatives may merely be an instance of unsuspected retention and delayed excretion. Even so soluble a salt as an iodid may not be entirely recovered in the excreta until several days after its administration has been stopped. Surely no one would look on the temporary deficit as an indication of nutritive "utilization" of the foreign salt.

There are, then, various alternative possibilities that must be reckoned with before we can proclaim unsuspected nutritive virtues for urea, nitrates, or other comparable simple derivatives. Foremost, undoubtedly, is the bacterial factor already described. This can be excluded only by avoiding the use of the alimentary tract itself. This prospect, involving prolonged parenteral nutrition, was not promising even in an experimental way until Henriques succeeded in devising an apparently effective mode of intravenous nutrition.[1] By this technic the Danish investigators have introduced urea and ammonium salts, with avoidance of the digestive tract, as the sole source of

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1. Henriques, V., and Anderson, A. C.: Ztschr. f. physiol. Chem., 1913, lxxxviii, 357. See also Intravenous Nutrition, editorial, The Journal A. M. A., Jan. 31, 1914, p. 385.

nitrogen.[2] The outcome has been clearly negative in failing to indicate any permanent retention of nitrogen "fed" in this form and manner. One is constrained to believe, for the present, that the reputed success of others in feeding urea, etc., as sources of available nitrogen has been due to unsuspected temporary retentions or to the inevitable participation of bacteria in converting useless compounds of nitrogen into usable forms.

## *Current Comment*

### TEACHING SEX HYGIENE IN SCHOOLS

There has been considerable discussion on the question of teaching sex hygiene in the public schools. The advantage of increased knowledge for the children, as well as the practical difficulties of presenting this subject properly, have been commented on from various points of view. There has been little effort, however, to secure an expression of opinion from those vitally interested, namely, the parents and the children themselves. For this reason, the report of the Bureau of Research of the Upper Peninsula (Michigan) Educational Association, recently issued, is of interest. This bureau was organized to make a direct study of the schools of the Upper Peninsula of Michigan, their equipment and their methods and material for study. It is at present endeavoring to discover the points of strength and weakness of the schools, as judged by the parents and others interested in them. The report just issued is divided into four sections: moral education, physical education, industrial education and general. The basis for the report is the individual opinions of 317 representative citizens. Under the first head, among many other subjects discussed, the question was asked of parents, "Do you believe that sex hygiene should be taught in the schools?" To this question, ninety-two replied "yes," while 175 opposed such instruction; six made qualified replies. Commenting on these answers, the report says that the replies indicate that patrons of schools are not ready as yet to have sex hygiene taught in the schools. "Doubtless but few teachers are qualified to teach the subject well," says the report, "and to teach it poorly would be much worse than not to teach it at all." The bureau also endeavored to get the point of view of the pupil. At Houghton, two lectures on sex hygiene were given to boys and two to girls. Some time after the lectures, the boys and girls were segregated and were asked: "Did you learn anything of value at the last lecture on sex hygiene?" Ninety boys stated that they had learned something of value and eight that they had not, while fifty-four girls regarded the lecture as of value and twenty did not. When asked: "Do you favor another lecture?" eighty-five boys were in favor of further instruction and thirteen were opposed to it, while forty-four girls were in favor and thirty were opposed to the proposition. This report emphasizes the points which have been previously brought out; until we know what should be taught pupils at different ages, until we have formulated a definite graded course of instruction and have trained teachers to give this instruction, the proposition for teaching sex hygiene in the public schools should be approached with the utmost caution. In no case should an effort be made to force such instruction on the pupils or on the community. When the parents of children are convinced, by a large majority, of the advisability of such instruction, it should be provided. Premature efforts to place such subjects on the school curriculum in advance of public opinion can only cause misunderstanding and trouble.

### GAS-PIPE THERAPY GETS A SETBACK

Since the days of Perkin's Metallic Tractors, no medical fraud of the drugless type has enjoyed greater vogue or swindled more people than those devices we have facetiously referred to under the term "Gas-Pipe Therapy." There are many of the gas-pipe frauds on the market. The original was the "Electropoise," devised by one Hercules Sanche, who later elaborated his device and sold it under the name "Oxydonor," having in the meantime persuaded a not-too-exacting patent office to grant him patent rights on the egregious humbug. So profitable, apparently, did the sale of this piece of fakishness prove that many imitations appeared. First, the "Oxygenor"; then, the "Oxygenator," the latter having its name changed later to the "Oxypathor." The "Oxytonor" and the "Oxybon" were still later modifications of the same scheme. Of these the Oxypathor (Oxygenator) has been the most extensively and elaborately exploited, and the extent to which the public has been defrauded has brought forth protests from various sources. The device itself consists essentially of a piece of nickel-plated tubing filled with inert material, sealed and having attached to each end a flexible cord with a garter-like attachment at the free ends. One garter is to be attached to the wrist and the other to the ankle of the person using the Oxypathor (Oxygenator). The gas-pipe itself is put in a bowl of cold water. According to the claims of the exploiters, the patient to whom the Oxypathor (Oxygenator) is attached, is made to absorb large quantities of oxygen through the skin. So absurdly fraudulent is the Oxypathor that the public in various parts of the world has been warned against it. The Australian government has debarred the thing from the Australian continent, while the committee appointed by the British Parliament to investigate medical frauds reported:

> "Much fraud is also successfully practiced by the advertisement and sale of appliances, as alleged cures for many ailments . . . appliances alleged to supply oxygen (otherwise than by inspiration) such as the 'Oxydonor' and 'Oxygenator' are, of course, deliberate swindles, for the makers cannot be supposed to be as ignorant of chemistry and therapy as their victims."

Now comes word from Vermont that the United States government has successfully prosecuted E. L.

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[2] Henriques, V., and Anderson, A. C.: Ueber Stickstoffretentionen bei Zufuhr von Ammoniaksalzen oder Harnstoff. Durch Versuche mit permanent-intravenöser Injektion untersucht, Ztschr. f. physiol. Chem., 1914, xcii, 21.

Moses of Buffalo, N. Y., general manager of the Oxypathor concern. The trial, which was held in Rutland, Vermont, lasted over a week, and on Nov. 7, 1914, Moses was found guilty of using the mails to defraud. The scheme has been a profitable one. At the trial it was brought out that the Oxypathor costs $1.23; it sold for $35. Aside from the element of suggestion inseparable from the use of a mysterious, expensive-appearing and imposing-looking device, purchasers of the Oxypathor could have obtained just as valuable curative effects from an empty tomato tin with a string tied to it. As a therapeutic agent, the Oxypathor belongs in the same class as the left hind foot of a rabbit caught in a graveyard in the dark of the moon. Yet at the trial the exploiters of the Oxypathor were able to produce witnesses to testify to the curative value of their gas-pipe — and a few of the witnesses called themselves doctors! This exhibition of credulity — or, in the case of physicians, worse — is but another proof of the inherent worthlessness of testimonials. Imposing and convincing testimony would have been forthcoming long ago to prove the therapeutic efficiency of the rabbit's foot if some one had an exclusive proprietary interest in the sale of rabbit's feet.

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# *Medical News*

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

## DISTRICT OF COLUMBIA

**Personal.**—Dr. William Browne Carr, Washington, has been appointed deputy coroner of the District, succeeding Dr. Charles S. White, resigned, to take effect, December 1.

**Preparing Red Cross Hospital Site.**—The demolishing of buildings on the Seventeenth Street site for the American Red Cross Hospital has commenced. The building to be erected is to be a national memorial to the women of the Civil War.

**Examination of Police Surgeons.**—On November 17 examinations will be held to form a list of eligibles for an appointment to the vacancy in the Board of Police Surgeons caused by the resignation of Dr. Edmund Barry, Washington, and the vacancy in the corps of medical inspectors in schools, caused by the resignation of Dr. Wilfred M. Barton. The health department announces that all who pass this examination are eligible for appointment as third assistant resident physicians at the Asylum Hospital and by law will advance after appointment one grade every four months, progressing through the Asylum Hospital, Home for the Aged and Infirm and the Tuberculosis Hospital. They then become eligible for appointment as resident physicians to the poor and later may be appointed inspectors of schools and then members of the Board of Police Surgeons.

## FLORIDA

**State Board News.**—Dr. Joseph Y. Porter, Jacksonville, State Health Officer, has established a branch office at St. Augustine, with Dr. Maurice E. Heck in charge.——The State Board of Health is expending $20,000 for the erection of a laboratory in Jacksonville. The board has established a bacteriologic laboratory in the Hirschberg Building, Tallahassee.

**Southern Health Exhibit.**—Preliminary arrangements for the Southern Health Exhibit, to be held in Jacksonville in connection with the convention of the American Public Health Association the end of November and the first few days of December, are practically completed. Most of the larger cities of the South have arranged for their exhibits, and will furnish statistics and evidence of an educational nature to show the progress of health conditions in each community.

**Hospital Corner-Stone Laid.**—The corner-stone of the Pensacola Hospital was laid with fitting ceremonies, October 11. The building will cost about $400,000, will be five stories in height, with a frontage of 212 feet and a depth of 187 feet, and will contain accommodations for 100 patients.——The Escambia County Medical Society gave a dinner to the Sisters of Charity at San Carlos Hospital, San Carlos, after the ceremonies, at which the Hon. W. A. Blount acted as toastmaster.

## ILLINOIS

**Meeting of the Federation of Charities.**—At the meeting of the Illinois State Conference of Charities and Correction held at La Salle, October 24-28, Dr. George T. Palmer of Springfield was elected president. Danville was selected as the place for the next meeting.

**Meeting of Illinois State Tuberculosis Association.**—At the meeting of the Illinois State Association for the Prevention of Tuberculosis at La Salle, October 28, the attitude of Governor Dunne in placing the embargo against the importation of tuberculous cattle in Illinois was commended and the association pledged itself to the repeal of the Shurtleff law, which deprives cities of the right to require the tuberculin testing of dairy cattle. The following officers were elected: president, Dr. George T. Palmer, Springfield; vice-president, Dr. Charles W. Lillie, East St. Louis, and Dr. Samuel Dodds, Cairo; secretary, James Minnick, Chicago, reelected.

### Chicago

**German War Dinner.**—The German Medical Society held a "War Dinner" at the Hotel LaSalle, October 24, at which Dr. Maximilian Herzog narrated his experiences in his recent trip to the war zone, and Dr. Paul Carus made an eloquent plea for peace.

**Appreciation of Service.**—At a largely attended dinner at the Sherman Hotel, Chicago, November 9, the Chicago Pathological Society presented Dr. George Howitt Weaver with an appropriate testimonial of its appreciation of his efficient services as secretary of the society for twenty consecutive years. Short addresses were made by Dr. J. B. Herrick, Dr. W. E. Quine and Dr. L. Hektoen; Dr. Weaver responded.

**Lying-In Hospital Opens Pavilion.**—The recently completed Mother's Aid Pavilion of the Chicago Lying-In Hospital was opened for inspection October 30, when a reception was tendered by the directors to nurses and physicians of Chicago. The pavilion is a four-story brick building constructed at a cost of $85,000 and has accommodations for thirty patients, one-third of whom will be charity cases. The hospital was opened to the public November 3.

## INDIANA

**Antituberculosis Society Organized.**—Clark County Society for the Study and Prevention of Tuberculosis has been organized at Jeffersonville. The society will control the funds raised by the sale of Red Cross seals and expects to institute public nursing and medical inspection of schoolchildren.

**Malpractice Suits Decided in Physicians' Favor.**—In the malpractice suit brought by Harold Shana, Glenwood, for $15,000 against Drs. Hugh H. Elliott and Eli John Q. Paxton, both of Rushville, in which the plaintiff alleged that he had been treated for rheumatism when he really had a fracture, it was proved that the physicians had treated him for fracture and the suit was consequently decided in favor of the physicians. The father of the plaintiff sued the same physician a few weeks ago for $5,000 damages and the suit was decided against him.

**Personal.**—Major M. August W. Shockley, M. C., U. S. A., has been assigned as inspector and director of the National Guard of Indiana, Ohio, Kentucky, Michigan and West Virginia.——Dr. Charles A. Pfafflin, Indianapolis, has returned from abroad.——Dr. Marshall T. Shively, Marion, has resigned as a member of the board of public works on account of ill health.——Dr. Onis O. Melton, Hammond, who was operated on at the Augustina Hospital, Chicago, recently, has returned home convalescent.——Dr. Oscar E. McWilliams, Anderson, is reported to be ill at his home with pneumonia.

## IOWA

**Milk Laboratory Ready.**—City Physician E. D. Middleton of Davenport announced on November 3, that the milk-testing equipment, recently ordered, had been installed and was ready for the use of the public.

## KANSAS

**Personal.**—Dr. H. Michener, Wichita, as the result of Roentgen-ray burns, had his ring finger amputated October 21. This is the second operation and it is probable that another finger will have to be removed.——Dr. Thomas C. Long, Independence, was seriously injured in an automobile accident near Independence, October 29.——Dr. John W. Hains, Kansas City, suffered a compound fracture of the right leg and internal injuries by the overturning of his automobile near Vance, November 2.

## MARYLAND

**Medical Librarian Appointed.**—Mrs. Ruth Briscoe has been appointed librarian of the medical department of the University of Maryland, Baltimore. The library now contains more than 11,000 volumes.

**Stamp Vending Profits to Tuberculosis Sufferers.**—The Maryland Association for the Prevention and Relief of Tuberculosis, in order to raise funds for the support of its work, has adopted the sale of stamps by an automatic stamp vending machine, in which two 2-cent stamps are sold for 5 cents, the extra cent going to the relief fund of the association.

**Personal.**—Dr. John F. Spearman, formerly of Baltimore, is on duty with the German forces near Strasburg.——Dr. Veader N. Leonard, Baltimore, who left on the first Red Cross expedition, is on duty at a 300-bed war hospital at Paignton, New Devonshire.——Dr. Eleanor B. Wolf, Baltimore, has sailed for India where she will be a member of the medical staff of the Guntur Hospital.——Dr. Henry Key is reported to be seriously ill with double pneumonia at the Hotel Altamont, Baltimore.

**Semi-Annual Meeting of Faculty.**—The semi-annual meeting of the Medico-Chirurgical Faculty of Maryland was held October 28 and 29 at Upper Marlboro and addresses were made by Dr. Randolph Winslow, Baltimore, president of the faculty, and Dr. Henry B. McDonnell, College Park, president of the Prince Georges' County Medical Society. A tablet was erected to Dr. William Beans, one of the founders and organizers of the faculty. Public meetings and a health exhibit were held under the auspices of the public instruction committee of the faculty during the meeting.

**Sanatorium Opened.**—The Pine Bluff Sanatorium near Salisbury, Wicomico County, a state institution for the treatment of advanced and chronic tuberculosis cases, has been formally opened. Dr. George W. Todd is superintendent of the institution and a special feature of the treatment is the single apartment system for patients. The institution can now accommodate forty patients, but within the next year will double its capacity. Indigent persons suffering from tuberculosis are admitted to the institution without charge on certificate of a reputable practitioner.

**Hopkins Physicians Honor Their Dead.**—At the twenty-fifth anniversary of the Johns Hopkins Medical School, tablets set in the walls of the hospital were dedicated to the honored dead. One of these tablets was in memory of Dr. John Hewetson who was assistant resident physician at the hospital from 1890 to 1894. Another in the lobby of the main hospital building is inscribed with the name of the late Dr. D. C. Gilman, first president of the university, with that of Dr. James W. Lazear of yellow fever fame and with that of Dr. Rupert Norton who died a short time ago while assistant superintendent of the institution.

## MASSACHUSETTS

**Free Mental Clinics.**—Members of the staff of the Northampton and Monson state hospitals will hold a free clinic at the Springfield Academy of Medicine, Wednesday afternoons from 2 to 5 o'clock, at which they will see persons suffering from nervous disorders, worry, anxiety, mental disorders, incipient or fully established mental diseases or epilepsy.

**Mental Hygiene Society Opens Office.**—The Massachusetts Society for Mental Hygiene has opened an office at Room 313, Ford Building, 15 Ashburton Place, Boston. The officers of the society are: the Hon. Harvey H. Baker, Boston, president; Dr. Walter E. Fernald, Waverly, vice-president; Dr. Charles E. Thompson, Gardner, secretary; John Koren, Boston, treasurer, and Dr. Frankwood E. Williams, formerly of Ann Arbor, Mich., first assistant physician at the Psychopathic Hospital, Boston, has been appointed executive secretary.

**Hospitals for the Insane to Keep Physicians on the Premises Constantly.**—The Massachusetts State Board of Insanity has voted that each private licensed hospital under the supervision of the board having five or more committed patients, beginning October 1, shall have a physician on the premises constantly, and that private licensed hospitals having less than five patients, committed or not, shall, from the same day, have a resident physician who shall see each patient at least once every day; also that no private hospital shall keep mental patients on the third floor of any building without special permission in writing from the State Board of Insanity.

**Personal.**—A banquet was given to Dr. Charles F. McCaffrey, Somerville, recently appointed medical examiner, by citizens of that city and after the banquet a fur coat was presented to Dr. McCaffrey on behalf of those present.——Dr. Allen J. McLaughlin, U. S. P. H. S., assumed the duties of his office as health commissioner of Massachusetts, November 2.——Drs. Ernest P. Miller and Bernard W. Carey, Fitchburg, have returned from abroad.——Dr. Theodore S. Bacon, Springfield, has resigned as associate district medical examiner.——Dr. Karl R. Bailey has been appointed bacteriologist to the Boston Health Department.——Dr. Henry P. Walcott, Boston, has been reappointed chairman of the Metropolitan Water and Sewerage Board.——Dr. Augustus L. Chase, Randolph, has been reappointed a member of the Board of Registration in Medicine.

## MISSISSIPPI

**Special Sanitary Officer Wanted.**—As the result of the propaganda of the Pure Milk Committee of Forrest County, efforts are being made to secure a full-time health officer for the county at a salary of $1,800 per year.

**Personal.**—Dr. Walter H. Rowan, who resigned as State Sanitary Inspector, to take effect November 15, was presented with a gold watch fob by the members of the Mississippi Public Health Association at its meeting in Jackson, October 28. Dr. Rowan has been appointed chief sanitary officer of the Republic of Costa Rica, and will also work under the auspices of the Rockefeller Foundation.——Dr. Willis Walley, Richton, has been appointed state sanitary inspector in place of Dr. Rowan.

## MISSOURI

**Personal.**—Dr. Daniel R. Hill, commissioner of health and sanitation of Joplin, has been chosen chairman of the Joplin Board of Health, and Dr. Alonzo L. Carpenter, city physician, has been elected secretary.——Dr. William Boyd Hight, Queen City, was seriously injured by the overturning of his automobile, October 19.

### St. Louis

**Appointments of City Hospital.**—Director of Public Welfare Tolkacz has announced 133 appointments on the visiting staff of the St. Louis City Hospital and municipal institutions, October 30. The appointments are divided into three classes: the first is composed of the nominees by the Washington University; the second nominees by St. Louis University, and the third nominees by the National University and appointments without regard to university connection.

**Hospital Dedication.**—The Barnes Hospital, erected and equipped under the terms of the will of the late Robert A. Barnes, who bequeathed $1,000,000 for its purpose, the balance of his estate being held as an endowment, was dedicated with impressive ceremonies, October 27. The dedicatory address was made by Bishop Hendricks of the Methodist Episcopal Church, South, who also unveiled a bronze bust of Robert A. Barnes. Washington University, with which the hospital is affiliated, was represented by its president and by Dr. George Dock, medical director.

## NEW JERSEY

**Personal.**—Dr. Alonzo L. Leach has been elected president and Dr. Virgil M. D. Marcy, Jr., health inspector of the Cape May Board of Health.

## NEW YORK

**Medical Clubhouse Opened.**—The Rochester Medical Society opened its new clubhouse for public inspection, November 4, and held an informal reception from 4 in the afternoon until 10 in the evening. The building is in colonial style and accommodates a medical library, a dining-room, an assembly room for the society and one for the Blackwell Medical Society. The property was purchased in June for $35,000 and the building has been remodeled and fitted for its present uses.

**Quarantine Against Foot-and-Mouth Disease.**—An order quarantining New York state against foot-and-mouth disease was issued on November 7 by the commissioner of agriculture, to become effective November 9. Another order prohibits the transportation of cattle from Canada into this state and another will forbid the feeding of skimmed milk and whey to calves and pigs in districts in which the disease exists. The quarantine will mean that there can be no movement of animals from one county to another until the animals have been inspected and a permit issued.

**Health Exhibits at State Fair.**—During August and September the State Department of Health had exhibits at fifty-three county fairs and 575,000 people had the opportunity of seeing them. In addition to these fairs the exhibits have been shown at the state fair, Syracuse and the Rochester Industrial Exposition, which have a combined attendance of 750,000. Five child welfare and three rural sanitation exhibits have been used at these fairs and the routes have extended from the St. Lawrence to Rockland county and as far west as Chautaqua and Niagara counties. The interest in the child welfare campaign has been extended to the county fairs and many more requests for the exhibits were made than could be granted.

**Personal.**—A reception was given at the Adirondack Cottage Sanatorium, Saranac Lake, October 28, for Dr. and Mrs. Francis B. Trudeau, Dr. and Mrs. M. Lawrason Brown, and Dr. and Mrs. Frederick H. C. Heise.——Dr. Regina Flood Keyes, Buffalo, sailed from New York, October 31, to join the staff of the American Ambulance Hospital, Paris.——Dr. Charles C. Kimball has been appointed a member of the board of health of Watertown, vice Dr. Olmsby O. Stowell, resigned after serving as a member of the board for fourteen years and as its president for seven years.——Dr. John L. Heffron, dean of the College of Medicine of Syracuse University, has been appointed a member of the advisory medical council of the state university for a term of five years.——Dr. Frederick Luke Classen has been appointed attending physician in connection with the state insurance fund of the compensation department with office at Albany.

### New York City

**New Clinic for Cripples Opened.**—The new dispensary in connection with the Hospital for Deformities and Joint Diseases, of which Dr. Henry W. Frauenthal is surgeon in chief, was dedicated on November 3. The new dispensary is a six-story building which with its site cost $130,000, of which amount all but about $10,000 has been paid. A gift of $1,000 from the Young Ladies' and Gentlemen's League was announced at the dedication. Among those who made addresses on this occasion were Dr. Abraham Jacobi and Dr. Katherine Davis.

**Gift to University.**—A gift of $113,750 from William K. Vanderbilt has enabled Columbia University to take title to the north half of the block bounded by 116th and 117th streets, Amsterdam Avenue and Morningside Drive. This property was acquired as a site for the new medical school, but the amalgamation of the College of Physicians and Surgeons and the Presbyterian Hospital has so modified the plans of the medical school that it has been decided to await further developments. The site is now occupied by the temporary building which houses the Crocker Research Laboratory.

**Revising the Sanitary Code.**—A letter has been addressed by the commissioner of health to each member of the advisory council and the medical advisory board announcing that a general revision of the sanitary code has been undertaken, with the purpose of bringing the code into conformity with the great body of municipal ordinances recently remodeled by the codification committee of the board of aldermen. It is pointed out that this occasion affords an opportunity for improving the code by the redrafting of existing sections, by the omission of superfluous contents, and by the inclusion of desirable new matter.

**Society for Clinical Study.**—The annual meeting of "The Society for the Advancement of Clinical Study" of New York City, will be held at the Academy of Medicine, 17 West Forty-Third Street, on Wednesday afternoon, November 18, at 5 p. m. This society, organized for the purpose of maintaining a bureau of information, will furnish to resident and visiting physicians definite information regarding the clinical facilities of the hospitals and laboratories of the city of New York. A bulletin board has been installed at the Academy of Medicine in charge of a special clerk, and on this all hospital clinics, both medical and surgical, are posted daily.

**New Appointments at Columbia University.**—It has been announced that clinical instruction for the medical students of the College of Physicians and Surgeons is hereafter to be provided at the Montefiore Home and to carry on this instruction the following appointments have been made: Dr. Siegfried Wachsmann, Berlin, professor of clinical medicine; Drs. George L. LaPorte and Simon Philip Goodhart, assistant professors of clinical medicine; instructors in laryngology, Dr. Arthur P. Goll and Dr. John Leshure. Dr. Warfield T. Longcope was appointed to serve as a member on the board of managers of the George Crocker Special Research Fund.

**Enforcing the New Milk Regulations.**—During September eighty dairies were excluded from business in this city for failure to comply with the minimum requirements for the production of Grade "C" milk. Shipments from four creameries were ordered degraded from Grade "B" to Grade "C," as the bacterial content of the milk shipped from two of these creameries was found to be continually excessive, and the other two were ordered degraded because of improper pasteurizing apparatus. Samples for bacterial examination were taken at forty-four pasteurizing stations during the month. Their examination showed that the process of pasteurization was conducted in a very satisfactory manner, and that in all but nine the regulations were being closely followed. Eleven new pasteurizing plants have been approved during the month. Nearly 24,000 specimens of milk as offered for sale in the city were examined and of this number only sixty-three were found to be above the maximum temperature permitted by the department's regulations. In addition 579 samples of raw milk were taken and on chemical analysis ninety-nine were found to be below the standard.

**Personal.**—Dr. H. McDonald Peggs has gone to Europe to make a reconnoissance in the war zone for the British Imperial Club. He goes first to England and then to the front to learn what surgeons, nurses and supplies are needed. The club will send what is recommended. Dr. Peggs then expects to work in the British hospital corps.——Dr. John Ravenswood Hicks, New Brighton, has accepted Dr. Hermann M. Biggs' request to help organize local health work on such lines as promise a maximum return for a given amount of money expended. Dr. Biggs believes that before such an adjustment can be effected it will be necessary to secure some uniformity in health department accounting, so that the expenditures for various purposes in various communities may be fairly compared.——Dr. E. C. Baldwin of Ft. Wadsworth, bacteriologist and director of the old laboratory at the Quarantine Station, has resigned in favor of Dr. Oscar Teague, recently of Cornell.——Dr. William E. West was seriously injured in a collision between his touring car and an Erie train at a grade crossing near West Haverstraw, N. Y., November 2.——Dr. John Herman Branth and family narrowly escaped death in the burning of his gasoline launch in the Hudson River, October 19.

## OHIO

**Small-Pox on Ore Steamer.**—The steamer *William P. Palmer* left Conneaut on October 17 for Duluth. One of the crew left behind at Conneaut developed small-pox the same day. The remainder of the crew were vaccinated at Duluth and the cabin in which the patient had slept was disinfected. On the return of the steamer to Conneaut, October 25, she was placed in the hands of the State Board of Health by her owners, the Pittsburgh Steamship Company. Permission was given to unload her cargo. The crew was then revaccinated and the steamer laid up at the dock with sanitary policemen to prevent the crew from leaving. No further cases of small-pox have developed and the period of quarantine expires shortly.

**Conference of State with Local Boards of Health.**—The fortieth conference of the State Board of Health with representatives of local boards of health was held in Cincinnati on Oct. 22-23, 1914. The attendance at the three sessions averaged about 250. The first session was devoted to a discussion on rural hygiene. Mr. John W. Hill, president of the state board, spoke of measures to prevent stream pollution. The chief engineer dealt with public improvements in villages from the standpoint of the sanitarian, and Dr. Paterson and Miss Britton discussed various phases of public health nursing. The evening session was devoted to illustrated lectures by Drs. Emery R. Hayhurst and Frank G. Boudreau, Columbus, on occupational diseases and communicable diseases, respectively. The third and final session was devoted to a discussion of model rules and regulations for villages and townships, rural school sanitation, and the relation of the rural health officer to his city brother. Dr. Eugene F. McCampbell, secretary and executive officer of the board, brought the session to a close by his discussion of proposed public health legislation. The most important measure he discussed was that dividing the state in large health units, each under the care of a full-time trained health officer.

### Cincinnati

**Work Cure for Convalescents.**—The Cincinnati Hospital Board has adopted the work cure for convalescents and work rooms will be established as soon as the institution is opened. Among the work to be inagurated will be basket weaving and rug making.

**Personal.**—Dr. Arthur C. Bachmeyer, superintendent of the Municipal Tuberculosis Sanatorium, has been appointed superintendent of the Cincinnati General Hospital, succeeding Dr. Charles F. Sanborn, resigned.——Dr. Walter E. List retains his post as assistant superintendent of the hospital and Dr. Harry Freudenberger has been appointed assistant in charge of the Tuberculosis Sanatorium.

**Holmes Honored by Staff.**—At a meeting of the staff of the Cincinnati General Hospital, October 29, resolutions were unanimously adopted approving of the new Cincinnati General Hospital and recognizing the faithfulness, efficiency and self-sacrificing devotion of Dr. Christian R. Holmes, "the one man chiefly instrumental in bringing the construction of the institution to a successful conclusion."

**New Hospital Plans.**—In accordance with the plans of the mayor and Dr. Christian R. Holmes, safety director, the Tuberculosis Sanatorium and General Hospital will be placed under one head who will receive a salary of $5,000 a year. Each hospital will have an assistant superintendent with a salary of $2,000 a year and the payroll of the General Hospital will amount to about $150,000. It is expected that the hospital will be ready for opening January 1.

## PENNSYLVANIA

**County Medical Society Building.**—Plans have been completed for the new building of the Luzerne County Medical Society, and work has already begun. It is a fireproof structure of brick and stone, and will cost about $20,000.

**Personal.**—Dr. Robert G. Boak, Newcastle, was seriously injured in a collision between his automobile and the upright supports of a railroad crossing.——Dr. William D. Danner, Glenville, who was operated on October 10 at the West Side Sanitarium, York, returned home convalescent a week later.——Dr. Henry J. Benz has succeeded Dr. Henry B. Burns as superintendent of the Bureau of Child Welfare of Pittsburgh.——Dr. Harry W. Salus, Johnstown, has been appointed state medical inspector for Cambria County in the Department of Labor and Industry.

**Scarlet Fever, Diphtheria and Typhoid.**—Between October 1 and 29, 241 cases of scarlet fever were reported in Pittsburgh. Twenty-seven cases of virulent scarlet fever with three deaths are reported from Donora, Washington County, and twenty-five cases from Blue Ball, Lancaster County. Schools have been closed at Confluence, Somerset County, and New Florence, Westmoreland County, on account of scarlet fever. In Pittsburgh, 120 cases of diphtheria were under quarantine October 29. The Pittsburgh Department of Public Health has been distributing antitoxin at low prices. Since the first of the year, 23,718,000 units of antitoxin have been distributed at a cost of almost $10,000. In Monessen, Westmoreland County, fifty-nine cases of typhoid were reported October 29.

### Philadelphia

**Society Anniversary.**—The Philadelphia Neurological Society announces that it will celebrate the thirtieth anniversary of its foundation by holding a special scientific meeting on November 27, followed by a banquet on November 28.

**Meat Laws Affected.**—Several new regulations relative to the sale of meats have recently become effective, the most important of which is the rule which governs the sale of meat of animals affected with disease. The parts not affected may be sold only after a process of sterilization and cooking and canning and marked "Second class meat, sterilized."

**The Alvarenga Prize: Correction.**—In a notice sent by the College of Physicians and Surgeons of Philadelphia regarding the award of the Alvarenga prize, which appeared in The Journal of November 7, page 1680, the title of the essay for which Dr. Herman B. Sheffield was awarded the prize, should have been "Idiocy and Allied Mental Deficiencies in Infancy and Early Childhood."

**Stockyards Under Quarantine.**—As a preventative measure against the spread of foot-and-mouth disease among cattle, a quarantine was placed November 7 on the stockyards. While the disease had not appeared among the cattle there, the animals on hand came from Chicago and other infected districts. On November 9 inspectors made a canvass of all farms within a 10-mile radius of the city.

**Police Orders to Aid Sick.**—Among the new orders issued to the police are regulations requiring that women accompanied by babies or small children be sent in patrol wagons to the city hall or county prison and not in police vans, that a physician accompany a woman removed from her home to the police station and a hospital in a patrol wagon and that a police matron be sent with abandoned infants who are removed to the Philadelphia Hospital.

**Personal.**—A smoker was given by the Philadelphia County Medical Society at the University Club on October 28, in honor of Dr. John B. Deaver.——On the occasion of the seventy-eighth birthday of Dr. Daniel Baugh, October 22, the medical and legal professions of the city joined in doing honor to the founder of the Daniel Baugh Institution of Anatomy. Practically the entire faculty of the Jefferson Medical College and the entire staff of the Jefferson Hospital were present.——Dr. Charles J. Hatfield has been elected executive secretary of the National Association for the Study and Prevention of Tuberculosis to succeed Dr. Livingston Farrand, New York, resigned.——Dr. Frank H. Hustead has been elected surgeon-general to the Association of Soldiers of Foreign Service of the United States.——Dr. William Penn Vail was elected by the Philadelphia County Medical Society to fill the unexpired term of assistant secretary of the board of directors, vice Dr. Arthur H. Hopkins, resigned.

## RHODE ISLAND

**Dr. Peters' Work Recognized.**—In recognition of the twenty-five years of service as superintendent of the Rhode Island Hospital of Dr. John M. Peters, nearly two hundred physicians of the state gathered at the Turks' Head Club, Providence, October 28, at a dinner in honor of Dr. Peters. Dr. G. Alder Blumer, superintendent of Butler Hospital, officiated as toastmaster. Addresses were made by Dr. Herbert B. Howard, superintendent of the Peter Bent Brigham Hospital, Boston; Hon. Charles C. Mumford, who spoke in behalf of the trustees and the general community, and Dr. Jacob C. Rutherford, who on behalf of the medical profession of the state, presented Dr. Peters with a gold watch and chain.

## VIRGINIA

**Personal.**—The home of Dr. Samuel H. Price, Montvale, was destroyed by fire, October 16, with a loss of about $8,000, partially covered by insurance.——Former President S. C. Mitchell of the Medical College of Virginia, Richmond, delivered the principal address at the anniversary of the surrender of Yorktown, October 20.

**Tuberculosis Camp Without Funds.**—The management of the Pine Camp Tuberculosis Hospital announces that unless the city of Richmond takes over the management of the institution, it will be necessary to close it this month, and the thirty-six patients in an advanced state of tuberculosis will either be left destitute or must be cared for by some other charity.

**Alumni Association Organized.**—A University of Virginia Alumni Association has been recently organized to bring together the alumni of the university and to further the interests of the school in the South. The following officers have been elected: Dr. Hugh H. Young, Baltimore, president; Dr. John Staige Davis, University, vice-president; Dr. Seale Harris, Mobile, Ala., secretary; Dr. Thomas V. Williamson, Norfolk, treasurer.

**Malarial Survey of the State.**—Surgeon Rudolph H. von Ezdorf, U. S. Public Health Service, has completed a malarial survey of Virginia, and reports that he has located breeding places of the malarial mosquito and has taken steps toward their eradication. The next step of the work is the determination of how many people are carrying malaria in their blood, while the third part of the work is educational. The State Board of Health proposes to do a considerable amount of educational and eradicatory work during the year.

**State Society Meeting.**—The Medical Society of Virginia held its forty-fifth annual meeting in Washington, D. C., October 27 to 29, under the presidency of Dr. Stephen Harnsberger, Catlett. Dr. Harnsberger and Surgeon-General William Crawford Gorgas, M.C., U. S. Army, were elected honorary members of the society, and the following officers were elected: president, Dr. Samuel Lile, Lynchburg; vice-presidents, Drs. Samuel B. Moore, Alexandria; Joseph T. Buxton, Newport News, and John W. Preston, Roanoke; secretary, Dr. Paulus A. Irving, Farmville (reelected); treasurer, Dr. Mark W. Peyser, Richmond (reelected); delegate to the American Medical Association, Dr. Robert C. Bryan, Richmond, and alternate, Dr. Sparrell S. Gale, Roanoke. Richmond was selected as the next meeting place.

## GENERAL

**Tri-State Physicians to Meet.**—The Tri-State Medical Association of Virginia and the Carolinas will hold its seventeenth annual meeting at Charleston, Feb. 17 and 18, 1915, under the presidency of Dr. Edward C. Register, Charlotte, N. C.

**Ohio Valley Physicians Hold Meeting.**—At the sixteenth annual meeting of the Ohio Valley Medical Association held in Evansville, Ind., November 4 and 5, the following officers were elected: president, Dr. E. Otis Smith, Cincinnati; vice-presidents, Drs. George M. Young, Evansville; William Shimer, Indianapolis, and William M. Harsha, Chicago; secretary-treasurer, Dr. Benjamin L. W. Floyd, Evansville (reelected).

**Bequests and Donations.**—The following bequests and donations have recently been announced:

The Sisters of Charity (colored), of Indianapolis, have raised nearly $10,000 for the purchase of property on which a hospital is to be erected for the exclusive use of colored people.

Jewish Hospital, Pennsylvania Institution for the Instruction of the Blind, Wills Eye Hospital, Pennsylvania Hospital, and Presbyterian Hospital, Philadelphia, each $5,000 by the will of Henry B. Palethorp.

University of Pennsylvania, $50,000; Hospital of the Protestant Episcopal Church, Philadelphia, $10,000; Children's Aid Society, Philadelphia, $10,000; and Pennsylvania Prison Society, Philadelphia, $10,000, by the will of Miss Anna M. Blanchard.

German Society, $5,000, for the endowment of a free bed in the German Hospital, by the will of William Lutz.

**First-Aid Cars.**—Dr. Matthew J. Shields, Scranton, Pa., one of the staff of the American Red Cross Aid Department, with First-Aid Car Number 3, arrived at the Terminal, Washington, D. C., November 4, and lectured on November 5 in the car to the employees of the Washington Terminal Company on "Accident Prevention and First Aid." The car was then taken to Richmond, Va., where Dr. Shields lectured, November 6. First-Aid Cars Numbers 1 and 2 are touring the United States the year round, giving free lectures to workman in shops, factories, mines, etc., on "Accident Prevention and First-Aid Methods."

**To Reduce Death in Mines.**—As the result of a report by the committee of physicians, consisting of Dr. Walter B. Cannon, Harvard University, chairman; Drs. George W. Crile, Cleveland; Joseph Erlanger, St. Louis; Dr. Yandell Henderson, Yale University, and Dr. S. J. Meltzer, Rockefeller Institute for Medical Research, recommendations have been made by the Bureau of Mines regarding methods used by miners in resuscitating fellow workmen overcome by electric shock or gases in places that cannot easily be reached by physicians. These recommendations applied equally well to individuals suffering from the effects of illuminating gas poisoning or electric shock.

**Holiday Gifts for Culion Lepers Requested.**—Dr. Victor G. Heiser, United States Director of Health in the Philippines, suggests that Americans send some little kindly token of sympathy next Christmas to the Culion lepers. Readers who wish to remember the lepers should do so at once, because it requires several weeks to reach the Culion leper station. Send prepaid parcels, checks or money orders to Mr. Fleming H. Revell, 158 Fifth Avenue, New York City, treasurer of the U. S. A. Committee, the Mission of Lepers, who has consented to receive and forward all gifts. All parcels should be securely wrapped, marked and addressed, also bearing the name of the sender.

**Red Cross Work in France.**—Following up its recent donation of $25,000 to the American Ambulance Hospital, Paris, the American Red Cross has asked Ambassador Herrick if he will receive $10,000 to be used at his discretion in furnishing surgeons, nurses, supplies, or whatever is most needed in Vierzon, Dinard, Dieppe and Pau, from which points appeals for assistance have come. It is said that there are 1,200 gravely wounded French and German soldiers in Vierzon, and at Boulogne there are 400 wounded lying on straw, with only one surgeon, an American, to attend them.——The American Red Cross arranged on November 4 to ship 5,000 heavy blankets to distressed non-combatants in Belgium.

**The Foot-and-Mouth Epizootic.**—The Chicago stockyards were closed for a ten-day period at the end of the day, November 5, by the Illinois Live Stock Commission in the attempt to check the epidemic of foot-and-mouth disease now affecting six states. No cattle will be permitted to be shipped to or from the yards. Cattle already shipped from the uninfected areas which reached the yards by 5 p. m. November 5 were to be admitted, but after that hour none were to be received until the yards and buildings had been thoroughly fumigated and disinfected and the quarantine lifted. The stockyards of Buffalo, New York and Indianapolis have been quarantined and New York, Maryland, Indiana, Michigan, Illinois, Pennsylvania, Wisconsin and Ohio and other states have also been quarantined by the federal authorities. Interstate shipments of cattle, sheep and swine are prohibited from the states now quarantined. The United States Department of Agriculture has pronounced the epidemic the most virulent and dangerous the country has ever experienced. It is probable that Congress will be asked for an appropriation to suppress the disease.

**The Small-Pox Situation in the Middle West.**—Under the policy of resistance by the Dowieite community in Zion City, Ill., to the efforts of the Illinois State Board of Health, the number of cases of small-pox in that place has increased to nearly fifty. November 3 the overseer of the community under protest consented to allow the state authorities to take charge of the situation. Dr. C. E. Crawford, medical inspector for the Illinois State Board of Health, at once instituted a rigid quarantine on the premises of all persons affected with small-pox and appointed six deputy inspectors to assist him in maintaining quarantine. He also prohibited all public gatherings, canvassing from house to house, and ordered all children under 16 years of age to remain at home. All the inhabitants who are willing are being vaccinated. Under the law the Illinois State Board of Health has no power to compel vaccination. The surrounding towns have already declared a rigid quarantine against Zion City. Some manufacturing establishments in Waukegan, Ill., have been closed down on account of the threatened spread of the disease. The number of cases at Neponset, Ill., has increased to thirty, and schools and churches have been compelled to close temporarily.——Forty cases of small-pox were reported from Whiting, Ind., November 2. The health authorities are said to have the situation in hand now. Fifty cases are reported from Cromwell, Noble County, Ind., by J. W. Moore, county health officer.——Forty-four cases of small-pox were reported in Milwaukee, Wis., October 28, and the commissioner of health believes that many cases of the disease in mild form have not been reported.——There have been six cases in Battle Creek, Mich. Cases are also reported from Allegan, Mich. Nineteen cases of mild small-pox, at first diagnosed as chicken-pox, are reported from Manistee County, Michigan, near Kaleva. Two schools have been closed and an area of 10 square miles is under quarantine. Six cases are reported from Escanaba, Mich., and nearly twenty cases from Alamo, Mich. The disease throughout the West seems to be present in a mild form.

## WAR NOTES

**Cholera in Galicia.**—It was officially announced in Vienna, November 6, that there are 256 cases of cholera in Galicia of which 126 are reported from Przemysl.

**American Surgeons Appreciated.**—A dispatch from London states that the American hospitals at Gleiwitz and Cassel are doing such satisfactory work that the government is about to request that three more American surgeons be sent to Germany.

**Aid for Non-Combatants.**—In addition to the supplies sent to Belgium, which were noted in The Journal of last week, the American National Red Cross has cabled $10,000 to Minister Van Dyke at the Hague for Belgium refugees in Holland and has also sent a number of boxes of clothing for women and children and 500 pairs of blankets.

**Mikado Gives Money for Hospital.**—Emperor Yoshihito has given $25,000 toward the foundation of St. Luke's International Hospital, Tokyo, to be conducted under the auspices of the Protestant Episcopal Church. The institution is to be the most elaborate in the far east and will cost about one-half million dollars. The substantial imperial support will, it is believed, assure the success of the enterprise.

**More Medical Aid from the United States.**—Mrs. Harry Payne Whitney sailed for Europe on the *Lusitania* November 4, with a staff of four surgeons and fifteen trained nurses to establish a field hospital in northern France. Ten motor ambulances and a large quantity of medical supplies and clothing sufficient for 3,000 men, women and children were shipped to France by Mrs. Whitney, October 31. The surgeons who accompanied Mrs. Whitney are Drs. Walton Martin, New York City, in charge of the field organization; Drs. Karl Connell and Donald Gordon, New York City; Dr. W. E. Drennan, Birmingham, Ala.

**Prize Given for Relief Work.**—The Société Médicale des Hôpitaux de Paris appointed last summer a delegate to the sixth congress of the Association of French-Speaking Physicians in North America, which was announced to be held at Quebec, August 31 to September 3. At the same time it notified the association that it would give a prize of $200 for the best paper read at the meeting. In acknowledging this courtesy the executive committee, writing August 2, expressed their appreciation but said that as the cable had just brought word that war was declared in Europe they suggested that the munificent offer for a prize be devoted instead to the relief of the wounded in the war. This has been done, the society turning over to the fund for the aid of the wounded five-fold the amount designated for the prize.

## PARIS LETTER

Paris, Oct. 22, 1914.

### Hygiene in War

At the last meeting of the Parisian section of the Association générale des hygiénistes et techniciens municipaux, Dr. Frederic Bordas, temporary professor at the Collège de France, suggested a number of ingenious devices for use in war time.

It is not always easy to procure hot water for baths, dressings or hot drinks in a temporary hospital. In the country, one may take one of those steam engines used to supply power on farms. The steam from the generator is turned with free escapement into a barrel or other water-container and in a few minutes the temperature of the water is raised to the boiling-point. This sterilized water may be used for washing wounds or for drinking. When the temporary hospital is near a factory, a jet of steam from the boiler will answer the same purpose.

To protect soldiers from the cold, the Japanese, during the war in Manchuria, used paper clothes made from rice-straw or bamboo. This paper, though proportionately expensive, gives very good results. Equally good results have been obtained from wrapping-paper rendered impermeable by being lightly greased with liquid petrolatum and used as an interlining between two layers of cloth.

The secretary of the Association des Hygiénistes et techniciens municipaux, M. Samuel Bruère, chemist of the laboratory of toxicology, recommends, for the sterilization of the soldier's drinking-water, to be done by the soldier himself, the use of: (1) 0.25 gm. tablets of calcium glycerophosphate and potassium phosphate with 7 mg. of potassium permanganate; (2) tablets of 0.5 gm. of citric acid with the precise quantity of sodium hypophosphite to reduce the excess of permanganate. Each soldier could easily be supplied with a little box or metal case containing a certain number of these tablets and thus could himself sterilize the amount of water he needs for his own use. In each liter (quart) he would drop a pink tablet (potassium permanganate) then five minutes afterward a white tablet (sodium hypophosphite). Numerous practical trials with yellow and turbid Seine water have proved that a dose of 7 mg. of potassium permanganate per liter in contact for five minutes in the presence of calcium glycerophosphate is sufficient to eliminate the colon bacillus. At the end of five minutes, the addition of the second (hypophosphite) tablet reduces the excess of permanganate in nine or ten minutes. From violet the water becomes citron yellow. A little while later it loses color. At the end of ten more minutes, the color is hardly perceptible, and it disappears completely in twenty minutes, leaving no trace of the yellowish color of the untreated water. The treatment requires altogether not more than twenty-five or thirty minutes.

### A New Military Hospital in Paris

The Grand-Palais is now used by the military health service, which has established there a hospital remarkable for the vast extent which it occupies and for its situation, one of the most attractive in Paris. The hospital was opened October 13 by Dr. Février, director of the military health service. With the aid of M. Deglane, architect of the Grand-Palais, the immense exposition galleries have been rapidly transformed into hospital wards at slight expense. The hospital has 1,200 beds and receives convalescents especially. Some wards have been furnished by the French Red Cross, others by the proprietors of some large mercantile establishments in Paris and others with material belonging to the military health service.

### The Blue Cross

Mme. Millerand, wife of the minister of war, has just accepted the presidency of a new society, the Blue Cross, organized on the model of the British Blue Cross, for the purpose of collecting from the battlefields and caring for wounded horses from which more service may be expected and which would otherwise die slowly of their wounds and of hunger where they have fallen. Eight Blue Cross ambulances are already operating at the front. They have been able to save many horses, a number of which have gone back to their regiments.

### Measures Against Infectious Diseases in Algeria

Exceptional measures have just been decreed against epidemic and infectious diseases in Algeria. Not only physicians, but also heads of families and lodgers are bound to report to the mayor any case of infectious disease coming to their knowledge. The mayor is to report such cases to the local sanitary authorities.

### The University of Aix Offers Hospitality to the Belgian Universities

At a meeting held at the Aix city hall, presided over by the mayor and university authorities, it was unanimously decided to make an official offer to the Belgian government to receive the Belgian universities, both professors and students, at the University of Aix. The city will defray the expenses of the students' lodging. The university will request that our minister of public construction permit the Belgians to receive instruction free and allow the University of Aix-Marseilles to confer French university degrees on the Belgian students.

### Bureau of Chemical Products

A temporary bureau of chemical and pharmaceutical products has just been created to last during the war. Its function is to cooperate with our manufacturers with regard to production and distribution. It will investigate supplies, gather figures on our exact present capacity for production, develop production as much as possible to meet the needs of the civil population and, so far as possible, the needs of the allies. It will also attempt to establish in France the manufacture of products which hitherto have been monopolized by foreign countries. The bureau will be a division of the Department of Commerce, and its head will be M. Behal, professor at the Ecole supérieure de pharmacie de Paris and a member of the Académie de médecine.

### Prohibition of Alcoholic Drinks

I mentioned in a previous letter (The Journal, Sept. 19, 1914, p. 1044), the prohibition of the sale of absinthe in drinking shops. This prohibition has been extended to apply to drinks similar to absinthe, that is, to bitters and all *apéritives* except those with a wine base. This measure applies to all France. Some military commanders have, in addition, taken such local measures as the closing of drinking-shops, the prohibition of the sale of alcohol in certain places, or the strict regulation of hours of closing. All these measures have already given good results with respect to the habits, behavior and health of the population. It is to be hoped that the new habits contracted during war may have an influence in suppressing the scourge of alcoholism.

### The Soldiers' March

Dr. L. Manouvrier, professor at the Ecole d'anthropologie de Paris, at one of the last sessions of the Académie des sciences, read a paper on the grouping of marching soldiers, not according to their height but according to the length of the leg, measured from the great trochanter to the ground. When the soldiers with the shortest legs are put in front, the troop marches most regularly and with a minimum of fatigue.

## *Marriages*

Robert Morton Wolfe, M.D., Port Carbon, Pa., to Miss Cora M. Bagenstose of Shoemakersville, Pa., at Philadelphia, October 3.

William Graves Phillips, M.D., Helena, Ky., to Miss Elizabeth Byram Ewan of Flemingsburg, Ky., October 20.

Alexander S. Waiss, M.D., San Francisco, to Miss Anna M. Wueck of Reading, Pa., at San Francisco, August 24.

Onnie Earl Stevenson, M.D., Labette, Kan., to Miss Nancy Wilmetta Belknap of Altamont, Kan., October 11.

Frank Beeby Conterman, M.D., Ilion, N. Y., to Miss Beatrice Thornton Buley of Syracuse, N. Y., October 15.

John Sullivan Clifford, M.D., Charlotte, N. C., to Miss Mary Agnes Keely, at Nashua, N. H., October 21.

John Adolph Greene, M.D., to Miss Huldah Elizabeth Pettengill, both of Rumford, Me., October 21.

Charles Walsh McQuillen, M.D., Cascade, Ia., to Miss Frances Bradley of Iowa City, Ia., October 19.

John Hudson Blauvelt, M.D., Beacon, N. Y., to Miss Mae Costello Furman of Nyack, N. Y., October 21.

John Harold Powers, M.D., Pueblo, Colo., to Miss Edith May Brooks of Wellington, Kan., October 20.

Edmund William Butler, M.D., San Francisco, to Miss Wilma Jacobs of Berkeley, Cal., October 19.

William Alvah Parks, M.D., to Miss Mary Alice Sell, both of Akron, Ohio, September 15.

Jacques J. Roth, M.D., New York City, to Miss Nellie A. Levy of Passaic, N. J., October 21.

Frank Anson Becker, M.D., to Miss Edna Refsum, both of New York City, October 21.

Walter Dent Wise, M.D., to Miss Agnes Bordon Whiting, both of Baltimore, October 20.

Oscar Lewis Zelle, M.D., to Miss Elizabeth Kane, both of Springfield, Ill., October 20.

Roy Newton Fuller, M.D., to Miss Lena Hesse, both of Tulare, Cal., October 21.

Charles Francis Yerger, M.D., to Miss Helen Zegar, both of Chicago, October 17.

## *Deaths*

**Edward Hodges, M.D.** Long Island College Hospital, 1895; formerly a Fellow of the American Medical Association and a member of the Association of Military Surgeons of the United States; assistant surgeon of the Forty-Seventh New York Infantry, U. S. A., during the Spanish-American War with service in Porto Rico; for several years captain and assistant surgeon, N. G., N. Y., assigned to the Twenty-Third Infantry; once president of the Long Island Medical Society; visiting surgeon to the House of St. Giles the Cripple, Brooklyn, and associate visiting surgeon to Williamsburg, Bushwick, Swedish and Samaritan Hospital; died at his home in Brooklyn, October 30, from pneumonia, aged 44.

**Joseph Smith Richards, M.D.** Bellevue Hospital Medical College, 1875; a Fellow of the American Medical Association; medical director of the Dr. W. H. Groves Latter Day Saints' Hospital, and surgeon to the San Pedro, Los Angeles and Salt Lake Railroad, Salt Lake City; for many years visiting surgeon to the Holy Cross Hospital, Salt Lake City; died at his home, October 30, from Hodgkin's disease, aged 66.

**Hugo Maximilian von Starkloff, M.D.** University of Tübingen, Germany, 1854; surgeon of the Forty-Third Illinois Volunteer Infantry and medical director of the First Division, Seventh Army Corps during the Civil War; formerly professor of orthopedic surgery in the Marion-Sims-Beaumont College of Medicine; for many years a practitioner of St. Louis; died at his home in that city, October 31, aged 86.

**William Bowman, M.D.** Medical College of Ohio, Cincinnati, 1875; a member of the Kentucky State Medical Association; a veteran of the Civil War and past department commander of the Grand Army of the Republic, State of Kentucky; for three terms a member of the state legislature and once consul of the United States in China; died at his home in Vanceburg, Ky., October 23, aged 71.

**John J. Castellanos, M.D.** Tulane University, New Orleans, 1856; a member of the Louisiana State Medical Association, and second vice-president of the Orleans Parish Medical Society in 1892; adjunct professor of surgery and lecturer on surgery and later professor of surgical anatomy in the Charity Hospital Medical College, New Orleans; died at his home in that city, October 29.

**Cyrus Jay Seltzer, M.D.** University of Pennsylvania, Philadelphia, 1881; for twenty years assistant surgeon at the Wills Eye Hospital, Philadelphia; laryngologist to the Philadelphia Hospital and Philadelphia Polyclinic Hospital; for the last five years a resident of Lebanon, Pa.; died at his home in that city, October 23, from heart disease, aged 59.

**John R. Colburn, M.D.** Washington University, St. Louis, 1878; a Fellow of the American Medical Association; president of the Pacific Coast Railway Surgeons Association in 1907; for several years chief surgeon of the Salt Lake, San Pedro and Los Angeles Railway; died at his home in Los Angeles, October 27, from heart disease, aged 60.

**Franklin Pierce Miller, M.D.** New York University, New York City, 1876; visiting physician to the Bushwick Hospital and to the outpatient department of St. Mary's Hospital, Brooklyn; since his retirement in 1912, a resident of Tappen, N. Y.; died in the Long Island College Hospital, Brooklyn, October 17, aged 60.

**Roland F. Blount, M.D.** Central College of Physicians and Surgeons, Indianapolis, 1898; of Rushville, Ind.; a Fellow of the American Medical Association; died in a hospital in Indianapolis, August 28, from carcinoma of the pancreas, seventeen days after an operation on the gall-bladder, aged 40.

**Frederick Joseph McNulty, M.D.** Cooper Medical College, San Francisco, 1896; of Yreka; a member of the Medical Society of the State of California; physician and surgeon to the Siskiyou County Hospital; died at Oakland, Cal., while being taken to San Francisco for special treatment, October 21, aged 45.

**Floyd Benton Parke, M.D.** University of Buffalo, N. Y., 1879; a Fellow of the American Medical Association and prominent as a dermatologist; health officer of Elmira township and health commissioner of the city of Elmira; died at his home in Elmira, N. Y., October 9, from heart disease, aged 58.

**James Sanford Denison, M.D.** University of Tennessee, Nashville, 1904; a member of the Oklahoma State Medical Association and president of the McCurtain County Medical Society; a physician in the United States Indian Service; died at his home in Garvin, Okla., October 29, from malarial fever, aged 38.

**William H. Bramblitt, M.D.** New York University, New York City, 1857; a member of the Medical Society of Virginia; surgeon in the Confederate Army during the Civil War; died at his home in Pulaski, Va., October 30, from pneumonia following a fracture of the hip six days before, aged 85.

**Franklin Fremont Finical, M.D.** Starling Medical College, Columbus, Ohio, 1893; a member of the Ohio State Medical Association; assistant surgeon of the Pennsylvania System at Denison, Ohio, and a member of the Denison Board of Education; died at his home in that city, October 23, aged 51.

**Daniel D. Neff, M.D.** Bellevue Hospital Medical College, 1894; a member of the Syracuse Academy of Medicine; was found dead in his home in Syracuse, October 13, from the effects of poison, self-administered, it is believed, with suicidal intent while despondent on account of ill health, aged 45.

**James Porter Brallier, M.D.** Medico-Chirurgical College of Philadelphia, 1909; a Fellow of the American Medical Association; and a well-known young surgeon of Alexandria, Pa.; was crushed under an overturned automobile, October 18, near Hollidaysburg and instantly killed, aged 31.

**Daniel Michael Sheedy, M.D.** New York University, New York City, 1888; a member of the surgical staff of St. Francis' Hospital, Poughkeepsie, N. Y.; died suddenly at his home in that city, October 31, from heart disease, aged 49.

**Warren H. Taylor, M.D.** Detroit College of Medicine, 1896; a member of the Michigan State Medical Society and coroner of Genesee County; died at his home in Flint, Mich., October 29, from cerebral hemorrhage, aged 41.

**Stanley Michael Piotrowski, M.D.** Chicago College of Medicine and Surgery, 1914; died at his home in Chicago, September 18, from diabetes, aged 27.

**Bukk G. Carleton, M.D.** New York Homeopathic Medical College, New York City, 1876; genito-urinary surgeon to the Metropolitan, Hahnemann and Flower hospitals, New York City; a specialist on diseases of the kidney; died at his home in New York City, October 29, from heart disease, aged 57.

**Cyrus Cue Davis Shelburn, M.D.** Hospital College of Medicine, Louisville, Ky., 1906; a member of the Kentucky State Medical Association; died at his home in Cunningham, Ky., October 25, from the effects of poison self-administered, it is believed, with suicidal intent, aged 40.

**John Wesley Beckett, M.D.** Howard University, Washington, D. C., 1905; a member of the Medical Society of the State of Pennsylvania; a colored practitioner and one of the city physicians of Pittsburgh; died in the West Penn Hospital in that city, October 20, aged 35.

**John Joseph Cassidy, M.D.** University of Toronto, Ont., 1869; for sixteen years editor of the *Canadian Journal of Medicine and Surgery* and formerly president of the Board of Health of Toronto; died at his home in that city, August 1, from heart disease, aged 71.

**Samuel Butler Grimes, M.D.** University of Maryland, Baltimore, 1897; of Roland Park, Md.; died at the home of his father in Baltimore, October 25, from the effects of a gunshot wound of the head, self-inflicted it is believed with suicidal intent, aged 39.

**Crowell Clarinton Hall, M.D.** Dartmouth Medical School, Hanover, N. H., 1876; a member of the Maine Medical Association and one of the most prominent and wealthy citizens of Piscataquis County; died at his home in Dover, Maine, October 19, aged 60.

**Frank Merril Vebber, M.D.** Eclectic Medical College of the City of New York, 1884; town health officer of Clayton, N. Y.; coroner of Jefferson County in 1885 and 1888; died in the Watertown, N. Y., City Hospital, October 20, from diabetes, aged 58.

**Phillip E. Parker, M.D.** Tulane University, New Orleans, 1885; a Fellow of the American Medical Association; of Bay City, Tex.; was accidentally shot by a companion while shooting October 15 and died in the Jones Hospital, October 16, aged 55.

**Robert W. Earll, M.D.** Rush Medical College, 1853; formerly superintendent of the Columbus, Wis., Hospital, and for many years a practitioner of Milwaukee; died at the home of his daughter in Denver, October 26, from pneumonia, aged 91.

**Walter Samuel Baker, M.D.** New York Homeopathic Medical College, New York City, 1863; for more than half a century a practitioner of Newark, N. J.; died at his home in that city, October 26, from cerebral hemorrhage, aged 73.

**Levi Houghton Kimball, M.D.** Boston University, 1877; formerly of Bath, Maine, and for two terms a member of the city council; died at his home in Roxbury, Boston, October 21, aged 61.

**Thomas J. Boyson, M.D.** Royal University of Copenhagen, Denmark, 1869; of Plymouth, Cal.; died in the German Hospital, San Francisco, October 2, from cerebral hemorrhage, aged 69.

**John Franklin Clark, M.D.** University of Alabama, Mobile, 1909; a Fellow of the American Medical Association; died at his home in Paint Rock, Ala., September 22, aged 34.

**John Robinson Gamble, M.D.** Bellevue Hospital Medical College, 1866; a retired practitioner of Knox County, Ohio; died at his home near Mount Vernon, July 19, aged 77.

**David C. Harmison, M.D.** College of Physicians and Surgeons, Keokuk, Ia., 1878; a veteran of the Civil War; died at his home in Havana, Ill., October 19, aged 69.

**Charles G. Kuhlman, M.D.** Rush Medical College, 1889; of San Francisco; a member of the Medical Society of the State of California; died in San Francisco, October 8.

**John Fullerton Hicks, M.D.** University of Michigan, Ann Arbor, 1865; died at his home in Menominee, Mich., October 17, from cerebral hemorrhage, aged 76.

**J. Jackson Crider** (license, Iowa, 1886) an itinerant practitioner; died at his home in Columbus Junction, Ia., October 12, from cerebral hemorrhage; aged 82.

**John W. Jones, M.D.** Eclectic Medical Institute, Cincinnati, 1868; of Milton, Wis.; died at his home in that place, October 21, aged 75.

**Edwin A. Gaviller, M.D.** McGill University, Montreal, 1873; died at his home in Hamilton, Ont., August 8, aged 74.

# *The Propaganda for Reform*

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

## ARTICLES REFUSED RECOGNITION

### Reports of the Council on Pharmacy and Chemistry

For the benefit of the medical profession and the encouragement of honest manufacturers, the Council on Pharmacy and Chemistry, when first organized, decided to publish a book which should contain authoritative information about medicinal preparations found to merit the consideration of physicians. This book, New and Nonofficial Remedies (N. N. R.) is republished annually, so that each edition contains descriptions of all the proprietary and nonofficial remedies which, up to the date of issue, the Council has found worthy of recognition. During each year descriptions of additional preparations appear in The Journal, are later issued in supplements to N. N. R., and finally are incorporated in the next edition of the book.

In addition to N. N. R., with its descriptions of medicinal articles found "acceptable," the Council has authorized for publication from time to time reports dealing with proprietary articles or with certain phases of the proprietary medicine business. These reports have been issued annually in book form, those deemed of interest to the general medical practitioner being previously published in The Journal. Reports which were of direct interest only to a few have been published in the annual volume only.

While, in its Reports, the Council has published the reasons which led to the rejection of some of the articles investigated, by far the greater portion of the Council's investigations have not been published for two reasons. First, it was thought that many of the products found ineligible did not justify reports because they were of interest to few physicians; and, second, it was desirable that the manufacturers should be given an opportunity to modify or improve the preparations found ineligible and thus make them acceptable to inclusion in N. N. R.; therefore, publication of reports dealing with rejected articles was postponed so far as possible. The Council having been in existence for nearly ten years, manufacturers have had ample time to adapt themselves to new conditions, and one of the reasons for delayed publicity no longer holds good. So far as the other reason is concerned, inquiries which come to the Council and to The Journal indicate that physicians do, for various reasons, seek information in regard to many proprietary products regarding which no report has been published. The Council, therefore, has decided to make public, even when no detailed reports are prepared, a brief outline of the reasons which led to the rejection of articles. In case consideration of such products was requested by their manufacturer or their distributing agents, these abstracts are not published until they have been submitted to the interested parties. When the Council takes up the consideration of an article on its own initiative, the abstract of such consideration naturally is published without consideration of the manufacturer. Included with these abstracts also will be brief abstracts of Council reports which have been prepared only for publication in the annual reports. The Council has authorized the publication of the first instalment of abstracts, which appears below.

### Agar-lac

Agar-lac, said to be the product of "Agar-lac, Inc.," is sold by E. Fougera and Company, New York. The following "formula" for Agar-lac is published:

| | |
|---|---|
| "Agar-Agar with Lactic Ferments | Grs. 4½ |
| Phenolphthalein | Grs. ½" |

Regarding the "lactic ferment," the identity of which is not declared by the manufacturer and for the viability of which no precautions appear to be taken, the Council's expert on lactic acid ferments reported that *Bacillus bulgaricus* was present in small numbers only and that there were at least two other bacteria present, one of which is a gas-former of the *Bacillus coli* type.

The Council found that the amount of agar-agar in Agar-lac and the identity of the "lactic ferment" are not declared; that the name "Agar-lac" is blown in the glass and that the method of its exploitation will lead laymen to use it to their detriment; that the claims that it "facilitates assimilation of proteids" and that it is of value as an aid to "gastro-intestinal digestion" give a false value to the mixture and that the claims emphasize the action of agar-agar when from the composition it is evident that the phenolphthalein action will predominate; that the name does not indicate its predominating constituent, phenolphthalein, and that the use of a ready-made combination of cathartic drugs, such as agar-agar and phenolphthalein with lactic acid ferments, is unscientific.

### Aseptikons

Aseptikons are vaginal suppositories sold by the Chinosol Co. of New York. Each suppository is said to contain:

| | |
|---|---|
| Ac. Salicicylici | 2 grs. |
| Ac. Borici | 10 grs. |
| Quin. purae (Alkal.) | 1 gr. |
| Chinosol | 2 grs. |
| But. Cacao | 60 grs. |

The following claims appear in advertisements:

"These suppositories are indicated in cervicitis, leucorrhea, specific and non-specific vulvo-vaginitis and in all cases where complete vaginal antisepsis is desired."

"Non Toxic, Non Irritating, No Damage to Membranes. Yet a More Powerful Antiseptic than Bichloride."

The Council decided that the foregoing claims in the absence of evidence must be held exaggerated and likely to mislead, and also that the claim "Stronger than Bichloride" which appears on the box is misleading.

The position of the Council is that "In the case of pharmaceutical preparations or mixtures the trade name must be so framed as to indicate the most potent ingredients." The name Aseptikons does not give any indication of the ingredients of the product.

The Council holds that "The combination of two or more remedies in a mixture must be considered contrary to scientific medicine unless a distinct reason exists for such combination." No evidence has been submitted to establish the value of the combination in Aseptikons.

On the basis of the evidence submitted the Council voted that Aseptikons be refused recognition because unwarranted and misleading therapeutic claims are made because the name does not indicate its potent constituents, and because the combination of two or more remedies in a mixture is considered contrary to scientific medicine unless a distinct reason exists for such combination.

### Bacillicide

Bacillicide, sold by the Prophytol Products Company, Richmond, Va., is an antiseptic solution of the Glyco-Thymoline type. Vague, indefinite and misleading statements are made in regard to its composition and method of preparation.

The Council voted that Bacillicide was unacceptable because only a non-quantitative and therefore meaningless formula was published; because vague and unsubstantiated statements were made as to its method of preparation (removal of irritating action of formaldehyde); because exaggerated claims as to its therapeutic action were made; because its name did not indicate the potent ingredients of the pharmaceutical mixture but suggested its use without consideration of the composition, and because the use of an indefinite complex preparation such as Bacillicide is represented to be, is contrary to the best interests of the public.

### Iron Solution for Intravenous Therapy—Perkins and Ross

Iron Solution for Intravenous Therapy, Perkins and Ross, manufactured by Perkins and Ross, Colorado Springs, Colo., is said to be an aqueous solution containing soluble iron phosphate, sodium chloride and "calcium creosote." Its use by intravenous injection is recommended as a "chalybeate, emmenagogue and tonic" and in "all conditions in which iron is indicated." The advertising circular overemphasizes the use of intravenous medication and minimizes its drawbacks and dangers.

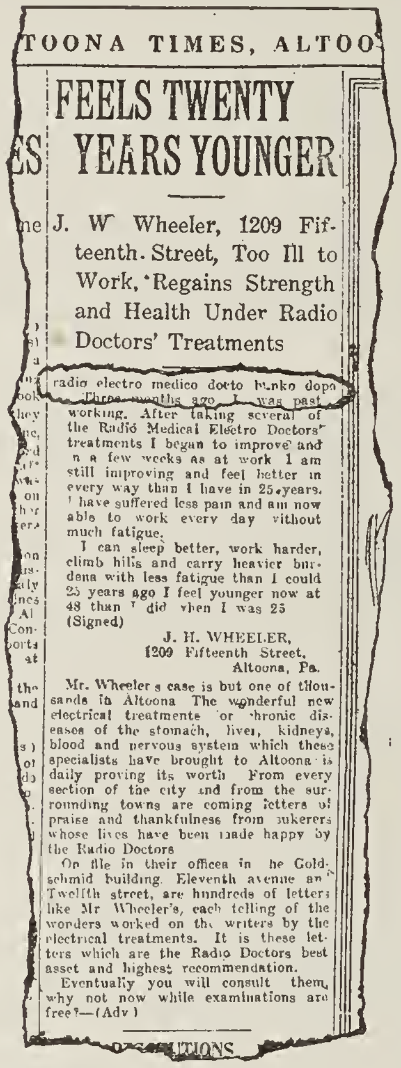
The composition of "calcium creosote" was not furnished and it was acknowledged that only a part of the "calcium creosote" enters into the solution. As the intravenous administration of a drug like iron, which must be continued for long periods, cannot be considered the method of choice, as the composition of the solution is such that changes may occur on standing, etc., which would make the preparation dangerous, and as the method of marketing the solution does not insure its sterility, further increasing the danger of its use, the product was rejected.

*(To be continued)*

## THE RADIO MEDICAL ELECTRO DOCTORS

### A Printer Inadvertently Expresses an Opinion on These Doctors

In preparing manuscript for publication, it is not unusual to insert what are known as "catch lines" for the purpose of aiding the "make-up man" in preparing the matter according to the author's ideas. Such "catch lines," of course, are deleted by the proofreader before the material finally appears in its finished form. Occasionally, however, these lines are overlooked, and the reader is given a peep behind the scenes of the printing office.



TOONA TIMES, ALTOO

FEELS TWENTY YEARS YOUNGER

J. W Wheeler, 1209 Fifteenth Street, Too Ill to Work, Regains Strength and Health Under Radio Doctors' Treatments

radio electro medico docto bunko dopo
Three months ago I was past working. After taking several of the Radio Medical Electro Doctors' treatments I began to improve and n a few weeks as at work I am still improving and feel better in every way than I have in 25 years. I have suffered less pain and am now able to work every day without much fatigue.

I can sleep better, work harder, climb hills and carry heavier burdens with less fatigue than I could 25 years ago I feel younger now at 48 than I did when I was 25
(Signed)

J. H. WHEELER,
1209 Fifteenth Street,
Altoona, Pa.

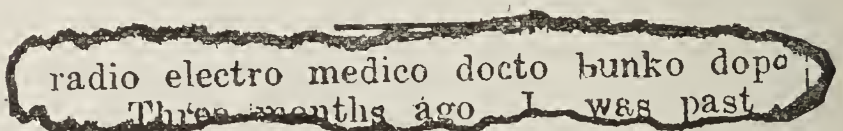
Mr. Wheeler s case is but one of thousands in Altoona The wonderful new electrical treatments for chronic diseases of the stomach, liver, kidneys, blood and nervous system which these specialists have brought to Altoona is daily proving its worth From every section of the city and from the surrounding towns are coming letters of praise and thankfulness from sufferers whose lives have been made happy by the Radio Doctors

On file in their offices in the Goldschmid building. Eleventh avenue and Twelfth street, are hundreds of letters like Mr Wheeler's, each telling of the wonders worked on the writers by the electrical treatments. It is these letters which are the Radio Doctors best asset and highest recommendation.

Eventually you will consult them, why not now while examinations are free?—(Adv)

Itinerant quacks have certain stock advertisements which are interspersed with testimonials—genuine or faked. The testimonials, being a fluctuating quantity, are usually sent separately from the main advertisement.

The Radio Medical Doctors is the name assumed by some quacks who have recently been operating in Altoona, Pa. In common with their kind, they publish advertisements in local newspapers. We reproduce in miniature one advertisement that appeared in the Altoona *Times* Oct. 1, 1914. It consists of the usual extravagant statements found in such advertisements, together with a testimonial from a Mr. Wheeler. The testimonial had evidently been sent to the printers at a different time from the body of the advertisement. That the type-setter might know just where this testimonial was to be used, he headed it with a "catch line." This "catch line" we have marked in the miniature reproduction, and that it may be more easily read, have reproduced slightly enlarged thus:



radio electro medico docto bunko dopo
Three months ago I was past

The average newspaper man, whether he works in the composing room or on the editorial staff, is usually no fool. The printer who headed the Radio Medical Electro Doctors' testimonial as "bunco dope" was "wise." His classification cannot be improved on.

## MAIGNEN ANTISEPTIC POWDER

### Report of the Council on Pharmacy and Chemistry

The report which appears below was submitted by a referee and after adoption by the Council was sent to the manufacturer for comment, in accordance with the Council's regular procedure in such cases. The manufacturer's comments were transmitted to a second referee, who reported that after a careful consideration of the manufacturer's reply he saw no valid reason for a modification of the report. The referee also reported that a visit to the Maignen Institute further served to convince him of the viciousness of the treatment as given and that the records made by the persons in the employ of the institute were too inadequate to serve as clinical evidence. On the referee's recommendation, the report as originally adopted was reendorsed by the Council and authorized for publication.

W. A. Puckner, Secretary.

Maignen Antiseptic Powder is marketed by the "Maignen Institute for the Study of Bacterial Diseases," Philadelphia. It is claimed to be a mixture of calcium hydroxid, sodium carbonate, aluminum sulphate and boric acid, but no statement as to the amount of the several constituents is furnished. Its action depends on the sodium hydroxid which is formed when the powder is treated with water, 1 Gm. of the powder as now submitted to the Council yielding 0.32 Gm. of sodium hydroxid (NaOH) and a specimen obtained a year ago yielding 0.28 Gm. Its promiscuous use is recommended both to physicians and to the public with claims which are extravagant, preposterous and even dangerous.

A pamphlet, clearly intended for the laity, entitled "What Is Catarrh?" gives direction for the "sterilization" of the nose, throat, stomach, lungs, eyes, gums, mouth and the genito-urinary tract. The following, taken from this pamphlet, illustrates the absurdity of the claims made for Maignen Antiseptic Powder:

> "STERILIZATION OF THE STOMACH
>
> "Take of the Maignen Antiseptic Powder half the quantity raised on a dime, scant.
>
> "Add to a tumbler of water, preferably warm, and stir.
>
> "Drink slowly.
>
> "This is what may happen:
>
> "1). Belching may be the first indication of the sterilization of the stomach.
>
> "2). The excess of acidity is corrected.
>
> "3). The fermentation is stopped.
>
> "4). The sterilization extends to the Intestinal Tract.
>
> "5). The bowels are regulated without purgation.
>
> "6). The whole metabolic process is improved.
>
> "When and how often to drink the antiseptic solution.
>
> "a). For Indigestion, whenever distressed, before or after meals.
>
> "b). For Constipation, half an hour before breakfast or last thing at night.
>
> "c). For Gastro-Intestinal troubles, such as Typhoid Fever, Dysentery and Cholera, which are the most serious forms of catarrhal inflammation, take half a tumbler or a whole tumbler of hot water with half the quantity of Powder raised on a dime every hour, and between times a glass of generous [sic] wine.
>
> "Remarks
>
> "The sterilization recommended here is a plain disinfecting process which does not interfere with medical treatment. It is, on the contrary, of great assistance to it.
>
> "It has been found very effective in breaking up the cigarette habit. It does away with the craving by removing the morbid irritation of the mucous membrane."

Eighty-eight disorders are listed in a pamphlet entitled "Antiseptic Therapeutics" all of which are reported as having been treated with success. The dangerous character of the Maignen "sterilization" propaganda is illustrated by a pamphlet "First Aid to Baby-Sick" and by the recommendation on the trade package:

> "To prevent Blood Poisoning, Lockjaw, Hydrophobia and Infectious Diseases."

The legend on the trade package and the advertising matter contained in it are likely to lead the public to place dependence on a weak sodium hydroxid solution as a means of preventing blood-poison, lockjaw, hydrophobia and infectious diseases. The pamphlet "First Aid to Baby-Sick" recommends its use in sore eyes, teething and sore mouth, sore throat, running ears, running nose, sore chest, summer complaint, skin troubles and infection after vaccination; if any trust is put in these claims, they are bound to lead to the sacrifice of many infants through neglect of proper treatment.

Patent No. 1,086,339 has been granted on this powder to P. J. A. Maignen of Philadelphia by the U. S. patent office on the following specification of claim made in the application:

> "1. A process for destroying microorganisms on living tissue, without injuring the latter . . . whereby the growth of such organisms is inhibited and their substance dissolved without deleterious effect upon contiguous healthy tissue."

With brazen assurance this grant has been twisted by the unscrupulous promoters into a government endorsement of the preparation. It, of course, means nothing of the sort, as, no doubt, in accordance with legal routine the patent was granted without any investigation by the patent office to determine the effectiveness of the powder for the purpose claimed.

In view of the dangerous, unwarranted and absurd claims made for Maignen Antiseptic Powder the referee recommends that it be refused recognition, and that the Council declare its agreement with views expressed in the article "Maignen Pulv." published in The Journal, Feb. 15, 1913, p. 537, particularly the following:

> "The germicidal powers of strong alkalies have long been known, but the inconvenience of their application to tissues and mucous membranes has prevented their use. That they will be of service when sufficiently diluted not to irritate the tissues is improbable, for the antiseptic power of such solution is slight and the disinfectant value practically nil."

Because the Maignen Institute has twisted the granting of U. S. patent No. 1,086,339 into a quasi-endorsement of the claims made for Maignen Antiseptic Powder it is recommended that a copy of this report be sent to the Commissioner of Patents as a protest against the present law, which authorizes the granting of patents on unproved and improbable medical claims.

# *Correspondence*

## Unauthorized Insertion of Advertisement

*To the Editor:*—I notice the regular Kenilworth Sanitarium advertisement displayed in the October number of *American Medicine*, and I would thank you to put this note in The Journal of the American Medical Association, in order that the medical profession may be informed that the insertion of said advertisement was entirely unauthorized.

Sanger Brown, M.D., Kenilworth, Ill.
Chief of Medical Staff, Kenilworth Sanitarium.

[Comment.—The foregoing may explain how it sometimes happens that clean, ethical advertisements appear in publications whose principal income is derived from nostrum and fake advertisements.—Ed.]

## The Metchnikoff Theory

*To the Editor:*—The theory, so ably supported by Metchnikoff, which ascribes to the leukocytes the function of picking up and destroying bacteria which find their way into the blood or tissues (phagocytosis) is now generally accepted as having been demonstrated by observation and experimental evidence.

I have no desire to detract from the credit due to Metchnikoff in connection with this theory, but in justice to myself desire to call attention to the fact that this theory was suggested by me several years before the publication of Metchnikoff's first paper on the subject. In support of this statement, I quote from my book entitled "Bacteria," published in 1884 (William Wood & Co., New York), pp. 250 and 251:

"If we add a small quantity of culture-fluid containing the bacteria of putrefaction to the blood of an animal, withdrawn from the circulation into a proper receptacle, and maintained in a culture-oven at blood-heat, we will find that these bacteria multiply abundantly, and evidence of putrefactive decomposition will soon be perceived. But, if we inject a like quantity of the culture-fluid with its contained bacteria into the circulation of a living animal, not only does no increase and no putrefactive change occur, but the bacteria introduced quickly disappear, and at the end of an hour or two the most careful microscopical examination will not reveal the presence of a single bacterium. This difference we ascribe to the vital properties of the fluid as contained in the vessels of a living animal; and it seems probable that the little masses of protoplasm known as white blood corpuscles are the essential histological elements of the fluid, so far as any manifestation of vitality is concerned.

*"The writer has elsewhere suggested that the disappearance of the bacteria from the circulation, in the experiment above referred to, may be effected by the white corpuscles,* which, it is well known, pick up, after the manner of amoebae, any particles, organic or inorganic, which come in their way. And it requires no great stretch of credulity to believe that they may, like an amoeba, digest and assimilate the protoplasm of the captured bacterium, thus putting an end to the possibility of its doing any harm.

"In the case of a pathogenic organism we may imagine that, when captured in this way, it may share a like fate if the captor is not paralyzed by some potent poison evolved by it, or overwhelmed by its superior vigor and rapid multiplication. In the latter event, the active career of our conservative white corpuscle would be quickly terminated, and its protoplasm would serve as food for the enemy. It is evident that in a contest of this kind the balance of power would depend on circumstances relating to the INHERITED vital characteristics of the invading parasite and of the invaded leukocyte."

It seems to me that the theory of phagocytosis is very clearly stated in the foregoing quotation, although the term "phagocyte" had not yet been suggested.

The book from which the quotation is made was published in the spring of 1884, but it was written in 1883 and the preface, written last, is dated Aug. 15, 1883. The statement that "the writer has elsewhere suggested that the disappearance of the bacteria from the circulation in the experiment above referred to may be effected by the white corpuscles" is supported by the following quotation from a paper read at the Cincinnati meeting of the American Association for the Advancement of Science, Aug. 18, 1881:

"It has occurred to me that possibly the white corpuscles may have the office of picking up and digesting bacterial organisms which by any means find their way into the blood. The propensity exhibited by the leukocytes for picking up inorganic granules is well known, and that they may be able not only to pick up but to assimilate, and so dispose of, bacteria which come in their way does not seem to me very improbable in view of the fact that amoebae, which they resemble so closely, feed on bacteria and similar organisms" (*Tr. A. A. A. S.* for 1881, p. 175).

The paper from which this quotation is made is entitled "A Contribution to the Study of the Bacterial Organisms Commonly Found on Exposed Mucous Surfaces and in the Alimentary Canal of Healthy Individuals. Illustrated by Photo-Micrographs. By George M. Sternberg, Surgeon U. S. Army, late 'Fellow by Courtesy' of the Johns Hopkins University. With Plates XI, XII and XIII."

The first record I can find of Metchnikoff's announcement of the theory of phagocytosis is in his paper in *Virchows Archiv,* 1884, xcvi, 177, "Ueber eine Sprosspilzkrankheit der Daphnien."

GEORGE M. STERNBERG, M.D., Washington, D. C.

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**"Flying Clinics" in the Medical Treatment of Rural Schoolchildren.**—Dr. A. E. Williams describes in the *Journal of State Medicine* for October some of the measures employed in the medical treatment of schoolchildren in Great Britain. In thinly populated rural districts facilities for remedying many defects found among the children are lacking. Although the children of the rural districts are, as a rule, healthier and stronger than those in more thickly populated districts, it became necessary to devise some special measures for treating defective vision, dental caries, etc. For this purpose, "flying clinics" were established. For the flying eye clinic, a portable apparatus was devised, consisting of a small tent of dark material for a dark room, an ophthalmic lamp and a case of trial lenses. For dental defects, both flying clinics, working from school to school throughout a county, and clinics at a fixed center to which all the children in the given county were sent, were employed. Dr. Williams says it is now proved that flying clinics are both practical and useful, the cost being not great. He believes that the time is not far distant when these clinics will be looked on as an essential feature in every scheme of medical inspection.

# *Queries and Minor Notes*

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed.. Every letter must contain the writer's name and address, but these will be omitted on request.

## THE PRICE OF RADIUM ACTIVATORS

*To the Editor:*—The treatment of disease by radium emanations is being urged on the medical profession by interested purveyors of apparatus for producing these emanations. There is a certain mystery with reference to radium which, combined with its high price, leads the physician readily to accept the prices charged for these activators. Thus, one of the most widely advertised activators is priced at $200 for an apparatus which will produce 2,500 Mache units per day in ½ liter of water. Another firm advertises a similar apparatus at a price of $165. Still another firm claims to produce an apparatus of equal capacity for $15.

Being interested in this subject, I wrote to several companies asking prices and particularly the amount of radium which is necessary to produce this quantity of emanation. To the first firm I wrote as follows:

"Please quote me the price of a — — — activator capable of furnishing 2,500 Mache units per day. Will you kindly indicate to me the approximate amount of radium that is necessary to produce this strength of radium emanation?"

With reference to the amount of radium necessary, the reply of this firm is somewhat evasive:

"In answer to your question as to the approximate amount of radium required to produce a desired strength of emanation, we beg to reply that this depends entirely upon which salt of radium you use, its concentration and how you use it. Its full emanation is available when a soluble salt, as bromide or a chloride is dissolved in water, but this is only temporary, as its strong affinity for other salts soon causes it to precipitate, even attacking the silica of the glass; the emanation is then greatly reduced—in instances we have known it to fall within 2.5 per cent. of its original amount. If an insoluble salt like the sulphate or the carbonate be used, you can generally obtain from 5 to 8 and sometimes even 10 per cent. of its available emanation. Unless you are thoroughly familiar with radium, we would not advise you to attempt constructing your own apparatus, because in the end you would undoubtedly lose a considerable proportion of your radium, and the result would be much more expensive than if you purchased an activator at the start."

Of course, it is well known that the different radium salts differ in their radium activity, but it would have been no great task for the firm to indicate the amount of some one salt or of radium element.

To the second company I wrote as follows:

"Do you furnish an activator for producing radium emanations? If so, please quote me the price of an apparatus capable of producing a solution containing 2,500 Mache units per day. Would you kindly tell me the approximate amount of radium necessary for the production of a water containing 2,500 Mache units per day?"

In reply to this query, I received the following letter:

"In answer to your inquiry in your letter of September 25, we are obliged to advise that we cannot supply an apparatus for the production of so small an amount of radium emanation as 2,500 Mache units per day. The amount of radium necessary for the production of a water containing 2,500 Mache units per day would be 0.01 mg. of radium element."

The third firm advertises an apparatus at the low price of $15, but says in its letter:

"The price of our No. — — — is $25. This we guarantee to generate 2,700 Mache units. This guaranty is based on a generating capacity of from 500 to 1,000 Mache units more than the rating. The reason for this is that the emanation is three times as soluble in air as it is in water, and in spite of careful handling, a certain amount of the emanation will be lost."

In view of these varying prices, it is pertinent to ask, What is the reason for this enormous excess charged beyond the value of the radium contained? One one-hundredth mg. of radium element is worth approximately $1.25. If this is the value of the radium contained in the apparatus, is it possible that bottles and containers are worth from $164 to $199? A similar disparity between charges and value appears in the price for rental of these pieces of apparatus. Thus, the apparatus costing $200 rents for $80 for a period of six months. Is it possible that the credit of physicians is so poor that they must pay such enormous prices? Even the cheap apparatus costing $15 is rented for $22.50 for a period of six months.

I would be much interested in any comments which you may see fit to make on this situation. J. H. S.

ANSWER.—In reply to the first question, regarding the amount of radium necessary to produce 2,500 Mache units of emanation daily, it may be said that the total amount of emanation from 1 microgram (that is one millionth of a gram) of radium (element) will correspond to 2,700 Mache units. The total amount of emanation produced by a given amount of radium is that which is obtained from material that has been kept in a sealed vessel for six weeks or more. If all emanation is removed from a sample of radium at the start, then at the end of twenty-four hours only about one-sixth of the maximum amount of emanation will have accumulated. If all of the emanation produced were effective, then it would require 6 micrograms of radium to yield 2,700

Mache units in twenty-four hours. At $120 a milligram this amount of radium would be worth 72 cents.

The answer to the second question is in fair agreement with the foregoing statement. It is there stated that 0.01 mg. (10 micrograms) of radium element will produce 2,500 Mache units per day. Doubtless the writer of that statement made allowance for some loss, as would be inevitable in the actual therapeutic use of radium. Actually 10 micrograms of radium would produce emanation corresponding to 2,500 Mache units in about fourteen hours; or in twenty-four hours with a 58 per cent. efficiency.

When it comes to the practical utilization of the emanation in the preparation of drinking water the statements in reply to the first question are in the main correct. A chemist familiar with the manipulation of radio-active substance could by use of a soluble radium salt get each day practically the whole of the emanation produced and bring it into solution in the water intended for drinking. But such work requires technical skill in manipulation; in the first place to avoid loss of the emanation and secondly to prevent ultimate loss of the valuable radium or its spontaneous conversion into an insoluble form as pointed out in the answer to the first question.

The practicing physician, or the patient using the active water, is not in general skilled in the handling of radium or its emanation, and so requires an apparatus with which he "pushes the button, and the machine does the rest." In the "activators" on the market the radium is practically always in the form of an insoluble salt, probably sulphate or carbonate. In this form only a small percentage of the emanation is given off. Suppose, however, that only 5 per cent. is available, as this is the lowest figure given in the answer to the first question: then to produce 2,500 Mache units daily with 5 per cent. efficiency would require twenty times as much radium as if all the emanation were available, namely, 120 micrograms (0.12 mg.), worth $14.40.

In regard to the third question, it would seem that it would be possible to supply an activator which would give 2,500 Mache units daily at the price stated, $25, and still leave a reasonable margin of profit.

### ARTICLES ON INTRASPINAL INJECTIONS OF SALVARSAN IN PARESIS AND LOCOMOTOR ATAXIA

*To the Editor:*—Please inform me if any extensive work is being carried on with intraspinal injections of salvarsan in cases of paresis and locomotor ataxia. Who is doing this work? Can a detailed statement or a summary of it be obtained?

A. E. Conter, M.D., Chattahoochee, Fla.

Answer.—The following is a list of references to the work on this subject:

Johnson, G. T.; Breaks, L. Z., and Knoefel. A. F.: The Treatment of Tabetic Optic Atrophy with Intraspinal Injections of Salvarsanized Serum, The Journal, Sept. 5, 1914, p. 866.

Riggs, C. E., and Hammes, E. H.: Results of One Hundred Injections of Salvarsanized Serum, The Journal, Oct. 10, 1914, p. 1277.

Spencer, G. W.: Intrathecal Injection of Salvarsanized Serum, *Lancet,* London, May 30, 1914; Abst., The Journal, July 4, 1914, p. 65.

Brown, P. K., and Cummins, W. T.: Swift-Ellis Treatment of Cerebrospinal Syphilis, *California State Jour. Med.*, July, 1914.

Gradwohl, R. B. H.: Treatment of Syphilis of Nervous System by Means of Salvarsanized Serum, *Lancet-Clinic,* July 11 and 18, 1914.

Mapother, E., and Beaton, T: Swift-Ellis Treatment of General Paralysis, *Lancet,* London, April 18, 1914; abstr., The Journal, May 16, 1914, p. 1585.

McCaskey, G. W.: Autoserosalvarsan Treatment of Syphilis of the Central Nervous System, The Journal, May 30, 1914, p. 1709.

Swift, H. F., and Ellis, A. W. M.: The Treatment of Syphilitic Affections of the Central Nervous System, with Special Reference to the Use of Intraspinous Injections, *Arch. Int. Med.*, September, 1913, p. 331.

Hough, W. H.: Intraspinous Injection of Salvarsanized Serum in Treatment of Syphilis of Nervous System, Including Tabes and Paresis, The Journal, Jan. 17, 1914, p. 183.

McCaskey, G. W.: Autoserosalvarsan Treatment of Syphilis of Central Nervous System, The Journal, Jan. 17, 1914, p. 187.

A New Treatment for Cerebrospinal Syphilis, Including Tabes and Paresis, editorial, The Journal, Jan. 17, 1914, p. 209.

Myerson, A.: Intraspinous Injection of Salvarsanized Serum, correspondence, The Journal, Jan. 31, 1914, p. 396.

Cutting, J. A., and Mack, C. W.: Intraspinal Injections of Salvarsanized Serum in Paresis, The Journal, March 21, 1914, p. 903.

Bernstein, H. S.: A Suggestion in the Treatment of Syphilis, The Journal, March 21, 1914, p. 914.

Ayers, J. B.: Salvarsanized Serum (Swift-Ellis Treatment) in Syphilitic Diseases of Central Nervous System, *Boston Med. and Surg. Jour.*, March 19, 1914.

Jefferson, C. W.: Intraspinous Injection of Salvarsanized Blood Serum in Syphilitic Affections of Central Nervous System, *Kentucky Med. Jour.*, April 1, 1914.

Marinesco, G., and Minea, J.: Salvarsanized Treatment, *Bull. de l'Acad. de méd.*, Feb. 17, 1914.

Pilsbury, L. B.: Paresis Patients Treated with Intraspinal Injections of Salvarsanized Serum, The Journal, Oct. 10, 1914, p. 1274.

# *Medical Education and State Boards of Registration*

## COMING EXAMINATIONS

California: Los Angeles, December 8. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.

Delaware: Dover and Wilmington, December 8-10. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

Florida: Palatka, December 2-3. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Kentucky: Louisville, December 16-18. Sec., Dr. A. T. McCormack, Bowling Green.

Maryland: Baltimore, December 8. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton, Baltimore.

Ohio: Columbus, December 8-10. Sec., Dr. George H. Matson.

Pennsylvania: Philadelphia, December 1-3. Sec., Dr. N. C. Schaeffer, Harrisburg.

Virginia: Richmond, December 15-18. Sec., Dr. J. N. Barney, Fredericksburg.

### Arkansas May Report

Dr. W. S. Stewart, secretary of the State Medical Board of the Arkansas Medical Society, reports the written examination held at Little Rock, May 12-13, 1914. The total number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 61, of whom 51 passed and 10 failed. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| University of Arkansas | (1902) 84.2; (1908) 80; (1913) 77.3; (1914) 75, 75.5, 76.2, 77.1, 78, 78.3, 78.4, 78.7, 78.8, 79.2, 79.7, 80, 81.2, 81.3, 81.8, 83, 83, 83.3, 84, 85, 85.6, 86, 89.5, 90.3. | |
| University of Colorado | (1895) | 82.7 |
| University of Louisville | (1895) 81.4; (1894) | 84 |
| Tulane University of Louisiana | (1910) | 82.2 |
| University of Oklahoma | (1914) | 84.7 |
| Meharry Medical College | (1904) 70.7*; (1909) 70.3*; (1914) 78.6, | 83 |
| University of Nashville | (1905) | 83 |
| University of Tennessee | (1913) 80; 81.6; (1914) 75, 75, 78.4, 79.4, 80, 82, 82.5, 82.7, 83, 84, 84.7, 85.8. | |

* Credit allowed for years of practice.

FAILED

| College | Year Grad. | Per Cent. |
|---|---|---|
| Louisville and Hosp. Med. College | (1908) | 59.5 |
| University of Louisville | (1909) 66.2; (1911) | 63 |
| University Medical College, Kansas City | (1911) | 64.3 |
| Meharry Medical College | (1909) 63.8; (1912) 55.7; (1913) 46.3; (1914) 68.8, | 70.3 |
| University of Tennessee | (1914) | 63.7 |

The following questions were asked:

ANATOMY

1. Name the bones of the upper extremity. 2. Describe the scapula. 3. Give the boundaries and contents of the axilla. 4. Give the origin, relations and branches of the femoral artery. 5. Describe the duodenum, giving nerve and blood supply. 6. Name the structures composing the larynx, with nerve and blood supply. 7. Give the origin, course and termination of thoracic duct. 8. Give the origin, course and distribution of the musculospiral nerve. 9. Describe the fourth ventricle. 10. Name the structures divided in an amputation at knee-joint.

PHYSIOLOGY

1. Give the origin and significance of urea. 2. What general conditions or factors influence blood-pressure and blood-velocity? 3. Describe and discuss hunger and thirst. 4. Name the veins which form the portal vein, and give its function. 5. Give the function of the lymphatic system. 6. Give the function and location of the gall-bladder and its connection with other organs. 7. Define osmosis, endosmosis and exosmosis. 8. Name and describe the salivary glands. 9. What digestive disturbances follow the removal of the pancreas? 10. How do the products of digestion find their way into the blood?

CHEMISTRY

1. Name seven elements, giving symbol, valence and atomic weight. 2. How is oxygen prepared for commercial use? 3. Define organic, inorganic and physiologic chemistry. 4. Give chemical name and formula of sugar of lead; Epsom salts; tartar emetic. 5. What are the chemical changes if you mix calomel and lime-water? 6. Give Heller's test for albumin and the bismuth test for sugar in urine. 7. Give test for blood in urine. 8. What are proteins and from what are they derived? 9. What is lunar caustic? Dose? Antidote? 10. What is salol and when administered what chemical changes take place?

HYGIENE

1. Define hygiene. 2. Describe the physiologic action of alcohol. 3. Describe the preparation of patient, surgeon, instrument and surroundings for a surgical operation. 4. What is antitetanic serum? Give its use. 5. Give an effective method for controlling an epidemic of diphtheria. 6. What are the most important factors in preserving health, and how best observed and applied? 7. Name some of the conditions that predispose to or cause disease. 8. State the value of disinfection

and isolation in contagious diseases and the disinfectant employed. 9. How does hookworm enter the human system, and what measures should be taken to prevent it? 10. What would be your instruction to prevent the spread of typhoid fever?

### MATERIA MEDICA

1. Define an expectorant. (*b*) Into what classes are expectorants divided? (*c*) Give an example of a nauseating expectorant. 2. Where does the belladonna plant grow? (*b*) What is its physiologic action? (*c*) What is its active principle? 3. What is a vascular contractor? (*b*) Give an example. 4. How much morphin is there in 1 ounce of powdered opium U. S. P.? (*b*) How much opium is there in 1 ounce of tincture of opium? 5. Define a solvent and an excipient. Give an example of each. 6. Give dosage of the following drugs: strychnin sulphate; hydrargyri chloridum mite; liquor poatssi arsenitis; hydrargyri iodid rubrum; ammonium chlorid; ferri sulphate; acetanilid; sodium salicylate; F. E. nucis vomica; atropin sulphate; ipecacuanha; magnesia sulphate. 7. Criticize the following prescriptions:

(*a*) F. E. Nucis Vomica oz. I.
Aquae q. s. ad oz. IV.
M. Sig. Tablespoonful t. i. d.—p. c.
(*b*) Tinct. Digitalis dr. ss.
Spts. Aetheris Nitrosi dr. III.
Liq. Ammon. Acetat. oz. ss.
Aquae q. s. ad oz. VI.
M. S. One ounce every three (3) hours.
(*c*) Tr. Ferric Chlorid dr. ss.
Tr. Iodine dr. ss.
Tannic acid grs. xx.
Glycerine q. s. ad oz. IV.
M. S. Swab throat.

8. Give properties and physiologic action of potassium permanganate. 9. Give physiologic action of potassium bromid. 10. How does acetanilid reduce an elevated temperature?

### THERAPEUTICS

1. Name two conditions in which you would use thymol and state how you would use it. 2. What is especially indicated in treating scrofulosis with glandular enlargement? 3. In collapse of pneumonia, name the most efficient remedy and mode of administration. 4. Name six routes by which we may introduce remedies into the circulation. 5. How would you combat opium poisoning? 6. Give therapeutic uses of salicylic acid. 7. How may we administer ipecac in large doses without causing nausea? 8. Name three official preparations of mercury and give therapeutic uses of each. 9. Describe the technic in the administration of diphtheritic antitoxin. How does it combat the disease? 10. What class of patients is it that does not bear chloral hydrate well?

### SURGERY

1. Describe ligation of the radial artery in the upper third. 2. Give symptoms, diagnosis and treatment of tuberculosis of the kidney. 3. What are the symptoms of air embolism? Give treatment. In what regions are surgical operations most liable to be followed by this condition? 4. Name three forms of bowel obstruction. Give symptoms that are common to each. Outline a surgical operation that may be required in any one form selected. 5. Give differential diagnosis of luxation of the hip and fracture of the surgical neck of the femur. Give methods of management of each. 6. Describe in detail an amputation of a finger at the metacarpophalangeal joint. 7. Define hernia. Describe oblique inguinal hernia; give symptoms of strangulation and treatment. How measure and fit a truss in inguinal hernia? 8. What is shock? Give symptoms. Give the treatment and the precautions that may be taken for its prevention. 9. Define necrosis and give the causes and surgical treatment. 10. Name varieties of fistula in ano and give treatment. Describe an operation for removal of hemorrhoids. Give symptoms and treatment of ischiorectal abscess.

### OBSTETRICS

1. Describe how you would conduct a normal labor. Give in detail asepsis in conection therewith. Also what attention would you give the child if Neisser infection is suspected with the mother? 2. Define abortion and miscarriage. State how you would manage a case of incomplete abortion. Also state some morbid conditions of mother that is a frequent cause of either occurring. 3. What are the more frequent morbid conditions of the breasts which occur in puerperium? Give prophylaxis and treatment for same. 4. Give the mechanism of normal labor in R. O. A. position. 5. State how you would apply forceps in R. O. P. position, and what emergencies and complications should you be prepared for at such a delivery? 6. Give the varieties of version, and give in detail method of doing same in any variety you may select. 7. What is accidental hemorrhage occurring in gestation? Give causes, varieties and treatment. 8. How would you manage a case of retained placenta associated with profuse hemorrhage? 9. Describe some of the more frequent etiologic factors in puerperal infection. 10. What is asphyxia neonatorum? Give causes and treatment. Describe Sylvester's method of artificial respiration.

### PATHOLOGY

1. Explain the development of pus cells. 2. What general pathologic lesions characterize chronic alcoholism? 3. Describe the pathogenesis of gall-stones and the physical and chemical characteristics of one variety. 4. What is cretinism and with what is it associated? 5. Describe in detail the pathogenesis of pellagra. 6. What pathologic changes may cicatrices undergo? 7. What valve is most commonly involved in endocarditis? (*b*) What are the structural types of endocarditis and the common micro-organisms that produce these lesions? 8. What conditions may cause dropsical effusions in the abdomen and in the lower extremity? 9. What laboratory methods may be of service in the diagnosis of cancer of the stomach? 10. Name the varieties of urinary renal casts, describe the characteristics of each and state of what forms of renal disease they are a part.

### GYNECOLOGY

1. What is pruritus vulvae? Give causes and treatment. 2. Name the different forms of vaginitis, giving etiologic factor in each, and treatment where the gonococcus is the causative agent. 3. Define urethral caruncle. Give symptoms and treatment. 4. Name causes and give treatment for dysuria. 5. In the early stage of cancer of the cervix what objective symptoms would you find to make you suspect same? How would you confirm the diagnosis, and what would be your treatment? 6. What anatomic changes will take place in order that a retroversion may occur? Give operative treatment for retroversion. 7. Give differential diagnostic points of salpingitis on the right side and appendicitis. 8. What are the more frequent causes of acute pelvic cellulitis? Give subjective and objective symptoms and your treatment. 9. What conditions would lead you to do a uterine curettement? Describe in detail your method of performing same. 10. Differentiate ascites, hydramnios and unilocular ovarian cyst.

### THEORY AND PRACTICE OF MEDICINE

1. Give the physical signs, symptoms and treatment of pulmonary tuberculosis in the early stage of the disease. 2. Give differential diagnosis of variola and varicella. 3. Differentiate between chronic interstitial and chronic parenchymatous nephritis. Give prognosis of each. 4. Describe the physical signs of each stage of pneumonia and give treatment of each in robust subject. 5. Give symptoms and treatment of cerebrospinal meningitis. 6. Give etiology, symptoms, prognosis and treatment of rachitis. 7. Give normal location of apex beat of the heart and give diagnostic symptoms of its various displacements. 8. What are the more common causes of ascites and from what other abnormal conditions must it be differentiated? 9. Give differential diagnosis of measles and scarlet fever, and treatment of the latter. 10. What are the symptoms, prognosis and treatment of hysteria?

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## Book Notices

THE HEALTHY MARRIAGE. A Medical and Psychological Guide to Wives. By G. T. Wrench, M.D., B.S. Cloth. Price, $1.50 net. Pp. 300. New York: Paul B. Hoeber, 1914.

SEXUAL ETHICS: A STUDY OF BORDERLAND QUESTIONS. By Robert Michels, Professor of Political Economy at the University of Basle. Cloth. Price, $1.50 net. Pp. 296. New York: Charles Scribner's Sons, 1914.

FOR GIRLS AND THE MOTHERS OF GIRLS. A Book for the Home and School Concerning the Beginnings of Life. By Mary G. Hood, M.D., with an Introduction by Sarah Louise Arnold. Cloth. Price, $1 net. Pp. 157, with illustrations. Indianapolis: Bobbs-Merrill Company, 1914.

TEN SEX TALKS TO BOYS (10 YEARS AND OLDER). By Irving David Steinhardt, M.D., Instructor in Clinical Surgery, Cornell University Medical School. Cloth. Price, $1 net. Pp. 187. Philadelphia: J. B. Lippincott Company, 1914.

TEN SEX TALKS TO GIRLS (FOURTEEN YEARS AND OLDER). By Irving David Steinhardt, M.D., Instructor in Clinical Surgery, Cornell University Medical School. Cloth. Price, $1 net. Pp. 193, with 6 illustrations. Philadelphia: J. B. Lippincott Company, 1914.

WOMEN AND MORALITY. By a Mother. Men and Morals. By a Father. The Sexes Again. By C. Gasquoine Hartley. Introduction by Wallace Rice. Cloth. Price, $1 net. Pp. 102. Chicago: The Laurentian Publishers, 1914.

TEACHING SEX HYGIENE IN THE SCHOOLS. By E. B. Lowry, M.D. Cloth. Price, 50 cents. Pp. 94. Chicago: Forbes & Co., 1914.

It is to be expected that the widespread discussion of sex questions and sex instruction that has been prevalent during the past two or three years would produce a considerable amount of literature. The books listed above represent a small portion of the recent output and are typical publications on this subject. The entire question of sex relations is so complicated by personal, religious and conventional prejudices and so modified by experience, temperament and point of view as to make dogmatic assertions on this subject particularly dangerous. What the outcome of the present agitation will be, as far as modification of our ideas as to sex relations, education of children and social conventions, it is impossible to say. Perhaps the wisest plan to follow is simply to chronicle the appearance of different books on this subject, leaving it to each individual to select the literature which comes nearest to meeting his needs.

"The Healthy Marriage" appears to be an earnest effort to supply the lay reader with a moderate, sane, practical book which will furnish the information needed without sensationalism or exaggeration. Besides advice on marriage, the book contains much valuable information on exercise, personal habits and the securing of sanitary surroundings. It can be safely recommended by the physician to the patient desiring reliable information.

Michels' book is a frankly philosophic discussion of the problems involved in sexual relations. The point of view is essentially Continental, and probably many of the author's assertions and conclusions would be unacceptable to the average American reader.—The book is one for the student rather than for the public.

Dr. Mary G. Hood's book "For Girls and the Mothers of Girls" is an elementary presentation for girls of the school age. There have been many efforts in this direction, each of which has had its merits and weaknesses. Each writer on this subject has her own conception of the manner in which it should be presented, and by the same token probably each writer finds readers who are particularly attracted by the manner of presentation. Perhaps in the future we may be able to standardize our ideas of instruction on these subjects. To-day the number of books in this field is the best evidence of diversity of opinion as to the best method of presentation.

Dr. I. D. Steinhardt has made two contributions to this field, one for girls and one for boys. The books originated in talks to audiences of Jewish boys and girls in New York. They are in the form of ten talks or lectures, each followed by ten review questions covering the subject matter.

The little volume on "Women and Morality" contains three essays, the first two being anonymous and the third by Mrs. Walter Gallichian. The three essays originally appeared in the *English Review* for July, August and September, 1913. The discussion, which is essentially from an English point of view, is interesting on account of the brilliancy of method rather than for any real contribution to the problems involved.

Dr. Lowry's "Teaching Sex Hygiene in the Public Schools" does not adhere closely to the title, but touches on many related questions such as "White Slavery," "The True Relations between Mothers and Daughters," "The Dangers to Boyhood," "Blindness of Parents," etc. Several of the chapters appeared first as separate articles in different medical journals. The book impresses the reader as being hastily and rather carelessly put together.

Practical Sanitation. A Handbook for Health Officers and Practitioners of Medicine. By Fletcher Gardner, M.D., Captain Medical Corps, Indiana National Guard, and James Persons Simonds, B.A., M.D., Professor of Preventive Medicine and Bacteriology, Medical Department, University of Texas. Cloth. Price, $4. Pp. 403, with 37 illustrations. St. Louis: C. V. Mosby Company, 1914.

The authors have endeavored to provide, within the confines of a single, moderate-priced volume, a plain, non-technical presentation of the duties of the local health officer and to furnish information for the health officer to meet any emergency which may arise. It is not intended for the specialist or the sanitarian who has access to a large library. The growing tendency of smaller towns and counties to provide for health supervision of some sort makes the need for such a work. The book is divided into three general parts, on epidemiology, general sanitation and laboratory methods. In the first part, after a general discussion of the nature of infection, chapters are given to the management of epidemics, isolation and quarantine, the construction and maintenance of isolation hospitals and camps, and disinfection. The different groups of diseases coming under the jurisdiction of the health officer are then discussed. Under the typhoid group, for instance, are considered typhoid, paratyphoid, mountain fever, amebic dysentery, bacillary dysentery and Asiatic cholera. The other groups discussed are the exanthemas group, the diphtheria group, the plague group, the yellow fever group, the septic group, the tuberculosis group, the typhus group, the meningitis group, the venereal group, the ringworm group, the conjunctivitis group and the animal parasites group. This method of grouping contagious diseases in classes of diseases requiring similar treatment and management has obvious advantages. Under each disease, the cause, pathology, method of transmission, diagnosis, quarantine and disinfection methods and methods for community prevention are considered. The section on general sanitation discusses the organization of sanitary forces, methods of keeping records, methods of inspecting schools, factories and institutions, methods for carrying on special campaigns against rats, flies, mosquitoes, etc., and methods for the disposal of sewage and garbage and for the inspection of water and milk. The third part of the book is devoted to a description of practical laboratory methods. The introduction is by Dr. J. N. Hurty, Health Commissioner of Indiana.

# Miscellany

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### Foot-and-Mouth Disease

Foot-and-mouth disease (see editorial on same subject, this issue, page 1766) is also known as epizootic aphtha, aphthous fever, infectious aphtha, aphthae epizooticae; *Maul-und-Klauenseuche, Aphthenseuche, Mäulfaule*, by the Germans; as fièvre aphtheuse, cocotte, by the French; and as *afta epizootica, febbre aftosa*, by the Italians. The contagious nature of foot-and-mouth disease was recognized before 1764, but until the growth of bacteriology it was associated with spoiled feed, bad air and various climatic influences. Various organisms, including bacteria or protozoa, have been suggested as the cause of the disease. In 1897 Löffler and Frosch showed that the contagious material passed through porcelain filters, and therefore put it in the class of filterable viruses. Recently Siegel has connected with the disease certain cocci, which he found in the blood of infected animals, in the vesicles, in the plasma, and in the heart muscle, and his findings have been duplicated by others. The disease infected eastern Europe, and in various wars was spread to western and central Europe. It has occurred at periodic intervals, when it usually has spread over all the countries, and after two or four years subsided. Great Britain, Germany, France, the Netherlands, Austro-Hungary, Russia, all have in turn suffered from it. The loss from this disease in England in 1883 was estimated at $5,000,000. In an epidemic in Germany in 1890, about 500,000 cattle, 250,000 sheep and 150,000 swine were infected with it.

The disease reached Canada through an importation of cattle from England to Montreal in 1870; from this point it spread to the New England states, New York and New Jersey, when this large epidemic was effectively checked. In 1902 an outbreak threatened great danger, but following the destruction of all infected and exposed herds, together with proper quarantine measures, the disease was limited to four of the New England states. At various times there have been small outbreaks following the importation of infected animals. The last large outbreak to occur in the United States was in 1908. At this time the disease was discovered in some Pennsylvania cattle. Investigations by the government showed that cow-pox vaccine virus, imported from a foreign country, was contaminated with foot-and-mouth disease. This vaccine was employed for the production of vaccine in calves which then became infected with foot-and-mouth disease. Another concern purchased some of the contaminated vaccine and infected its own calves. The calves of the second firm were then sold in the open market and started the epidemic; those of the first firm having served their purpose for the production of vaccine had been killed. The government immediately had all the vaccine recalled, and using the usual vigorous measures, was able to check and eradicate the epidemic. This particular instance cost the federal government $300,000. There are no records which show transmission to man of foot-and-mouth disease by means of small-pox vaccine, and it is extremely doubtful if such transmission is possible by the ordinary method of vaccination.

In the epidemic of 1908 Michigan, Pennsylvania, New York and Maryland were affected. "Since that time," says Eichhorn, of the Bureau of Animal Industry, "this country has been free from the disease and with the quarantine prescribed by law for imported animals and the present requirements of testing all importations of vaccine lymph for possible contaminations of foot-and-mouth disease, there appears to be little danger of the introduction of the disease into this country" (Reference Handbook of the Medical Sciences, iv, 504).

In the present epidemic of foot-and-mouth disease, which concerns practically the entire Mississippi Valley, the chief interest is centered in the outbreak in the large Chicago Stock Yards. Up to November 9—quarantine of the stock yards having been instituted November 7—912 head of cattle valued at $52,000 and 160 hogs valued at $2,000 were slaughtered and buried in quicklime in the stock yards. The work of disinfection consisted of a liberal use of creosote, lime and phenol (carbolic acid). Ten states are under federal quarantine and two others are about to be quarantined. It was found unnecessary to slaughter any of the prize stock in the exhibit at Chicago, all of them being quarantined and under treatment; none of them were affected with the disease in a severe form. The history of the epidemic as given by Secretary Houston is as follows: The disease appeared at Niles, Mich., about October 12, and went to the Chicago Stock Yards in a shipment of hogs. From the stock yards it was carried broadcast for over two weeks before steps were taken to limit it. The present epidemic covers five times as much territory as any other former epidemic. Railroads are disinfecting all stock cars. The embargo over the Chicago Stock Yards will cover a period of one week.

In many of the European countries the spread of the disease is checked by allowing all the animals in a single herd to be infected, holding them under quarantine and waiting for them all to die or to recover. More recently it has proved of advantage to destroy all animals of the infected herd and those that have been exposed, at the same time instituting a rigid quarantine and disinfecting the buildings in which the diseased animals have been kept.

The disease is rarely fatal in man, but has been known to be fatal to children. It is not carried by meats but may be transmitted by milk, butter or cheese. Milk that is not pasteurized and cheese that is not made from pasteurized milk may be carriers of the disease.

### First Aid to Those Overcome by Mine Gases, Electric Shock, Etc.

The Bureau of Mines, in publishing the report of the Committee on Resuscitation from Mine Gases (Technical Paper 77), recommends the following procedure in giving first aid to those in need of artificial respiration:

"In case of gassing, remove victim at once from gaseous atmosphere. Carry him quickly to fresh air and immediately give manual artificial respiration. Do not stop to loosen clothing. Every moment of delay is serious.

"In case of electric shock, break electric current instantly. Free the patient from the current with a single quick motion, using any dry non-conductor, such as clothing, rope or board, to move patient or wire. Beware of using any metal or moist material. Meantime have every effort made to shut off current.

"Attend instantly to the victim's breathing. If the victim is not breathing, he should be given manual artificial respiration at once.

"If the patient is breathing slowly and regularly, do not give artificial respiration, but let Nature restore breathing unaided.

"In gas cases, give oxygen. If the patient has been gassed, give him pure oxygen, with manual artificial respiration.

"The oxygen may be given through a breathing bag from a cylinder having a reducing valve, with connecting tubes and face mask, and with an inspiratory and expiratory valve, of which the latter communicates directly with the atmosphere.

"No mechanical artificial resuscitating device should be used unless one operated by hand that has no suction effect on the lungs.

"Use the Schäfer or prone-pressure method of artificial respiration. Begin at once. A moment's delay is serious.

"Continue the artificial respiration. If necessary, continue two hours or longer without interruption until natural breathing is restored. If natural breathing stops after being restored, use artificial respiration again.

"Do not give the patient any liquid by mouth until he is fully conscious.

"Give him fresh air, but keep his body warm.

"Send for the nearest doctor as soon as accident is discovered."

A limited number of copies of the report may be obtained free from the Bureau of Mines, Washington, D. C.

## Medicolegal

### Practicing Medicine Without a License Punishable Under Statute

*(State vs. Nelson (La.), 65 So. R. 893)*

The Supreme Court of Louisiana says that the bill of information filed against the defendant charged him with practicing medicine without a license. He filed a motion to quash the information on the ground that no provision is contained in the statute to punish those who practice without a license. The motion was granted and the Supreme Court affirmed the judgment of the lower court. A rehearing was obtained, and on the rehearing the judgment was reversed.

In its first decision the Supreme Court held that the defendant's contention that Act 49 of 1894 is unconstitutional because its title is not broad enough to cover a prosecution for practicing medicine without a license, was not well founded, as the title of the act recites that it is an act "to regulate the practice of medicine" and "to provide punishment by fine or imprisonment or both." But the court further held that an act, amending an act which has already been repealed, is absolutely without force as the amendment has no foundation on which to rest; and, as Section 14 of Act 49 of 1894 had been repealed by Act 13 of 1898, the attempt to amend Section 14 of Act 49 of 1894 by the passing of Act 244 of 1908 was abortive, and did not have the effect of giving any force to Section 14 of Act 49 of 1894. On the rehearing, however, the court holds that the objection that a statute, purporting to amend and reenact a section of an existing statute, is inoperative because the section in question has already been amended and reenacted by, and merged in, another statute, will not be sustained where the title of the amendatory statute not only declares the purpose to amend, but goes farther and specifically and affirmatively declares the object to be accomplished by the amendment. Act 244 of 1908 is not, therefore, obnoxious to the objection that its object is not declared in its title, or to the objection that it is an ineffectual attempt to amend a nonexistent provision of law, since its title gives it a status as independent legislation.

The title of Act 16 of 1912, at which, also, the defendant's motion to quash was directed, merely declares its object to be to "amend" Sections 5, 11 and 14 of Act 49 of 1894, entitled "An Act to regulate the practice of medicine," etc. The declaration is sufficient as to Sections 5 and 11, but insufficient as to Section 14, which had previously been amended and reenacted by Act 13 of 1896, and superseded by Act 244 of 1908. Another objection, in so far as Section 14 is concerned, is that the title of Act 16 of 1912 refers to criminal prosecutions only, whereas the body of the act provides also a civil proceeding by injunction.

### Liability for Patient Under Own Physician Getting Poison in Hospital—Evidence

*(Broz vs. Omaha Maternity & General Hospital Association (Neb.), 148 N. W. R. 575)*

The Supreme Court of Nebraska affirms a judgment for $7,000 damages against the defendant hospital association for the death of a patient from poison. The patient, who suffered intermittent mental infirmities, was under the care of his own physician. In the absence of his physician, wife, relatives and friends, he found and took some mercuric chlorid tablets. The court says that the pleadings, evidence and circumstances justified a finding that the patient was admitted to the hospital under an implied obligation that he should receive such reasonable care and attention for his safety as his mental and physical condition required. The physician employed by him did not relieve the hospital of responsibility for negligence on its part, if any. The patient was under the personal observation of his physician only a small portion of the time. In the latter's absence and drug emergencies he was under the care of the nurses and the intern who were employees of the hospital. Within the scope of their employment their employer was legally responsible for their negligence to a patient. The patient's physician did not manage or control the hospital, and he was not liable for the negligence of hospital nurses and interns, if he had no connection with any negligent act.

At night, during the absence of the patient's physician, it was clearly the duty of the hospital intern, who was a physician, and the nurses in charge, to give such treatment and attention as the emergency demanded, when known. The defendant was prepared for such an exigency. One of the purposes of a hospital in assuming control of a patient, for private gain, is to furnish promptly modern equipment, facilities and treatment. To avail himself of these advantages the patient left his home and intrusted himself to the care of the defendant. The duties which such a hospital owes to a patient are commensurate with the responsibilities assumed. The approved rule is that a patient is generally admitted to a hospital, conducted for private gain, under an implied obligation that he shall receive such reasonable care and attention for his safety as his mental and physical condition, if known, may require.

It was said that the physician employed by the patient instructed the defendant to allow him the freedom of his room and the halls, that employees of the defendant did so, and that it was not chargeable with negligence for complying with instructions. The directions of the physician should be considered with the duty of the hospital to give the patient such reasonable care and attention for his safety as his mental and physical condition required. The defendant was not instructed to allow the patient, who had been suffering from a fitful mental disorder, access to a hospital sinkroom, where poison, in the form of medicine tablets, was kept. Whether there was negligence in allowing the patient access to such a place in the night, while unattended, was a question for the jury.

Where a hospital patient takes poison at night in the absence of his physician and friends, while he is under the exclusive care of nurses and interns, harsh and technical rules of evidence should not be enforced to exclude proper testimony tending to throw some light on material facts which, on account of the pecuniary interests and the reputation of the hospital, there might be a temptation to conceal.

In considering the reasonableness of the amount of damages awarded, it is held that a mere fitful or temporary mental disorder will not be presumed to continue.

### What Constitute Communications to Physicians and Waivers of Privilege

*(Ausdenmoore et al vs. Holzback (Ohio), 106 N. E. R. 41)*

The Supreme Court of Ohio holds that there was no error in sustaining the objection of plaintiff Holzback to certain physicians testifying for the defendant as to a diagnosis they had made of the plaintiff's physical condition. Section 11494 of the General Code of Ohio provides: "The following persons shall not testify in certain respects: . . . Or a physician, concerning a communication made to him by his patient in that relation, or his advice to his patient." The court holds that a communication by the patient to the physician may be, not only by word of mouth, but also by exhibiting the body or any part thereof to the physician for his opinion, examination, or diagnosis, and that that sort of communication is quite as clearly within the statute as a communication by word of mouth. But the same section further provides that the physician may testify by express consent of the patient, and if the patient voluntarily testifies the physician may be compelled to testify on the same subject. This qualifying clause the court holds to mean that there cannot be a waiver except in two ways: First, by an express consent of the patient, or by the patient taking the stand and voluntarily testifying as to the things and matters communicated to his physician, the latter being held to be in effect an express waiver as to that physician. There was neither form of waiver in this case.

# Society Proceedings

## COMING MEETINGS

American Association of Anatomists, St. Louis, Dec. 28-30.
American Physiological Society, St. Louis, Dec. 27-30.
Amer. Public Health Association, Jacksonville, Fla., Nov. 30-Dec. 5.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Society of American Bacteriologists, Philadelphia, Dec. 29-31.
Southern Surgical and Gynecological Assn., Asheville, N. C., Dec. 15-17.
Western Surgical Association, Denver, Dec. 18-19.

## MISSISSIPPI VALLEY MEDICAL ASSOCIATION

*Fortieth Annual Meeting, held at Cincinnati, Oct. 27-29, 1914*

The President, Dr. D'Orsay Hecht, Chicago, in the Chair

### Factors Which Determine the Advisability of Prostatectomy

Dr. William F. Braasch, Rochester, Minn.: With stone in the bladder it is usually advisable to remove the stone and drain the bladder for a time prior to prostatectomy. Stone in the bladder may cause temporary enlargement of the prostate. Pyelonephritis is a frequent complication of bladder drainage and a strong resistance should be established before attempting operation. The renal condition is better estimated prior to operation by clinical evidence than by laboratory tests. Cystoscopic examination, while valuable in certain conditions, may be the cause of harm if used as a routine procedure. Urethroscopic examination is occasionally of greater value than cystoscopic examination. It is particularly valuable with intra-urethral hypertrophy and with carcinoma.

#### DISCUSSION

Dr. William N. Wishard, Indianapolis: Twenty-four years ago I emphasized the importance of preliminary drainage in cases of prostatic obstruction where bladder infection existed and where kidney function was impaired.

Dr. French Cary, Chicago: Cystoscopic examination is of assistance in determining hypertrophy in different portions of the prostate. All cases should be given a functional test before operation and if the test is low, drainage should be instituted.

Dr. Charles E. Barnett, Fort Wayne, Ind.: In cases of malignant prostate, if the gland is very large and must be taken out, it is wrong to cystoscope the patient and traumatize the tissues, thus infecting the patient still more.

Dr. Bransford Lewis, St. Louis: Many cases of prostatic obstruction are not improved by operation. They are cases of acute, almost complete, obstruction from contracture which can be relieved by palliative measures.

Dr. Gustav Kolischer, Chicago: There are cases in which prostatectomy is indicated, although retention of urine may not be very acute, and there is no hyperdilatation of the bladder, and no infection. One condition which frequently is overlooked is an infiltrating cystitis that extends to the bladder wall from the mucosa and perivesical tissue. If we drain the bladder we are not going to influence the infiltration which is an infectious, inflammatory infiltration of the two coats of the bladder wall. There is only one way of relieving this condition, and that is to make an extensive incision, stripping this infiltrated tissue just as we deal with an infiltrating phlegmon in any other part of the body.

### Hemolysis, Following Transfusion of Blood

Dr. Bertram B. Bernheim, Baltimore: In eight hundred reported transfusions there were fifteen instances of macroscopic hemolysis. In these fifteen cases there were eleven recoveries and four deaths. No hemolytic tests were made in three of the instances where death occurred. In the fourth case tests were made and it was known that the donor's cells were slightly agglutinated by the patient's serum, but since agglutination is an entirely different process from hemolysis, and since no other donor was available, it was considered fairly safe to use this donor, and a fatality occurred. Tests were made in eleven of the fifteen recoveries, and in nine instances hemolysis was prognosticated. The dangers of transfusion are immediate and delayed. The immediate is acute dilatation of the heart consequent on an inflow of blood of such force and rate that the recipient's heart is overwhelmed. The delayed danger is that of hemolysis, which can be prognosticated in practically every instance by careful tests prior to transfusion. In emergencies no thought should be given to hemolysis or anything else. Far better is it to transfuse immediately and save a patient from imminent death, running the slight risk of a late hemolysis, than to temporize with tests which require at least two hours for their proper performance. Where, however, there is time, and in the majority of instances such is the case, failure to have the tests made is an inexcusable blunder.

### Radium in Treatment of Cancer of Uterus

Dr. J. Louis Ransohoff, Cincinnati: Radium is of undoubted value in cancer of the uterus to control hemorrhage, discharge and pain, and in causing the local disappearance of the disease. If possible, radium should be used in all cases of inoperable cancer of the uterus when the patient is not in the extreme stage of emaciation and cachexia.

### Renal Infections from Bacteriologic Point of View

Dr. Irvin S. Koll, Chicago: The accepted three routes of infection are the lymphogenous, hematogenous and urogenous. Knowledge of the lymph channels draining from the intestinal tract into the kidney accounts for the frequency of infections of the kidney associated with acute and chronic gastro-intestinal disturbances. Infections through the ureter may be either extra- or intra-ureteral. Of particular importance is the pyelitis associated with pregnancy, the frequency of which is estimated as high as 20 per cent. Of late the hematogenous route seems to have been neglected in the consideration of the carriage of bacteria to the kidney. The circulatory system is a carrier of bacteria of as great importance as the lymph stream.

#### DISCUSSION

Dr. Hugh Cabot, Boston: The milder grades of infection of the kidney, commonly miscalled pyelitis, are extraordinarily more common in females than in males, even among children. This should not be regarded as accidental, and yet this has never been explained satisfactorily.

Dr. Edward C. Rosenow, Chicago: Primary pyelitis is rare. It is a pyelonephritis or nephritis infecting the pelvis of the kidney secondarily. The results I have had from the intravenous injections of streptococci make me feel strongly that given a case of acute pyelitis or pyelonephritis, no matter what the organism is primarily, it is a hematogenous infection that primarily infects the capillaries and secondarily infects the pelvis of the kidney.

Dr. Emil Ries, Chicago: Cases of so-called pyelitis said to have been cured were really not cases of pyelitis at all, but cases of pyelonephritis. Cases of so-called pyelitis of pregnancy came under my observation rather frequently in years gone by. They were treated on the conservative plan, and the vast majority of the patients got well.

Dr. Bransford Lewis, St. Louis: Lavage, using a fluid that has certain medicaments incorporated in it that have germicidal properties, will cure infections of the renal pelvis.

### Gastric and Duodenal Ulcer

Dr. C. W. Dowden, West Baden, Ind.: Of 425 cases of gastric and duodenal ulcer, 170, or 40 per cent., bore a definite relation to some infection, and I conclude that this is the chief etiologic factor. Ulcers pass through a stage which is distinctly medical, and if diagnosed at this time are amenable to treatment. Surgical ulcers are those that have involved more than one coat of the gastric mucosa. Medical treatment at this time is worse than useless because the patient mistakes temporary relief for cure. An active ulcer in its early stage is best treated by absolute rest to the stomach, controlling painful peristalsis by antispasmodics, and by rectal feeding until the acute stage has passed. All foci of infection, no matter where located, should be removed.

#### DISCUSSION

Dr. Charles D. Aaron, Detroit: In the treatment of gastric ulcer, when it is complicated by vagotonia, the treatment of both conditions will give a better result than if we treat only the ulcer. We have all had cases of healed ulcer of the pylorus, with contraction or stenosis of the pylorus, dilatation of the stomach, visible peristalsis when the stomach was endeavoring to empty itself. We operate and what do we find? Not an ulcer but obstruction of the pylorus. A gastro-enterostomy is done and the patient recovers. Why in such cases do we not have chronic ulcer of the stomach?

Dr. Charles A. L. Reed, Cincinnati: Little regard has been paid to one of the most important etiologic factors, namely, chronic intestinal stasis. Too little attention is being given to the conditions within the stomach proper, to the nerve conditions back of the stomach action, and to the various distinctly local causes as they apply directly to the pylorus or to the duodenum. In the majority of cases the difficulty lies in favor of normal physiologic drainage of the duodenum and stomach, thus inducing infection which in turn induces ulceration. I have demonstrated this in a considerable number of cases. I have latterly tried to establish drainage in the lower segment of the intestinal tract, and with what results? The ulcer disappears.

Dr. C. W. Dowden: I am fully in accord with everything Dr. Reed said as to the important rôle intestinal stasis plays in the production of gastric and duodenal ulcer.

### Colon Stasis

Dr. Joseph R. Eastman, Indianapolis: Treatment directed at the relief of chronic colitis will affect also the attendant ptosis and stasis and likewise the associated plastic peritonitis. Properly performed short-circuiting operations by the improved drainage which they provide relieve chronic colitis and indirectly affect favorably the other factors of stasis — ptosis and peritonitis. The feces are to a considerable extent made up of epithelial debris, intestinal secretions and dead and living bacteria, and these things mixed with food residue under the influence of contractions of the cecum rise in the ascending colon. But this contraction is not constant. The empty cecum is in repose; it does not contract. It is only awakened when the small intestine empties into the cecum its liquid contents. If contractions are not produced in this way, the feces have no tendency to be evacuated. The colon becomes lazy and atonic and obstipation is increased by antiperistalsis. It is for this reason that ileosigmoidostomy may be said to be conceived falsely. By this operation the liquid contents of the small intestine are not permitted to enter the cecum to bring about contraction. It is for this reason that Lane and others have been obliged to reoperate after ileosigmoidostomy and deal with an enormous fecal accumulation in the cecum and ascending colon. Typhlo-sigmoidostomy or typhlo-proctostomy are not open to the above criticisms, for in these operations the fluid contents of the small intestine are permitted to enter the cecum. In a case of simple constipation concerning only the left colon, ileosigmoidostomy may be of some benefit, but it is debatable whether such a condition is not better treated by non-surgical means. Bergmann first anastomosed the cecum to the sigmoid for volvulus of the ascending colon and the operation in cases of stasis is not indicated unless membranes or adhesions so fetter the colon as to make such an exclusion necessary because of incompetency or obstruction. If the colon is obstructed at the hepatic or splenic angles alone, then colocolostomy, as practiced by Payr, which excludes these flexures alone is of obvious use. Sigmoidoproctostomy for the exclusion of redundant sigmoid may often be employed with advantage to supplement the anastomosis of the caput coli to the rectum or the redundant sigmoid may be treated by the Troyanoff-Winiwarter anastomosis between the loops of the sigmoid or eventually the redundant colon may be resected. At any rate, after typhlo-proctostomy, coils of redundant sigmoid cannot with safety be left above the stoma. Montprofit's operation of dividing the terminal ileum and anastomosing both ends end-to-side with the sigmoid represents no improvement over simple typhlo-proctostomy. Here an attempt is made to drain the excluded cecum in defiance of the ileocecal valve through the short stump of the ileum, whereas this can be accomplished more simply and more completely by a large stoma in the floor of the cecum.

DISCUSSION

Dr. Joseph Ransohoff, Cincinnati: Colon stasis does exist, but in a large number of individuals it produces no deleterious results whatever. In a very small number of cases colon stasis is followed by pathologic conditions. It has been said that idiopathic epilepsy may be brought on by colon stasis. It is a tremendously far cry from colon stasis to epilepsy. Idiopathic epilepsy is a condition which begins exceedingly early in life in the form of *petit mal.* I cannot believe that there is any possible connection between colon stasis and epilepsy.

Dr. William Seaman Bainbridge, New York City: Lane emphasizes that nineteen cases out of twenty of intestinal stasis ought never to be operated, and yet men are saying that Lane performs colectomy, ileocolostomy, etc., on this class of patients. He does not.

Dr. Louis J. Hirschman, Detroit: Postural treatment, special localized exercise, etc., will cure many cases of intestinal stasis. Give these patients Russian oil for months; it cures many of these patients. When they do not respond to these methods of treatment, operate.

Dr. J. Rawson Pennington, Chicago: Colon stasis is a symptom, not a disease. The treatment for colon stasis is to remove the obstruction and then the stasis disappears. It does not make much difference what operation you do.

### Use of Abderhalden Reaction with Normal and Pathologic Serums

Dr. Ellison L. Ross and Dr. H. Douglas Singer, Kankakee, Ill.: Our results, briefly, are as follows: 1. Paretic serum: With 2 washings 10 serums all gave positive results; with 3 washings 6 were all positive; with 5 washings 8 of 11 were positive; with 10 washings 1 of 3 was positive; with 11, 2 of 8; with 13, 14 and 15 washings none of 20 were positive. 2. Normal serum: With 2 washings 8 were all positive; with 3 washings 1 of 4 was positive; with 5, 8, 10, 11, 13, 14 and 15 washings a total of 34 serums all gave negative results. It was also demonstrated that the water used for the washing of substrates contained material which underwent lysis when mixed with blood serum. Hence, in order to determine whether there is any specific difference between the ferments present in general paresis and the normal state, the water used for the fifth and eighth washings was concentrated and used as a substrate. In spite of the failure of normal serum to digest brain substrate which had been washed 5 times or more, normal serum caused lysis of the material in this wash-water fully as markedly as did that from cases of general paralysis. From these facts it is evident that no interpretation of the results of Abderhalden tests with tissue substrates is justifiable unless the same (not merely similarly prepared) substrate has been proven to give negative results with a series of normal serums..

### Modern Syphilis Therapy and the Central Nervous System from a Biologic Point of View

Dr. Carl D. Camp, Ann Arbor, Mich.: The treatment of tabes and paresis is probably the most important part of the treatment of syphilis of the nervous system. These diseases, while due to syphilis, have other determining factors. Intravenous injections of salvarsan have an effect in some cases. Intradural injections of salvarsan have greater effect on the spinal fluid findings but are distinctly dangerous. The Swift-Ellis treatment seems to vary in effectiveness with different observers; the more conservative do not find any greater improvement than with intravenous injections. The rationalé of this treatment is not very clear. The use of mercury by injections is probably as effective as any method of treatment and has less possibility of harm. Cases of tabes dorsalis frequently become stationary under mercurial treatment, the spinal fluid findings either showing improvement or else no change.

(*To be continued*)

# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Diseases of Children, Chicago

*November, VIII, No. 5, pp. 321-384*

1 Weights and Measurements of Infants and Children in Private Practice Compared with Institution Children and Schoolchildren. R. G. Freeman, New York.
2 *Hereditary Syphilis as Social Problem. P. C. Jeans and E. M. Butler, St. Louis.
3 Splenohepatomegaly Gaucher. Report of Three Cases. M. S. Reuben, New York.
4 Subacute Atrophy of Liver. E. C. Dickson, San Francisco.
5 *Tuberculous Lesions in Infants and Young Children, Based on Post-Mortem Examinations. M. Wollstein and F. H. Bartlett, New York.
6 Recurrent Meningitis, Due to Lead, in Child of Five Years. H. M. Thomas and K. D. Blackfan, Baltimore.

2. **Hereditary Syphilis.**—Jeans and Butler emphasize that as a social problem, hereditary syphilis assumes relatively large proportions, one patient often representing a number of individuals needing treatment. Parents are frequently indifferent and fail to continue treatment. They also frequently fail to see the importance of having Wassermann tests made on the other children of the family, who may seem perfectly well, but who may have syphilis. In the case of such parental indifference the authors suggest that such tests or treatment should be enforced.

Hereditary syphilis is more frequent in illegitimate than legitimate children. The mortality is higher in illegitimate syphilitic infants than legitimate syphilitic infants. Hereditary syphilis in St. Louis is from two to three times as frequent in the colored as in the white race. The frequency of hereditary syphilis is greater among the infants in our clinic than among the older children. The waste in potential life by miscarriages and deaths in syphilitic families is twice as great as in non-syphilitic children.

Thirty-three per cent. of the syphilitic children over 1 year examined by Jeans and Butler had permanent disabling damage. Eighteen per cent. of the syphilitic children over 1 year had long-continued temporary disabling damage. There is about five times as much feeble-mindedness in syphilitic families as in non-syphilitic families. The mortality for artificially fed syphilitic infants is five times as high as for breast-fed syphilitic infants, not including deaths due to intestinal disturbances.

5. **Tuberculosis.**—An analysis of 178 cases of tuberculosis occurring in children less than 5 years of age (75 per cent. under 2 years) was made by Wollstein and Bartlett. In five instances the tuberculous lesions were found to be limited to the bronchial lymph-nodes, only one node being involved in each of three cases, and two and three nodes in the other two cases, respectively. These children were between 17 and 27 months old. The lesion was an active one in every case. There were two children in whom the tuberculous lesions were limited to one lung and the adjacent bronchial lymph-nodes. One of these was a 4-months-old girl, the other a boy of 3 years. One child, 20 months old, had but one other tuberculous focus besides that in the bronchial lymph-nodes. In this case several fingers were the seat of a dactylitis, apparently tuberculous. As examples of pulmonary tuberculosis with beginning generalization through the blood-stream, was an 18-months-old child in which there was tuberculosis of the lungs, bronchial lymph-nodes and spleen, and another in which tubercles were found in the liver, spleen and pia mater, in addition to the lungs. The presence of recent tuberculous ulcers in the intestines in a boy 18 months old with an older infection in the lungs and bronchial glands suggested infection of the intestine through swallowing of tubercle-bacilli-laden sputum rather than blood generalization. By far the greater number of cases in this series fall into the group of primary pulmonary infection with markedly generalized tuberculosis by way of the blood. There were 134 cases of this kind, the lesions in the lungs and bronchial lymph-nodes being older than those in any other organ.

The lungs were free from tuberculosis in only 14 of the 178 cases. Calcareous degeneration was found in the lungs only five times. Pulmonary cavitation was present in forty-three children. One child presented cheesy tubercles in one mesenteric lymph-node, without any other tuberculous focus in the body. In one infant, 9 months old, the mesenteric and cervical nodes were equally large and cheesy, while one deep cervical node contained a calcareous area; one tuberculous ulcer was found in the jejunum. In two cases the cervical lymph-nodes showed as old a tuberculous focus as that found in the mesenteric nodes and intestines, while the liver and spleen and lungs contained but few young, miliary tubercles. Thirteen other cases presented the oldest lesion in the mesenteric lymph-nodes, whence more or less completely generalized infection had occurred. One child of 2 years, besides cheesy tubercles in several mesenteric glands, had miliary tubercles in the liver, peritoneum and pia mater. The involvement of the pia mater before that of the lungs and spleen is noteworthy. Six of the thirteen cases in which the mesenteric glands contained the oldest lesion were accompanied by tuberculous peritonitis. With one exception, a child of 7 months, all the cases of peritonitis occurred in children 21 months to 4 years of age.

There were only 14 cases in which the lungs were not involved. In the entire series of 178 cases there were only 9 in which the bronchial lymph-nodes contained no evidence of tuberculosis. In three the lungs were also free. In the remaining six there were tuberculous lesions in the lungs, but the primary focus was in the gastro-intestinal tract. The mesenteric lymph-nodes, on the other hand, were the seat of a tuberculous lesion in 113 of the 178 cases. In only 17 of these 178 cases were the mesenteric gland lesions the most advanced in the body, and in 4 of the 17 the intestines were not involved. Tuberculous meningitis occurred in 69, or 38 per cent., of these children. The distribution of the lesions in these cases shows that the younger infants tend to have a larger number of viscera involved in the tuberculous process, while in the older children meningitis may follow a limited infection. The younger infants have a more generalized tuberculosis and the older children have a more localized infection.

The most generalized cases had tubercles in the skin, myocardium, peritoneum, mesenteric glands, intestines, kidneys, liver, spleen, bronchial glands, lungs and pia mater. This occurred in two infants, 3 and 5 months of age. Of these sixty-nine cases of meningitis, three were of intestinal origin: The largest number of cases were of inhalation origin, as shown by the large percentage of cases in which the pulmonary lesions were the most advanced in the body. The absence of tuberculous lesions from the lungs in fourteen cases and the presence of tuberculous lesions in the bronchial lymph-nodes in seven of these seems to show that it is possible for the tubercle bacillus to pass through the lungs without localizing there.

### American Journal of Orthopedic Surgery, Philadelphia

*July, XII, No. 1, pp. 1-200*

7 *Scoliosis. J. Calve, Berck, France.
8 Criticism of Paradoxic, Rotation of Physiologic Treatment of Scoliosis. A. M. Forbes, Montreal.
9 Mechanics of Plaster Corset in Lateral Curvature of Spine. E. G. Abbott, Portland, Me.
10 Relation of Bony Anomalies of Lumbar and Sacral Spine to Causes and Treatment of Scoliosis. Z. B. Adams, Boston.
11 *Bifurcation of Transverse Process of Fifth Lumbar Vertebra. M. S. Henderson, Rochester, Minn.
12 Treatment of Scoliosis by Abbott Method. H. L. Prince, Rochester, N. Y.
13 Frame for Standardizing Photographic Records of Scoliosis. C. H. Bucholz and R. B. Osgood, Boston.
14 So-Called "Sciatic Scoliosis." C. H. Bucholz, Boston.
15 Abbott Treatment of Rigid Scoliosis with Report of Sixty Cases. S. Kleinberg, New York.

7. **Scoliosis.**—With a child whose bony tissue is abnormally malleable, if the equilibrium of the forces of the spinal column is, from any cause, disrupted, Calve believes that the ensuing scoliotic deformation is perhaps readily explained. The rupture of the equilibrium is manifested by a curvature of the vertebral column. Because of the softness of the bony tissue, this curvature causes a deformation of the bodies of the vertebra, and this deformation makes the curvature permanent. The weight of the patient increases the curvature and rotation is started. The lateral deviation vertebra causes the bending of the rib, and this bending increases the rotation.

11. **Transverse Process of Fifth Lumbar Vertebra.**—Within the last two years, seventeen cases with bifurcation of the transverse process of the fifth lumbar vertebra have been recorded in the Mayo clinic. In this series there were three males, aged from 18 to 35, and fourteen females, aged from 9 to 45. Only three gave any symptoms which could be definitely attributed to the condition present. The remaining fourteen cases were discovered accidently in radiographing for other conditions such as lesions of the kidney and ureter, tuberculosis of the spine, congenital dislocation of the hip, etc. In four cases, the condition occurred on both side, seven on the right and six on the left. One case only was operated on; relief was but temporary.

### American Journal of Public Health, Boston

*October, IV, No. 10, pp. 819-963*

16 Stream Pollution and Present Status of Controlling Legislation in California. C. G. Hyde, San Francisco.
17 Stream Sanitation in Illinois. P. Hansen, Springfield.
18 Stream Pollution in Indiana. J. A. Craven, Denver.
19 Prevention of River Pollution in Kansas. C. A. Haskins, Kansas City, Kan.
20 Stream Pollution in Louisiana. J. H. O'Neill, Denver.
21 Stream Sanitation in Maine. H. D. Evans, Denver.
22 State Control over Water Supply and Drainage Conditions in Maryland. R. B. Morse, Baltimore.
23 Laws Relating to Prevention of River Pollution in Massachusetts. X. H. Goodnough, Boston.
24 Sewage Disposal and Stream Pollution in Minnesota. F. Bass, Minneapolis.
25 Present Status of Waterways Sanitation in Montana. W. M. Cobleigh, Helena, Mont.
26 Stream Pollution and Sewage Treatment in Ohio. W. H. Dittoe, Columbus.
27 Conditions in Virginia with Respect to Stream Pollution. R. G. Messer, Richmond, Va.
28 *Pulmonary Anthracosis—Community Disease. O. Klotz, Pittsburgh.
29 Potassium Tellurite as an Indicator of Microbial Life. W. E. King and L. Davis, Detroit.
30 Is Pellagra Due to an Intestinal Parasite? B. W. Page, Lumberton, N. C.

28. **Pulmonary Anthracosis.**—Pulmonary anthracosis (not in coal miners) according to Klotz is distinctly an urban disease, and is proportionate to the smoke content of the air. The soot is inspired and lodges in the pulmonary alveoli, from which it carried by phagocytes into the lung tissue to become lodged in some portion of the pulmonary lymphatic system. Although small quantities of carbon deposit in the lung may remain without harm, yet the quantity accumulating in the dweller of the larger cities has an accompanying greater or less fibrosis, impairing the elasticity as well as altering the functional capacity of the organ. The distribution of carbon is fairly uniform in the parenchyma of the different lobes, but there is a considerable variation in the distribution of the pleural deposit. The interlobar diaphragmatic pleural surfaces show the least pigment. Moreover, less pigment is found in the grooves produced by the ribs of abnormal bands. Carbon tends to accumulate at the nodal points of junction of the lymphatic channels. The cellular migration of carbon may lead to unusual accumulations in certain areas, particularly well demonstrated in the deposit about chronic tuberculous lesions. Carbon deposits by inducing fibrosis tend to encapsulate chronic tuberculous foci. Pulmonary anthracosis by itself does not appear to stimulate the production of pleural adhesions. The actual amount of carbon present in the lungs of different individuals varies considerably and is dependent, in part at least, on the age, occupation, residence and condition of the lungs (emphysema, collapse, tuberculosis).

### American Journal of Tropical Diseases and Preventive Medicine, New Orleans

*October, II, No. 4, pp. 223-294*

31 *Propagation of Amebic Dysentery in Animals. A. W. Sellards and W. A. Baetjer, Baltimore.
32 Spirochete and Fusiform Bacilli in Various Lesions in Philippines. W. P. Chamberlain, New York.

33 Occurrence of Endamoeba Mortinatalium as Human Parasite. A. J. Smith and F. D. Weidman, Philadelphia.
34 *Bubonic Plague. Study of Typical Case. H. W. Wade and H. L. Staring, New Orleans.
35 Tuberculosis in Tropical Countries and Necessity for Greater Effort to Prevent It. I. W. Brewer, Taughannock Falls, N. Y.
36 Tropical Infectious Stomatitis; "Mal De Boca." N. Barlow, Cuyamel, Honduras.

31. **Propagation of Amebic Dysentery in Animals.**—The inoculation of infective material from virulent and also from distinctly avirulent cases of amebic dysentery directly into the cecum of kittens has given practically 100 per cent. of infections as compared with the usual result of about 50 per cent. of positive infections when virulent material is fed or injected per rectum. Injections by intracecal methods has been of service in: (1) The continuous propagation of a strain of dysentery. (2) The determination of the etiology of some obscure diarrheas. (3) It also offers certain advantages in diagnosis and in the study of the morphology and biology of the entameba.

Continuous propagation of one strain of dysentery through eleven passages, with a definite increase in virulence and with retention of the typical morphology, has been obtained. Especial attention was given to the following points: (1) Avoidance, as far as possible, of the accompanying bacteria by selection of mucus and blood practically free from fecal matter. (2) Inoculation of ameba obtained during the first day or two of symptoms. (3) Avoidance of diluting agents. (4) Avoidance of degenerated ameba by sacrificing animals, if necessary, and obtaining material from the lesions in the mucosa.

Sellards and Baetjer state that degenerative changes described by Hartmann and by Darling do occur in infected animals, especially in spontaneous stools and in autopsy material, but by sacrificing the animals they were able to demonstrate, in addition to these degenerated forms, an abundance of typical virulent ameba in the lesions in the mucosa. A careful consideration of the possibilities for the loss of a strain of ameba by accident during subpassage in animals leads them to feel definitely that the view, accepted at present, that the subpassage of amebic infection is self-limited, is definitely erroneous.

The clinical course of the disease in animals is strikingly similar to that of human infections: (1) The following features occur both in man and animals: (a) Acute fatal infections; (b) chronic infections with relapses and liver abscess; (c) development of the carrier state. (2) Certain features have not been reproduced in kittens; (a) intestinal amebiasis with extensive lesions without dysentery; (b) rare complications, such as brain and splenic abscess. (3) One important feature, bacterial septicemia, is common in animals, but has not been rigidly established in man. (4) The pathology in man and animals is similar in its fundamental characteristics, but differs in the exact distribution of the lesions. Some obscure diarrheas were investigated by Sellards and Baetjer which were characterized by continuous watery discharges without periods of intermission and with the presence of a few atypical ameba in the stools. From a morphologic standpoint, no etiologic importance could be attached to these ameba. Animal inoculations proved definitely, however, that these organisms were responsible for the symptoms.

34. **Bubonic Plague.**—Given a case in which there is a sudden onset with marked prostration, severe headache, vomiting, high temperature and early delirium, in which there is found a focus of lymphatic enlargement and tenderness, Wade and Staring urge that the possibility of *B. pestis* infection should be considered. The diagnosis of a case cannot, as a rule, be made positive without a bacteriologic study. This is to be carried out on material secured by gland aspiration, smears of which usually show numerous typical bacilli. The rather characteristic growth on different media, with the usual involution forms on salt agar, together with the demonstration of lack of motility and of the habit of producing acid without gas in dextrose media, make the diagnosis so certain that the death of guinea-pigs inoculated with gland material is merely confirmatory. The essential features of sections of the tissues in this infection are acute inflammatory infiltrations, dissolution of connective tissue, hemorrhage, edema and the presence of great numbers of the bacilli in the tissues along the invasion tract.

### Boston Medical and Surgical Journal

*October 29, CLXXI, No. 18, pp. 659-694*

37 Relation of Industry to General Medicine. D. L. Edsall, Boston.
38 Relation of Insurance Companies to Industrial Diseases. F. L. Hoffman, Newark, N. J.
39 Occupational Diseases as Public Health Problem. H. Linenthal, Boston.
40 Some Fatal Surgical Errors. J. S. Horsley, Richmond, Va.

### Colorado Medicine, Denver

*October, XI, No. 10, pp. 361-402*

41 Pathology of Early Gastric Carcinoma. L. B. Wilson, Rochester, Minn.

### Journal of Experimental Medicine, Lancaster, Pa.

*November, XX, No. 5, pp. 433-543*

42 *Influence of Diet on Transplanted and Spontaneous Mouse Tumors. P. Rous, New York.
43 Bacterial Antiferments. J. W. Jobling and W. Petersen, New York.
44 Lipoids as Inhibitors of Anaphylactic Shock. J. W. Jobling and W. Petersen, New York.
45 *Effects of Extirpation of Thymus in Rats. A. M. Pappenheimer, New York.
46 Calcium Content in Bones and Teeth from Normal and Thymectomized Albino Rats. S. Morgulis and W. J. Gies, New York.
47 Influence of Various Substances on Growth of Mouse Carcinoma. M. S. Fleisher and L. Loeb, St. Louis.
48 Immunization Against Action of Substances Inhibiting Tumor Growth. M. S. Fleisher, M. Vera and L. Loeb, St. Louis.
49 Do Substances Inhibiting Tumor Growth Exert Retarding Influence on Regeneration of Skin? W. E. Leighton, St. Louis.

42. **Influence of Diet on Tumors.**—Rous' experiments show that large growths of certain transplanted rat and mouse tumors are checked in their development by underfeeding the host on a special diet. (Sweet's modification of one of Mendel and Osborne's foods) or in some cases by simple underfeeding. Two metastasizing mouse tumors are instances in point. They stopped growing or grew very slowly in hosts underfed on the special diet. The Flexner-Jobling rat carcinoma, on the other hand, was unaffected by the most rigorous and underfeeding on a mixed diet when this was begun after the tumor had been growing for a short period. Experiments to test the influence of underfeeding on recurrence of this tumor gave results that varied, but the findings strongly indicate that generalizations from work with transplanted tumors as regards the effects of diet on spontaneous growths are unwarranted.

By underfeeding on Sweet's food mice with spontaneous tumors, beginning some days prior to operation, it proved possible in most cases to delay for a relatively long period the development of recurrences and the growth of tumor bits (grafts) disseminated at the time of surgical interference. The treatment entailed great loss of weight. Tumor mice kept on ordinary diet previous to operation, but put thereafter on an abundant ration of Sweet's food, developed recurrences as early as the tumor mice on ordinary diet; whereas the growth of auto-implants was much delayed. These results seem attributable rather to a gradual malnutrition induced by the special food than to the circumstance that it lacked a growth principle. In none of the dieted mice was a definite cure obtained. Ordinarily a recurrence appeared and the grafts began to grow soon after the host, again on ordinary food, had regained weight. A few spontaneous tumors seem absolutely unaffected by the most rigorous dieting.

Rous thinks that it is conceivable that recurrences of certain human tumors and the development of metastases may be delayed or prevented for a period by methods somewhat similar to those employed against spontaneous mouse tumors in the present investigation. But generally speaking only the more malignant human tumors would require such palliative measures, and these are precisely the ones that would prove—if experience with mice is an index—least amenable to alterations in the nutrition of the host.

45. **Effects of Extirpation of Thymus in Rats.**—Lesions of the bones and teeth were observed by Pappenheimer in thymectomized rats, in controls of the same litters, in stock animals, and in a rat inoculated with bone-marrow from a thymectomized rat with lesions of the skeletal system. He sees no valid reason for attributing such lesions to the loss of thymic function. In some of the rats showing the disease, an unusual number of mitoses were found in the parathyroid glands, but no evidence of injury to these structures. Pappenheimer was unable to confirm the statements of Klose and Magnini as to the fatal effects of complete thymus extirpation in rats.

### Lancet-Clinic, Cincinnati

*October 17, CXII, No. 16, pp. 413-444*

50 Two Hundred Nervous and Mental Cases; Alcohol as a Factor in Their Causation. R. Reed, Cincinnati.
51 Fascial Transplantation in Cure of Hernia. C. Hiller, Cincinnati.
52 Importance of Observation of Mouth and Teeth from Life Insurance Standpoint. G. V. I. Brown, Milwaukee, Wis.
53 Alcoholic Psychosis and Psychopathic Drinkers. T. A. Williams, Washington, D. C.
54 Use of Filters in Roentgen-Ray Treatment. C. Goosman, Cincinnati.
55 Thomsen's Disease—Myotonia Congenita. H. H. Hoppe, Cincinnati.

*October 24, No. 17, pp. 445-470*

56 Case of Epidemic Cerebrospinal Meningitis. P. H. Linthicum, Evansville, Ind.
57 Scopolamin Morphin in Labor. M. A. Tate, Cincinnati.
58 Public Health Administration. J. N. Hurty, Indianapolis.
59 Esophago-Bronchial Fistula. J. E. Pirrung, Cincinnati.
60 Clinically Malignant Nevi—Pathologically Non-Malignant. F. M. Coppock, Jr., Cincinnati.

### Medical Record, New York

*October 31, LXXXVI, No. 18, pp. 741-782*

61 Treatment of Advanced Pulmonary Tuberculosis. S. A. Knopf, New York.
62 *Effects of Forty Years of Cholelithiasis. G. H. Hoxie, Kansas City, Mo.
63 *Suggestion Regarding Treatment of Fractures About Elbow Joint. W. E. Hartshorn, New Haven, Conn.
64 Vasomotor Disorders. W. H. Thomson, New York.
65 Subjective and Objective Symptoms (98) of Favorable and Unfavorable Reactions to Tuberculin. M. Solis-Cohen, Philadelphia.
66 Widening Pellagra Zone. G. G. Hunter and E. H. Williams, Los Angeles.
67 Treatment of Orbital Cellulitis. S. E. Pendexter, East Orange, N. J.

62. **Effects of Forty Years of Cholelithiasis.**—Hoxie presents a detailed post mortem report in a case in which the patient gave an authentic history of having suffered from gall-stones for over forty years. The anatomic diagnosis was as follows: Acute pancreatitis with necrosis, impacted gall-stone in common duct, local peritonitis in region of bile ducts and bladder, multiple gall-stones in bladder and in cystic and common ducts, yellow atrophy (?) of liver due to fatty degeneration, congestion of right kidney, fatty infiltration of the heart, partial thickening of pylorus, partial obstruction of ascending colon due to constricting band, acute dilatation of the stomach.

63. **Treatment of Fractures About Elbow Joint.**—After reducing the fracture and placing the forearm in the acutely flexed position Hartshorn applies the dressing as follows: 1. The placing of a gauze bandage extending from the wrist to the elbow permitting free movement at the elbow. 2. An adhesive strip is applied as suggested by Scudder, extending from wrist to arm. 3. Starting at the elbow the center of a strip of adhesive plaster 1½ cm. wide and of sufficient length to encircle the forearm and arm is placed posterior to the elbow and its ends brought forward to the anterior surface in the same manner as that employed in strapping the knee joint. A second strip if applied overlapping this one-half. This is followed by more strips of a similar nature, gradually ascending until the forearm and arm have been completely covered both anteriorly and posteriorly. Protected as they are by the gauze bandage previously applied, the adhesive does not at any point come in contact with the skin except at the hand and shoulder. 4. The application of a strip of adhesive plaster 5 cm. wide along the dorsum of the forearm and over the uninjured shoulder. This holds the hand firmly in position. 5. A similar strip of adhesive is then applied around the arm and chest just above the elbow.

The subsequent treatment of the fracture requires: Daily inspection for the first week. At the end of this time the adhesive plaster is removed and passive motion leading toward extention is applied. If acute flexion can be easily regained the dressing is reapplied, reducing the angle of flexion by substituting a muslin or gauze swathe for the plaster, allowing only the adhesive band to remain. This is permitted to stay in place for one week longer, when some form of an external angular splint is applied, which allows adjustment of the angle. After the second week massage and passive motion are employed each second day until both flexion and extension are approximately normal. Daily use of the extremity after the fourth week.

### Michigan State Medical Society Journal, Grand Rapids

*October, XIII, No. 10, pp. 573-634*

68 Modern Practice of Medicine. G. L. Kiefer, Detroit.
69 Vital Statistics—White Slave of Sanitation. C. L. Wilbur, Albany.
70 State Medicine. W. H. Sawyer, Hillsdale.
71 Infant Feeding. R. B. Harkness, Houghton.
72 Local Anesthetics—Some Comparative Physiologic Reactions. O. E. Closson, Detroit.
73 Four Cases of Cholelithiasis and Pregnancy. R. A. Burke, Detroit.
74 Skin Grafting. M. D. Bird, Marinette, Wis.

### Missouri State Medical Association Journal, St. Louis

*October, XI, No. 4, pp. 157-206*

75 *Use of Electrocardiograph in Study of Heart. G. C. Robinson, St. Louis.
76 *Cardiac Arhythmia. P. T. Bohan, Kansas City.
77 *Respiratory Disturbances in Heart Disease. Report of Case. G. H. Hoxie, Kansas City.
78 *Cancer of Cecum in Relation to Appendiceal Lesions. Report of Two Cases. P. Y. Tupper, St. Louis.
79 *Treatment of Migraine. G. Campbell, St. Louis.
80 Local Anesthesia in Major Surgery. W. A. Shelton, Kansas City.
81 State Medical Legislation from Viewpoint of Physician. W. S. Allee, Olean.
82 Retrobulbar Neuritis with Ethmoidal Involvement. Report of Case. W. F. Hardy, St. Louis.

75. **Use of Electrocardiograph.**—Curves from cases of complete heart-block, ventricular premature contractions or extra systoles and auricular fibrillation are shown by Robinson to demonstrate the importance of the conception of the heartbeat, that its normal mechanism is dependent on a proper coordination of two separately contracting portions of the heart, and that the electrocardiograph serves to demonstrate clearly any derangement of this coordination that may occur.

76. **Cardiac Arhythmia.**—Bohan has used strophanthin in eighteen cases of fibrillation with excellent results in all, except one patient who had fever. When the pulse is rapid 1/100 of a grain of strophanthin intravenously will usually reduce the rate one-third within one hour. One such dose every four to seven days is usually sufficient. In some patients it has to be repeated every day or two. The action of strophanthin is the same as digitalis. It is easily administered, practically painless and in over 300 injections that Bohan has given there have been no bad results.

77. **Respiration in Heart Disease.**—Hoxie states there are several factors in the production of irregular respiration in cardiac cases. They are, first, the mechanic insufficiency of the lungs because of the damming back of the blood in the lungs and of the lowered blood-pressure; and second, the oxygen lack at the medulla. Added to these factors is the acidosis due to insufficient combustion in the tissues. It follows, therefore, that in the dyspnea of cardiac patients the inhalation of oxygen may be of great benefit. By increasing the oxygen tension of partial pressure more oxygen will be taken up by the blood, more passed to the tissues and to the respiratory center, and the chemical cause of the dyspnea removed.

Inasmuch as there are several factors at work in the production of periodic respiration, the early recognition of the type of respiration will enable the clinician to prolong life by taking measures to remove the factors at fault, namely, stimulate the heart action with digitalis or increase the blood-pressure with pituitrin, or lower it with the nitrites, or reduce the acidity by administering alkalies, or attack the oxygen lack directly by administering oxygen itself, as the circumstances may permit.

78. **Cancer of Cecum.**—According to Tupper malignant disease of the appendix is not uncommon. The new growth cannot be clearly differentiated from carcinoma microscopically, but clinically its deportment is definitely that of the endotheliomata elsewhere in the body. The malignant process is probably grafted on the appendix that has, as the result of inflammatory action, undergone cicatrization and partial or complete obliteration of its lumen. The removal of the involved appendix generally compasses the trouble, as secondary glandular involvement and metastases are rare. In rare instances the cecem seems to have been involved secondarily to and as the result of the cancer of the appendix, but definite proof of this is wanting.

79. **Treatment of Migraine.**—In all cases of migraine, Campbell says, treatment should consist of first a sufficiency of outdoor recreative exercise, first strengthening the muscles, if required, and stimulating the patient's interest and pride in physical accomplishments; second, a diet abundantly rich in cellulose with agar-agar added if necessary, and from which sugar is eliminated, protein given very sparingly and starch in moderation only; third, when the above diet and abundant diluents fail to keep the bowels free, the rectum should be attended to, or, this failing of effect, a saline as above advised should be regularly employed, and finally the patients should receive three times daily, after meals, a dose of spirits of glonoin sufficient for him to feel the physiologic effect in slight headache or throbbing of head or flushing of face shortly after taking each dose, and the dose should be maintained at or slightly beneath this. Remember that to maintain this effect, the dose has often to be greatly increased, sometimes to 30 drops or more three times a day. Such a regimen has, in Campbell's hands, brought much relief to patients with a condition in which the suffering headache, severe though it often be, is of minor importance compared to the effect on the cardiovascular system and life expectancy itself.

### New York Medical Journal

*October 31, C, No. 18, pp. 849-900*

83 Nerve Block, Public Health and Tuberculosis. J. Grant, Ottawa, Canada.
84 Diseased Conditions of Cecum. G. R. Satterlee, New York.
85 *Features of Pneumococcus Meningitis. A. Gordon, Philadelphia.
86 An Improved Ether Inhaler. A. E. Gallant, New York.
87 Implantation of Generative Glands and Its Therapeutic Possibilities. (To be continued.) G. F. Lydston, Chicago.
88 Intranasal Operation in Tumor of Hypophysis. T. H. Halsted, Syracuse.
89 Blackwater Fever. W. H. Deaderick, Hot Springs, Ark.
90 *Normal Horse Serum in Hemorrhage from Nose and Throat Operations. C. F. Theisen and N. K. Fromm, Albany.
91 *An Effective Method to Prevent Postoperative Nasal Hemorrhages. A. I. Schwartz, New York.
92 Treatment of Ringworm of Scalp. P. E. Bechet, New York.

85. **Features of Pneumococcus Meningitis.**—The difficulty of making a diagnosis in some of these cases is commented on by Gordon. In a case recently observed by him, there were no special nervous manifestations, except during the last few hours when the patient had convulsions and a right hemiplegia. Rigidity of the neck, Kernig's sign, opisthotonos, tenderness of the spine, cutaneous hypesthesia, headache, mental phenomena, changes of reflexes were all absent throughout the disease. Two weeks before death the patient manifested a slight sore throat, anorexia, and constipation. The throat condition rapidly disappeared. A tooth abscess then formed which gave him considerable pain. While the patient was recovering from the abscess, he began to suffer from pain in the left shoulder. The latter continued up to four days before he expired. The temperature was 102 F., a murmur was heard at the mitral valve. No special nervous manifestations were in evidence. Uranalysis showed traces of albumin; otherwise the urine was normal. On spinal puncture, the cerebrospinal fluid showed slight turbidity with flocculent substance; albumin ++++; Noguchi globulin test ++++; polynucleosis; pneumococci. The patient's condition remained unaltered, except for the temperature which went up to 103.2 F. The condition of the pulse was significant. Most of the time it did not run parallel with the temperature. On the fourth day the patient had convulsions and a spasticity on the right side. Three hours later he expired.

Autopsy showed stenosis of the mitral valve, chronic nodular fibrosis with some calcareous infiltration in the valve; the chorda tendinae were also much thickened; the thickened pericardium contained 60 to 65 c.c. of clear limpid fluid; the pleura on the right was thickened and adherent to the diaphragm. The brain was found bathed in thin pus at the base and especially at the convexity, more on the left than on the right side; blood-vessels were congested along the Rolandic fissure on the left side. The spinal cord was congested. Section of the brain and cord revealed nothing that deserved special mention. The pus from the cranial cavity gave pure cultures of pneumococcus.

90. Abstracted in The Journal, July 18, p. 271.

91. **Nasal Hemorrhages.**—Schwartz dips a pledget of absorbent cotton on a nasal applicator in a 100 per cent. solution of silver nitrate and carefully passes it over the cut surface only. By this method he has made his nose operations almost always bloodless.

### Vermont Medical Monthly, Burlington

*October, XX, No. 10, pp. 243-256*

93 Malignant Disease. A. L. Miner, Bellows Falls.

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## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### Brain, London

*May, XXXVI, No. 3 and 4, pp. 271-552*

1 *Lymphogenous Infection of Central Nervous System. D. Orr and R. G. Rows.
2 *Unusual Type of Hereditary Disease of Nervous System. Congenital, Extracortical, Axial Aplasia. F. E. Batten and D. Wilkinson.
3 *Anatomicophysiologic Study of Posterior Longitudinal Bundle in Its Relation to Forced Movements. L. J. J. Muskens.
4 Experimental Research into Anatomy and Physiology of Corpus Striatum. S. A. K. Wilson.
5 *Aphasia Due to Atrophy of Cerebral Convolutions. Report of Case. G. Mingazzini.
6 *Study of Satellite in Fifty Selected Cases of Mental Disease. S. T. Orton.

1. **Lymphogenous Infection of Central Nervous System.**—The results of the authors' experiments support the view that the character of the cellular reaction found in the nerves and in the spinal cord when the disease-producing agent approaches by the lymph-stream depends entirely on the potency of the irritant, and further, that many of the so-called varieties of cells have one and the same origin. When the capsule had not burst and the tissues were attacked by the toxin only, they found that the reaction produced was of the plasma-cell type, including under that term the numerous intermediate forms which have been described earlier in this paper. But in the other series in which the capsule had burst and the organisms had grown among the tissues, there was an altogether different picture. All the cells of the connective tissues and of the walls of the vessels exhibited an intense proliferation, with the production of another predominating type of cell, the polyblast; there were also collections of Körnchenzellen showing various stages of development. In the subacute series there were some polyblasts in the reaction outside the dura mater, namely, quite close to the capsule. It was at this point that the results of the two series of experiments might be said to have met.

In these two series of experiments a culture of the same organism was employed, and the experiments were performed on members of the same species of animals, living under identical conditions, and the animals lived about the same length of time after the operation; therefore, the authors consider that the difference in the reaction in the two series must be attributed to the difference in the intensity and quantity of the irritant. The reactions were produced in both instances by infected lymph, which spread by the same path and therefore attacked the same cells. There is no doubt in their minds that if the capsules in the second series of experiments had not burst the reaction would have been of the plasma-cell type, namely, the type of cells characteristic of the subacute inflammations; but as the capsules had burst and the organisms had grown among the tissues, the reaction was of the polyblast type, namely, the type of the acute inflammations. These cells were the direct product of the action of the disease-producing agent and therefore the conditions corresponded to the primary inflammations of Schmaus. But there were small collections of Körnchenzellen, and the authors are convinced that if the animals had lived a little longer and the nerve elements had broken down under the influence of the more prolonged action of the irritant, the tissues would have been infiltrated by these cells and the conditions would have corresponded to the secondary inflammations of Schmaus.

2. **Hereditary Disease of Nervous System.**—The disease described by Batten and Wilkinson is a familial and hereditary one, having its onset in the first three months of life, even if it is not actually congenital. It presents symptoms which in many respects are similar to those seen in cases of disseminated sclerosis, cerebellar disease, and, in its later stages, to Friedrich's disease. It is very slowly, if at all progressive, affects chiefly males, and is transmitted by healthy females. In the family described by them males only are affected. It corresponds to none of the commonly recognized types of familial affection, but the symptomatology so closely resembles that presented by the family recorded by Pelizaeus and Merzbacher that Batten and Wilkinson believe the disease to be of the same nature, although no pathologic examination has been made in any member of the family here described.

When the children were first seen Batten and Wilkinson were inclined to associate the condition with some congenital defect in the development of the cerebellum such as occurs in litters of cats and puppies, and have been recorded by Herringham, Andrewes, Risien, Russell and others, but after studying the pathologic anatomy as put forward in Merzbacher's paper, they have come to the conclusion that their cases probably belong to that group. Six males at least were affected in two generations. Those affected were either congenitally diseased or exhibited symptoms in the first months of life, the progress of the disease being very slow. They were mentally defective and ataxic, showed nystagmus, speech defect, and defective development, with weakness and spasticity of the lower limbs.

3. **Study of Posterior Longitudinal Bundle.**—The study by Muskens of the physiologic phenomena observed after lesions of different parts of the vestibulary system demonstrates that there is a far-reaching differentiation of function in the primary end-stations of the vestibulary nerve. Further, it also shows that the different strands of fibers which connect the vestibular nuclei with the various nuclei in the midbrain and with the region of the posterior commissure in a cerebropetal direction may be more accurately analyzed. The starting point of this analysis is the fact that an ascending degeneration of the crossed vestibulomesencephalic bundle, which forms the bulk of the mesial part of the posterior longitudinal bundle till near the nucleus of the posterior commissure, is always found associated with circus movements to the side of the intact posterior longitudinal bundle. The degeneration of an ascending tract lying immediately lateral to the crossed vestibulomesencephalic tract in the posterior longitudinal bundle formation appears to be equally associated with a circus movement (or rather conjugate deviation) to the side of the normal posterior longitudinal bundle. This tract is further shown to be a homolateral tract originating exclusively in the nucleus of Bechterew, at least in the oral parts of the vestibular region, and terminating in the region of the posterior commissural nucleus. This bundle is styled the homolateral vestibulomesencephalic fasciculus. Both the circus movements observed after lesion of the homolateral or crossed vestibulomesencephalic tracts are associated with conjugate deviation of the head and eyes to the side of the movement, or with loss of lateral deviation of the eyeballs to the opposite side.

From experimental data furnished by Muskens' investigation, it is seen that after a direct lesion in the region of the posterior commissure of the cat on one side, in which the resulting circus movements were directed to the side of the lesion, a descending tract degenerates which lies at the innermost part of the posterior longitudinal bundle of the same side. This tract probably originates in the posterior commissural nucleus. As it stops short in the medulla it is suggested that it may be termed the fasciculus commissuromedullaris. Like the circus movements the rolling movements may serve as a guide in working out the anatomophysiologic analysis of the vestibular complex and the posterior longitudinal bundle formation. After a direct lesion of the complicated nerve fibers, which help to form the vestibular root, a rolling movement toward the injured side is constantly observed, mostly associated with a skew deviation and conjugate rotation of the eyeballs around their anteroposterior axis.

In three cases of lesion of the descending branch of the nucleus vestibularis rolling movements toward the normal side were seen lasting over several days. Lesion of Deiters' nucleus proper was found in two cases associated with rolling movements, moderate in character, toward the side of the lesion. From this nucleus the degeneration spread upward along a tract which lies in the outermost part of the lateral horn of the posterior longitudinal bundle. A direct lesion of this ascending tract or connection is also associated with a tendency to roll toward the side of the lesion. This was demonstrated in five cases. The fibers of this tract appear to end mostly in the tegmentum, although some may be traced to the caudal part of the posterior commissure, in which the fibers appear to lose their medullary sheath; it is therefore suggested that it should be styled the tractus vestibulotegmentalis lateralis. Its origin is apparently in the medium-sized cells of Deiters' nucleus proper, its termination probably in the interstitial nucleus. A comparison of the cases in which the lesion is situated in the region of the posterior commissure leads Muskens to postulate in that region a center, probably the nucleus interstitialis, injury of which (or of its afferent tracts from other parts) in the cat is constantly followed by rolling movements to the normal side. If the descending connections of the vestibular structures which control the circus and rolling movements and those of the superimposed mesencephalic structures be compared, the conclusion seems warranted that the descending connections are far more important in the case of the rolling movements. Relatively few descending fibers which originate in the structures associated with circus movements pass beyond the sixth nucleus.

5. **Aphasia Due to Atrophy of Cerebral Convolutions.**—In the period between 1907 and 1909, Mingazzini's patient showed disturbances in his speech, which gradually increased and consisted in the use of unusual words in ordinary conversation (paraphasia and echolalia). He also experienced difficulty in understanding many questions. After two years (March, 1907, to August, 1909), the examination of the patient revealed true partial sensory aphasia (with automatic echolalia and perseveration), associated with paralexia and almost complete agraphia. In February, 1910, the sensory aphasia had become almost complete and some dysarthria was noticed in his repetition of words. The understanding of words was extremely limited; further, a condition of advanced dementia showed itself, accompanied by symptoms of agnosia. In October, 1910, the speech disturbances had become still more serious; the word deafness, the alexia and the agraphia were complete, while voluntary speech was almost entirely absent. Parallel with these progressive disturbances of speech a condition of mental weakness gradually developed, which at last became a true dementia and was attended with symptoms of agnostic apraxia, and psychial blindness. Two months later (four years after the beginning of the disease) the patient died. The post mortem revealed

severe atrophy of the prefrontal and temporal convolutions, the left side being the most affected, while the histologic examination showed severe alterations in the nerve-cells and medullary fibers of the convolutions belonging to the Broca region (*in sensu lato*) and to T, these changes being greatest on the left side.

6. **Satellite Cells in Mental Disease.**—The analysis by Orton of the relative numerical occurrence of satellite cells in ten cases, each of five psychoses, seems to him to warrant the conclusion that satellitosis cannot be considered in any sense indicative of the type of psychosis, although it has in this series appeared with more consistent intensity in the maniacal depressive cases and has been of very much less prominence in dementia praecox. The reaction elects the deeper cell layers both in regard to frequence of occurrence and degree of reaction. The cortices of the dome, precentral, postcentral and frontal, seems to show the reaction with greater intensity than do the temporal and occipital regions. Age at the time of death seems to play some part in the occurrence of severe reactions, but cannot be considered the only factor. The duration of the psychosis bears no demonstrable relation to satellitosis.

### British Medical Journal, London

*October 17, II, No. 2807, pp. 653-696*

7 Cancer of Duodenum and Small Intestine. J. Bland-Sutton.
8 Present-Day Lessons from Life Work of Mitchell Banks. V. Horsley.
9 *Pinewood Sawdust as Surgical Dressing. C. W. Cathcart.
10 Insects and War: Flies. (1) House-Fly. A. E. Shipley.
11 Outlook in Epilepsy. W. A. Turner.
12 Rheumatoid Arthritis. D. D. Brown.
13 Treatment of Torticolitis. P. B. Roth.

9. **Pinewood Sawdust as Surgical Dressing.**—Sawdust is used by Cathcart as a surgical dressing not only for operation wounds but also for septic cases of all sorts. It has also been much appreciated as a dressing for the shell wounds of the wounded German sailors in Edinburgh Castle, and it is valuable for cases of incontinence of urine. As to the wood, the sawdust from various kinds of pinewood has given good results. The softer kinds are the best, being more absorbent, while the harder kinds although less absorbent, have the advantage of containing more resinous material. Commercial hard woods like mahogany or oak should be excluded if pinewood can be obtained. A simple method of testing the absorbant property of a sample piece of planed wood is to draw a stroke across it with a pen full of ink. If the ink spreads laterally, and dries in quickly as it would on blotting paper, the fiber of the wood is good for surgical purposes. If the ink remains on the surface, as on writing paper, the absorbent power is deficient. Apart from the wood itself, however, a good deal of absorption will take place between the individual particles of the wood.

The method of preparation Cathcart has found useful is the following: Two large standard wire sieves are required —No. 8, that is, eight threads per inch, and No. 40, that is, forty threads per inch. In order to reject the coarse fragments the sawdust as obtained from the sawmill, is passed through No. 8, sieve and allowed to fall on to No. 40. It is then well shaken and rubbed on No. 40, and the very fine particles which pass through are discarded, because they would escape too readily from the prepared pads and cause an inconvenient dust. The sawdust which remains on No. 40 sieve is put into a box or sack and sent to the surgical nurse. The bags are made of butter muslin, and the sizes may be regulated according to requirement. The nurse fills the bag about two-thirds full with the sifted sawdust, and then closes it with colored thread. The filled bags or pads are sterilized by steam in the same manner as other dressings. After use the colored thread is withdrawn, the sawdust thrown away and the bag washed, boiled and dried for future use.

### Dublin Journal of Medical Science

*October, III, No. 514, pp. 241-319*

14 Myasthenia Gravis. Report of Three Cases. R. O. Smyth.
15 Four Cases of Pancreatic Disease. E. J. Malherbe.
16 Pathologic Report of Rotunda Hospital from November, 1912, to October, 1913. R. J. Rowlette.

### Journal of State Medicine, London

*October, XXII, No. 10, pp. 577-640*

17 Medical Inspection in Relation to Special Schools. E. T. Roberts.
18 Medical Treatment of School Children in Rural Districts. A. E. Williams.
19 Training of Teachers in Hygiene. C. C. Douglas.
20 Occurrence of Amebiasis in Malta. P. P. Debono.
21 Toxicity of Extracts of Organs. H. Dold.

### Journal of Tropical Medicine and Hygiene, London

*October 1, XVII, No. 19, pp. 289-304*

22 Systemic Position of Genus Tricophyton Malmsten, 1845. A. J. Chalmers and A. Marshall.
23 Molluscum Fibrosum, Pendulatum atque Elephantiacum. F. S. Harper.

### Lancet, London

*October 17, II, No. 4755, pp. 931-978*

24 *Cancer of Duodenum and Small Intestines. J. Bland-Sutton.
25 Position of Psychiatry and Rôle of General Hospitals in Its Improvement. C. H. Bond.
26 *Incontinence of Urine in Women. D. Newman.
27 Multiple Round-Celled Sarcoma Originating in Nares. C. N. Slaney.
28 Case of Mediastinal Pleural Effusion. A. Rose.
29 Four Cases of Splenectomy following Rupture. R. Cox.
30 Bee-Stings and Anaphylaxis. A. T. Waterhouse.

24. Also published in the *British Medical Journal,* Oct. 17, 1914.

26. **Incontinence of Urine in Women.**—The operation Newman has performed successfully in a considerable number of cases during the last fifteen years is described as follows: The patient may be placed either in the lithotomy or in the elbow-knee position. The posterior wall of the vagina is fully depressed, so as to expose the anterior wall fully in view. The bladder is distended with 12 ounces of boric solution. A straight steel bougie No. 14, with a knob of the size and shape of a horse-bean half an inch from its point, is introduced into the bladder, at first fully and then partly withdrawn, so that the knob comes down to and locates the neck, and by elevating the handle of the bougie the knob is made to throw out the posterior wall of the bladder immediately above the sphincter, and so project it backward and downward. Three sutures, one anterior and two lateral, are now passed through the lips of the os, and the uterus is dragged downward so as to give a clear view of the anterior wall of the vagina.

A median vertical incision is now made from the uppermost point of the knob of the bougie downward over the knob and along the middle of the stem for a distance of 1½ to 2 inches. With blunt pointed scissors cutting on the flat the mucous membrane and muscular coat of the vagina are carefully separated on both sides of the median incision. Down to the submucous tissue of the bladder and urethra, without exposing the vesical mucous membrane itself. The vaginal mucous membrane is removed over a lozenge-shaped area, the center of which corresponds with the position of the most prominent part of the knob of the bougie; the upper angle is just over the point of the instrument. The lower angle corresponds with the stem, while the two other angles point outward one on either side. Incisions are now made to join the apices, and a lozenge-shaped portion of vaginal mucous membrane is removed, exposing a corresponding area of raw surface, the floor of which covers the neck of the bladder and the first half inch of the urethra. The next step of the operation consists in building up a dam to prevent the too easy escape of urine. The successful construction of this mechanical obstruction depends on heaping up a bank of mucous membrane on the vesical side of the septum and supporting it by tightening the structures behind—those on the vaginal side.

The sutures are chromic catgut and are introduced as follows: On the left lip of the wound the needle is passed from left to right; it enters immediately under the vaginal mucous membrane to come out one-eighth of an inch to the left side of the center line of the bougie; it is then carried over the rawed surface to one-eighth of an inch beyond the right side of the bougie, in which it penetrates the tissue, to be brought out on the right lip of the wound. Six sutures are passed in this way. The bougie is now withdrawn, and the sutures are tied, cut and buried. A second row of fine gut sutures is applied to unite the margins of the wound in the vaginal mucous membrane, and the operation is completed. No special after treatment is required, except that it is well to retain a small sized rubber catheter for the first six to eight days, and to cleanse gently the parts twice daily.

### Bulletin de l'Académie de Médecine, Paris

*October 6, LXXII, No. 30, pp. 103-145. Last indexed August 29, p. 810*

31 *Tetanus among the Wounded. C. Walther.
32 *Nature and Prevention of Accidents during Treatment of Obesity with Heart Disease. (Les inconvénients des cures d'amaigrissement chez certains cardiopathes.) C. Fiessinger.
33 Wounds Vary in Severity as Bullet is Fast or Slow. Capitan.
34 Rose-Pickers' Dermatitis. (Les affections des mains chez les cueilleurs de roses de la Riviera.) L. Revillet.

31. **Tetanus.**—Walther states that twenty cases of tetanus he has encountered among the wounded in his charge all came from a certain district along the Marne where tetanus has long been known to be frequent. It developed only among men wounded by shrapnel, and he thinks only when the exploding pieces hit the ground first or the explosion drove dirt from the ground into the wound. None of the bullet wounds was followed by tetanus. Hence he urges the necessity for prophylactic injection of antitetanus serum as a routine measure after a shrapnel injury. The Académie passed a resolution appealing to the authorities to have an ample supply of the serum on the firing line.

32. **Disturbances Liable to Follow Reduction of Obesity.**—Fiessinger thinks that there is much to sustain the assumption that the fat serves as a kind of filter to hold back certain toxic substances. When the fat is thrown off, these toxic substances make their presence felt, and the patient may develop rheumatism, sciatica, eczema, gout, interstitial nephritis, or neurasthenia. "The connection between the loss of fat and the development of these troubles is conclusively shown by their subsidence as the patient puts on a few pounds more of fat." His treatment of obesity is mainly dietetic, having the patient eat lightly seven times a day, so he never gets very hungry. He has had some disturbance like the above in fifteen of his 145 patients with obesity and heart disease, and in three the disturbance took the form of neurasthenia. In all the disturbances ceased as soon as the patients had gained 10 or 12 pounds again after they had previously thrown off from 22 to 45 pounds in a few months. As the fat recedes it seems to leave exposed the morbid taint which then exerts its injurious influence. The amount of reduction permitted should be carefully individualized and not be calculated for the height. See also Paris Letter, p. 1684.

### Berliner klinische Wochenschrift

*October 5, LI, No. 40, pp. 1677-1696*

35 Displacement of Internal Organs with Kyphosis; Seven Photographs of Mounted Torso. (Situs der Thoraxeingeweide bei spitzwinkliger Kyphose.) H. Virchow.
36 *Partial Interruption of the Operation of the Mind and Periodical Insanity. (Schizothymie und Zyklothymie.) O. Kohnstamm.
37 Roentgen Examination of Stenosis of the Small Intestine. (Dünndarmstenosen.) E. Marcuse.
38 Carbon-Dioxid Snow for Correction of Small-Pox Pitting. (Neue Erfahrungen über Pockennarbenbehandlung.) P. Unna, Jr.

*October 12, No. 41, pp. 1697-1716*

39 *Dysentery. (Zur Behandlung der Ruhr.) F. Göppert.
40 Wounded Prisoners in Berlin. (Kriegsgefangenenlazarett Alexandrinenstrasse.) Brettner. (Die ersten Wochen kriegschirurgischer Tätigkeit.) W. Levy. (Schussverletzungen von Gehirnnerven.) E. Froehlich.

36. **Schizothymia.**—Kohnstamm's "schyzothymia" is best defined by an example of it. He cites, for instance, the paralysis suggested during hypnosis and persisting afterward. It is an interruption in the psychic continuity, and search for and removal of the cause in such a condition may realize a cure when otherwise the trouble would seem to be incurable cyclic insanity or the like. He compares it to a sand bank in a level desert of sand, and discusses it from various points of view.

39. **Dysentery.**—Göppert has had extensive experience with dysentery in children in the last few years and thinks that the lessons learned with them can apply also to adults, especially the necessity for feeding with mineral elements which have been lost in such amounts, also albumin in the most easily assimilated form and carbohydrates, but not too exclusively the latter. Whey and buttermilk supply the needed minerals for infants, and with this can be combined meat juice or soup. At first the fasting must be complete, but later hunger is liable to aggravate the course of the disease, but the digestive organs are left very sensitive so that motor insufficiency of the stomach is frequent. Fruit juices are also useful in the later course. The tenesmus and diarrhea are sometimes benefited by rectal injection of bolus alba, a handful to a liter of water, with a teaspoonful of salt. Its use internally is lauded by some, but Göppert thinks that the mild cases will get well without it and in the severest cases he says that it is impossible to influence with it the number of bowel movements or the general condition. Castor oil at first is the main reliance, and combination with opium may render good service. Biermer's mixture of krameria, cinnamon and logwood hastens the subsidence of the disease already on the wane, and he advocates it as a valuable aid even with this restriction.

The formula is

| | | c.c. | |
|---|---|---|---|
| ℞ | Decocti Ratanhiae (50)........ | 450 | ℥ xv |
| | Extr. Campechiani ............ | 5 to 8 | or dr. i to ii |
| | Sir. Cinnamoni .........qs. ad | 500 | ℥ xvi |

Dose 20 or 30 c.c. five or six times a day.

### Deutsche medizinische Wochenschrift, Berlin

*October 1, XL, No. 40, pp. 1801-1824*

41 *The Food of the Populace during the War. (Die Volksernährung im Kriege.) M. Rubner.
42 Care of the Wounded in the Field. (Einleitung in die Kriegschirurgie.) V. Czerny. (Grundlagen der heutigen Kriegschirurgie.) E. Lexer.
43 *Dysentery. (Zur Klinik der Bazillen-Ruhr.) J. A. Grober.
44 *Venereal Disease in the Army. (Bekämpfung der Geschlechtskrankheiten im Kriege.) A. Blaschko.
45 The Medical Service in the Navy. (Kurzer Ueberblick über das Marine-Sanitätswesen.) H. F. W. Hoffmann.

41. **Supply of Food in Germany.**—Rubner says that Germany now leads all other European nations in the amount of meat consumed per capita, namely, 52.3 kilograms per year (1912). The figure for England was 47.6; for France, 33.6; for Austria, 29; Russia, 21.8, and Italy, 10.4. He states that Germany does not import meat and hence the supply will not be cut off by the war. "The only loss will be the eggs and poultry from Russia and sea fish, but these can probably be obtained from neutral countries in sufficient amounts." Only about three-fourths of the wheat used in Germany is raised there, but there is an overabundance of rye, and this will more than compensate the loss of wheat and of rice. Only 28 per cent. of the potato crop has been used for the table; the distillers took 4.6 per cent., the starch factories nearly as much, and nearly 50 per cent. was used for fodder. A large proportion of the potatoes usually rot before spring, and here a change must be made to prevent this waste. Desiccated potatoes can be used to advantage in soups, purées, etc.

Germany has been in the habit of exporting its rye and importing cheaper fodder from Russia. The loss of this 3,500,000 tons of cheap fodder can be made up from the surplus of other grains. Parliament has regulated the matter so there can be no wholesale slaughtering of cattle for pecuniary reasons. He reiterates that the stock of cows must be maintained at all hazards, and that the supply of milk can be rendered more plentiful by a little more economy in consumption of butter. He figures that if each person would stint himself just a little (1 gm.) butter each day this would be equivalent to releasing the milk of 300,000 cows for other purposes. He continues, "When the man of the house is away, the family table is usually much simpler. It is of the greatest importance that the army is now living in and off the enemy's country and that many accumulated stores of provisions have fallen into our hands."

43. **Dysentery.**—Grober states: "In the present epidemic there have been 19 deaths in 400 cases, and there were 23 house infections. The bacilli alone do not cause dysentery; there are probably many healthy carriers by this time. Some

error in diet throws down the barriers by inducing irritation in the bowel. The first symptoms generally appear about three or four hours after ingesting too young beer, soggy bread or unripe fruit or drinking much contaminated water. They range from slight discomfort to the severest toxemic conditions in a few hours but intense tenesmus and blood in the stools are the rule. The pains are sometimes ascribed to the stomach; the transverse colon is probably responsible for this." He has one patient who for six weeks has had fifteen or twenty thin, bloody stools daily, but as long as the heart keeps strong, hope should not be given up. Convalescence is very slow and for weeks the patients seem apathetic and dull. Even in the mildest cases, recovery takes about two weeks, and relapses are not uncommon. In treatment, serotherapy is the main reliance. A dose of castor oil is given next, but he never saw much benefit from tannin preparations. Light red wine, boiled and with cinnamon, seemed to give great subjective relief. Tincture of opium is reliable but such large doses are necessary that the effect on the heart may be detrimental. In many severe cases the distress was so extreme that morphin had to be given. Singultus was hard to control; sometimes it yielded to a narcotic after scraps of ice with a few drops of some fruit juice had been dissolved in the mouth. Opium suppositories occasionally, but not always, relieved the tenesmus; bolus alba did not seem to display any efficacy in the severer cases in which alone it was used. His experience confirms the necessity for heart stimulants if the circulation weakens. He did not try ipecac. Moist heat to the abdomen gave great relief as a rule. The patients were kept on gruel, tea, cocoa and light red wine as long as the stools contained blood and mucus, but henceforth he is going to try a little more nourishing food. (The *Berlin. klin. Wchnschr.* of October 12, reports 924 cases of dysentery at over forty scattered points in Germany, including Cologne, Breslau, Kattowitz and Kreuzburg, mostly among the prisoners.)

Prophylactic measures are simple, refraining from touching the face with the hands (smoking) and cleanliness in eating, but above all refraining from errors in diet. "Medical men in the tropics have found it an aid in prevention to take five drops of dilute hydrochloric acid in some beverage at each of the principal meals. The dysentery bacillus is extremely susceptible to hydrochloric acid." "Transmission of the disease by flies has been abundantly demonstrated anew in the present epidemic, and it is impossible to overestimate this danger."

44. **Venereal Disease in Wartime.**—Blaschko remarks that down into the eighteenth century an army of prostitutes regularly accompanied every army in active service, sometimes outnumbering the troops. "But this army of female camp-followers," he continues, "did not become a hygienic danger until at the end of the sixteenth century syphilis swooped down on the troops and has been at home throughout Europe ever since. The introduction of the system of compulsory military service altered all this, but even Napoleon was unable to prevent hordes of female camp-followers from accompanying his army in the campaign into Russia, and in the recent Russo-Japanese War the Russians, especially the officers, were accompanied by some."

"Although the present war is far graver than any of the wars in previous centuries, yet we must accept the possibility of a great increase in venereal diseases. The men left in charge of a conquered city are particularly exposed to this danger. In some the brothels have been closed, but in other cities, where people still believe in the hygienic efficacy of these institutions, they are flourishing more than ever. But conditions are not much safer even where there are no brothels. I have seen here in Berlin a number of cases of recently acquired gonorrhea and syphilis among the troops and the number of reservists who were found healthy on joining the colors and who already have been sent back from the front for treatment of gonorrhea acquired since is larger than is generally supposed."

"During the last half of the Franco-Prussian War, venereal diseases formed 9 per cent. of all the morbidity. It is self-evident that men with fresh gonorrhea are unable to go on marching or fighting."

"In peace, regulation of prostitution does not accomplish much, but the strict measures that can be enforced under exceptional conditions, as during a campaign, may be of the greatest utility. Absolute prohibition of public dances, and the early or total closing of saloons will help, and extreme care must be taken to weed out any loose women that may attach themselves to the army in the guise of nurses, etc. This sifting out must be done chiefly in the base stations. The hygienist accompanying the corps must have previously informed himself as to the conditions regarding prostitution in each district the corps enters."

"Many physicians regard it as impossible to prohibit entirely to the troops all intercourse with prostitutes. But this is absolutely false, according to my opinion" . . . "Keeping secret a beginning venereal disease justifies punishment." Blaschko remarks in conclusion that the many women deprived of their livelihood now by the shutting down of factories, etc., present a particularly serious danger, and it behooves the authorities to provide employment for them in some way or at least food and shelter. Well-to-do women who serve gratuitously from patriotic motives in preparing articles to be sent to the soldiers, etc., had better ponder whether it would not be better to set some of the unemployed at the task and pay them for it. He protests against the exclusion of cases of venereal disease from the hospitals, to make room for wounded soldiers as has been done in some quarters, calling it a very short-sighted policy which will bring retribution later.

## Medizinische Klinik, Berlin

*October 4, X, No. 40, pp. 1527-1554*

46 Internal Diseases in the Army. (Ueber einige während des Feldzugs vielleicht wichtige innere Krankheiten.) M. Matthes.
47 Indirect Injury of the Ear from Explosives. (Indirekte Schädigung des Gehörorgans durch Schusswirkung.) Haenlein.
48 Vaccination against Typhoid. (Schutzimpfung gegen Typhus.) H. Sachs.
49 Splenectomy for Pernicious Anemia. (Die Milzexstirpation bei perniziöser Anämie.) W. Hansing.
50 Systematic Therapeutic Inhalations. (Fortschritte der Inhalationstherapie.) A. Haupt.
51 Treatment of Subcutaneous Hematoma. O. Nordmann.

*October 11, No. 41, pp. 1555-1580*

52 *Skin Diseases among the Troops. ((Bedeutung der Hautkrankheiten für den Krieg.) F. Pinkus.
53 *The Infectious Diseases to Be Reckoned with during a Campaign. (Mit welchen Infektionskrankheiten haben wir während des Feldzugs zu rechnen?) H. Eichhorst.
54 *Soldiers' Foot Tumors. (Die Fussgeschwulst der Soldaten.) G. Müller.
55 Orthopedic Surgery in Wartime. A. Bum.
56 Chronic Nephritis. (Klinische Erfahrungen und Anschauungen über die Brightsche Nierenkrankheit.) F. Volhard. Commenced in No. 40.
57 Ankylosis of the Spine. G. Arnheim.
58 The Metabolic Processes during Thyroid Treatment. (Stoffwechselvorgänge bei Schilddrüsenbehandlung.) L. Hirschstein.

52. **Care of the Feet.**—This is only one of the points touched on in Pinkus' article on the importance of skin lesions and disease among the troops. He says "Every soldier is trained in the care of his feet, from the very beginning of his military service. The troops are trained to stand the longest marches by combating sweating of the feet, by the use of suitable shoes and inner covering for the feet, and by systematic exercise of the muscles during the exacting drill. The foot-cloths used instead of stockings are of great service in protecting the feet against getting sore. They are easily changed, easily cleansed, as they dry rapidly after washing, and if they shrink during washing this does no harm. Washing and drying are much harder with woolen socks, and they are liable to shrink and squeeze the toes, while the spots worn thin or in holes come always at the same points on the foot, and where there is greatest danger of abrasion. With the foot-cloth, on the other hand, fresh parts each time can be drawn over the heel, etc., thus protecting them against injury. Those unaccustomed to these foot-cloths may not like them, and for such the next best is to draw on a second sock over the first, both amply large. The woolen double sock forms an extraordinarily elastic foundation for the foot, keeps it

warm, and protects it against wet and against pressure from the stiff and shrinking leather when it gets wet. The double socks also absorb perspiration well and enable the socks to be changed about, putting on first one and then the other." He warns that sweat and dirt invite eczema in folds in the skin, and also annoying and tenacious mycosis, especially around the anus and genitals—all of which can be warded off by systematic cleanliness, especially sponging off with alcohol.

53. **Infectious Diseases Liable to be Encountered During the War.**—Eichhorst says that no means of protection against exanthematous typhus, "war typhus," like vaccination against small-pox, is known, and it is liable to be brought into Germany by Russian prisoners of war. Bacteriologic differentiation of it is not on a sure footing as yet. "With salvarsan we can cope with relapsing fever; plague is not near enough to cause alarm, and cholera can be kept out by scrupulous hygiene, but tropical dysentery is liable to be encountered as troops from Africa and India are fighting with the Allies."

54. **Foot Swellings in Soldiers.**—Müller remarks that the Roentgen rays have explained this trouble, first described in the middle of the last century as peculiar to soldiers obliged to march long distances. The rays revealed it to be a fracture or periostitis of a metatarsal bone. About 22.5 per thousand of the troops develop this trouble each year, with or without contributing trauma. It generally can be cured in fifteen to thirty days; only about 0.5 per thousand have any disturbance left, from pains or too exuberant callus. It appears as a white, doughy swelling on the dorsum of the foot. If the tenderness is limited to one point, the trouble is probably a fracture. In a few days walking becomes impossible. By strapping the foot with plaster the man can continue to use it, applying massage, warm baths and moist heat, renewing the plaster each time. If he can be kept in bed, stasis hyperemia and superheated air are effectual; but a plaster cast or extension may be necessary if there is dislocation of the fractured stumps. The adhesive plaster is applied with the foot standing flat on a stool, the heel at the edge. The strip of plaster is applied to the back of the foot, at the tubercle of the fifth metatarsal bone, drawn tight straight down over the outer edge of the foot and around under the sole while, with the other hand, distally, the metatarsal bones are squeezed together and their dorsal convex arch exaggerated. The plaster is then brought up on the dorsum above the first cuneiform bone. The plaster thus serves to hold the middle part of the foot firm and acts as a splint for the broken bone while strengthening the arch. Other conditions that may be confounded with it are acute articular rheumatism, flat-foot and inflammation in the joints, cellular tissue, tendon sheaths, or bursae.

### Münchener medizinische Wochenschrift

*October 6, LXI, No. 40, pp. 2025-2056*

59 *Roentgen Treatment of Surgical Tuberculosis, etc. (Zur Röntgentiefentherapie bei chirurgischen Krankheiten.) J. Oehler.
60 Is There an "Injurious Residue" in Infant Feeding? (Gibt es einen "schädlichen Nahrungsrest" beim Säugling?) A. Uffenheimer. Concluded in No. 41.
61 Influencing of the Subconscious Centers by Hypnosis. (Zur Kenntnis der Beeinflussung vegetativer Zentren durch die Hypnose.) R. Mohr.
62 Traumatic Ossifying Myositis. H. Schöppler.
63 Neuritis of the Recurrent Nerve. (Zur Lehre und Behandlung der sogen. Medianstellung der Stimmlippe bei Rekurrensneuritis.) R. Hoffmann.
64 Protection of Roentgenologists in Fluoroscopy. (Zum Schutze des Arztes bei Röntgendurchleuchtungen.) L. Moses.
65 *Tetanus. (Einige praktisch wichtige Gesichtspunkte in der Tetanusfrage.) Kreuter.
66 *Treatment of Tetanus Cramp of Respiratory Apparatus by Cutting Both Phrenic Nerves. (Behandlung schwerster Atmungskrämpfe beim Tetanus durch doppelseitige Phrenikotomie.) W. Jehn.
67 *Bolus Alba in Diarrhea, Dysentery and Cholera. J. Stumpf.
68 Return to the Front of the Slightly Wounded. (Rückkehr Leichtverwundeter an die Front.) G. Herhold.

59. **Roentgen Treatment of Surgical Affections.**—Oehler calls attention to the fine results he has obtained with deep Roentgen treatment of accessible surgical affections, even when there was mixed infection. Subsidence of pain and improvement of function were particularly evident with incipient processes in the knee and head of the humerus, but it was difficult to influence the hip joint. The method is peculiarly advantageous for tuberculous lymph-glands in the neck, spina ventosa, and tuberculous processes in the smaller bones and joints, in the ribs, sternoclavicular joint, and tendon sheaths. Lymphoid tissue is peculiarly susceptible to Roentgen treatment, and "scrofulous" glands in particular, but goiter does not seem to respond well. In the exceptional cases in which benefit was observed, it was only transient. In one case Basedow symptoms came on for the first time after the third exposure of the thyroid.

65. **Tetanus.**—Kreuter says that reports from the various hospitals harboring the wounded from the front almost without exception mention the development of tetanus in more or less numerous cases. Injuries from shrapnel, from being run over and from being kicked by a horse expose to special danger of tetanus. "The tetanus bacillus," he continues, "does not induce suppuration so that the aspect of the wound does not even hint at its presence." "Disturbance in swallowing, with no cause for it evident in the throat, is characteristic and trismus may be early apparent." In the hospital in his charge (Erlangen) he has had a number of cases of local tetanus, the cramps restricted to the part directly injured. The mortality averaged 80 or 90 per cent. when the incubation period was less than eight or ten days; immediate amputation of the injured limb failed to arrest the tetanus in the two cases in which this was done. He warns that we must not look for improvement after injection of antitetanus serum; all it can do is to cut off the further supply of the toxin to the nervous system. Other measures must be called on to arrest the convulsions, as death comes usually from exhaustion or suffocation. He gives morphin every two or three hours, with a rectal injection of chloral at night. Antitoxin serum, according to Permin's statistics, has reduced the mortality from 95 to 73 per cent. with incubation of less than ten days, and from 70 to 40 per cent. with longer incubation. He gave magnesium sulphate according to Meltzer and Auer's technic and found that it modified the convulsions almost instantaneously but caused such serious disturbance in breathing that artificial respiration had to be kept up for hours. To combat this, he suggests that Kocher's method of tracheotomy and insufflation of oxygen might be tried or Arnd's method of rinsing out the lumbar sac. Baccelli's phenol method has no curative action and as a sedative it is far surpassed by other drugs. The brilliant statistics in regard to its use that come from Italy are explained by the mild course of tetanus in that country. The mortality is said to have averaged only 20 per cent. even before tetanus serum was introduced.

66. **Cutting Both Phrenic Nerves in Tetanus.**—Jehn reports from Sauerbruch's clinic at Zurich a case of extremely severe tetanus in a boy of 8 who was suffocating from recurring spasms of the respiratory apparatus, each lasting three or four minutes with cyanosis and unconsciousness. The rigid thorax and spasm of the diaphragm rendered artificial respiration impossible. After the third spasm of the kind Sauerbruch severed the phrenic nerve on each side through an incision along the posterior margin of the sternocleidomastoid, under ether. The type of breathing altered at once and artificial respiration became possible. The boy had thirty-five severe convulsions afterward, but with oxygen, artificial respiration and a temporary gastrostomy he was tided along to final recovery. The boy shows no ill effects now, four months later; the diaphragm rises and falls mechanically with the breathing. Expectoration proceeds even better than under normal conditions.

67. **Bolus Alba in Dysentery and Cholera.**—Stumpf reiterates his advocacy of bolus alba—kaolin—as an effectual and harmless method of treating intestinal diarrheic troubles. It acts mechanically, burying the germs under the insoluble powder and protecting the inflamed mucosa. His method has been repeatedly referred to in The Journal. He says that the authorities have laid in large supplies of bolus alba to combat dysentery and cholera, and adds, "If ever a method

of treatment had a scientific basis, it is this one. I got my enthusiasm for it from the microscopic findings." A smaller dose by the mouth than the suspension of 300 gm. is inadequate.

## Policlinico, Rome

*August 9, XXI, No. 32, pp. 1145-1180*

69 The Right Hemisphere of the Brain in Connection with Speech. (Emisfero cerebrale destro e linguaggio.) T. Silvestri.
70 Duodenal Ulcer. U. Rosi.

*August 16, No. 33, pp. 1181-1216*

71 Megacolon with Appendicitis. O. Cignozzi.
72 Diagnosis of Senile Cataract, Chronic Glaucoma and Atrophy of the Optic Nerve. G. Sabatini.

*August 23, No. 34, pp. 1217-1248*

73 Anthrax Pustule Cured by Serotherapy; Two Cases. (Pustola carbonchiosa guariti col siero anticarbonchioso Sclavo.) A. Bruni.

*August 15, XXI, Surgical Section No. 8, pp. 361-412*

74 *Laryngectomy for Tumor: Two Cases. (Laringectomie per neoplasma col processo di Durante.) A. Bevacqua.
75 *Papilloma of Kidney Pelvis; Two Cases. (Papillomi del bacinetto.) P. Marogna.
76 *Operative Treatment of Exophthalmic Goiter. (La cura chirurgica del morbo di Basedow.) I. Scalone. Commenced in No. 7.
77 *Removal of Infected Gall-Bladder free from Gall-Stones. (La colecistectomia nelle colecistiti non calcolose.) O. Cignozzi.

*September 15, No. 9, pp. 413-460*

78 *Experimental Transplantation, Decapsulation and Fixation of the Kidney. A. Poggiolini. Commenced in No. 8.
79 *Jet of Hot Air in Treatment of Granulating Wounds. (Sul trattamento delle superfici granuleggianti colla corrente d'aria calda con speciale riguardo al trattamento delle ustioni.) U. Stoppato.
80 Undescribed Fungus Found in Pus in Chronic Upper Jaw Process. C. L. Rusca.

74. **Laryngectomy for Cancer.**—Bevacqua adds two new cases to the four previously published in which the entire larynx was removed by Durante's technic, and ten other cases have also been published by others. These bring to ninety-nine the number of cases of total laryngectomy on record in Italy. Bevacqua's first patient survived the operation for nearly two years before succumbing to metastasis. The second patient died of pneumonia ten days after the operation. Durante's technic thus does not guarantee against postoperative pneumonia but wards it off better than other methods, as a rule. The flap starting at the angle of the jaw on each side, skirts the anterior margin of the sternocleidomastoid and reaches down to 3 cm. from the upper end of the manubrium. This flap is turned back on a level with the hyoid bone. The cannula is introduced into the trachea after incising the thyrohyoid membrane, and then the larynx is excised from above down to the second ring of the trachea. The flap is then turned back and sutured to the edges of the mucosa of the pharynx and esophagus so that the lower point of the flap rests on the stump of the trachea and is sutured here. Of all the raw surfaces nothing is left exposed but two strips at the side which are packed with gauze. The patient can swallow by the end of the first day.

75. **Papilloma in Kidney Pelvis.**—In the first of the two cases reported the kidney was removed on account of the pains, hematuria and other findings indicating a tumor in the kidney pelvis. After three years of health, symptoms developed suggesting a similar growth in the remaining kidney. This patient was a man of 40. The other was an elderly woman with hydronephrosis and papillomatous growths in the kidney pelvis. The shell of kidney left was cleared out and sutured to the skin and the patient recovered.

76. **Operative Treatment of Exophthalmic Goiter.**—Scalone reviews the literature of the last three years on this subject, his conclusions being all in favor of operative measures in suitable cases, and he urges practitioners to insist on it before irreparable lesions become installed.

77. **Cholecystectomy for Infected Gall-Bladder without Stone.**—The two cases reported by Cignozzi confirm the harmlessness and various advantages of removing the gall-bladder when it is the seat of chronic or subacute inflammation. One patient had suffered from recurring colic for three years, the other for six weeks.

78. **Effect of Conservative Operations on the Kidneys.**—Poggiolini gives illustrations of the findings in the kidneys of twenty rabbits and a number of controls after a kidney had been subjected to various experiences resembling those commonly encountered in clinical work.

79. **Hot Air Treatment of Granulating Surfaces.**—Stoppato noticed that after a burn the parts left exposed to the air healed more rapidly than regions dressed with various salves, etc., or merely shut off from the air. This suggested that keeping the surface dry would be beneficial and to promote this he applies a jet of hot air. A number of illustrations are shown of the way in which rebellious burns promptly healed under fifteen to thirty applications of the jet of hot air. Heat evidently stimulates repair of epithelium by the hyperemia which it induces.

## Hospitalstidende, Copenhagen

*September 30, LVII, No. 39, pp. 1201-1224*

81 *Conglutination by Karvonen's Technic as Substitute for the Wassermann Reaction. W. Leschly and H. Boas.
82 *Tumor of the Acoustic Nerve; Six Operative Cases. A. Wimmer. Commenced in No. 38.

81. **Conglutination Test Not as Reliable as Wassermann's.**—Leschly and Boas applied Karvonen's technic in 456 cases, including 278 known syphilitics, but found the results less instructive than the Wassermann, positive results being obtained in a number of non-syphilitics, and vice versa.

82. **Tumors in Acoustic Nerve.**—In Wimmer's six cases the outcome of the operations was not very encouraging. The first patient, a woman of 35, died from infection of the wound. She had been deaf for several years on the side of the tumor before other signs of a brain lesion became apparent. No such "free interval" was apparent in the second case, a man of 51, who for eighteen months had had headache, vertigo, vomiting and other symptoms of a brain tumor. Deafness on that side developed suddenly after a few months. He died about six hours after removal of the large sarcoma. In the third case there was a free interval of seven years between the initial deafness and the other symptoms of a brain tumor. Intervals of blindness on this side were the next symptoms. He died the third day after the sarcoma had been shelled out. The fourth patient referred all his symptoms to the effects of a lighting stroke in 1908, which had left him paralyzed and deaf on one side, but this could not actually have been the case as it seems improbable that a gliosarcoma could have developed so rapidly in consequence of the man's being struck by lightning. The tumor must have been growing at the time and the lightning stroke induced hyperemia in it and an apoplectic attack. This subsided as the extravasated blood was absorbed, leaving the symptoms of merely the brain tumor. He died suddenly five hours after the operation. The fifth patient was a woman of 55. Four years before she noticed that she had suddenly become deaf in the right ear. During the following years disturbances in gait gradually developed and finally vision became impaired and then intense pain developed suddenly in the left side of the face. The left side of the tongue felt as if she had burnt it and her speech was thick, but there was no headache, no vomiting or psychic torpor as in some of the above cases. Other signs confirmed the diagnosis of a tumor involving the acoustic nerve, and it was successfully removed. In a sixth case intervention had to be restricted to a decompressive trephining, leaving a safety-valve opening which was of great benefit.

## Hygiea, Stockholm

*LXXVI, No. 17, pp. 961-1008*

83 Attempt to Cut Adhesions in Preparation for Artificial Pneumothorax. M. D. Jacobson. See abstr. 92, p. 1616.
84 Abnormal Location of the Appendix. (Till kännedomen om anormala appendixlagen.) A. Troell.

## Norsk Magazin for Lægevidenskaben, Christiania

*October, LXXV, No. 10, pp. 1107-1248*

85 *Adhesive Pericarditis. (Adhærent perikardium.) P. F. Holst.
86 *Kidney Transplantation. (Homoplastisk nyretransplantation.) R. Ingebrigtsen.
87 *Diabetes and Pregnancy. (Diabetes og graviditet.) H. C. Geelmuyden.

88 Tests for Estimation of Functional Capacity of Lacrimal Apparatus. (Fluorescein og argyrol til undersøkelse av taareledningen.) H. Lystad.

85. **Adhesive Pericarditis.**—Holst found evidences of adhesions in the pericardium in about 4 per cent. of a series of 1,586 necropsies. In 30 of the 61 cases there was no valvular defect. In the other 31 cases there was tuberculosis in 10, chronic nephritis in 6 and only 3 cases of "pure" adhesive pericarditis. The details of 2 in this last group are reported in full. The patients were men of 22 and 30. The younger man developed pericarditis after diphtheria at 14 and the symptoms from adhesion gradually became manifest in the course of eight years. The other patient had always been healthy. Both were treated by resection of three ribs over the apex region to reduce the resistance opposed by the rigid wall to which the pericardium had become attached. The effect was strikingly good in the first case and the young man was able to resume his work as a clerk. Later some ascites and edema returned, and the liver enlarged again, but the general condition has kept good during the five years to date. Before the cardiolysis there had been cyanosis, difficulty in breathing and so much dropsy that the patient was confined to bed at times. The heart was not enlarged and the sounds were pure. No apex beat was perceptible and the fourth and fifth ribs and interspaces were dragged inward at each systole. There was no albuminuria, no paradoxic pulse and no diastolic collapse of the veins. The operation gave immediate relief.

Conditions were about the same in the other case except that the apex beat was perceptible and there was diastolic vein collapse. Roentgenoscopy showed an irregular shadow supposed to be a strip of calcification, as also shadows suggesting adhesions running from the heart to the right diaphragm. Gradual improvement followed the operation, but the ascites returned later and it has had to be tapped several times during the nearly two years since, so that the operation was but a dubious success.

He discusses the differentiating points, with curves from various cases, and emphasizes that cardiolysis acts exclusively on the symptoms which result from the parts having been connected by adhesions. Complicating "iced peritonitis" or stasis peritonitis, or cirrhosis of the liver, or myocarditis may modify the clinical picture, but the symptoms from these are not influenced by any operation on the chest wall.

86. **Homotransplantation of Kidneys.**—Ingebrigtsen states that some of his experiments on dogs and cats proved technically successful but still the transplanted kidney lost its vitality. He thinks that there is little hope of clinical transplantation of these organs, on account of the individual differences between the donor and the recipient. This will not be possible until means are discovered to estimate beforehand the serologic and biologic properties of each party and thus select those that fit together.

87. **Diabetes and Pregnancy.**—Geelmuyden comments on the connection between the functioning of the female internal genital organs and carbohydrate metabolism, saying that glycosuria develops regularly in about 10 or 12 per cent. of all pregnancies. Some have encountered it in 40 per cent. Usually lactose is the sugar in the urine in this benign pregnancy glycosuria, but it may be grape sugar or both. The proportion of sugar in the urine may be so large as to suggest severe diabetes with acidosis. Differential points are its onset first during the pregnancy, its independence of carbohydrates in the diet, and the absence of polyuria and excessive thirst. He has known instances of these latter symptoms, polyuria, thirst and pruritus occurring with unmistakable pregnancy glycosuria. Knowledge that the urine before the pregnancy was free from sugar is a great help. Also the findings that the acidosis does not fluctuate with the intake of carbohydrates. Normal or subnormal proportion of sugar in the blood sustains the assumption of the benign form. In case actual diabetes is suspected, the diet must be regulated very cautiously as there seems to be a special liability to acidosis and coma in pregnant women. Carbohydrates must be cut down very cautiously, taking a couple of weeks for it, and always under constant control of the urine. Bicarbonate may also be required and "oatmeal cures."

Opinions are divided as to the necessity for terminating the pregnancy; cases are on record in which evacuation of the uterus arrested incipient coma and undoubtedly saved the woman. Waiting to save also the child, has often resulted in the loss of both lives. Even in the cases of apparently mild diabetes, the outcome for both may be disastrous. If the woman was under observation for some time before the pregnancy, it is usually possible to tell whether it now is of a progressive or stationary type; if not, study of the case over a sufficient period may throw light on this. It is a question of general internal medicine and not gynecologic alone, and strict individualization is indispensable. If the pregnancy is to be terminated, we must bear in mind that diabetics do not stand well general anesthesia and cutting operations. Geelmuyden has known chloroform to bring on coma in diabetics. He thinks it is not always necessary to forbid pregnancy for diabetics. They must be warned, however, of the danger they run. It is more threatening the younger the patient, so that quite young women with diabetes should be emphatically warned against possible conception. His long bibliography on the subject does not include any American names.

### Ugeskrift for Læger, Copenhagen

*September 24, LXXVI, No. 39, pp. 1055-1720*

89 *Typhoid Bacilli in the Blood Revealed by Microscope. (Den direkte, mikroscopiske Paavisning af Tyfusbacillen i Patientens Blod og denne Undersøgelses Betydning for Diagnose og Behandling.) V. A. Wille.

90 *Cancer Disappears after Intercurrent Erysipelas; Three Cases. Strandgaard.

89. **Typhoid Bacilli in the Blood Under the Microscope.**—Wille writes from Java that the microscope revealed the typhoid bacilli in the blood at every one of his 160 examinations in sixteen cases. After an error in the diet the number of bacilli in the fields was materially increased, even before there was any rise in temperature. As soon as the error in diet was corrected, the number of bacilli dropped off. In this way it was learned that fresh milk was not a suitable food for typhoid patients. They thrived much better on unsweetened condensed milk. The microscope was also a guide to know how much milk could be assimilated by the different patients. When the individual limit was overstepped, the bacilli in the field ran up from 30 to 250 as also after large doses of drugs. One of the patients was thus proved unable to eat meat; far into convalescence, any meat or fish at once sent up the number of bacilli. Wille's experience further demonstrated that the finding of typhoid bacilli in the blood does not necessarily imply existing typhoid; they may be relics of typhoid infection years before. In nearly all his cases bacilli were still to be found in the blood months after recovery from the disease. In a later series he examined the blood of fifty healthy persons in Denmark and found scanty typhoid bacilli in the blood in 50 per cent. while the proportion had been over 78 per cent. in sixty-six healthy Javanese examined and the bacilli were much more numerous. He believes that a person can have typhoid bacilli abounding in his blood without his being what is called a bacilli-carrier. Burri's technic was found practical and reliable for showing up typhoid bacilli under the microscope.

90. **Cancer and Erysipelas.**—Strandgaard reports three new cases in which severe wandering erysipelas developed in three elderly persons with a palpable cancer in the colon or breast, primary or a recurrence. The tumors rapidly subsided during and after the erysipelas, and striking improvement in the general health followed. The mammary cancer retrogressed completely. The intestinal cancers likewise retrogressed but one soon returned and proved fatal. In the other case the bladder became infected and the man died. The infection probably was from the breaking-up cancer.

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# THE WET NURSE IN HOSPITAL PRACTICE*

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The high death-rate during the first year of human life is a phenomenon now attracting the attention of all civilized peoples. It is a condition peculiar to no one nationality, city or community, but prevails everywhere the world over. Broadly speaking, this mortality is due to ignorance and poverty. Hence most of these deaths occur in the homes of the poor and ignorant, both in cities and rural districts. A large proportion, however, is contributed by infant asylums, institutions and hospitals. It is with the high death-rate in the last named institution—babies' hospitals—together with measures taken to combat it, that this paper deals.

It is somewhat startling to note the high death-rate which prevails in even our best infant hospitals. It ranges from 30 to 40 per cent. in different institutions in different years. The reason is not far to seek; the babies are brought to the hospital invariably in a state of chronic malnutrition, often suffering from some acute disease. Their resisting power is low. Their progress is slow, necessitating a long stay in the hospital, thereby exposing them to the danger of communicable disease, of the respiratory tract in winter, and of the intestinal tract in summer. All of these factors result in a high death-rate.

Modern methods of substitute feeding, so successful in private practice, are not attended with the same beneficial results when applied in hospital practice. One baby dying out of every three admitted is hardly a satisfactory record. It is undoubtedly this unsatisfactory result with substitute feeding which is giving rise to the tendency to revert to the more widespread use of human milk in the management of these hospital cases. The superiority of breast milk to all other foods for babies in health is universally acknowledged. It would seem as if its use among sick babies also ought to be attended with results better than those attained by any other food. In accordance with this view the staff of the Children's Memorial Hospital have, for a period of five years, resorted to the use of human milk in their management of the hospital infants. During the first two years of this period, 1909-1910, breast milk was used irregularly; during the last three years, 1911, 1912 and 1913, more regularly and constantly.

It is to a discussion of the methods used and the results there obtained that I now invite attention.

### METHODS AT CHILDREN'S MEMORIAL HOSPITAL

We have kept on hand two or three wet-nurses at a time. They come from the Salvation Army headquarters. Each nurse brings her own baby; both mother and baby are examined before engagement, the examination of the mother including a Wassermann test. The nurse is paid $30 per month, room and board, and in addition to her duties as foster mother, does general work about the hospital.

The mother nurses her own baby every four hours, usually on one breast. The other breast is pumped the alternate four hours, the mammae thus being stimulated to activity every two hours. The milk is fed by bottle to the ward babies, none of the latter being put to the breast for fear of infecting the woman, for example, with a latent syphilis. This method has the further advantage of allowing us to feed definite amounts of breast milk to a given baby. Except for the prematures, few of the babies receive exclusively breast milk, but are on "mixed" feeding—part human milk, part bovine milk. The feedings of the latter are gradually increased as the infant improves preparatory to sending it home on a simple milk formula. As a rule the milk from all nurses is mixed and fed thus to the ward babies; in some cases, however, babies with a particularly weak digestion receive the milk from a single nurse, which milk analysis has shown to be a "poor" milk; or such a baby is given the "foremilk." In several instances one of these proceedings has seemed to improve a faulty digestion.

The amount of breast milk furnished by each nurse of course varies in the different women. During the first few days they each average 8 to 10 ounces daily in addition to that given their own babies. This increases quite rapidly under the use of proper hygiene and the two hourly stimulation of the breasts, until the maximum is reached, this maximum ranging from 16 to 60 ounces per day. We do not consider a wet-nurse a good one unless she furnishes at least a pint of milk daily for the ward babies.

The average "life" of a wet-nurse has been nine to ten months; the maximum has been thirteen months. They come to us when their own babies are about a month old.

It is evident that, by the method thus briefly outlined, many babies can receive a certain amount of breast milk daily, especially as most of these infants, below par, with a correspondingly weak digestive capacity, can take only small amounts at a feeding. We averaged, for example, during the year 1913, 58 ounces of breast milk per day; with feedings averaging in amounts 2 to 3 ounces, twenty to thirty feedings of breast milk are available, enabling us to give three to four feedings to each one of eight or ten babies daily.

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* Chairman's address, read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

### RESULTS

What results have been obtained by this method of treatment of our hospital infants? Have those fed on breast milk done better than those fed on some modification of cow's milk? Has the infant mortality of the hospital decreased since the systematic use of breast milk was begun? To determine these points, I have studied the records of a large number of babies treated at the hospital during the last three years. The records have been divided into two parts, the first consisting of all babies fed on breast milk either exclusively or in combination with some modification of cow's milk; the second, of all babies fed on some modification of cow's milk alone.

The total number of cases studied is 715, of which 165 fall into the breast-fed and 550 into the cow's milk group. They range in age from 1 day to 1 year, in weight from 5 to 20 pounds. They include the types of cases usually seen in an infants' hospital, of varying degrees of severity, from mild cases of disturbed feeding to severe types of ileocolitis and severe degrees of "intoxication." The mortality among the 715 cases as a whole is 36.7 per cent.; among the breast-fed babies, Group 1, it is 36.3 per cent., among the cow's milk fed babies, Group 2, it is 36.9 per cent. Thus the mortality in both groups is practically the same.

### MORTALITY IN GROUPS 1 AND 2

All members of Group 1 received as part of their diet a food universally acknowledged to be the best for infants. The members of Group 2, on the contrary, received no such food and were, to this extent, handicapped in the race for life. Yet even with this handicap in a matter of such vital importance, the group loses no more cases in proportion than does Group 1. What is the reason? Obviously the members of the second group must possess some advantage of their own to offset that enjoyed by Group 1 in the matter of diet. This advantage must consist either in some superiority of general management or in some condition of physique indicative of greater vigor and vitality.

The general management was the same in both groups: the cow's milk group did not enjoy the advantage, for example, of living in private homes. All the members of both groups lived (or died) in the same hospital, attended by the same physicians and nurses, exposed to the same atmosphere, to the same communicable diseases; in all respects the general environment was the same for both groups. Any advantage enjoyed by Group 2 could not, therefore, consist in its management. It must consist rather in some physical condition of members of the group, by virtue of which they possessed greater resisting power to disease.

The best index to the vigor and resisting power of an infant is his weight at a given age. In order to compare the vigor and physical condition of the two groups, therefore, the average weight and age on admission were determined, with the following results:

Average weight of 165 infants in Group 1 was 7.6 pounds
Average weight of 503 infants in Group 2 was 9.3 pounds
Average age of 165 infants in Group 1 was 3.8 months
Average age of 503 infants in Group 2 was 5.3 months

Thus it appears that the members of Group 2 were, on an average, 1¾ pounds heavier and 1½ months older, than those of Group 1; and in this superiority of weight and age lies the advantage possessed by the former group, and the explanation of its relatively low mortality.

We are discussing, however, not primarily the effect of physique and natural vigor on infant mortality, but the effect of one kind of feeding on this mortality as compared with another kind.

Obviously the comparative value of two methods of feeding cannot be gauged by applying these two methods to groups of infants with different degrees of vigor. Such values can be determined only by carrying out the two methods on groups of infants of equal vigor and living under the same conditions of general hygiene. In order to do this in the present study, the following plan was pursued.

It was observed that the weight of the great majority of the infants in Group 1 fell within the limits of 6 and 9 pounds. From Group 2 were now selected all the cases ranging in weight between 6 and 9 pounds, and the average weight determined. They constitute Group 2a. They numbered 234, of whom 131 recovered and 103 died. They averaged in weight 7.7 pounds, in age 3.9 months, the averages, it will be noted, of Group 1. To test the relative influence of breast milk and cow's milk in their effect on mortality, we now compared the death-rate of Group 1 with the death-rate of Group 2a, both groups consisting of babies approximately equal in vigor and resisting power but receiving different foods. The mortality rate of Group 2a was determined and found to be 44 per cent.[1] as compared with 36 per cent. in Group 1.

Thus of two groups of infants equal in weight and age, living under identically the same hygienic conditions, the one group receiving *some* breast milk, the second group *none*, a larger proportion of those receiving breast milk survive. It seems reasonable to attribute the lower mortality of this group to the breast milk received.

But while these figures are in favor of breast milk, as was to be expected, the difference is by no means striking, only 8 per cent., and the mortality of the favored group still remains high. There are two possible explanations for this continued high death-rate: the desperate nature of the cases involved; indiscriminate use of a limited supply of breast milk.

The serious condition of hospital infants on admission has already been mentioned. Many come in practically moribund, improve under no treatment at present known to us, sink steadily and die. Such are many of the cases of "intoxication" with or without some complication, for example, bronchopneumonia. The manipulation of proteins yesterday, of fats to-day, of sugar and salts to-morrow, does not save these babies. At present they are out of our reach. We have much yet to learn as to their proper management. To some of these we have fed breast milk whole, skimmed, diluted; to some, modified cow's milk, using the term "modified" in its proper comprehensive sense to include any modification or manipulation of cow's milk, whether it be a simple dilution of whole milk, or the complicated *"Eiweissmilch"* with or without the addition of maltose. It is not at all improbable that breast milk is not the proper food for many of these babies; it is entirely within reason to believe that some combination of water, fat, protein, sugar and salts other than that present in any breast milk will be found to be better adapted to the conditions existing in these infants. At present, however, we must frankly accept and face our ignorance concerning them. In spite of human endeavor they raise the infantile death-rate.

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[1] Recoveries 131; deaths 103.

Consideration of the second point, the proper distribution of a limited supply of breast milk, presents a more hopeful outlook. It is generally believed that the giving of one or two feedings of breast milk to a bottle-baby during the twenty-four hours is beneficial and enables that baby to digest and assimilate higher percentages of the ingredients of cow's milk than he could do without this human milk. As far as healthy infants are concerned, this is undoubtedly true. To what extent this applies to sick infants, I have sought to learn from further study of the present cases.

The records of the breast-fed group have now been regrouped into three subdivisions, A, B and C: those receiving exclusively breast milk, those receiving at least half breast milk for a limited critical period, those receiving less than half breast milk for such a period. The mortality-rate has been estimated in each of these subdivisions, giving the following results:

A. Of 17 infants exclusively on breast milk, 10 died; mortality, 59 per cent.

B. Of 62 infants on at least half breast milk, 2 died; mortality, 3 per cent.

C. Of 58 infants on less than half breast milk, 29 died; mortality, 50 per cent.

Division A consists of desperate cases. We assumed, rightly or wrongly, that breast milk would give them the best chance for life; hence their diets consisted exclusively of breast milk. How unsuccessful we were the high mortality shows.

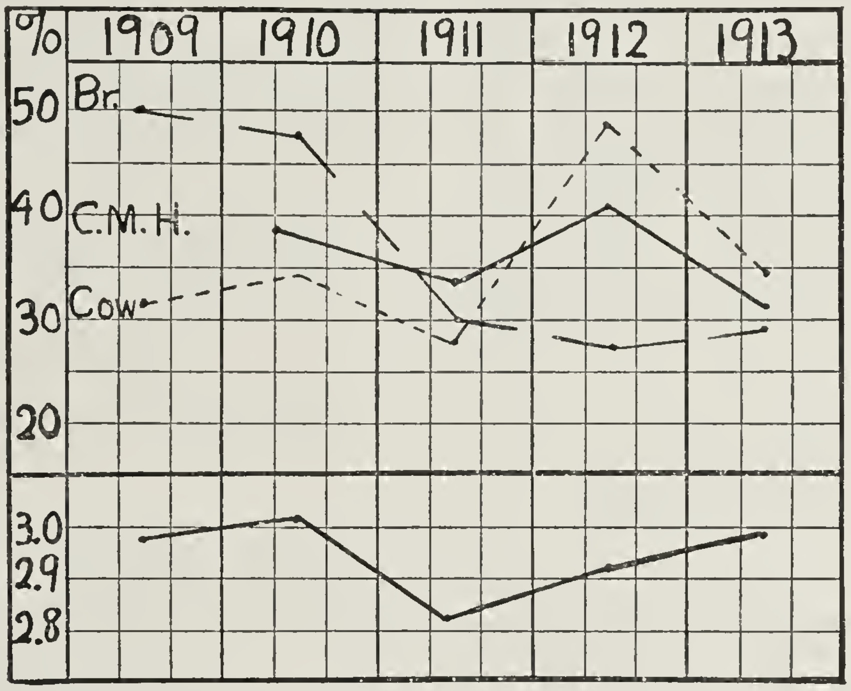

Chart showing infant mortality rates for the years 1909 to 1913, inclusive: Above, the solid black line shows the general hospital infant mortality; the broken line the rate among breast-fed infants; the dash line the rate among infants fed on cow's milk.

Below, the curve shows the deaths in the city of Chicago among infants 1 year old or under per thousand of population for the corresponding years.

The infants in division B seemed less serious, as a whole, than those in A, but more serious than those in C. They were accordingly given, not exclusively breast milk, but comparatively large amounts, to tide them over a critical period. The change for the better and the upward progress of most of these infants took place coincidently with the change to, and administration of, breast milk, and I believe the low mortality among them to be due to the considerable amounts of this milk received.

The infants in division C seemed somewhat less serious than those in either A or B; accordingly they received less breast milk and had a high mortality rate, half of them dying.

The high mortality in division A emphasizes the fact that human milk is not a panacea for all the ills of infancy, but in many cases is of no avail. Intensive study of such cases, by clinical and laboratory methods, will probably show that some combination of water and solids other than that found in breast milk is better adapted to correct the chemicophysical condition in which these infants enter the hospital.

The low and high mortality of divisions B and C, respectively, is significant: the one group received breast milk in abundance and suffered a mortality of only 3 per cent.; the other was "skimped" on breast milk and half died. The lesson is obvious.

### MORTALITY BY YEARS

We have seen that the mortality rate of a group of babies fed partly on breast milk and partly on cow's milk is somewhat lower than that of a group of equal vigor fed on cow's milk alone, the investigation covering a period of three years. What has been the effect on the hospital infant death-rate as a whole? Is this lower on an average than it was before breast milk was used so extensively? Is the number of recoveries among the breast-fed babies sufficiently large to influence the general mortality?

The hospital infant mortality-rate as a whole has been ascertained for the years 1910 to 1913, inclusive; the mortality-rate in Groups 1 and 2 has been estimated yearly; finally, as an infant's hospital is apt to reflect in the severity of its cases, the severity of the same diseases prevailing in the community at large, figures of the infantile death-rate in Chicago, during the same period, are introduced for purposes of comparison. Curves have then been plotted, based on these figures in the accompanying chart.

Analysis of the curves as a whole is interesting. All show a drop from 1910 to 1911, the hospital curves reflecting the general drop seen in the city curve; from 1911 to 1912 there is a sharp rise in the cow-milk group, carrying up the general hospital rate, a reflection again of the increased city mortality; from 1912 to 1913 we see a marked drop in the cow-milk group, carrying down the general hospital rate, in spite of a continued rise in the city at large.

In the breast-milk curve, the high figures seen in 1909 and 1910 have already been explained. They are due to the scanty, irregular use of breast milk. They are of little significance but serve as a background and contrast to the marked decrease in the following two years, during which breast milk was used extensively. Especially interesting is the drop in 1912 coincidently with the rise in all the other curves, both of hospital and of city. Notwithstanding a season of severe intestinal troubles, we were able to save an increased number of babies taking breast milk, while the number of deaths of those taking cow's milk markedly increased, from 27 per cent. to 48 per cent.

There is a rise in the curve in 1913; it is, however, slight, only 2 per cent., and may well be due to the presence of an unusual number of well nigh hopeless cases, there being on the list two cases of pyloric stenosis, one of erysipelas and ten of bronchopneumonia in a total of fifty-seven cases for the year.

In the curve based on the hospital infant mortality as a whole, we see that the mortality for 1910, before the extensive use of breast milk, was 36 per cent., and that it was 33 per cent., 42 per cent. and 32 per cent. for 1911, 1912 and 1913, respectively. Two of these last three years thus show a decreased death-rate, but in the third year, 1912, the rate was so high that the average for the whole period was 35.6 per cent., practically the same as in 1910, before the extensive use of breast milk was begun. Thus the average general rate has not been lowered by the use of breast milk. We have undoubtedly saved lives by its use, but not in numbers sufficient to lower the general infant death-rate. The time covered by the study, however, three years, is too short to warrant final conclusions and the figures are introduced only as a preliminary report.

### DURATION AND COMPLICATIONS

One of the unfortunate factors in the management of hospital babies and one contributing largely to the high mortality is their prolonged stay in hospital. It seemed desirable in the present study to ascertain whether or not the breast-fed babies made more rapid progress than the others; whether or not, also, they were less apt to contract communicable disease. Accordingly Groups 1 and 2a were analyzed from these points of view. The average length of stay of all recoveries was estimated, likewise the number of complications among both the recoveries and the fatal cases. The results are as follows:

Average stay of Group 1 was 54 days
Average stay of Group 2a was 34 days
37 per cent. of Group 1 developed complications
24 per cent. of Group 2a developed complications

The more protracted stay of the breast-fed infants is striking. The greater proportion of complications among them follows as a natural result of this long stay; of the sixty-two cases with complications, only six had a complication on admission. Furthermore, the complications are more fatal among the breast-fed infants, 37 per cent. of these dying, as compared with 27 per cent. in the other group.

It is probable that in our desire to give the babies every possible chance we have kept them on breast milk too long, thereby delaying their discharge from the hospital. It apparently has not been possible to furnish them breast milk at home, and they have stayed until they have been "switched" to an exclusively cow-milk diet on which they could be sent home.

The problem is difficult, though not insurmountable. On the one hand is the necessity of feeding to a weak baby the food which in all probability will give him the best chance for life; namely, breast milk. On the other hand is the continued exposure to communicable disease—exposure of a baby with an already lowered resisting power. The solution of the problem lies in the earlier discharge from hospital and the continued use of breast milk from the hospital wet-nurse, oversight of the patient at home being continued through the out-patient and social service departments.

### CONCLUSIONS

Comparative study of two groups of infants of unequal age and weight, the older and heavier group fed exclusively on cow's milk, the lighter and younger group on part human and part bovine milk, shows that the mortality-rate in both groups is the same.

Study of two groups of the same age and weight, fed as above, shows a mortality lower by 8 per cent. in the group fed partly on breast milk.

Infants seriously but not hopelessly ill, whose diet consisted of at least half breast milk over a critical period, show a mortality of but 3 per cent.

Infants somewhat less seriously sick, whose diet consisted of less than half breast milk, over a similar period show a mortality of 50 per cent.

Whenever possible, therefore, the diet of such seriously ill babies should consist of at least half breast milk throughout the critical period of their illness.

The use of a limited supply of breast milk in a large infant hospital, over a period of three years, has not reduced the infant mortality of that hospital during that period. The mortality, however, has not risen, notwithstanding the fact that during the same period there has been a steadily rising infant mortality in the city in which the hospital is located and from the infant population of which the hospital draws its patients.

Breast milk is not a panacea for all the ills of infancy, desperately ill infants showing a high mortality even when fed exclusively this kind of food.

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# URINARY ANALYSIS IN THE DIAGNOSIS AND TREATMENT OF DISEASES OF INFANCY AND CHILDHOOD *

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It is the design of this paper to point out the importance of fairly complete urinary examinations in disorders of infancy and the value of certain tests infrequently made which may furnish important information. The urinary analysis recommended may be run through in ten or fifteen minutes by a competent man in any properly equipped laboratory.

I am aware, of course, of the ordinary office examinations of busy physicians, the tests for albumin and for sugar, and also of the fact that commercial laboratories are used by many physicians to obtain more complete examinations without trouble to the physician himself. But it is not often that office examinations or laboratory examinations supply the physician with the most important facts to be elicited from the urine in the diagnosis of diseases of infancy and childhood, while in the case of infants where the procuring of a specimen is difficult, urinary analysis is often completely neglected. This neglect is in sharp contrast to the frequency of blood examinations in such cases, blood being readily procured by a prick.

The examination of a specimen of urine in a child acutely sick, especially if the diagnosis is obscure, is usually much more important than an examination of the blood or any other examination excepting the general physical examination by the physician.

The obtaining of a specimen of urine, while often difficult, especially in female children, is not really so difficult as is generally supposed. One difficulty is that infants pass a little urine very often. Accurate obser-

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vations on the urination of infants have recently been made by Engle[1] who placed an infant over a receptacle for the urine so arranged that an electric current was formed which rang a bell whenever the child moistened the receptacle with urine. He found that an average infant taking about 800 c.c. (27 ounces) of food urinates from twenty-five to thirty times in twenty-four hours, or oftener than once an hour, and when the food was increased to 1,600 c.c. (54 ounces) the child would urinate from fifty to sixty times or more in twenty-four hours; that is, every twenty or thirty minutes. He also found that a young infant voided urine at regular intervals whether awake or asleep, while after 6 months of age they usually urinate only while awake.

While cribs have been made with receptacles for saving all the urine, for ordinary clinical purposes this is not necessary. In a male infant a bottle with a mouth sufficiently large for the insertion of the penis may be fastened to the child with plaster with full assurance that a specimen will be obtained within an hour if the child is awake. In a female infant the procuring of a specimen is more difficult, but a small cup placed under the infant whenever she wakes with a dry diaper, especially if pressure is made over the bladder, which at this age is an abdominal organ, will usually procure a specimen. If it does not, the next opportunity will be when a bottle is given, for during the time when a baby sucks at a bottle urine is apt to be excreted. In cases of pyelitis in female infants I have had no trouble, where there has been intelligent supervision, in securing several specimens a day without the use of any apparatus.

Of the conditions to be looked for in the urine we may note in order:

1. Dilution
2. Evidences of nephritis
3. Evidences of diabetes
4. Evidences of acidity
5. Evidences of acidosis
6. Evidences of intestinal intoxication
7. Evidences of pyelitis

But it is the acidosis, intestinal intoxication and pyelitis that I wish to emphasize, these being the important conditions to be constantly looked for in the disorders of childhood.

### URINALYSIS

Before considering these abnormal conditions found in the urine of children I will review briefly the sort of urinalysis which I believe is essential to the intelligent diagnosis and treatment of disorders of children. This analysis, when the materials are ready, may be run through in a few moments.

The specific gravity is taken in the ordinary way with a urinometer.

A qualitative reaction may be obtained by the use of litmus paper, but for a quantitative reaction, which is quite important in treatment, a more accurate test with phenolphthalein is of advantage. For this purpose a phenolphthalein solution, a buret containing a decinormal sodium solution and a few grains of potassium oxalate are necessary. Twenty-five cubic centimeters of urine and a few grains of potassium oxalate are put into a test-tube and shaken. Two drops of phenolphthalein solution are added, and then drop by drop the normal sodium solution until the reaction occurs which is read off in cubic centimeters on the buret.

Albumin may be detected by the use of strong nitrate acid in cold urine or by boiling the urine and adding a few drops of acetic acid.

Glucose is detected by Fehling's solution, and if positive, is confirmed by a fermentation test with yeast.

To obtain acetone the urine is shaken up with a few drops of a freshly prepared sodium-nitroprussid solution. To this 2 c.c. of glacial acetic acid are added and over this a layer of 10 per cent. ammonia water. After standing three minutes a red ring indicates the presence of acetone.

For diacetic acid a 10 per cent. ferric chlorid solution is added to 5 c.c. of urine until the mixture clears. A Burgundy red-color indicates diacetic acid, the amount varying with the saturation of the color.

For indican, to 5 c.c. of urine 5 c.c. of strong hydrochloric acid are added. To this a drop of sodium hypochlorite solution and a few drops of chloroform are added. The test tube is inverted five or six times and allowed to stand for five minutes. A violet color indicates indican, while a red color indicates potassium iodid.

For phenol 5 c.c. of Millon's reagent are added to 1 c.c. of urine. This is boiled and a salmon pink color indicates the presence of phenol.

These tests are only a few readily made tests to indicate certain conditions. Acetone and diacetic acid are only two of the products of acidosis. Beta-oxybutyric acid, a third and earlier form of acidosis, is more difficult to test for and of less consequence.

Other substances that give evidence of intestinal intoxication likewise may be tested for, but these two, indican and phenol, are good representatives of the class and give one readily an indication of what one is dealing with, and I believe that these tests together with the test for bile, if necessary, and thorough microscopic examination of the sediment are all that are necessary for routine work.

The dilution of urine is indicated by its specific gravity. The specific gravity of the urine may give one a good clew to the amount of fluid taken, and while in those who are largely on a fluid diet the specific gravity is low, it is not uncommon in children of 3 or 4 years of age to find a very high specific gravity, and these children are usually those who take very little milk or other fluid.

### ALBUMIN

The presence of albumin in the urine of children who have general disorders is not, to my mind, a necessary source of concern. Traces of albumin are very frequently found and unless this albumin occurs in a child with a nephritic history or is associated with or preceded by acute nephritic disorder, one may assume that it will disappear with an amelioration in the general condition of the child. The same may be said of hyaline casts in the urine, which in some children will occur in large numbers, and sometimes without the presence of albumin, and these casts may not signify any grave disorder.

Sugar is rarely found in the urine of children even in cases of marked acidoses. If it is found the possibility of a physiologic glycosuria due to overindulgence in sugar should be borne in mind, but the persistence of sugar in a normally fed child is one of the gravest indications, diabetes in these young patients being almost universally fatal.

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[1] Engle: Rev. in Therap. Monatsch., 1912, xxvi, No. 5, p. 318.

Intense acidity of the urine unaccompanied by the products which we call an acidosis may produce such symptoms as intertrigo and frequent micturition, which are readily relieved by a neutralization of the urine by the internal administration of alkalies.

### ACIDOSES

To attempt to give a review of the theories of the cause and significance of acidoses would take more time than we have, and would not lead us probably to any definite conclusions. Acidoses have been mostly studied as they occur during the disturbances of pregnancy, particularly as they occur in diabetes, in acute yellow atrophy of the liver and after chloroform anesthesia.

All this literature, however, we will lay aside to consider the association of acidoses in the common ailments in children and their treatment.

By acidosis I mean a condition associated with a considerable amount of acetone and diacetic acid in the urine. In any urine that is very markedly acid in children the presence of these substances should be suspected and looked for. A fairly regular accompaniment of these attacks of acidoses is the flavor of acetone in the breath of the child, and on this alone a diagnosis can often be made. Acetone may, however, occur in the urine unaccompanied by acetone breath, and acetone and diacetic acid may be present in a urine that gives an alkaline reaction. An acidosis occurring in very early life is that found in breast fed babies who are taking and retaining more breast milk than they can properly digest. They have frequent movements that are markedly acid. They become irritated under the diaper and if the food is not cut down will soon break out in an acute general eczema. In such cases the remedy is easy of application. By weighing before and after nursing one may ascertain the amount of milk the child is getting at each nursing, and this is often 5 to 6 ounces in a child 6 weeks old, and when the breast feeding is cut down to a suitable amount the eczema rapidly disappears and the child recovers.

Almost all intertrigo in babies is caused by an acid urine and this may be associated with the presence of acetone and diacetic acid. This condition is most successfully combated by a neutralization of the urine in addition to the use of external applications. In neutralizing the urine care must be taken that it is not made strongly alkaline, for I believe it may then be as irritating as before.

Most of the attacks of vomiting in children are accompaniments of acidoses, excepting those caused by an overloaded stomach, while in persistent attacks of vomiting the condition of acidosis is usually very marked. Those cases known as cyclic vomiting, where children from 3 to 10 years of age have repeated attacks of vomiting with a markedly acetone breath which last for a number of days, while not necessarily due entirely to acidosis—for in these cases there is a large nervous element—are usually preceded and accompanied by acidoses and are best treated by alkalies and elimination. These attacks are best controlled by excluding nervous irritation, by watching the tongue of the child and on the slightest indication of a recurrence of an attack, putting it to bed, relaxing it with a warm bath, and administering alkalies and laxatives. By these methods, promptly and vigorously applied, the habit of recurring attacks may best be broken.

### INTESTINAL INTOXICATION

In addition to these attacks of acidoses we have another class of cases called intestinal intoxication which may or may not be associated with acidoses. Attacks of intestinal intoxication are characterized by the presence of indican and phenol in the urine. Such attacks are common in young children and an appreciation of their nature is an aid in intelligent treatment. One of the earliest accompaniments of this condition is seen in marasmic babies during the first months of life, who after a stationary weight or a gradual loss in weight, show in one day a gain of from ½ to ¾ pound, and on examination it is found that there is an edema of the hands and feet or of the face. These are usually severe cases and often terminate fatally, and this edema is often associated with intestinal intoxication, while the stimulating cause may be the administration of too much sodium chlorid.

Another group of cases are those that have urticaria with localized edema. It is not very uncommon that a child who has been doing pretty well, except possibly for a coated tongue, is found one morning with one eye entirely closed from swelling. He has little or no fever, is less active than usual, and may have no other swelling, but sooner or later other evidences of urticaria appear. If with these attacks the child vomits, we usually find an acidosis associated with the intestinal intoxication. Examination of the urine in these cases is very important in eliminating a diagnosis of a much more serious condition. As these children improve under treatment the evidences of acidosis and intestinal intoxication disappear.

The eczema of childhood which is often resistant to the treatment administered is usually curable if the food is carefully regulated on a basis of required calories, the intestinal intoxication eliminated and the surface kept well covered with appropriate ointment. The treatment of these intestinal intoxication cases is very similar to that used in acidoses—free elimination from the intestinal tract and the administration of alkalies. In the administration of alkalies, however, both in acidoses and in intestinal toxemias, careful control of the reaction of the urine must be had by the use of litmus paper or phenolphthalein, so that when a neutral or slightly alkaline reaction is reached the alkalies may be reduced in dose or discontinued. The alkalies that are most valuable for this purpose, as being in no way irritating and well taken by children, are the bicarbonate and citrate of soda, while milk of magnesia, which is strongly alkaline, makes a good laxative to use in combination with the bicarbonate and citrate of soda. Lacto-bacillary cultures may also be administered with benefit in cases with offensive stools, or with abdominal distention from gas formation.

The growing pains of children are often associated with acidoses and intestinal intoxications and may be relieved by treatment which rectifies these irregularities.

### PYELITIS

The third condition in the urine which should be carefully looked for in every case of unexplained fever is pyelitis. Cases of pyelitis, many of which are readily curable, are more commonly allowed to run on unrecognized than any other disease of infancy, not excepting otitis and scurvy; for pyelitis may give no evident clew to diagnosis unless the urine is examined.

The laboratory diagnosis is made by finding in the precipitate of a centrifugalized specimen of urine a material number of leukocytes. One or two leukocytes in a D-field (Zeiss) of precipitate of a female baby does not indicate a pyelitis, but only the washing from the vulva. That number, however, in a male baby or more in a female baby should render the diagnosis suspicious, and then other specimens obtained so as to avoid contamination should be examined for both leukocytes and bacteria.

A clean sample may be obtained by using a bottle and cork that have been in boiling water, by rinsing the chamber with boiling water and washing thoroughly the urethral orifice in a male baby and the urethral orifice and vulva in the female. With these precautions taken one usually obtains almost a pure culture of the infecting organism. Or in pyelitis cases the specimen may be obtained by a sterile catheter into a boiled bottle or sterilized test-tube.

The pyelitis of infancy is an acute infection which may or may not be accompanied by fever, but which, in any event, should be promptly cured, for cases that have not been cured and have gone on to a fatal termination have shown suppurative processes in the kidney tissue. The diagnosis of pyelitis is often fairly sure before the urinary examination is made, if one is accustomed to the type of symptoms that accompany it. The temperature is usually of a marked remittent type and in severe cases is apt to reach more than 105 F. and sometimes 106 F. It occurs usually in children near the end of the first year, and far more often in female children than in male. On this account pediatricians are apt to feel that the infection has come from the outside through the smearing of the colon-bearing stools over the buttocks of the child, thus reaching the vulva, and the infection traveling up the urethra. The inside infection through the lymphatics is, of course, possible, and may frequently occur, but the greater incidence of pyelitis in female children can best be explained on the theory of external contamination. This likelihood of external contamination is one of the strongest arguments for the early control of defecation in children. Children with intelligent nurses may be trained by the aid of glycerin suppositories to have a morning movement in a bowl when not more than 2 or 3 months old. The formation of such a habit in early life should not be neglected.

Pyelitis is likely to be preceded by a disturbance of the bowels, usually not an acute colitis, but a condition in which the movements are a little green and perhaps slightly more numerous than normal. The attack of pyelitis is usually ushered in by a slight rise of temperature, which most often quickly subsides on the administration of sufficient alkalies to neutralize the urine, and many authorities believe that this administration of alkalies should be the main reliance in pyelitis.

Although cases of pyelitis are almost all colon infections, the reaction to treatment varies materially, and while most children are cured by neutralization of the urine by alkalies, there remain many children in whom this treatment has apparently no effect, and for these cases other methods of treatment must be sought. Perhaps the best treatment in many cases for the cure of the constitutional symptoms is the administration of colon vaccines which produce a reduction in the temperature; but so far as I know, the vaccines do not cure the disease, though they apparently cure it. The child loses its fever and will increase in weight and seem perfectly well, but when the urine is examined one finds the same pus and bacteria that existed before. We fortunately have now the first internal antiseptic that has ever proved efficient for any part of the body, and hexamethylenamin is certainly an absolute antiseptic for certain infections of the urinary tract. It, however, is a drug that should be given with care to infants.

I have seen marked cyanosis follow the administration of one-half grain of hexamethylenamin in a child 8 months old, and a similar attack follow the second administration of the same dose. So in no infant should doses be begun of more than ½ grain; but if the infant and its urine can be carefully watched and no reaction follows the administration of ½ grain, the dose can be rapidly increased. I have, however, administered a dram a day of hexamethylenamin to two babies of 6 months with colon cystitis and acid urine, neither weighing more than 12 pounds, without causing any evident irritation of the kidneys and without curing the cystitis. Such large doses if given should be continued only a few days, during which time the child and its urine should be under close daily observation for evidences of kidney irritation.

## CONCLUSIONS

In every urinary analysis in children, whether with fever or without, careful tests for acidity, for acidosis and intestinal intoxication should be made, and also an accurate computation of the number of leukocytes present. Should these leukocytes be constantly present in any considerably increased amount an examination for bacteria in a fresh specimen procured in such a manner as to avoid contamination or drawn by a catheter, should be made and if present should be grown on culture media for identification. By neglecting to make these tests many failures to properly diagnose and promptly cure disorders in childhood may occur.

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## ABSTRACT OF DISCUSSION

Dr. J. P. Sedgwick, Minneapolis: At the St. Louis meeting of this section I was able to report that in recurrent vomiting we have a greatly increased amount of creatin and creatinin, especially creatinin. At Chicago a year or two later I was able to show that increased creatin and creatinin excretion accompanies the attack. In the meantime Mellanby had reported that the creatin and creatinin excretion and acidosis increase with attacks of recurrent vomiting. It has been shown by physiologists that acidosis is produced and occurs with the withdrawal of food, especially with the withdrawal of carbohydrates, and creatin and creatinin excretion also increase under the same conditions. I think we should be careful not to mistake the acidosis for the cause or the fundamental part of recurrent vomiting, when we do know that the withdrawal of food, especially carbohydrates, or an increase in the amount of fat ingested, will produce these acids. I think many have made the mistake of considering the effect to be the cause. Based on the fact that infections of the urinary tract occur more frequently in female children, we think it must be due to infection through the urethra. We have not been able to find any experimental proof. Dr. Huenekens worked with me, trying to cause ascending infection in guinea-pigs, but we were not able to accomplish it.

Dr. S. M. Hamill, Philadelphia: Will Dr. Sedgwick say what relation creatin and creatinin bear to these attacks? Is elimination increased before the attack? In other words, is it a premonitory symptom?

Dr. Sedgwick: Mellanby's report shows that he found an increase of creatin and creatinin as well as acidosis just before the attack. I reported one case in which a child having repeated attacks of recurrent vomiting, also had fever and appeared to be coming down with an attack of recurrent vomiting, and creatin and creatinin did increase without the typical vomiting. In many cases when we had recurrent vomiting, I did not get much increase in creatin and creatinin before vomiting. Of course acidosis and acid bodies come up at the same time—I believe in many cases owing to the withdrawal of carbohydrates.

Dr. Joseph I. Linde, New Haven, Conn.: It is important to get complete specimens of urine, or at least several specimens during the day. Pus is not present in all specimens during the day, and if several specimens are not examined one may easily fail on the diagnosis.

Dr. Henry F. Helmholz, Chicago: I wish to emphasize a point made by Dr. Linde, not only to take several specimens on one day, but specimens for several days running, especially in those chronic cases, in which one may find no pus for several days. In recurring cases, in which the symptoms are indefinite, one sometimes gets a sudden gush of pus after practically negative urinary examinations covering a period of several days. With regard to the finding of albumin in the urine in older children, one case is well recognized, namely, orthostatic albuminuria, which should be considered, because, by means of exercises, this condition can be cured. Whether or not it is of any great harm to the child to be excreting albumin, is not for me to decide. In this well-defined group of orthostatic albuminuria we have an explanation of why the child is passing albumin. Dr. Freeman called attention to overfeeding; it seems to me just as important to recognize cases of acidoses caused by underfeeding. As Dr. Sedgwick has said, the withdrawal of carbohydrates gives rise to this condition, and in children who are underfed a very good indication of this is the presence of diacetic acid in the urine.

Dr. W. W. Butterworth, New Orleans: If, through Dr. Freeman's paper the attention of the general practitioner can be called to the great need of examining the urine of infants and children more frequently than is generally done, we will have accomplished a great deal. It is easy to secure a specimen of urine from infants—especially female infants. Apart from albumin and sugar examination, the test for indican, acetone bodies and the presence of pus is important. Another thing which should be mentioned is the frequency of pyelitis occurring in boys as well as in girls. At the last meeting of the International Medical Association, Dr. Thompson of Edinburgh reported twenty-seven cases of pyelitis occurring in boys. I, as well as others, had lost sight of the fact that it occurs more frequently in girls than boys. My fatalities have occurred in boys instead of girls. Just why is not clear to me. I believe we are apt to overestimate the importance of acetone and diacetic bodies in the urine. Almost any febrile disturbance will cause their presence. The simple finding of them does not mean acidosis.

Dr. Henry Heiman, New York: First in importance is the examination of the urine at various times. In orthostatic albuminuria, if we examine the first specimen before the patient is out of bed, we will find it negative. As soon as he is up and around the albuminuria will be present. We know this is probably due to pressure on the venous system of the kidneys. It is better to take morning and evening specimens in cases of suspected orthostatic albuminuria. In infectious diseases, when we examine the first twenty-four-hour specimen we find it as a rule containing albumin, but we all know that real nephritis occurs later, as in the third week in scarlet fever. With regard to obtaining urine in children, I have been fairly successful with Dr. Chapin's receptacle. In females I never hesitate to catheterize when necessary with a small ureteral catheter. This is thoroughly sterilized, of course. There is no difficulty in obtaining urine. With regard to types of pyelitis, we all believe we have ascending, descending and transparietal types. My experience has been that they are much more frequent, in New York, in females than in males. We should state specifically with what type of pyelitis we are dealing. The majority are due to the *Bacillus coli communis*. I have one case in the hospital of the pyocyaneus type. I believe the majority are of the ascending type. The colon bacillus has been found in the blood, but in rare instances. With regard to the treatment of these patients, I must say if they do not get well in ten or twelve days with or without urotropin, they become chronic. The Germans believe, in such cases as have been mentioned, in which there is free urine for several days and a relapse, that it is due to punctate abscesses in the cortex of the kidney. For the diagnosis of these cases Dr. Edwin Beer has given an excellent test—methylene blue. For a few days the urine will be green, then it becomes normal, then when an abscess bursts, it will be green again. This test is a very useful one.

Dr. Kate C. Meade, Middletown, Conn.: Is it possible, by regulating the urine, to control the eczema which these children sometimes have?

Dr. R. G. Freeman, New York: A variation in the amount of pus in the urine at different times in the day does of course occur. As to using the urine from a squeezed diaper, that is better than nothing, but one never knows what the diaper may contain, and what it does contain will appear in the urine. It is perfectly simple to obtain a specimen in a clean vessel in all cases. I think modifying the urine aids much, but diet is the main factor in eczema.

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# AMEBIC DYSENTERY IN CHILDREN *

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Amebic dysentery is a relatively rare disease in children, not because children are not susceptible to the infection but because they are less exposed to the etiologic factors which cause the infection in the adult. It is possible that in children it may exist much more often than is believed but may escape detection. The four cases reported below are instances of this.

In the Charity Hospital in New Orleans where there have been seen in the out-patient department for the last eight and a half years an average of 20,543 new cases annually, and where there have been admitted annually an average of 11,077 cases, or where 94,161 cases have been admitted, only 313 were cases of amebic dysentery, and of these four occurred in children under 12 years. Two of these were in my service.

At the Touro Infirmary in my service in over 3,000 children there were four cases of amebic dysentery. Two of these children were admitted to the Charity Hospital, because the Touro beds were filled, and are included in the four cases in the Charity Hospital. Besides my four cases at the Touro Infirmary there were two others, making a total of six cases at this institution.

Of the eight cases, one, after the condition was diagnosed, deserted.

Amebic dysentery is more prevalent in the male than in the female, due, it is generally believed, to the more active life of the male with the incident greater exposure; and so it might be argued, the lesser exposure may hold good for the relative infrequency in children. The younger the child the less often is the disease found. This is in accord with our belief of the sources of infection, more particularly water and green vegetables, as the smaller babies have boiled water, as a rule, and do not yet have vegetables. As they grow older the exposure, and consequent liability to infection is greater.

The symptoms of amebic dysentery in children do not differ from those in the adult. The abdominal pain, the frequent stools containing mucus, blood and, at times pus, the tenesmus, anorexia, indigestion, anemia, emaciation and low temperature, loss of weight, flabbiness of muscles, dry skin and sallow complexion are more or less constantly found, depending on the severity of the disease. The blood picture is one of secondary anemia.

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* Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

The diagnosis is not difficult to make if a microscopic examination of the warm, liquid stool, free from urine, is made; or better still, if a rectal tube is passed and the bloody mucus or small pieces of necrotic tissue thereon are examined on warm slides. The ameba will be most readily found in this way. The condition from which amebic dysentery is to be differentiated in children is bacillary dysentery. In the latter condition the onset is usually more acute, temperature higher, systemic disturbance greater, the child is more toxic and less sallow, and the agglutination test may be positive, and the dysentery bacilli but no amebas are found in the stools. The facies in the two dysenteries are different and characteristic in each.

TABLE 1.—DATA IN CASE 2 *

| Dat 1913 | Temp. Min. and Max. | Med. | Tube Passed | Ameba | Stools | | Description | Remarks | Diet | Blood | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Day | Night | | | | Hb. % | R.B.C. | W.B.C. | Neut. % | S.L. % | L.M. % | Eos. % | Bas. % |
| 7/25 | 98.6-100 | ........ | ........ | ........ | ..... | 0 | ........ | ........ | ........ | 50 | 4,116,000 | 14,600 | 67 | 23 | 4 | 6 | |
| 7/26 | 90.6-100 | Emetin ⅔ gr. | + | + | 3 | 3 | Loose; brown; blood; mucus | Complained of pain in abdomen | Liquid | | | | | | | | |
| 7/27. | 99.4-100 | Emetin 1 gr. | + | + | 3 | 1 | Loose; brown; blood; mucus | Pain | | | | | | | | | |
| 7/28 | 98 -100 | Emetin 1 gr. | + | + | 0 | 0 | ........ | Feeling comfortable | ........ | ........ | ........ | 14,000 | 61 | 24 | 8 | 6 | 1 |
| 7/29 | 98 - 99.4 | Emetin 1 gr. | + | + † | 0 | 0 | ........ | Comfortable | | | | | | | | | |
| 7/30 | 99 -100 | Mag. Sulph. 2 dr. | + | — | 3 | 0 | Liquid and yellow; no blood; no mucus | ........ | Liquid | ........ | ........ | 11,000 | 69 | 22 | 8 | 1 | |
| 7/31 | 99.2- 99 | ........ | + | — | 1 | 0 | Semisolid; yellow; no blood; no mucus | Tube passed 22 hrs. after Mag. Sulph. | Soft | | | | | | | | |
| 8/1 | 98 - 99.8 | ........ | ........ | ........ | 0 | 0 | ........ | ........ | Soft | | | | | | | | |
| 8/2 | 99.8 | Milk Mag.<br>Mag. Citr. | + | — | 0 | 0 | ........ | ........ | Soft | | | | | | | | |
| 8/3 | 99.8 | ........ | ........ | ........ | 0 | 0 | | | | | | | | | | | |
| 8/4 | 99.8 | Mag. Sulph. ½ oz. | + | — | 1 | 0 | Liquid........ | ........ | ........ | ........ | ........ | 9,300 | 57 | 35 | 8 | | |
| 8/5 | 99.8 | Milk Mag. | + | — | 1 | 0 | Semisolid........ | ........ | Full diet | | | | | | | | |
| 8/6 | 99.8 | ........ | ........ | ........ | ........ | ........ | ........ | Hungry between meals | | | | | | | | | |

* Urine negative except for indican.

† Inactive.

The prognosis depends on the severity of the disease and the complications, more particularly abscess of the liver, terminal infection, exhaustion in protracted cases, and intercurrent diseases.

Conclusions cannot be drawn from a few cases but in a condition as infrequent as is amebic dysentery in children, it is excusable to venture some suggestions from the study of a few cases.

The treatment of the seven cases (because one of the eight patients deserted after the diagnosis was made) referred to in the beginning of this paper consisted of ipecac in two cases and emetin in five cases. The two patients who were given the ipecac in the form of pills were 11 years and 6 years and they received 380 grains in 27 days and 243 grains in 25 days, respectively. In a third case ipecac was attempted but because of the inability of the patient to swallow the ipecac pills emetin was given with, I am told, satisfactory results. The four remaining patients, aged $8\frac{5}{12}$, 7, 4 and 4 years, respectively were given emetin. The 7-year-old child was given 4⅔ grains in five days, being given ⅓ grain three times a day. The amebas disappeared from the stools on the fourth day. The plan adopted in the treatment of my three patients was to pass the tube daily, and as long as amebas were found to give 1 grain emetin hypodermatically at one dose daily. When the amebas were no longer found the tube was passed every other day for two or three observations; then the interval of passing the tube was lengthened. The passing of the tube was not discontinued until after magnesium sulphate or castor oil was given and no amebas found.

The diet should be liquid until the blood and mucus disappear, when soft food may be given. Rest is absolutely essential, not only to the individual, but to the bowel. Emetin seems to provide rest to the latter.

### CASE REPORTS

Case 1.—F. A., white male, 1 year and 11 months old, native of Louisiana and resident of Donner, La., was brought to my clinic at Touro Infirmary, Nov. 8, 1912, because of loose, bloody stools.

His family history was negative, except that there had been two miscarriages. There were three well children and no bowel trouble in the family. He was a full term child and born after a difficult labor. He was breast-fed and after his fourteenth month ate everything. His development was normal. He had had no other illnesses.

In June, 1912, his present trouble began with frequent stools, twelve to fifteen a day, containing slime and much blood, and accompanied with pain and straining. In August there appeared a lump in the left inguinal region which disappeared from time to time. During the present illness the patient has had slight fever.

Physical examination showed a fairly developed child weighing 21 pounds. He had a small left inguinal hernia. A rectal tube was passed and amebas were found. Otherwise his examination was negative. He was given an admission card but was not seen again. This is the patient that has been alluded to as having deserted.

Case 2.—W. O., white male, 4 years old, native of Louisiana, was brought to me July 25, 1913, from Baton Rouge, La., with a complaint of frequent and bloody stools.

His father and mother were both living and healthy as were also his two sisters and one brother. There was no other member in the household with bowel trouble.

He was a full-term child delivered normally. He was fed exclusively on the breast for nine months, after which cereals and a proprietary food were given until his eleventh month when he was gradually put on a full diet, eating everything at the age of three. When 2 years old he had fever for four days which was called "malaria." The diagnosis, however, was not confirmed microscopically.

The patient lived in the suburbs of the city but used the water furnished by the city's waterworks. He was very fond of green vegetables, which he frequently stole and ate.

In November, 1912, he ate a great number of green pecans and within a week afterward his stools became loose, there being two or three movements daily. About one month later his stools became worse and the movements were accompanied by severe straining. They contained a great deal of blood and mucus. His stools were very frequent—from twelve to twenty-six daily. He was relieved somewhat after a consultation was held by two physicians, but this relief was only temporary. He had experienced periods of relief followed by relapses intermittently since the onset of the disease. The patient had lost much weight from December, 1912, to March, 1913.

He was admitted into Touro Infirmary on the evening of July 25, 1913, with a temperature of 98.6 F., pulse 102, respiration 24. He had no stool during the night.

On the morning of July 26 a rectal tube was passed and amebas were found. He was given emetin, ⅔ grain, by needle, was kept in bed and was put on liquid diet. In the next twenty-four hours he had six stools which were loose, dark brown and contained mucus and blood. He complained of pain in his abdomen and strained much at stool. The next day the tube was passed again, amebas found, and emetin, 1 grain by needle was given. He continued to complain of pain in the abdomen, but straining at stool was not so marked. During the next twenty-four hours he had only four stools which were of the same character as during the previous twenty-four hours. His urine examination was negative, except that it contained much indican.

On July 28 the tube was passed, amebas found, though not so many, and another hypodermic of emetin, 1 grain, was given. There were no stools in the twenty-four hours following and the patient was fairly comfortable.

On July 29 the tube was passed and a few amebas (inactive) were found. Emetin, 1 grain, by needle was again administered. As before there were no stools in the twenty-four hours, but the patient remained in a perfectly comfortable condition.

TABLE 2.—DATA IN CASE 3*

| Date 1913 | Temp. Min. and Max. | Med. | Tube Passed | Ameba | Stools | | Description | Remarks | Diet | Blood | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Day | Night | | | | Hb. % | R.B.C. | W.B.C. | Neut. % | S.L. % | L.L. % | L.M. % | E. % |
| 9/ 2 | ..... | ..... | ..... | ..... | ..... | 1 | Liquid, mucus, blood | Cries with pain in abdomen | Eggs and milk | | | | | | | | |
| 9/ 4 | 100.5 | Emetin ⅔ gr. | + | + | ..... | 4 | Liquid, mucus, blood | Cries with pain in abdomen | | | | | | | | | |
| 9/ 5 | ..... | Emetin 1 gr. | + | + | ..... | 4 | Loose, mucus; no blood | More comfortable | | | | | | | | | |
| 9/ 6 | 100 | Emetin 1 gr. | + | + | ..... | ..... | ..... | Deserted | | | | | | | | | |
| 9/11 | ..... | ..... | + | — | ..... | ..... | ..... | Returned..... | ..... | 80 | 5,888,000 | 13,900 | 60 | 40 | | | |
| 9/16 | 100 | ..... | + | — | | | | | | | | | | | | | |
| 9/23 | ..... | ..... | ..... | ..... | 1 or 2 | ..... | Normal..... | Deserted | | | | | | | | | |
| 9/27 | ..... | ..... | ..... | ..... | ? | ? | Blood reappeared | | | | | | | | | | |
| 10/ 2 | ..... | Emetin 1 gr. | + | + | ? | ? | Blood mostly at end of stool | Returned..... | Eats everything | | | | | | | | |
| 10/ 4 | ..... | Emetin 1 gr. | + | + | ? | ? | Stools yellowish and brownish | Deserted | | | | | | | | | |
| 11/ 4 | 98 -100 | Castor oil | ..... | ..... | 0 | 5 | Mucus, blood, pus | Returned..... | Liquid | | | | | | | | |
| 11/ 5 | 98 - 99.3 | ..... | + | + | 2 | 0 | Mucus, blood, pus | ..... | Liquid | 85 | 4,775,000 | 8,680 | 58 | 30 | 4 | 6 | 2 |
| 11/ 6 | 98 -100 | Emetin 1 gr. | + | + | 0 | 0 | ..... | Emetin at 9:00; vomited 9:45; pain in abdomen | | | | | | | | | |
| 11/ 7 | 98 -100.5 | Emetin 1 gr. | + | + ‡ | 1 | 0 | Small dark green | Rested well, no vomiting | ..... | ..... | ..... | 7,458 | 59 | 31 | 6 | 4 | |
| 11/ 8 | 96.5- 99.5 | Emetin 1 gr. | + | — | 2 | 0 | Normal..... | Rested well, no vomiting | Soft | ..... | 5,700,000 | 6.600 | 48 | 40 | 6 | 6 | |
| 11/ 9 | 98.5- 99.5 | Emetin 1 gr. | + | — | 1 | 0 | Loose, large flakes; mucus | Comfortable, no vomiting | | | | | | | | | |
| 11/10 | 98 - 99 | ..... | + | — | 2 | 0 | Normal..... | ..... | ..... | ..... | ..... | 8,262 | 46 | 47 | 6 | 1 | |
| 11/12 | 98.5- 99 | ..... | + | — | 0 | 0 | ..... | ..... | ..... | ..... | 5,125,000 | 9,895 | 41 | 48 | 7 | 4 | |
| 11/14 | 99.5- 98.5 | ..... | + | — | 1 | 0 | Normal..... | ..... | ..... | ..... | ..... | 7,465 | 36 | 55 | 7 | 2 | |
| 11/17 | 96.5- 99.5 | ..... | + | — | 1 | ..... | ..... | ..... | ..... | ..... | 5,150,000 | 5,708 | 24 | 67 | 7 | 2 | |
| 11/21 | 99.5 | ..... | + | — | 1 | ..... | Large, loose, watery stools; mucus; no blood | ..... | ..... | ..... | ..... | 3,819 | 20 | 68 | 9 | 3 | |
| 11/22 | 99.5 | ..... | ..... | ..... | 1 | ..... | Loose stool; mucus; no blood | | | | | | | | | | |
| 11/24 | 99.5 | ..... | + | — | 0 | ..... | Loose stool; mucus; no blood | | | | | | | | | | |
| 11/27 | | | | | | | | | | | | | | | | | |
| 11/28 | 99.5 | ..... | + | — | ..... | .. | Large brown stool | Deserted..... | ..... | ..... | 5,025,000 | 6,076 | 30 | 58 | 11 | 1 | 1 |
| 1914 | | | | | | | | | | | | | | | | | |
| 2/11 | ..... | ..... | ..... | ..... | ..... | 3 | Yellow; much mucus and blood | Returned..... | Light | | | | | | | | |
| 2/12 | 99.5 | ..... | + | ..... | 1 | 0 | Yellow; much mucus and blood | ..... | Liquid | | | | | | | | |
| 2/13 | 100 | Emetin 1 gr. | + | ..... | 1 | 0 | Yellow; much mucus and blood | Rested quietly | | | | | | | | | |
| 2/14 | 99.8 | Emetin 1 gr. | + | ..... | 0 | 0 | ..... | Vomited 1 hour after emetin | ..... | ..... | ..... | 8,000 | | | | | |
| 2/15 | 98.5 | Emetin 1 gr. | + | ..... | 0 | 0 | ..... | ..... | ..... | ..... | ..... | 10,000 | | | | | |
| 2/16 | 100 | Emetin 1 gr. | + | ..... | 2 | 0 | No blood..... | Rested well | | | | | | | | | |
| 2/17 | 99 | ..... | + | — | 1 | 1 | No blood..... | ..... | Soft | ..... | ..... | 11,980 | | | | | |
| 2/18 | ..... | ..... | ..... | ..... | 0 | 0 | | | | | | | | | | | |
| 2/19 | ..... | ..... | + | — § | 1 | 0 | | | | | | | | | | | |
| 2/20 | 99.5 | ..... | + | — | 0 | 0 | | | | | | | | | | | |
| 2/21 | 99 | Emetin 1 gr. | + | — | 1 | 0 | | | | | | | | | | | |
| 2/22 | 99.8 | Emetin 1 gr. | ..... | — | 1 | 0 | ..... | ..... | ..... | ..... | ..... | 10,464 | | | | | |
| 2/23 | 99.5 | Emetin 1 gr. | + | — | 0 | 0 | | | | | | | | | | | |
| 2/24 | 100 | ..... | ..... | ..... | 0 | 0 | | | | | | | | | | | |
| 2/25 | 98.5 | Emetin 1 gr. | + | — | 1 | 0 | ..... | ..... | ..... | ..... | ..... | 10,850 | | | | | |
| 2/26 | 99.3 | Emetin 1 gr. | + | — | 1 | 0 | ..... | Vomited after emetin | | | | | | | | | |

* Urine negative except for indican.

‡ Few encysted; non-active.

§ Red blood-corpuscles.

On the morning of July 30 the passing of the tube showed no amebas. No emetin was administered but magnesium sulphate ℥ii was given, from the effect of which he had three stools which were liquid and yellow and contained no blood and no mucus.

The tube was passed on the morning of July 31, twenty-two hours after the magnesium sulphate was given and no amebas were found. He was allowed to have soft food and continued to improve in every way. There was a tendency toward constipation which was met by the administration of milk of magnesia. The tube was passed every other day until Aug. 4, 1913, with negative findings. On August 4 he was again given magnesium sulphate and again the passing of the tube twenty-four hours afterward was negative. He was then placed on full diet and was hungry between meals. On August 8, after a negative finding on passing the tube, he was discharged as cured. The patient weighed 32 pounds, 11 ounces on July 27, 1913, and 34 pounds, 2 ounces on Aug. 4, 1913. Wassermann made on admission, July 26, 1913, was negative.

On August 24 he was brought back for observation. His parents stated that the previous week he had had as many as five stools daily and that the day before (August 23) he had vomited after drinking pop, had high fever and complained of pain in his stomach. While at home he had eaten everything. He had had a cold for the past week. He was readmitted into Touro Infirmary. He had a cough but examination was otherwise negative. His bowels were constipated. Physical examination was negative. On passing the tube no amebas were found. His urine examination was negative except for a small amount of indican. His blood showed a total white count of 9,300, small lymphocytes 35 per cent., large mononuclears 8 per cent., polymorphonuclear neutrophils 57 per cent.

TABLE 3.—DATA IN CASE 4 *

| Date 1914 | Temp. Min. and Max. | Med. | Tube Passed | Ameba | Stools | | Description | Remarks | Diet | Blood | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Day | Night | | | | Hb. % | R.B.C. | W.B.C. | Neut. % | S.L. % | L.M. % | Eos. % | Bas. % |
| 5/26 | 100 | ... | ... | ... | ... | 1 | Large; brown: mucus; blood | Slept well | Liquid | | | | | | | | |
| 5/27 | 100 -100.5 | ... | + | + | 1 | 0 | Large; brown; mucus; blood | Slept well | Liquid | 30 | ... | 16,000 | 75 | 25 | | | |
| 5/28 | 99.5-100 | Emetin 1 gr. | + | + | 2 | 0 | Large; brown; mucus; blood | Slept well | Soft | ... | ... | ... | 65 | 30 | 3 | 1 | 1 |
| 5/29 | 99 -100 | Emetin 1 gr. | + | + | 1 | 0 | Semisolid; brown; little blood and mucus | Slept well | Soft | ... | 2,500,000 | 12,500 | | | | | |
| 5/30 | 99 -100 | ... | + | — | 0 | 0 | ... | ... | ... | ... | ... | 11,400 | 75 | 21 | 2 | 1 | 1 |
| 5/31 | 99 -100.4 | Castor oil ½ oz. | + | — | 1 | 0 | Mucus; no blood | ... | ... | ... | ... | 8,100 | 63 | 33 | 2 | 1 | 1 |
| 6/ 1 | 99 - 99.8 | ... | + | — | 0 | 0 | ... | ... | ... | 35 | ... | 9,200 | 66 | 23 | 9 | 2 | |
| 6/ 2 | 99 -100 | ... | + | — | 0 | 0 | ... | ... | ... | 30 | ... | 12,083 | 61 | 33 | 5 | 1 | |
| 6/ 3 | 98 - 99.5 | Castor oil ½ oz. | + | — | 0 | 0 | ... | ... | ... | 35 | ... | 10,220 | 58 | 38 | 3 | 1 | |
| 6/ 4 | 98 - 99.5 | ... | ... | ... | 0 | 0 | ... | ... | ... | 25 | ... | 12,839 | 57 | 38 | 3 | 2 | |
| 6/ 5 | 98.3- 99.4 | Mag. Sulph. 1 dr. | + | — | 0 | 0 | ... | ... | ... | 30 | ... | 11,210 | 50 | 34 | 15 | 1 | |
| 6/ 6 | 98.3- 99 | ... | + | — | 0 | 1 | Normal | | | | | | | | | | |
| 6/ 7 | 99 -100.4 | ... | ... | ... | 1 | 0 | | | | | | | | | | | |
| 6/ 8 | 99 -100 | I. Q. S. | + | — | 0 | 0 | ... | ... | ... | 35 | ... | 10,100 | 55 | 30 | 14 | 1 | |
| 6/ 9 | 98.3- 99 | I. Q. S. | ... | ... | 0 | 2 | Normal | | | | | | | | | | |
| 6/10 | 99.2-100 | Mag. Sulph. ½ oz. | ... | ... | 0 | 3 | Normal | Coughed | | | | | | | | | |
| 6/11 | 99 -100.2 | ... | + | — | 0 | 0 | ... | ... | ... | 30 | ... | 6,853 | 43 | 46 | 9 | 1 | 1 |
| 6/12 | 98.3 | Castor oil ½ oz. | ... | ... | 0 | 2 | Normal | ... | Full | | | | | | | | |

* Urine negative except for indican.

The tube was passed again on August 26 with negative findings. There were no ova found at any time in his stools. Frequent reports have been received about the patient's condition and up to the present time, eleven months afterward, he has remained cured.

Case 3.—A. M., white male, 4 years old, native of Louisiana and resident of New Orleans, came to my clinic at Touro Infirmary on Sept. 2, 1913, because of frequent and bloody stools.

His father and mother and brother were all living and healthy. There was no dysentery in the family.

The patient was a full term child of normal delivery. He was breast fed exclusively for twelve months after which table food was added to his diet and at 21 months the breast was discontinued. His development was normal. At 18 months he had measles and whooping-cough, when he was ill for about four or five weeks.

He had used only city water but ate a considerable amount of candy from different stores, and he also ate some green fruit.

The present illness began fifteen weeks previous to this report, when patient complained of pain in his stomach and passed blood and mucus in his stools. He was taken to one of the hospitals where he was treated for two weeks without any results. Some time afterward he was taken to a physician who gave him a white medicine (presumably bismuth) which had a transient beneficial effect. In a week, however, the condition reappeared and the patient was brought to me. During the attacks of dysentery he had from twelve to twenty-four stools daily and complained of pain in the abdomen and much straining at stool.

He was brought to the out-patient department of Touro Infirmary Sept. 4, 1913. A rectal tube was passed, amebas found, and he was given emetin, ⅔ grain. The following day his mother reported that though the stools were liquid and there were four in the twenty-four hours she had noticed no blood, but some mucus. The passing of the tube showed amebas and he was given 1 grain emetin.

Sept. 6, 1913, there was a tendency toward constipation. The tube again showed amebas and he was given emetin, 1 grain. After this the mother did not return for the treatment and the patient was recorded as having deserted. Five days later she returned and the examination after passing the tube was negative. She brought the patient back on two occasions convenient for herself, and then again discontinued reporting.

Oct. 2, 1913, the patient was brought back to the clinic complaining that on September 27 blood reappeared in his stools and had continued daily since then. The stools were yellowish, the blood being passed mostly at the end of the stool. October 2, however, the stool was blackish. The patient had a good appetite and had eaten everything he wanted. On passing the tube amebas were found and the patient was given emetin, 1 grain. The next day the patient did not return. On the third day amebas were found again and emetin, 1 grain, was given. The mother then took it on herself not to return with the patient for further treatment as the child had improved, and the patient was again recorded as having deserted.

November 4 the patient was brought to the Touro out-patient department for the treatment of the same condition (frequent, bloody stools). The mother hesitated a long time before returning because she had discontinued of her own accord on the previous occasions. As there were no empty beds at Touro Infirmary and as it was believed best to treat the child in hospital, he was admitted into my service at Charity Hospital.

On admission he was given a dose of castor-oil. The next day the tube showed amebas in great numbers. He was given emetin, 1 grain daily, as long as amebas were found and for two days longer because of his previous unsatisfactory treatment. After the first twenty-four hours no active amebas were found and likewise after the second twenty-four hours. No amebas were seen for two consecutive days thereafter. The tube was then passed every other day for four days and finally twice weekly so that observations were carried over a period of three weeks. During his stay in the hospital it was extremely difficult to keep the patient in bed and whenever he saw the opportunity he would get up and play about in the ward.

His stools became a little loose and contained a small amount of mucus, but his mother took him away without his being discharged.

He returned again on Feb. 11, 1914, for the same condition. The treatment was again instituted and after four doses of emetin, 1 grain daily, it was discontinued as amebas were no longer found. After the first dose his bowels did not move but when they did move after the third dose there was no blood. On passing the tube three days after the last dose of emetin the presence of a few red blood-corpuscles caused the treatment to be begun again. Though no amebas were found he was given 5 grains of emetin in six days, one day being omitted through error. The tube was passed regularly after this and no further positive or suspicious findings were made. His mother took the patient away, after he had contracted a slight bronchitis on March 2, 1914, before he was discharged.

Since the last attack, which was treated under more favorable conditions than the previous ones, the patient remained well up to a report of one week before this was written.

Case 4.—M. R., white male, 8 5/12 years old, native of Louisiana and resident of Donaldsonville, La., was brought to my clinic at Touro Infirmary, May 26, 1914, for frequent stools containing blood.

He is the fifth child of eight, all of whom are healthy, as are the parents. His mother had four miscarriages and one stillbirth. An aunt died of tuberculosis five years ago. He was a full-term child of normal delivery and was breast fed for three months, after which he was given the bottle with milk and sweetened water.

Aside from the present illness he had never been sick. He usually drank cistern water and never well water. Three years ago a short time after eating of peanuts he passed much gas and later blood appeared in his stools. There were intervals when the dysentery would be much better, but recently he had become much worse. During the attacks he had much pain in his abdomen and strained a great deal at stool. The pain was more severe during the first three months of the illness. He had never had much fever. Four physicians were consulted at various times but none had ever made the diagnosis. One advised bringing him to the hospital. His mother thought that he was gradually becoming worse. He had never been confined to bed before he was admitted on May 26, 1914.

His stools were large, brown and contained mucus and blood. The tube was passed, amebas found and emetin, 1 grain, given. In all he was given 2 grains of emetin by needle after which the amebas were no longer found and the blood stopped. The tube was passed every day for four days after the first negative finding, then two days later with the same result. He was given castor-oil twice and magnesium sulphate twice and no amebas were found on passing the tube following the administration of the purgatives. Not much time has elapsed since this case was first treated but the patient is improving nicely.

## DISCUSSION

Case 1 came from a district low and swampy and is of interest from a diagnostic point of view and because of the age of the patient.

Case 2 was given 3⅔ grains emetin in four days. There was no blood after the second dose of emetin and no amebas were found after the fourth dose of emetin. This case is of especial interest because of the small amount of medication used; the prompt effect of the emetin in a case of such long duration (8 months); and the results of the treatment, eleven months having elapsed with no return of the illness.

Case 3 cannot be considered a fair test of any treatment, because (1) the first two attacks were treated without rest owing to the refusal of the parents to permit the patient to be admitted into the hospital; (2) the first two treatments were not completed; (3) during the third attack the patient was not kept in bed, and just at the time he should have been more closely observed, he deserted; (4) the fourth attack may have been due to no rest; and because (5) of the lack of intelligence and cooperation on the part of the parents, who gave the child all sorts of food when visiting him.

It must be borne in mind that there is a possibility of reinfection in this case, especially when the hygiene and habits (which were unfavorable) of the patient are considered.

The vomiting must be mentioned, as it is possible, though hardly probable, that the emetin alone caused it, because he did not vomit after each dose.

This case is of particular interest because of the relapses which may be accounted for as already mentioned. Also because it demonstrates the promptness of the effect of emetin in controlling the symptoms and the harmlessness of its large and continued dosage, and of its ultimate effect in the treatment.

It is too early yet to venture much in Case 4; suffice it to say, however, that the prompt effect of emetin was again demonstrated, since after the administration of 2 grains of emetin given in two days the blood disappeared and no amebas were found in the stools, and the effect was so prompt in a case of such long standing, (3 years).

All three patients were given 1 grain doses of emetin hypodermatically, and though it might be considered a large dose, no harmful effects resulted even in Case 3, in which the patient was given the drug on so many occasions and during one attack 5 grains in six days.

From the study of the foregoing cases and the literature I believe that emetin is the specific for amebic dysentery. There are some observers who have recorded cases treated satisfactorily and which have remained cured. There are others who have not reported such satisfactory results.

In the foregoing cases the effect of emetin was spectacular. After its administration the blood in the stools disappeared as if by magic; the amebas were soon no longer found, the stools were promptly diminished in frequency, and there was a tendency toward checking the bowels altogether and giving the necessary rest. Is there anything more to be desired? Undoubtedly it is the drug for children with amebic dysentery, as it may be given to them while quite young, its effect is rapid, and there are no disadvantages experienced as in endeavoring to have the child swallow ipecac pills or the inconvenience and struggle incident to colonic irrigation, and its effect is certain.

Maison Blanche Building.

## ABSTRACT OF DISCUSSION

**Dr. Thomas S. Southworth**, New York: We of the North are prone to look on amebic dysentery as a matter of warm climates and the tropics. We see few cases, even in adults, unless the persons have been in some other portion of the country. Yet I doubt whether cases of dysentery have been sufficiently investigated for the presence of the ameba. Last summer I had an opportunity of seeing a woman of nearly 80 who had traveled only between Ohio and Maine, yet she had amebic dysentery which was promptly checked by the use of emetin hypodermatically. In these days when so much of our garden produce and fruit comes to us from the southern states, it is perfectly possible that the origin of this infection can be brought to us, and we should be more on the outlook for these cases in children. I believe we shall find more of them if we are watchful.

**Dr. Henry Dwight Chapin**, New York: This disease does occur rarely in New York. Every year we have one or two cases in the babies' ward of the Post Graduate Hospital. These patients have not been out of New York. Perhaps the disease is more common than we think, and we have not looked with sufficient diligence for the ameba.

**Dr. J. W. Amesse**, Denver: Any contribution to our knowledge of amebic dysentery should be welcomed, not only by this Section, but by the entire Association. It was a matter of common observation and comment among those who served in the Philippines during the early days of our occupation, that while amebic dysentery in adults was the *bête noire* of our daily life, few if any cases were found in children. I believe there is a relative age immunity to this disease, as there is to yellow fever, just as we find a relative race immunity among certain peoples to typhoid, hookworm disease, etc. So far as emetin is concerned, reports from every quarter warrant us in asserting that this powerful remedy is a specific for amebiasis comparable with quinin in malaria and antitoxin in diphtheria. I have seen amazing results follow its use in the practice of a colleague. Soldiers and civilians invalided home years ago and suffering periodic recrudescences of dysentery, have become practically transformed, and have again taken up their work as productive members of society.

**Dr. W. W. Butterworth**, New Orleans: The amebas in this country are wide-spread and not confined to the South. Neither are all amebas pathogenic. It is only when we have recurring attacks of dysentery, bloody mucus and straining, which pass away in a few days if not treated, to recur again, that our attention is called to the pathogenic amebic dysentery. Therein lies the important diagnostic point between pathogenic amebic dysentery and ordinary dysentery. I had an interesting experience in New Orleans, with a soldier who returned from the Philippines. He had barely escaped death in those islands; he was a married man, with a family of four children, the youngest of whom was 13 months old. This child was partially breast-fed. It was found to have amebic dysentery. Two of his other children, his wife and himself suffered from the same disease. It seems fairly reasonable that the infection occurred through the person of this returned soldier. I heartily concur in the value of emetin. It is the best agent we have in the treatment of this disease. Treatment by ipecac and flushing is most distressing and most annoying, and is frequently foregone by the patient. They will not subject themselves or their child to such a treatment. Emetin is far and away the best treatment we have of this condition.

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**Farmers Being Paid for Milk on Score-Card Basis.**—For the past year or two the larger milk companies selling milk in this city have purchased milk from dairy farmers on the score-card basis. In general the contract provides for a premium of 10 cents per hundredweight for a score above 68, particular attention being given to methods of operation. That this is an effective incentive to the dairy farmer to produce milk according to modern standards is not open to question.—*Weekly Bull. Dept Health, City of New York.*

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# A YEAR'S EXPERIENCE WITH CONTAGIOUS-DISEASE NURSES*

WM. H. PRICE, M.D.
DETROIT

This paper assumes as established the fact that the taking of wholesome ways and reasonable precautions for the benefit of the public health may be expected to result in the prevention of disease, a healthier community, and more efficient individuals with lengthened lives. The truth of such a statement has come to be a matter of common knowledge. If evidence of it were needed, however, it is available in abundance, as witnessed by those spectacular sanitary reforms with which the world, lay as well as professional, is familiar.

With the prospect of such a reward, of disease prevented, dependents and public charges eliminated, and individual and community resources conserved, it is a source of wonderment that the preventable waste of disease and physical deficiencies continues to be endured. The explanation can only be in a lack of appreciation of these facts by laymen, by many physicians, and especially by those having in charge the appropriation of the public funds, when the principle of disease prevention is applied to their own household or community. It has therefore followed in natural sequence that education of the public has come to be a fundamental recourse for all activities having for their aim the protection and promotion of the public health. Some authorities even go so far as to state that efficient health measures are 80 per cent. educational.

Control of contagious disease is a rudimentary principle to be observed by all authorized public-health agencies. There are two reasons for this:

First, the problems of the control of communicable diseases are reduced to scientific exactness, and therefore greater results may be expected from the time, money and effort expended.

Secondly, public education regarding the possibility and advisability of reducing these diseases has progressed to such a point that the public demands their suppression as a prerequisite to the granting of further support, both moral and financial, for measures directed at more obscure diseases and defects in which all progressive health departments are interested, namely, housing, occupational, industrial and hereditary.

When, therefore, we embark on any program for the protection of the public health, it follows as a natural corollary that the suppression of contagious diseases is a prime requisite, and that the method of personal education directed at the known foci of infection is of greatest importance.

Previous to July 1, 1913, the following custom prevailed in Detroit relative to contagious diseases: The house was placarded immediately after the disease was reported. The next day a quarantine inspector visited the premises; his mission was to furnish fuel and groceries in needful cases, and to warn isolated persons against breaking quarantine. He called again as time and necessity indicated, and at the termination of the illness disinfected the house and removed the placard. Three inspectors were so employed at a salary of $1,000 per year each. They were faithful, reliable men with no pretense of hygienic training. Release cultures for diphtheria were taken by the tuberculosis nurses, thus involving a duplication of work by health-board employees.

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July 1, 1913, the quarantine inspection service was discontinued. Twelve contagious-disease nurses were appointed; tuberculosis, being a contagious disease, is included within the scope of their activities. These nurses are graduates and registered, or qualified for registration, and are each paid $1,000 per year. Districts are assigned according to density of population and facilities for transportation. A case of communicable disease being reported, the house is placarded, as formerly, by the police department. The same day, or at latest the next morning, a nurse visits the premies. A certain proportion of the patients go to the hospital, whereupon she immediately disinfects the house. Otherwise, she determines the advisability of isolating one room to permit the wage-earner to work and sleep at home. A card type history of the case and family is made out. Grocery supplies are furnished if necessary. The nurse's real mission, however, is to read over with the quarantined family the prophylactic literature published by the health board, which is similar to that furnished by other cities, referring to the particular disease in question, and also to give a practical demonstration of its application. Typhoid fever is a typical example. The nurse carries a half-pound can of chlorid of lime, a 6-ounce bottle of phenol (carbolic acid) and mosquito netting. A jug, a crock or other receptacle of two gallons' capacity is found and the chlorid is dissolved in two gallons of water, a basin of the solution is prepared and placed ready for the attendant's hands, disinfection of stools and urine are explained in detail, the phenol is made into a 5 per cent. solution with 1 gallon of water for disinfection of bedclothes and body linen. Antityphoid vaccination is urged. The windows and door of the sick-room are screened with mosquito netting, free if necessary. Return visits are made frequently and the supply of disinfectants is renewed. Account is kept of milk bottles to see that none are diverted to improper uses.

If subsequent infections take place in the family or neighborhood through the medium of flies or otherwise, it seems reasonable to assume that this must now be due to the wilfulness of the afflicted household. On termination of the illness, the house is disinfected by the same nurse.

Similar routine, varying with the character of the disease, applies to small-pox, diphtheria and scarlet fever. Perhaps a majority of the scarlet-fever cases are not seen by the doctor after the first week. At the end of the minimum period of quarantine it is the custom for the parent to call up the physician and notify him of that fact. He thereupon reports the patient as recovered. As a result of the careful examination of the patient before release, the average period of quarantine has been materially lengthened. The development of additional cases in the household is better reported.

Diphtheria cultures, both from schoolchildren, for release, and from suspicious cases at the request of physicians, are satisfactorily taken by the nurses. Reports are also returned to the main office of the progress of the illness and of the quantity of antitoxin used, thereby enabling the health officer to suggest, as diplomatically as possible, to the attending physician that doses of 2,000, 3,000 and 4,000 units for curative purposes are entirely inadequate and well calculated to perpetuate the disease and raise the death rate.

Objections on the part of the profession and the public to this system have been few and entirely out of proportion to the commendation it has received. The few objections have proceeded from two sources: First, the tradition on the part of certain physicians that disease is an individual affair of physician and patient. Such a contention is manifestly false. Contagious disease especially is not the personal affair of the individual, household or profession—the public is as much interested.

Secondly, there is a natural disposition on the part of the household to pump the nurse, as well as gossip with the neighbors and quiz the physician with the resulting information. Few practitioners have escaped the irritation of uncomplimentary remarks attributed to friends or other physicians before the introduction of the contagious-disease nurse, and in a few instances the nurses have been accused of talking too much. The nurse's training fits her perhaps better than any other individual to accomplish her purpose without suspicion of preempting the physician's field.

The following is a report of the contagious-disease situation in Detroit for the months of January, February, March, April and May, 1913, preceding the introduction of the contagious-disease-nurse system, as compared with the corresponding period in 1914, when that system was fully established:

COMPARISON OF FIRST FIVE MONTHS OF 1913 WITH SAME PERIOD IN 1914, WITH REGARD TO DEATHS FROM CONTAGIOUS DISEASES

| | Deaths | | Reduction in 1914 | Percentage of Reduction in 1914 |
|---|---|---|---|---|
| | 1913 | 1914 | | |
| Diphtheria ............... | 128 | 71 | 57 | 44 |
| Scarlet fever ............ | 89 | 27 | 62 | 70 |
| Typhoid fever ............ | 53 | 19 | 34 | 64 |

It is not sought to establish the conclusion that the contagious-disease nurse is alone responsible for the reduction shown above. The conclusion is drawn that she is a most valuable field agent of the health officer and the one best calculated to instil into the minds of quarantined persons the necessity for the taking of wholesome ways and reasonable preventive precautions. Also that the acquisition of obvious sanitary information by such persons is of the greatest importance in safeguarding the public health for two reasons; first, every infected person is a possible or even probable source of subsequent infections which should be guarded against at their source, and the attending physician has not as yet given sufficient attention to imparting this information; secondly, quarantined persons of the present will constitute themselves the professed authorities of the future in matters relating to communicable disease, and it is of the greatest importance that their views be definite and correct.

Board of Health Building.

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**Pathology.**—Pathologic anatomy which in other fields of pathology yields fundamental conceptions even on naked-eye inspection, in the case of mental diseases can neither provide clear data for clinical application nor be itself established without minute and painstaking microscopical research. And very often the latter demonstrates to us, in agreement with experimental data, that certain slight and transient influences, though not going the length of imprinting any sign of their passage on even such a delicate structure as the anatomical network, are still capable of inducing very grave functional disturbance.—Lugaro, Problems in Psychiatry.

# CEREBELLAR SYMPTOMS AND CEREBELLAR LOCALIZATION

## INCLUDING KINEMATOGRAPHIC OBSERVATIONS ON CEREBELLAR PHENOMENA *

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### RECENT ADVANCES IN CEREBELLAR SYMPTOMATOLOGY

In recent years, and especially under the lead of Babinski and Rothmann, some features of the old cerebellar symptomatology have come to be looked on in a different light and some of the symptoms regarded as elementary have been subjected to considerable dissection. The so-called cerebellar ataxia, now regarded as a symptom complex rather than as a pure symptom, has been more clearly differentiated from the ataxia of tabetics. Luciani's astasia, asthenia and atonia are acquiring a new interpretation.

Our studies emphasize the fact that asynergy is the fundamental symptom of cerebellar disease.

Cerebellar tremor and the new symptoms, hypermetry and adiadokocinesis, all now recognized as important cerebellar disorders, when reduced to their symptomatic elements, are seen to be dependent in large part if not entirely on loss or disturbance in the power of performing more or less complex movements together for the accomplishment of a definite end.

Luciani's asthenia, atonia and astasia are to be regarded not so much as special manifestations of asynergy as derivatives or resultants of asynergic effort. Asthenia is due to the exhaustion which results from efforts to perform movements which cannot be properly grouped and directed. Cerebellar atonia, which is very irregular in its expression, is a relaxation dependent on the fact that tonectic stimuli from the cerebral cortex cannot rhythmically combine with unsynergized movements. Primarily, tone is a cerebral, not a cerebellar attribute.

Attention may be fixed on the views just expressed by the following tabular statement:

*Fundamental Symptom in Cerebellar Disease:*
- Asynergy.

*Special Symptomatic Manifestations of Asynergy:*
- Hypermetry.
- Adiadokocinesis.
- Tremor.

*Symptoms Resulting from Asynergic Efforts:*
- Asthenia.
- Atonia.
- Ataxia.

Whether vertigo and nystagmus, which are so often present in disease of the cerebellum, are ever true cerebellar symptoms is a question which has been much discussed. From the time of Flourens' early experiments, physiologists and clinicians have concerned themselves with the relations between labyrinthine or vestibular nerve phenomena, and those dependent on pure cerebellar activity. Comparisons and parallels have been drawn and the extraordinary similarity in some instances and even the identity between the results of experiments on the vestibular nerve apparatus and the cerebellum have been shown by many competent investigators. The decision whether vertigo and nystagmus are cerebellar or vestibular symptoms must be largely determined by a thorough study of each case.

From the position of the cerebellum and its peduncles, the cranial nerves and particularly those from the fifth to the twelfth are frequently implicated in cerebellar affections, the complex resulting being compounded of true cerebellar symptoms and those referable to such of these nerves as may be involved. To this type of case Stewart and Holmes have given the name of "extracerebellar." The well-known and much-studied affections of the cerebellopontile angle belong in this category, although extracerebellar symptoms are not limited to the phenomena of lesions of this angle.

Besides the cranial nerves, the nuclei and the tracts of the neuraxis are not infrequently invaded in cerebellar lesions, and we have still another combination of symptoms, cerebelloneuraxial, which requires close scrutiny in the process of diagnosis.

The clinician is indebted to Babinski for the fixation of his attention on cerebellar asynergy. Ferrier, however, recognized the fact that synergic control was the particular rôle of the cerebellum. Discussing the mechanism of cerebellar coordination and the relative development of the cerebellum, he says:[1]

> Every form of active muscular exertion necessitates the simultaneous cooperation of an immense assemblage of synergic movements throughout the body to secure steadiness and maintain the general equilibrium; and on the hypothesis that the cerebellum is the center of these unconscious adjustments we would expect the cerebellum to be developed in proportion to the variety and complexity of the motor activities of which the animal is capable. The facts of comparative anatomy and development are entirely in harmony with this hypothesis.

Synergy or synergia is the power or faculty by which movements more or less complex, but functionally definite, are associated in a special act or acts. In a broad sense it is motor association, this association being carried out in movements of different parts of the same limb or in synchronous movements of the trunk and limbs, or of the head and trunk and limbs, etc.

Movements are mismeasured, giving dysmetry or hypermetry because the patient with cerebellar disease is unable motorially to associate the different elements of such movements. Adiadokocinesis, as illustrated for example by the impossibility of correctly and rapidly pronating and supinating the hand on the forearm, is due fundamentally to the inability to carry out fine motor associations of an antagonistic kind.

The method usually employed in clinical study or class instruction of demonstrating hypermetry is the well-known finger-to-nose test; for adiadokocinesis, partly flexing the forearm or forearms on the elbow and then rapidly pronating and supinating the hand, the movement being largely one from the wrist. Adiadokocinesis and hypermetry are both demonstrated by the rapid pronation and supination of the hand on the knee. Tremor is exemplified by the finger-to-nose test and by efforts to grasp an object or by writing. Hypermetry is shown by the finger which usually is able to touch the end of the nose overshooting to one side, or in the hand-knee test by the hand not keeping within the normal range of movement.

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* On account of lack of space this paper has been abbreviated for The Journal. It will appear in full in the Transactions of the Section and in the authors' reprints.

[1] Ferrier, David: Functions of the Brain, Ed. 2, 1883, p. 200.

The phases of asynergy described as dysmetry or hypermetry are discoverable, however, in cerebellar cases in the abnormal attitude or movements of the head, in the bending of the trunk, in the abduction, sprawling, overstepping or understepping in walking, in the spreading of the limbs in standing and in much else that is done by the patient, and these dysmetric phenomena are frequently accompanied by tremor and adiadokocinesis, all of which are well defined in kinematographic observations.

### KINEMATOGRAPHIC OBSERVATIONS

Our kinematographic investigations indicate the necessity of some revision of views both as regards the methods of describing and the intrinsic characteristics of cerebellar symptoms. Some new points in cerebellar symptomatology were elicited by these investigations.

The *gait* of a cerebellar patient in the majority of cases is chiefly trunkal. The trunk may go backward, or forward, forward and to one side, or simply to one side. The inclination may be total or partial. In every attempt on the part of the patient to walk, for example, the trunk from the first leans backward, forward or to one side, it being impossible for him to stand for any length of time in the erect posture. He may be able, however, for a short time to stand erect, or to walk either with the trunk erect or leaning, but even when this is possible he is likely soon to lurch forward or backward or to one side. In this type of case the movement of the trunk is predominant and forms the most impressive part of the picture, the legs seeming to act simply as props for the trunk. The trunk leads, and whatever way it goes, the legs follow. If, for example, the trunk leans forward and to the left, the swing of the left leg is shorter than that of the right, or if the trunk goes forward and to the right, the swing of the right leg is less than that of the left, the legs accommodating themselves to the movements of the trunk.

Our observations on pelvic girdle and shoulder girdle movements in locomotion, both when the patient is standing and when on all fours, are especially instructive. In some of the cases the asynergy is just as marked in the shoulder girdle as in the pelvic girdle. In those cases, however, in which the asynergy is more marked in the pelvic girdle, even if both girdles are affected, the gait is entirely different. Here the legs are held farther apart and the arms are nearly always held partly outstretched and semiflexed at the elbows. If the asynergy is shown alone in the pelvic girdle movements, the trunk assumes a different relation to the legs than in the cases just described. Here the trunk is held rigidly erect and the legs are pushed forward from the pelvis, giving the impression that the trunk goes after the legs. In the extreme pelvic girdle cases, it is impossible for the patient to walk without help, but when assisted, the trunk is very rigid, the legs being thrown out in almost any direction.

The cerebellar gait is often described as drunken or reeling, but from our observations, the gait is not like that of one who is drunk. A drunken man will reel in any direction, but he does this largely because of his mental, that is, of his cerebral reduction. A slightly drunken man simply reels forward or to one side, while one who is very drunk is unable even to stand up and any attempt on his part to do so brings on a sort of crumpling of the whole body. In such attempts the legs give way and the man falls because of this and not because his trunk forced him in a given direction. Besides, there is no attempt on the part of a drunken person to hold his arms outstretched for protection, whereas, the cerebellar patient is always careful as to how he walks, and knowing that he tends to stagger, makes efforts to obviate this and assumes as far as he can protective positions. He not only uses his cerebrum, which is largely out of commission in the case of the drunken man, but he even compensates in some degree for his cerebellar impairment by the forced or overuse of his cerebrum.

As has already been mentioned, when a cerebellar patient walks, the whole trunk may be projected in a given direction or one shoulder or one side may be moved more than the other, as for example, when a patient walks forward and to the left, in which case the left shoulder and left trunk are forward, the right side of the body lagging. The same thing will be true no matter what other position the body assumes, as when the patient changes to a sitting or standing from a recumbent posture. If the case is left-sided, then the left shoulder and trunk move first and more than the right; if right-sided, the right shoulder and trunk are more in the picture. If the case is bilateral or central, that is entirely trunkal, no difference in the movement of either side is detectable.

In the pelvic girdle cases when the patient attempts to get up from a recumbent posture and temporarily assumes in doing this a position on his hands and feet, the sway of the pelvis is very marked and may be chiefly to one side, but is nearly always to both sides. It is noticeable that in this position, the taking of which is one of the best methods of showing the relative degrees of pelvic girdle and shoulder girdle asynergy, if the pelvis only is involved, the trunk will not sway and whatever trunkal movements are present, are compensatory. These cases are much more common than those of the shoulder girdle. The methods thus indicated of demonstrating pelvic girdle and shoulder girdle asynergy have not, we think, been described before.

Turning now to some of our observations regarding *the movements of the limbs,* we are convinced that in testing for hypermetry, for example, it does not matter very much whether the finger goes beyond the nose, for many patients because of being repeatedly asked to do this learn to put their fingers to their noses quite well. The important thing is that if there is an asynergy of the upper limb when the patient attempts to place his finger to his nose, the movement being of wide range as when it starts with the hand on the knee, the whole arm including the shoulder takes part in the movement. The circle described by the hand is greater than it should be and in the majority of cases the movement is quicker than normal, although in some it is the contrary. In some cases when the patient is asked to put his finger to his nose the arm is swung inward; in some cases, outward and in some directly to the nose. The more marked the dysmetry the greater is the tendency for the sweep to be inward, that is, toward the body, and the greater is the involvement of the shoulder.

In testing hypermetry in the legs, if the patient is in a recumbent position and asked to put his heels to his knees or his heel to any point indicated, there is first an overflexion of the thigh on the abdomen and the heel nearly always overshoots the desired point. The nearer the pelvis is the point to be touched, the greater the sway of the leg, but the heel is usually placed on the desired point.

An equally good way to test hypermetry is by asking the patient to put the heel to the buttock. In this the movement is nearly always quick, the thighs are much more flexed on the abdomen than they should be and in the height of the excursion, with the heel approximating the buttock, there is always a to-and-fro sway of the limb, the degree of this depending on the severity of the symptom.

In testing for adiadokocinesis the attempts at alternate pronation and supination of the forearm and hand quickly show the degree of asynergy of the limbs. Adiadokocinesis may be tested in the lower limbs as well as the upper by alternate rotations or adductions and abductions. The defect is readily observed. The excessive movement may be either inward, outward, upward or downward in the upper limb and inward or outward in the lower limb. This is best brought out if only one side is involved, for then it is possible to compare the movements with those of the limbs of the other side. In some cases the movements are slow, but the important thing to look for is the overmovement.

In a case recently placed on record by one of us there was a *loss of emotional expression* on the right side of the face although the patient could use this side for every other purpose. The loss of emotional expression, while evident to ordinary observation, was emphasized by the kinematograph. In other cases, as for example, in paralysis agitans, disseminated sclerosis and focal lesions of the pons, we have been able to study changes in emotional expression more thoroughly than by the ordinary clinical method.

Not only can unilateral loss of emotional expression be exhibited, but a loss of all or almost all expression. One of our patients who could not be made to laugh or cry talked in a slow, monotonous, stupid manner with drooling of saliva. The moving pictures show not only the loss of emotional expression, but also the manner of speech. It is interesting that in this patient the movements of the limbs and body are of the same character as those of speech.

We believe in a true *cerebellar speech*, one type of which is shown in the patient described above. In another case which was for a long time in the nervous wards of the Philadelphia General Hospital the history was such as to indicate that the patient had had a hemorrhage into the anterosuperior portion of his cerebellum. He had most exquisite asynergy in his tongue, facial and laryngeal movements. His speech might be described as jerky and crackling. In this patient and in one other whom we recall, not only was the speech affected in the manner described, but mastication and deglutition were almost impossible because of the asynergy of the involved musculature.

In most of our cases examined kinematographically there were no asynergic *movements of the head and neck*. The head in these cases usually maintains the same plane as the trunk. In one case, however, shown in the series of pictures, the head is carried distinctly to one side. While the cases seemed to be relatively limited the fact that we have had a few speaks for the localization of movements of articulation, phonation, mastication and deglutition.

So far as our kinematographic observations are concerned, we showed, in one case, previously mentioned, of cerebellar agenesis, what we regard as true *asynergia of the eyeballs*. The eyes are never at rest. They move upward, downward, to either side, and in a rotary direction and combined, with the nodding of the head, give a furtive appearance, as if the patient were constantly dodging something. No two successive movements of the eyeballs are alike and it is with difficulty that the movements can be followed with the naked eye, although with the kinematograph this becomes easy.

In one of our patients vertical nystagmus was always present, and this occurred no matter in what direction the patient attempted to look. We believe because of the symptomatology that this patient had a lesion of the upper cervical cord and inferior cerebellar peduncles. We regard the nystagmus as due to involvement of the vestibulocerebellar apparatus, probably of the parts connecting the vestibular nuclei with the deep nuclei of the cerebellum.

In one of our patients in whom an exposure of the cerebellum was made, the cerebellum was incised to about the depth of half an inch at about the junction of the left superior semilunar lobe with the vermis. Directly after the operation and ever since, marked lateral jerkings of both eyeballs have been constant, but these have been more marked on the left. If the patient looks to the right the nystagmic movements are not so forcible, but on looking to the left they are strikingly exhibited. It is not that the left eyeball moves without the right, but that the excursion in the left eye is more marked than in the right and gives one the impression that the left eyeball alone is moving. It will be remembered that the incision was on the left. As these movements were not present before the operation it is apparent that they were the direct result of the incision into the cerebellum.

Babinski has described catalepsy as a new cerebellar symptom. In demonstrating this the patient is placed on his back, the thighs semiflexed on the abdomen, the legs on the thighs. After a few oscillations, according to Babinski, the legs become stationary and maintain their position for a longer than normal period. These phenomena in one patient were shown by Babinski by means of a moving picture at a meeting of the International Congress, 1913.

We found that most of our patients were too asynergic and asthenic to maintain their legs in the above-described position for more than a few moments. In other patients in whom the asynergy was not so marked, and particularly in the unilateral cases, we tested both the upper and lower limbs at the same time. The upper limbs in this test were first placed in a vertically extended position. The limbs on the affected side slowly drooped and reached the level of the body sooner than those of the unaffected side. In not a single patient did we find true catalepsy and we therefore do not look on it as a manifestation of pure cerebellar disease. In one of our patients, a very powerful man, one of our chief illustrations in the series of moving pictures, the man placed on his back was able to maintain his legs and arms in a set position—that of semiflexion of the lower limbs and vertical extension of the upper—but in this case there was no preliminary swaying and we regard the exhibition as pseudocataleptic and simply due to the great strength of the individual. The case was one in which the asynergic phenomena were expressed bilaterally, although the abnormal movements were more marked on the left and especially in the pelvic girdle.

### CEREBELLAR LOCALIZATION—FOCAL SYMPTOMATOLOGY

In studying the focal symptomatology of cerebellar disease, hypermetry, adiadokocinesis and tremor at times indicate not only the presence of cerebellar asynergy, but give the clue to the part of the cerebellum most involved, as when these phenomena are most markedly exhibited in a special part of the body—the trunk, the upper or lower extremity, the head, face or eyes. These facts of localization are, we believe, emphasized by kinematographic investigations, as we have just tried to show.

The clinician soon finds that the focal symptomatology of cerebellar disease is not so easily comprehended as cerebral focal symptomatology. He recalls, however, from his experience, observations which have a bearing on this question. He has had cerebellar cases with marked unilaterality in their manifestations, indicating that one-half of this organ exerts its influence with marked predominance on one side of the body. In other cases, not on the whole numerous, ocular movements have been disordered in a way not explicable by limited lesions of parts of the brain other than cerebellum. In other instances, also not numerous, the speech of the patient is affected in a manner not to be explained merely by bulbar or cerebral involvement, while in many instances both ocular movements and speech disturbances are wanting. He has noted that in different cerebellar patients the disordered movements of the trunk differ from each other in ways which can be definitely discriminated. Shoulder girdle movements in one instance, and pelvic girdle movements in another, are more affected. The changes in emotional expression sometimes observed differ in different cases. The head takes a special attitude in a few cases; in many others this not occurring. Extraordinary combinations of abnormalities of movement may be discoverable on casual observation or elaborate investigation.

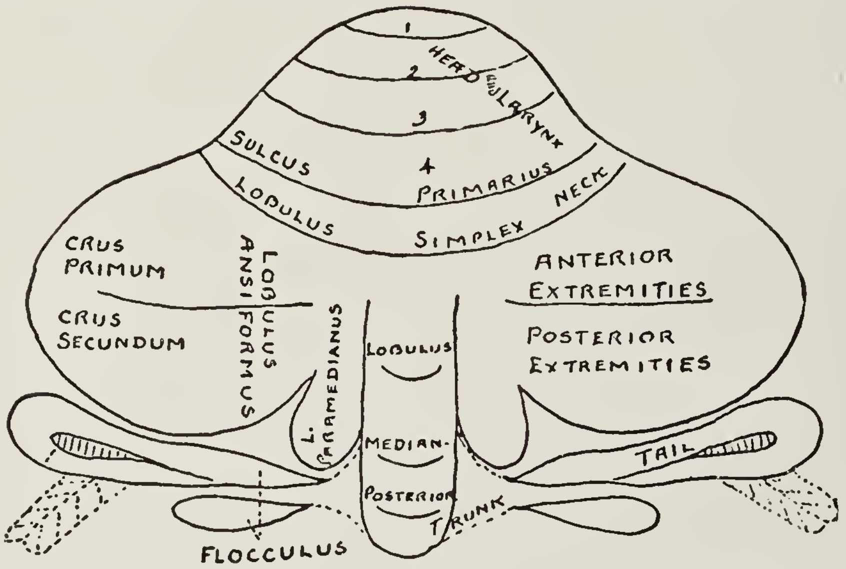

Fig. 1.—Bolk's schema of the mammalian cerebellum; on the left half the new anatomic names; on the right half the functions of special areas (Von Bechterew).

The cerebellum as a whole and all of its parts are concerned with the function of synergia. When, however, a particular part or parts of the body are the seat of abnormal motor phenomena of cerebellar origin, such manifestations are focal and more or less capable of localization. If these focal symptoms were arranged in tabular form, we would have a list something like the following:

*Focal Symptoms Indicated by Localized Asynergic Movements:*

Eye movements.
Attitude and movements of head.
Movements of jaw, face, tongue, larynx, etc.
  (Disturbances of speech, emotional expression, etc.).
Position and movements of trunk.
Special movements of upper extremity.
  (Disturbances in fine movements including writing).
Movements of trunk and upper extremity (shoulder-girdle movements).
Special movements of lower extremity.
Movements of trunk and lower extremity (pelvic-girdle movements).

### CEREBELLAR LOCALIZATION—COMPARATIVE ANATOMY AND EXPERIMENTATION

Some of the results of embryologic and morphologic investigation of mammalian cerebella indicate the development and elaboration of function in this organ. Among those who have contributed work of great value in this direction we find some of the most distinguished names in the field of neuro-anatomy: Kölliker, Schwalbe, Elliot Smith, Bolk, Van Rynberk, Charnock Bradley and others. To the results of the investigations of some of these, Rothmann has appealed in corroboration of his own experimental and pathologic findings.

Studying the mammalian cerebellum from the lowest types to man, certain facts of paramount interest regarding the development of fissures, folia, lobules and lobes attract attention. The methods in which fissures appear, extend, recede and disappear and the horizontal and sagittal expansion of cerebellar substance go hand in hand, as in the development of the cerebrum with additions and intensifications of function.

In the lower mammals like the squirrel, the ox, the dog and the monkey, the cerebellum has a less marked subdivision into a middle lobe and lateral lobes than in man. Such subdivision appears and becomes more definite as the evolutionary series approaches man. Glancing, for example, at the dorsal aspect of a series of the cerebella of apes or their semidiagrammatic representation as given by Bolk, one deep somewhat anterior fissure usually called the *sulcus primarius* is uniformly observed traversing the entire width of the cerebellum, while above and below this are distinct fissures shallower and of varying lateral extent, only one, much more posterior than the primary fissure mentioned above, crossing the full width of the cerebellum. In the cerebella of these animals a vermis of moderate extent is distinctly to be seen in the posterior region of the cerebellum. In *Lemur albifrons* the deep transverse fissure is seen with shallower fissures anterior and posterior to it. In its posterior median portion is a well-defined middle lobe, to the right and left of which are lobes traversed by a short fissure with radiations. This intercrural fissure separates two crura or limbs of a cerebellar lobe, the *crus primum* and *crus secundum*. Many of the references to the experiments on lower animals, as on dogs and monkeys, are to the effects produced by extirpation or irritation of these parts.

Bolk, Elliot Smith and Bradley have made schema of the mammalian cerebellum. Von Bechterew adapted the schema of Bolk so as to give a general view of the functions of the cerebellum (Fig. 1).

It is in the parts homologous in the human brain with the *crus primum* and its correlated vermis that the highly evolved synergic movements of the upper extremity and trunk appear to be represented, and in the *crus secundum* and its correlated median and paramedian regions the highly developed synergic movements of the lower extremity and trunk, those especially concerned with the maintenance of the erect position of man and his ability to perform complex synergic movements in this position.

In the anterior portion of the human cerebellum as in lower mammalia, movements more or less common to both them and to man—movements of the eyes, head, jaws, face and larynx—are represented, although this representation in man is of higher synergies than in lower animals. This anterior lobe is to be regarded more as a whole—as transverse or azygos—without so much reference to a separation into middle and lateral parts as has hitherto been considered essential, although the superior vermis and its wings may have subdivisions of their general representation.

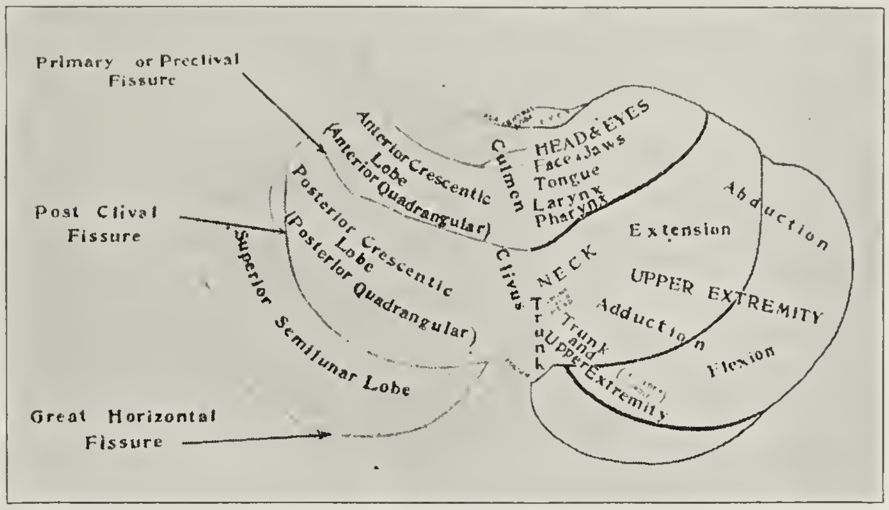

Fig. 2.—Cerebellar localization; zones and centers of the superior surface of the cerebellum.

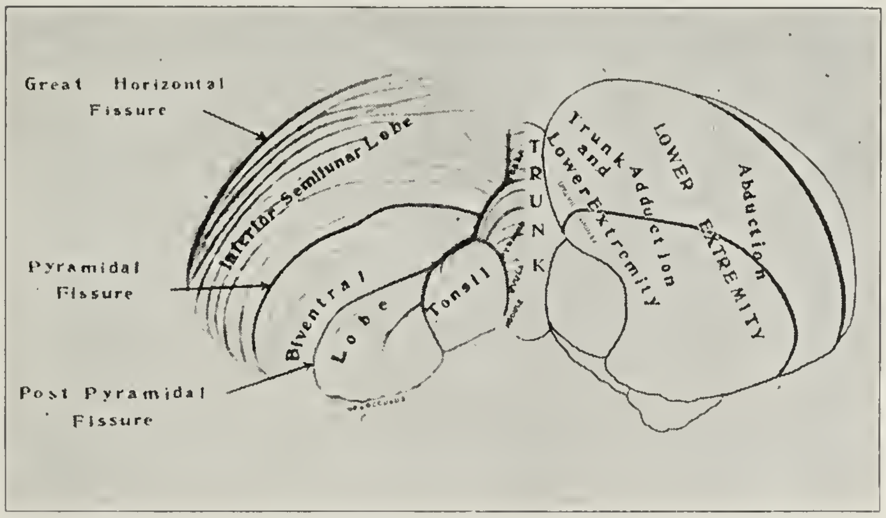

Fig. 3.—Cerebellar localization; zones and centers of the inferior surface of the cerebellum.

The demand for a complex representation of movements which are complex and elaborate has led to the tremendous development in man of that subdivision of the cerebellum which is posterior to the primary fissure.

The localization of cerebellar function and the abnormal phenomena produced by limited cerebellar lesions have been chiefly investigated by extirpation and electrical irritation. The extirpation experiments have been of varying character, sometimes decapsulation of a whole lateral lobe or of this and the vermis or of the vermis alone; and sometimes by extirpation of small areas in definite parts of the cerebellum as in the anterior lobe, in the *crus primum, crus secundum,* the posteriomedian lobe or inferior vermis, or the paramedian region.

The electrical-excitation experiments have been performed on carefully selected spots and areas of the cerebellar cortex and some observers have endeavored to isolate their irritation experiments to the deep nuclei of the cerebellum. We are in accord with Rothmann in our belief that the cerebellar cortex is excitable to the electric current, a fact which was long ago demonstrated by Ferrier and which we have confirmed in one case on a human subject. A stronger or longer-continued current seems to be required to bring about movements in the case of the cerebellar cortex than in that of the cerebral cortex, but such excitation is possible and can be more or less circumscribed.

In another communication, reviewing the neurologic contributions to the Seventeenth International Congress, one of us[2] has summarized the findings indicating special localizations by recent cerebellar experimentalists (Rothman, Prus, Adamkiewicz, Pagano, Bolk, Van Rynberk, Luna, Katzenstein and Rothmann, Bárány, and others). It is not always easy or perhaps possible to homologize the parts isolated in experiments on lower animals with divisions and subdivisions of the human cerebellum, and clinical contributions supported by necropsies have not yet been sufficiently numerous and exact to furnish absolutely dependable corroborations of the work in experimental physiology. Based on our studies of the literature of cerebellar embryology, comparative anatomy, experimentation and clinicopathology and on the results of our direct and kinematographic clinical observations, these studies in a few instances being reinforced by operations and necropsies, we have attempted a tentative schema of localization in the human cerebellar cortex (Figs. 2 and 3). It must be understood that this is regarded by us not only as tentative, but in some particulars as merely suggestive. One cannot with the same accuracy and certainty as in the case of the cerebral cortex indicate this or that region of the cerebellar cortex as exclusively concerned with the movements of the eyes, head, face, jaws, trunk, extremities or special parts of the limbs. The important fact that the cerebellum as a whole and in subdivision is concerned with synergy indicates that movements in which various parts of the body are at the same time concerned cannot be fully represented by a center or area for movements of one of these parts. The eyes may move to the right or left, or up or down without any association with other movements, but on the other hand, the eyes may move synergically with the head or with the head and trunk or with the head and trunk and limbs. The trunk may be bent forward or backward or twisted to the right or left with little or no association with movements of the extremities, but such comparatively simple trunkal movements are not the rule in bodily actions. The rôle played by the cerebellum has its best exemplifications in such acts as advancing and retiring in the erect position or in the performance of complex movements while standing, as in fencing, boxing or public speaking; or in the driving and regulating while sitting of the movements of a rapidly running automobile; or in any highly trained movements such as are exhibited in a series ascending in complexity and rapidity of association from a game of tennis or baseball to the handling of an aeroplane. These wonderful representations of instantaneous synergic activity must be represented in the cerebellum by complexly associated neural mechanisms. In other words, cerebellar localization is more compound in its cortical representation than is cerebral localization. A composite, however, has always within it factors or elements which can to a less or greater extent be separated from the entire mass.

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[2] Mills, C. K.: Neurology at the Recent (Seventeenth) International Congress of Medicine, New York Med. Jour., 1914, xlix, No. 5.

In the human cerebellum we must be able to recognize, in the first place, centers for synergically simple movements and in the second place, centers and zones for more and more complex synergic movements. Each simple synergic movements has, however, its special cortical representation.

To illustrate the principles just expounded let us refer to some of the results of experimentation and the difficulty of applying these in ordinary clinical work, at the same time showing that this application is possible. Bolk found a center for bilateral movements of the anterior limbs in the *crus primum* and a similar center for the posterior extremities in the *crus secundum*. A destructive lesion of one of the homologous parts in the human cerebellum would not give us the same simple clinical picture as the lesion of deficit in the dog, this being due, at least in part, to the fact that the dog ordinarily uses all four limbs in station and progression while man step by step with the development of his cerebellum has learned to stand erect and walk and guide his movements chiefly by the motor adjustments between his lower limbs and trunk, the upper limbs acting as auxiliaries in such performances. The aberrant movement resulting from localized deficit or irritation in the case of a man would be more complex, a combination, for instance, of an abnormal shoulder girdle or pelvic girdle movement with specialized dysmetric movements of parts of the limbs. The fact that the representation in certain parts of each hemisphere may be homolateral, contralateral or bilateral makes it more difficult to draw an inference or reach a conclusion as to the localization of function and therefore, of course, as to the results of focal lesions.

How then shall we apply the known facts of cerebellar localization in neurologic diagnosis? Simply by bearing in mind that when the trunkal movements and those movements of the limbs which must act with them to preserve static and dynamic equilibrium are affected, the vermis must be involved in whole or in part. The associated involvement of one lateral lobe in the vermal lesion will be largely determined by unilateral dysmetric phenomena, the extent of the anteroposterior involvement of the inferior vermis by the preponderance of asynergy in either the lower or the upper limbs. In our kinematographic studies the presence of abnormal pelvic girdle movements in one case and of abnormal shoulder girdle movements in another, these symptoms being sometimes more marked on one side than the other, seems to us to give the key to the localization of the lesions both as regards their anteroposterior and lateral positions.

1909 Chestnut Street.—2030 Chestnut Street.

## ABSTRACT OF DISCUSSION

Dr. Harvey Cushing, Boston: I can see the large opportunities this demonstration offers for study and analysis of the motor disturbances in these cerebellar cases. I recently saw some remarkable cinematographs of athletes in motion which had been taken with great rapidity, I think 250 exposures to the second instead of the usual number. When they were shown the reel was slowed sixteen times, so that the films passed very slowly and yet without fluttering. The opportunity of analyzing the movements was most unusual. With such improvements in the technic of taking and exhibiting films we may look forward to the future study of the motor disturbances of disease with the expectation of valuable returns. It has been a great help to me, being only an amateur neurologist, to have Dr. Mills assemble, so simply and clearly, the confusing terms relating to cerebellar incoordination. If we can accept asynergy itself as the underlying factor in the motor disturbances with which we are familiar it will greatly simplify the subject for all of us. So far as the caloric and other tests are concerned, interesting as they are from a physiologic point of view, I am sorry to say that for clinical purposes we have not as yet benefited greatly from them. We have religiously gone through these tests in all of our cerebellar cases before as well as after operation and have made as complete studies as th epatients' condition permitted. I have visited Bárány myself and one of my associates has been with him for some time, but I must acknowledge that so far we have not profited by these studies of the cerebellolabyrinthine pathway. Nevertheless, I think they should be made as a routine part of a neurologic diagnosis if there is any suggestion of temporal lobe, of labyrinthine or of cerebellar involvement; and I still hope, purely from the practical point of view, that we may in time gain something of value, even if we cannot expect to secure from the labyrinth information comparable to that which we get from the eye.

Dr. Otfrid Foerster, Breslau, Germany: I believe that all so-called cerebellar phenomena are only different signs of one elementary symptom, for which I will use the term "incoordination," instead of asynergy. I think it means a little more than asynergy. It is simply a question of examination.

The moving pictures are of great value, not only for demonstration, but also for investigative purposes. Patients often show a certain symptom at one moment and later do not show it. The moving pictures allow us to fix the symptom and to examine it as often as we like in a careful, detailed and analytic way.

Dr. Charles K. Mills, Philadelphia: It has been said that we should study more closely than we usually do the part of the body affected. More than this, we should note what part of the body is first affected, what second, and what last, in this way ascertaining the train of phenomena which leads us to the original focus of disease. A common thing for the neurologist to do in a case of cerebral tumor is to study its progressive symptomatology. He notes the occurrence of not only the initial symptom if the patient has a spasmodic attack, but also the serial order of phenomena; if, for instance, the spasm begins in the face, then goes to the leg or arm. If he has a case of parietal tumor he studies first the easily recognized parietal symptoms and then, perhaps, follows the successive phases of changes in the reflexes. I have seen, for instance, the normal plantar reflex change to a stationary position of the great toe and then to extension of this toe. In cerebellar disease—abscess, tumor, and, more rarely, hemorrhage—we can sometimes most readily get the clue by a study of the progressive order of development of the phenomena in the limbs or part affected.

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**The Death-Rate a Measure of Intelligence.**—If the principles of sanitation, as we now understand them, were put into practice, within fifteen years the average life would increase to 65 years. . . . The death-rate to-day is the measure of intelligence.—Victor C. Vaughan, *Journal Michigan State Medical Society.*

# CARCINOMA, SYPHILIS, AND TUBERCULOSIS COEXISTENT IN THE SAME PATIENT

## WITH REPORT OF A CASE

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BOSTON

The occurrence of active tuberculosis with carcinoma or of carcinoma with syphilis in the same patient is occasionally observed. We find reported in the literature many cases of lupus associated with epithelioma, and also of pulmonary tuberculosis with cancer involving the same, or some other organ, as the stomach, intestine, or liver. Much more infrequently do we see cases of carcinoma and syphilis in the one individual. The majority of these are patients in whom a malignant growth occurred at the site of leukoplakial patches. Cancer associated with syphilitic lesions of the central nervous system is not of common occurrence. The association, however, of carcinoma, tuberculosis and syphilis, each involving primarily a different organ in the same patient is apparently extremely rare. Such an occurrence is not mentioned in any of the standard works on pathology or carcinoma, and a careful search through the literature has failed to reveal a single recorded instance of a combination of these three diseases. Therefore, the following case, in which all three conditions were demonstrated during life and confirmed at the postmortem examination, is thought to be of sufficient interest to place on record.

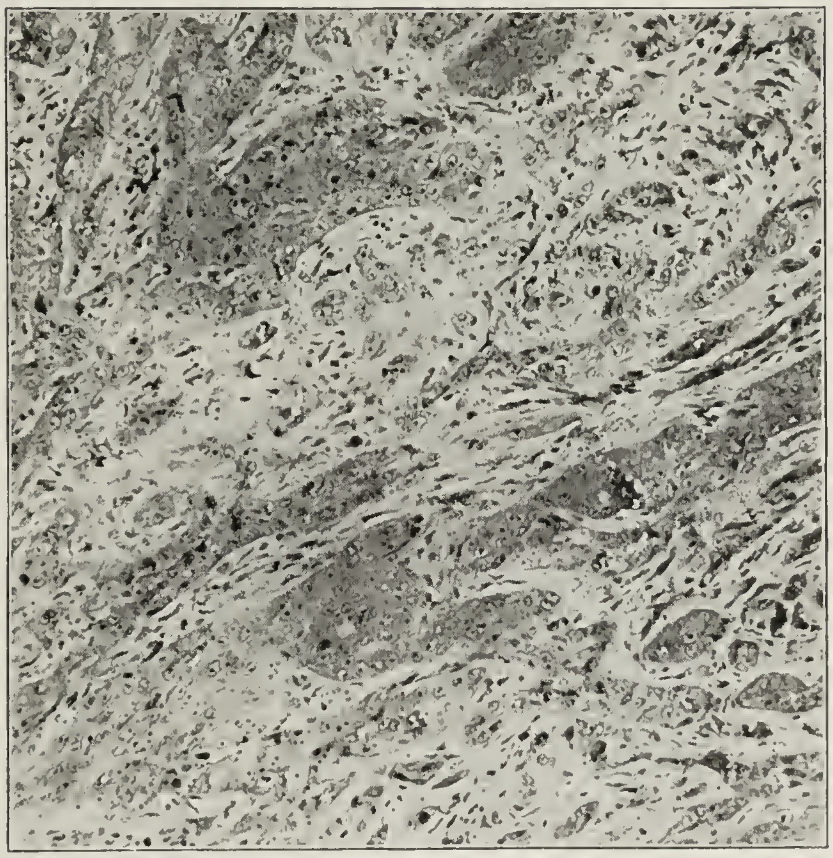

Fig. 1.—Section of tumor in pharynx. From a photomicrograph (×135)

### REPORT OF CASE

Mrs. O. M. J. (Case No. C. 1. 13. 44) aged 39, housewife, born in Ireland, was referred by Dr. N. Faxon of Stoughton to the Huntington Memorial Hospital, Sept. 27, 1913, complaining chiefly of difficulty in swallowing.

*Present Illness.*—In July, 1910, shortly after her first confinement, patient noticed that her knees became weak. She was able to stand and walk, but had great difficulty in going up or down stairs. This condition persisted until after her second confinement in September, 1912, when she became troubled by a "sort of numb, tired feeling" in the back of her head. This came on when she sat up for the first time after parturition, lasted for three months, and then passed into the spine and rectum, where there was severe pain, frequently during the entire day. Two months ago her throat began to "fill up" and she was unable to swallow. Local treatments by a specialist afforded temporary relief. Patient states that she occasionally has chills. For the past six months she has been nauseated in the morning, but seldom vomits. Has had cough and expectoration for the past two months. Her appetite was very good until the throat symptoms appeared. Bowels have been regular, no bladder symptoms. She has lost greatly in weight.

*Past History.*—Patient had measles, mumps and whooping-cough during childhood, typhoid fever and malaria in later life. Menstrual history is negative, except that the periods ceased after her first injection of salvarsan. She married at the age of 33 and had two children, both alive and well, one instrumental and the other a normal delivery. Does not use alcohol and denies venereal history.

*Family History.*—The patient's father died of blood-poisoning, but no information was afforded concerning recent injury or other cause. Mother died of asthma. Has one sister who is alive and well. No history of tuberculosis or tumor in the family.

*Physical Examination.*—The patient is a slightly built, emaciated, white female adult of brunette type. The skin and mucous membranes are pale. The forehead is prominent, the nose slightly depressed. The pupils are moderately contracted and react to accommodation, but not to light. The tongue protrudes mesially, and is red at the tip and margins. The papillae are prominent. The upper teeth are false. The pharynx is deeply injected and on the posterior wall above the level of the epiglottis is seen a rounded elevated nodule approximately 0.5 cm. in diameter. Beneath this, and extending downward to the left as far as the eye can see, is an ulcer, irregular in outline, and with elevated edges. The base is covered with a grayish-yellow discharge and projecting masses of reddish tissue can be seen. On the right side of the neck, beneath the ear, is an oval-shaped firm mass 3 by 2 cm. It is adherent to the tissues beneath it. The cervical lymph-nodes are readily palpable.

The thorax is symmetrical; the ribs, clavicles and sternum are prominent. Tactile fremitus is increased over the left chest. The area of cardiac dulness is within normal limits. The apex is heard best in the fifth interspace, 8 cm. from the midsternal line. The sounds are normal. The respiratory sounds are increased throughout the chest, particularly on the left side. Posteriorly, they are bronchovesicular in character and an occasional dry râle is heard.

The abdomen is depressed, linea albicantes are present. There is no increase in the area of hepatic or splenic dulness. The kidneys are both palpable, the right somewhat movable. The inguinal lymph-nodes are readily palpable.

The knee-jerks are absent. There is no ankle-clonus, no Babinski, although the right toe is slightly suggestive. Plantar reflexes are present. The umbilical reflex is absent. The patient cannot walk unassisted. The gait is spastic and the foot is brought down flatly. The toes point outward. On standing still, she sways slightly and on closing the eyes, topples over. The pulse is rapid, regular, of low tension and vessel-wall soft.

July 19, blood-serum was obtained for a Wassermann test by her physician, Dr. N. Faxon, and a positive report was returned. July 21, 0.4 gm. of salvarsan was given intravenously and on August 15, 0.6 gm. of neosalvarsan. She reacted strongly to these injections with chills and increased temperature. The administration of potassium iodid was then begun and continued up to the time of her entrance into the hospital.

Oct. 1, 1913, a fragment of tissue removed from the throat was reported carcinoma. A Wassermann test on the blood-serum was negative. A roentgenogram of the chest showed a picture consistent with pulmonary tuberculosis. Soon afterward, acid-fast bacilli, morphologically tubercle bacilli, in large numbers were found in the sputum. Her blood-pressure varied from 80 to 95 (Tycos). The urine was not remarkable. The blood on entrance contained 12,200 white cells, 5,300,000 red cells and 90 per cent. hemoglobin. Later the white blood-cells rose to 16,800 and on October 28 dropped to 10,200 and hemoglobin to 80 per cent.

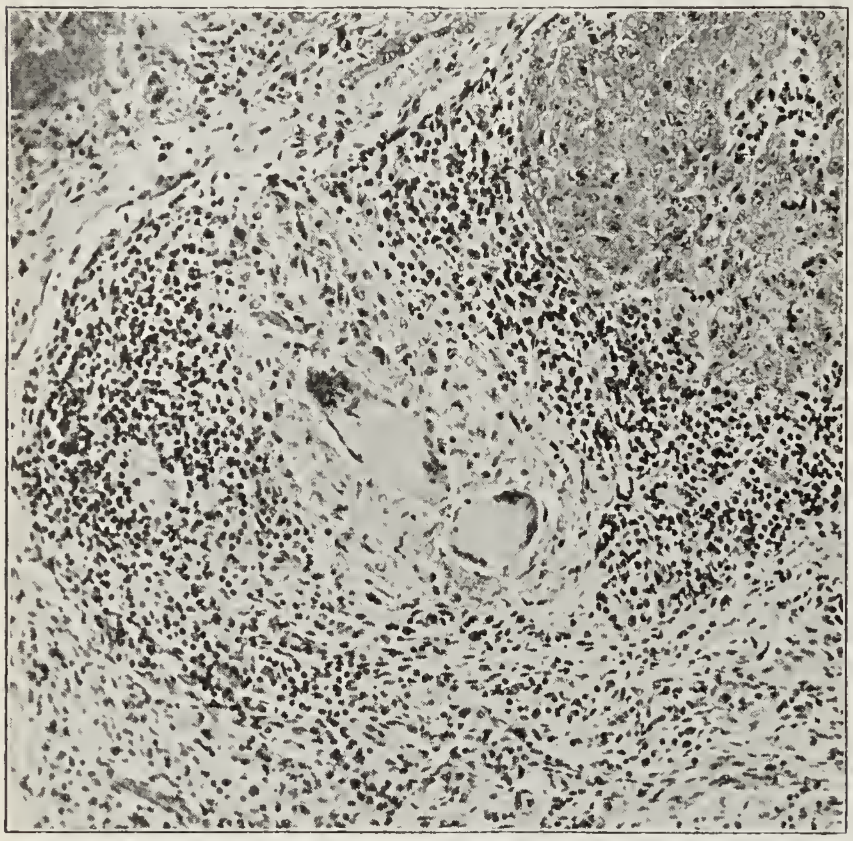

Fig. 2.—Section of tumor and tuberculous tissue from right side of neck. From a photomicrograph (×135).

During the first part of her stay in the hospital, she improved slightly, after which her condition became progressively worse. The pulse varied between 120 and 130, the respiration from 30 to 36. The temperature ranged from 98 F. a. m. to 102 F. p. m., occasionally being so low as 97 F. in the morning and reaching 103 F. in the afternoon. Death occurred Nov. 13, 1913, preceded by several days of great weakness, increased difficulty in swallowing and cyanosis.

*Post-Mortem Examination* (by Drs. E. E. Tyzzer and E. Kellert).—Body length, 157 cm. Body is that of a woman, slender, well developed and markedly emaciated. Rigor mortis is present. There is a moderate degree of lividity over the posterior aspect of the body. At the anal orifice is a mass of reddish tissue 1 cm. in diameter covered with epithelium. There is a very slight degree of edema about the ankles. The outer aspect of the forearm shows a rounded scar measuring 1 cm. in diameter. The chest is depressed on both sides near the upper sternal region and the sternum shows marked bulging outward.

Peritoneal Cavity: Abdominal wall measures 3 or 4 mm. in thickness. The peritoneum is smooth. There are adhesions between the lower surface of the spleen and the transverse colon. The abdominal viscera are displaced downward. The transverse colon extends into the pelvis and is bent S-shaped on itself. The appendix is negative.

Pleural Cavities: There are numerous adhesions over the entire surface of the right lung. The left pleural cavity contains approximately 50 c.c. of yellowish-red fluid.

Heart: Weight, 240 gm. The myocardium is normal in color and consistency. The mitral valve presents several firm and non-calcified thickenings at the free edge. The coronaries are normal. The intima of the ascending aorta is smooth and without lesion.

Lungs: They are voluminous and do not collapse when chest is opened. In the posterior portion of the right lung are numerous small nodules of opaque tissue measuring 2 mm. in diameter. The smaller ones are slightly translucent. At the apex is a cavity 5 by 4 by 3 cm., which contains a thick grayish mucopurulent material. The walls are smooth and contain irregular branching bridges and trabeculae. The inferior left lobe presents, on cross-section, nodules similar to those above described. Many of these nodules are confluent and form irregular masses of opaque grayish tissue. The bronchial lymph-nodes are deeply pigmented and non-calcified.

Gastro-Intestinal Tract: In the median portion of the small intestine are two ulcerations of rounded outline. The larger measures 2 cm. in transverse diameter and 1.5 cm. longitudinally. The mucosa at the edge is elevated and irregular. On the serous surface of the intestine are minute translucent areas. The stomach and large intestine are negative.

Spleen: Weight, 118 gm. The capsule shows very minute translucent elevations. Cut surface is light-red. The trabeculae are prominent and the follicles indistinguishable. Several opaque nodules, some measuring over 1 mm. in diameter, are present.

Pancreas: Normal in size, color and consistency.

Liver: Weight, 1,180 gm. The capsule is smooth. Cut surface is of a dull chocolate-brown; the markings are not prominent. At one point there is an opalescent mass 3 mm. in diameter. The gall-bladder and bile-ducts are negative.

Adrenals: Normal in appearance.

Kidneys: Combined weight, 250 gm. The capsule strips readily, exposing a slightly torn surface. The medulla is redder than the cortex, which is pale brownish-red.

Bladder: At the neck of the bladder is an area containing greatly dilated blood-vessels and producing a bluish-red discoloration. The genitalia are not remarkable.

Aorta: Smooth appearance throughout. The retroperitoneal mesenteric lymph-glands are considerably enlarged and reddened and, in some of these, opaque areas are to be seen.

Organs of Neck: In the posterior and left lateral wall of the pharynx is an ulceration measuring 4 by 3.5 cm. The base is irregular and covered with a pale grayish exudate mingled with reddish granular elevations. Lower down, there is a small rounded mass 0.7 by 0.5 cm. and elevated 0.3 cm., also smaller translucent nodules from 2 to 4 mm. in diameter.

Bone-Marrow: Dark brownish-red and moderately firm in consistency.

Head: The frontal eminence and occipital protuberance are unusually prominent. The anterior portion of the calvarium is normal, but somewhat thick posteriorly. The base of the skull is negative.

Brain and Cord: Report by department of neuropathology No. N.-13-96. The brain weighs 1,324 gm. It is generally brachycephalic in type. The pia of the vertex is cloudy, and the pial vessels considerably injected throughout. The convolutions are fairly simple in pattern. There is no gaping of the sulci and no gross cortical lesions. The vessels of the circle of Willis show very slight stiffening, but no atheroma. One centimeter frontal section through the cerebrum and cerebellum show the corona radiata small in area. No gross lesions, except a suggestion of slight sclerosis of the arteries of the lenticular nuclei. The cord, on gross inspection, shows yellowing of the posterior columns. Sections from the cervical, dorsal and lumbar levels of the cord show a marked degeneration of the columns of Goll and Burdach. The process is more marked in the lower than in the cervical region. The posterior roots appearing in the section are almost entirely unstained. The blood-vessels, especially the arteries, show considerable thickening, particularly of the intima. There is slight loss of cells in the column of Clark. The lesion is typical of tabes dorsalis.

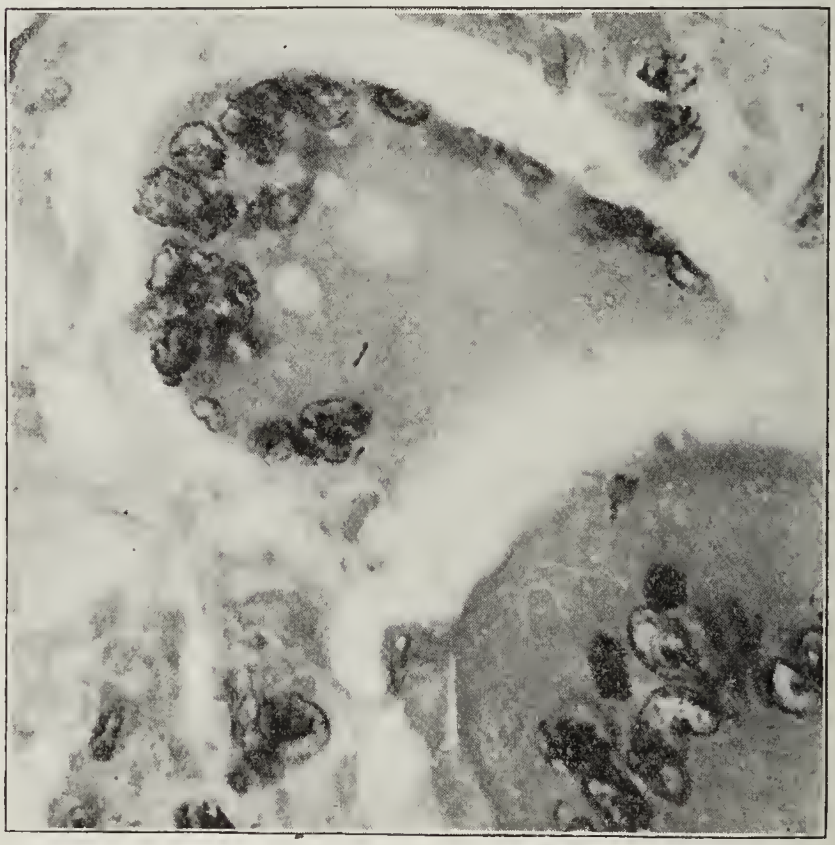

Fig. 3.—Section from tubercle shown in Figure 2. From a photomicrograph (× 1,000). Note giant cell containing tubercle bacilli.

Anatomic Diagnoses: Pulmonary tuberculosis with cavity formation; carcinoma of pharynx with metastasis to cervical lymph-node; tuberculous pleuritis with effusions; tuberculosis of lymph-node; tuberculosis of pharynx; edema of lungs; tabes dorsalis; tuberculous ulcers of small intestine; marked emaciation; external hemorrhoid; slight edema of feet.

*Histology.*—Pharyngeal Ulceration: Sections show an ulcerated surface covered with necrotic tissue, fibrin and bacteria. Directly beneath the ulcer are large closely packed masses of tumor epithelium which extend inward, where the tumor appears to be subdivided into smaller masses or isolated cells surrounded by dense fibrous tissue. In many of the larger masses are foci composed of pink-stained, swollen epithelial cells which are evidently necrotic. The tumor cells are large, irregularly rounded or polyhedral in shape and present a moderate amount of faint pink-staining cytoplasm. The nuclei vary considerably in size and shape but in general are large, rounded, vesicular and show one or more nucleoli or chromatic masses. Mitotic figures are present, but not numerous. The stroma appears, for the most part, dense in character and presents spindle-shaped connective-tissue cells, rare eosinophil and lymphoid cells. Blood-filled capillaries are numerous.

Enlarged Cervical Lymph-Node: A layer of tumor tissue is found enclosing the caseous interior of the mass and the whole more or less encapsulated. The capsule consists of dense fibrous and fat tissue containing nerves. Between the capsule and layer of tumor tissue is a narrow margin of lymphoidal tissue, dilated lymphatic spaces and areas of tuberculous tissue. The lymph spaces are surrounded by a supporting tissue containing but few cells. The tumor epithelium is closely associated with the tubercles, but there is no admixture of the two. The tubercles are distributed over the outer surface of the tumor tissue. Acid-fast bacilli are present.

Heart: The muscle fibers contain a moderate amount of brownish pigment situated about the nucleus.

Aorta: There is a diffuse thickening of the intima, but no calcareous deposits.

Lung: There are extensive areas of edema and caseation and many tubercles, both miliary and confluent. Some of the larger areas are surrounded by a thick connective-tissue capsule containing tuberculous tissue, frequently with giant cells. There is no calcification present. The alveoli surrounding the tuberculous tissue are filled with masses of fibrin and desquamated endothelial cells. There are numerous acid-fast bacilli present.

Small Intestine: The ulcerations involve the entire thickness of the intestinal wall. The superficial layers are composed entirely of necrotic and inflammatory tissue. Beneath this are tubercles and fragments of smooth muscle. There are very few giant cells present. The capillaries are dilated and filled with red blood-cells. Large numbers of acid-fast bacilli are present.

Liver: The hepatic cells about the central veins are in various stages of degeneration. Many are necrotic or absent. There are numerous polymorphonuclear leukocytes present. About the periphery of these areas of necrosis are columns of normal-appearing liver cells and there is a moderate degree of replacement of the hepatic tissue with fat. The sinusoids in the necrotic portions are dilated with blood-cells. There are large numbers of small tubercular areas scattered throughout the parenchyma.

Spleen: A few similar tubercles are present.

Kidney: There is a slight degree of degeneration of the tubular epithelium, and a few of the tubules contain casts.

Uterus: An occasional small blood-vessel in the myometrium shows hyaline changes, and there is moderate atrophy of the endometrium.

Lymph-Nodes: Miliary tubercles are present. The sinuses are frequently dilated and filled with desquamated endothelial cells, some of which are phagocytic for red blood-cells.

Bone-Marrow: It is not remarkable.

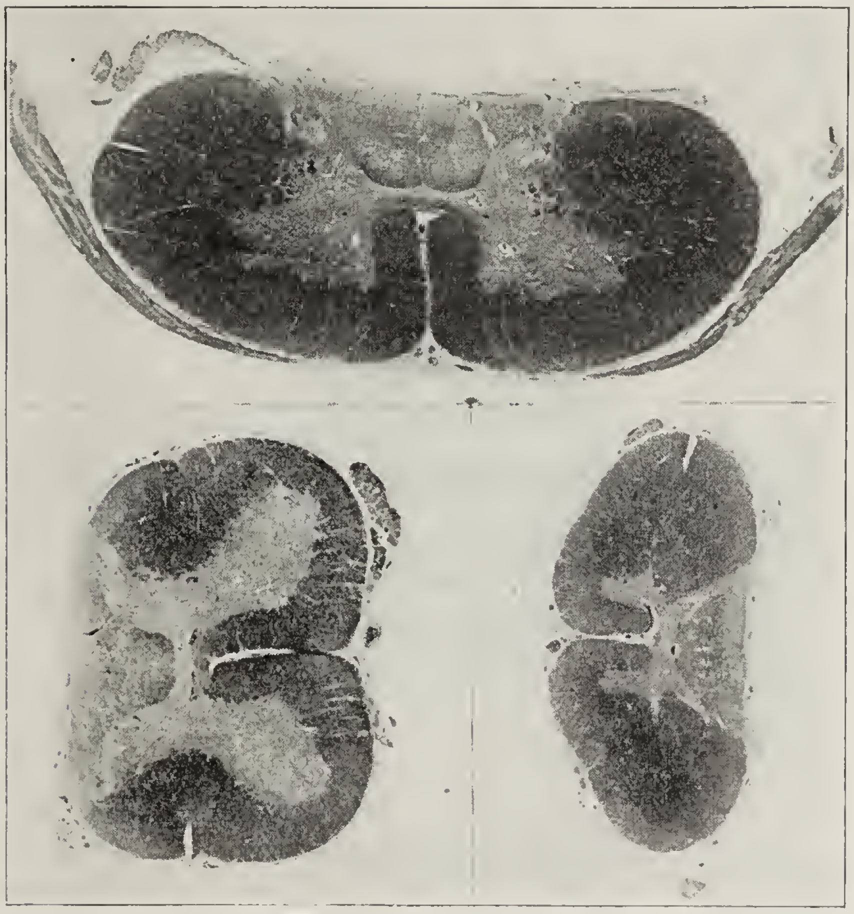
Fig. 4.—Section of spinal cord at varying levels showing degeneration of posterior columns. From a photomicrograph (× 6).

This patient, therefore, presented three distinct diseases, each involving primarily, though not confined to, a different organ—an invasive tumor primary in the pharynx with metastasis to a cervical lymph-node; an extensive bilateral pulmonary tuberculosis, and tabes dorsalis. The lesions are typical for each of these three, any one of which would ordinarily be regarded as a major disease. The origin of the syphilitic infection is somewhat obscure. The patient, an intelligent woman, most emphatically denied a venereal history. She had given birth to two normal and healthy children and did not have a miscarriage or abortion. It is stated in the family history that her father died of blood-poisoning, but further details could not be obtained. The peculiar shape of the head, the prominent frontal region, and the somewhat depressed bridge of the nose, slightly suggest congenital syphilis.

Although comparatively few cases of combined carcinoma and tuberculosis have been reported, it is doubtful if there exists between them any antagonism. Thus Bastedo,[1] who gives an excellent review of the literature, finds that there is no specific favoritism or antagonism between the two diseases; that cancer is more common among those with latent tuberculosis than among those at the cancer period of life. The common age for cancer is not the age for active tuberculosis. Moak,[2] in looking over the records of the Bender Hygiênic Laboratory, found carcinoma present in 6.6 per cent. of active tuberculous cases. This percentage is rather higher than that of other observers. Lubarsch[3] found cancer present in 4.4. per cent. of active tuberculosis, and McCaskey[4] in 1.4 per cent. The latter notes that retrogression of cancer has occurred after the injection of tuberculin. Patients dying of cancer not infrequently show old scars or calcification in the apices, indicating healed tuberculosis.

An occasional observation has been made in which it was thought that a tuberculous ulcer preceded a malignant growth. Such cases have been reported, but observations of the combined conditions, cancer and tuberculosis, as of the hand (Lapeyre[5]), esophagus (Weyeneth[6]), (Corduo[7]), larynx (Beale[8]), and intestine (Dixon, Smith and Fox[9]), have been more common. Lupus and carcinoma are frequently associated, but the pathologic processes involved, in which groups of epithelial cells are isolated by the "frequent cicatrizations, place these lesions in a class by themselves" according to Bastedo.[1]

Certain observers have concluded that the tubercle bacillus and its toxins are concerned in the etiology of cancer, but the relationship is not clearly demonstrated. Dixon, Smith, and Fox,[9] after animal experimentation, convinced themselves that the tubercle bacillus and its products could stimulate epithelial structures. While it is true that an epithelial hyperplasia can be brought about by the tubercle bacillus and its products, yet there is no evidence to show that it can produce an invasive tumor. If this were true, we should expect to find cancer much more frequently associated with tuberculosis, and more common at an earlier age. Roger Williams[10] pointed out that as cancer increased, phthisis decreased.

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[1] Bastedo, W. A.: The Association of Cancer and Tuberculosis, Med. News, 1904, p. 1165.

[2] Moak, H.: On the Occurrence of Carcinoma and Tuberculosis in the Same Organ or Tissue, Jour. Med. Research, June, 1902, p. 129.

[3] Lubarsch: Krebs und Tuberculose, Virchows Arch. f. path. Anat., 1888, cxi.

[4] McCaskey, G. W.: The Clinical Association of Cancer and Tuberculosis with Report of a Case, Am. Jour. Med. Sc., July, 1902.

[5] Lapeyre, N.: Tuberculosis Plus Cancer on Back of Hand, Presse méd., April 11, 1914.

[6] Weyeneth: Carcinoma und Tuberculose des Oesophagus, Dissert. Zurich, 1900.

[7] Corduo: Ein Fall von Krebsig—tuberculosem, Geschwür der Oesophagus, Arb. a. d. path. Inst., der Universitat Göttingen, 1893, p. 147.

[8] Beale: Cancer ou tuberculose du poumon, Jour. Laryngol., 1896, p. 36.

[9] Dixon, Smith and Fox: On Cancer and Tuberculosis, Penn. Health Bull., Harrisburg, 1911, No. 24.

Syphilis is a fairly common disease and yet its combination with carcinoma is exceedingly rare. This is indicated in the statistics gathered by Williams. He mentions the case of Turenne, who syphilized his recently operated cases, hoping thereby to prevent a recurrence of the growth. Lang,[11] on the other hand, claims to have observed syphilitic infiltrations which became converted into malignant neoplasms. He believes that the toxins of syphilis may weaken the organism which is more readily attacked by tumor growth. He also believes that cutaneous syphilitic infiltrations form a favorable soil for tubercle bacilli. We have found relatively few cancer patients who give a specific history, and Wassermann tests on their blood-serum but seldom give a positive reaction. This has been our experience at the Huntington Hospital, although varying percentages have been claimed at different clinics. Fox[12] reports a large series of cases with negative reactions. Many cases occur in which a malignant growth appears to have its origin in areas of leukoplakia.

It is always of interest to determine which lesion appeared first, and its influence on the development of subsequent affections, but only too often this is impossible. In the present case, it is apparent that the syphilitic infection must have occurred long before the active development of the other two conditions. The phthisis must have been a comparatively recent infection, for the history of loss of weight dated back but a few months. Throat symptoms developed about three months before death, so that the tumor was probably the last of the three diseases to appear.

Cases already reported and this one bring up the question of the occurrence of two or more active diseases in the same patient. We are inclined to think that it is to be found much more frequently than is commonly suspected. Thus typhoid and tuberculosis in combination are not uncommonly observed. Osler[13] found at necropsy, tuberculous lesions in 5 per cent. of typhoid cases. Yellow fever, dengue, malaria and amebiasis frequently coexist, so that individuals may harbor any two of the above infections. Recently, Strong, Tyzzer, and others[14] separated into two distinct diseases, oroya fever and verruca peruana, which had long been accepted as different manifestations of a single infection. It is not at all improbable that, in the tropics, many patients suffer from two and even three diseases. A short time ago a postmortem examination at this hospital in a case of myelogenous leukemia revealed also a tuberculous peritonitis with ascites. While the student is usually taught to make one diagnosis cover all the symptoms, the possibility of one or two other conditions being present must not be overlooked. In fact, it is unscientific not to consider the presence of more than one disease if the signs and symptoms indicate it.

In conclusion I wish to thank Dr. A. E. Taft for a thorough examination of the central nervous system and acknowledge my indebtedness to Dr. E. E. Tyzzer for assistance in the pathologic examination and report of the case.

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[10] Williams, Roger: Twentieth Century Practice of Medicine, New York, William Wood & Co.

[11] Lang, E.: Twentieth Century Practice of Medicine, New York, William Wood & Co.

[12] Fox, F. J.: Wassermann Reaction in Cancer, Med. Rec., New York, Aug. 16, 1913.

[13] Osler, W.: Practice of Medicine, New York, D. Appleton & Co.

[14] Strong, Richard P.; Tyzzer, E. E.; Brucs, Charles T.; Sellards, A. W., and Gastiaburo, J. C.: Verruca Peruana, Oroya Fever and Uta, The Journal A. M. A., Nov. 8, 1913, p. 1713.

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# THE RECONSTRUCTION OF THE NASAL SEPTUM AFTER THE SUBMUCOUS OPERATION*

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The reconstruction of the nasal septum after the submucous operation invites, first, a discussion from both the physiologic and the anatomic standpoint of the etiologic factors of nasal disturbance for which septal relief is indicated, and justification of the selection of surgical interference in the septum rather than other parts of the rhinopharyngeal tract; second, the adoption of surgical measures which will reasonably overcome the nasal disturbance with the least traumatic modification, and, third, the reestablishment of normal function in the part itself and the correction of the disturbed specialized function to which its displacement has contributed.

Succinctly stated, the consideration devolves on the three questions: For what may submucous resection be legitimately done? How can it most safely and simply be performed? How perfectly may the septum be reconstructed? Such reconstruction must include the anatomic rebuilding of a structure virtually razed to its foundation, the physiologic continuance of its general and specialized function and, finally, the relief in satisfactory measure from the conditions for which it was instituted.

The new partition must enable the septum to perform its part in the secretory, olfactory and respiratory activity of the nose, be anatomically strong enough to withstand reasonable subsequent trauma, preserve the alignment of the external nares and resist unfortunate sequelae.

Interesting results were reported by Anderson[1] from animal experimentation in obstructing the upper respiratory tract, proving that nasal obstruction leads to death or serious modification of vitality. It furthermore produces lowered resistance, predisposition to infection, local disease of the respiratory tract and associated cardiac, skin and pulmonary symptoms. He even produced asthma symptoms in the lower animals and found that reopening of the nose relieved them.

Consideration of this topic has been induced by a rather careful analysis of the procedures and subsequent results of about five hundred complete and partial submucous resections which I have performed, and by the rather fortunate opportunity, as will be later explained, of having obtained a septum specimen by secondary operation in which surgical and physiologic points of interest resulting from primary interference were well exhibited.

Obstinate catarrh, the neuroses of hay-fever or asthma, nasal stuffiness, eustachian tinnitus and sinus pressure are classical symptoms for which orthopedic correction of a deflected or nodular septum might be indicated. Here the personal equation of the specialist's examination must be severely eliminated, nor must the operator be influenced by the readiness and skill of his own preference for this operation. Surgeons subconsciously allow their minds to become focused on certain types of work, and it is difficult to escape the influence of this in their operative advice. The delicate decision as to the possibility of restoration in a middle turbinate showing early degeneration may frequently be the determining decision as to an operation on it or on the encroaching septum. A careful review of the physiology of these areas would indicate a preference for septal rather than turbinate interference.

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Anderson: Proc. A. L. R. and O.. 1909.

Mentzenbaum[2] is of the opinion that the exenteration of the turbinate destroys an important vitalizing organ in the nose, but the splendid work of Mosher and others need not be discussed here.

Phillips[3] classifies cause of septal deformities as due to congenital malformations, arrested or excessive development of the facial bones and traumatic injury, with large majority in the latter, and quotes the importance of the progressive changes due to unrecognized childhood traumatism. It is doubtless due to the insidious development of such disturbance that the many conditions indicating septum operation are suddenly revealed and apparently almost spontaneously.

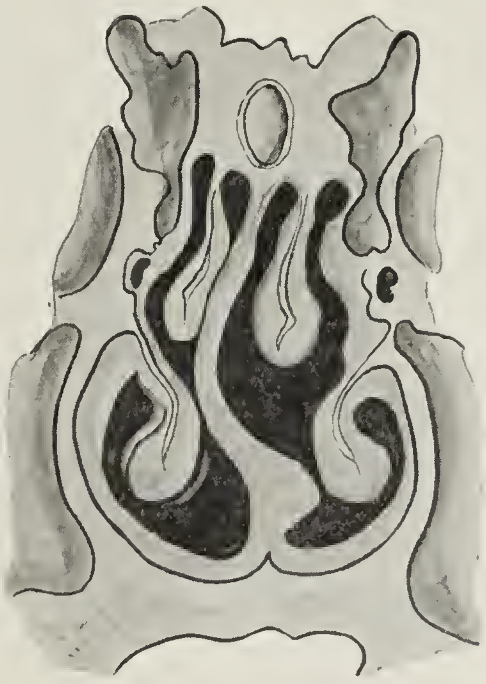

Fig. 1.—The most common type of deviation of the septum, presenting a common result of unrecognized traumatism.

As Emerson says,[4] the patient consults not for the deflection, but for the conditions which have produced unequal ingress of air, hypertrophies, contact, insufficient drainage or active infection of the sinuses of the nasopharynx. He further enumerates asthma, headaches, aprosexia, disturbance of vision, aggressive otitis media, erysipelas from the infection of the erosions, eczema of lip, recurrent bronchitis, chronic nasal pharyngitis, redness of nose, aphonia, perversion of smell and taste, dyspepsia, mechanical obstruction and catarrh as symptomatic of septal deformity.

To this might be added Bryant's[5] conclusions that epileptic seizures are more often due to reflex stimulus from the Schneiderian membrane to the fifth nerve than from other causes.

A most frequent indication for careful examination of the upper nasal cavity is a simple, indefinable stuffiness in that area, subjecting the patient to varying degrees of discomfort. Though indefinable, its degree of oppression is in sharp contrast to the unmeasured relief by removal of its cause. In a minor percentage of cases, hay-fever and asthma are relieved and occasionally entirely overcome if the obstruction be a sharp bulge or ridge constantly irritating the middle turbinate. Frontal and ethmoidal sinusitus, especially in those cases with recurrent attacks, have sometimes been eradicated by the correction of a markedly deformed septum. Hay-fever and asthmatic seizures, always problematic in prognosis, sometimes permanently change, and a most encouraging picture is seen in the return of normal luster to the mucous membrane.

As cited by Ballenger,[6] an irregularity of the septum *per se* should not indicate a submucous operation. The obstructive and irritative conditions present, combined with the symptoms enumerated above and obviously connected therewith, render the situation clear, though with one's tendency to become subconsciously focused in a certain type of work, possibly only a complete examination by an "all-around non-operative specialist"—if such hypothesis be possible—should determine in certain cases whether interference with the septum or the turbinate would be the more justifiable.

It is justifiable to associate ordinary postnasal catarrh with deformities in this area, especially those without adenoids, but with ridge, spur or deflection. Here must be carefully analyzed evidence of atrophic mucous membrane change, as the too-wide nasal cavity is one of dread. It might be suggested here that a careful subsequent review of patients some time after the septum operation should be instituted for possible sequelae of this sort.

A certain number of cases present a symptomatology of general defective metabolism—the stasis of gouty diathesis, sallow skin, foul breath and coated membranes. If these be associated with poor aeration of the upper respiratory passages, the obstructed nares may be a positive factor.

Richardson[7] has reviewed the connection of upper respiratory disturbance as a reflex of general body condition, counseling against undue haste for operation and early attention to dietary and hygienic reorganization, while Meyer reports treatment of ninety-three cases of nasal vasomotor disturbance by topical application for relief of dysmenorrhea.

Favorable result of septum replacement has been the experience of many of us in the relief of eustachian tinnitus, especially that associated with a posterior exostosis or hook-like projection of the vomer. The rationale of these improvements has been analyzed by many investigators, Leland[8] urging the freeing of the fossae of Rosenmüller of synechial or isolated patches of lymphoidal tissue at the onset of earache, and Norval Pierce, carrying the investigation further into the physical and physiologic factors involved in the diminished tympanic cavity, retraction and atrophic condition of the drum with ankylosis at the foot of the stapes. Changes in blood-supply with hyperemia and rarefaction of air explain the situation here and make septal replacement one of the positive elements in physiologic reconstruction.

Relief of eustachian catarrh and remodeling of the air-current with freedom through the tract of the pharyngeal tonsil area is a particularly favorable result. If we accept the theory suggested by Dr. Randall that the adenoid tonsil may be increased by obstructed nares, as well as the reverse, the change in rôle sometimes becomes explainable.

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[2] Mentzenbaum: Cleveland Med. Jour., 1914.
[3] Phillips: Diseases of the Ear, Nose and Throat.
[4] Emerson, Francis P.: The Results of the Operation of Submucous Resection of the Septum in Private Practice, The Journal A. M. A., Oct. 22, 1910, p. 1449.
[5] Bryant, Med. Rec., New York, 1907; Boston Med. and Surg. Jour., 1911.
[6] Ballenger: Diseases of the Ear, Nose and Throat.
[7] Richardson, Charles W.: Some Suggestions in the Methods of Correcting Deflection of the Nasal Septum, The Journal A. M. A., Sept. 21, 1912, p. 1131; Proc. A. L. R. and O., 1913.
[8] Leland: Laryngoscope, 1909.
[9] Pierce, Norval: Laryngoscope, 1909.

The extensive relation of the septal tract with eye affections forces a close connection of ophthalmologic and rhinologic fields. Hilcher[10] quotes a varied field of optic conditions—rebellious headache with eye pains, accommodative asthenopia with neuroretinitis, catarrhal conjunctivitis, recurring phlyctenular keratitis and dacryocystitis—as indicating an examination for nasal obstruction, while we receive constant reference of cases for study in this tract of involvement of the optic nerve.

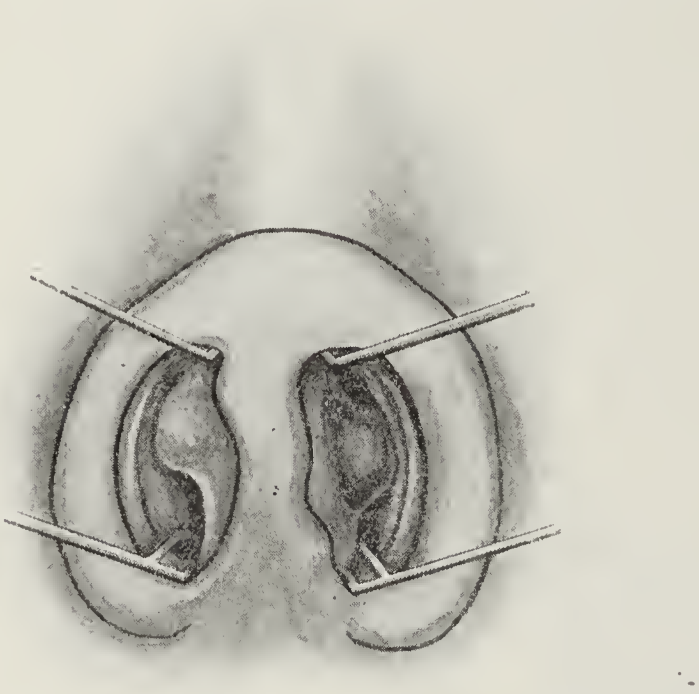

Fig. 2.—A type of deviation with a double compensatory vertical sweep.

Thus explained, the review of functional and pathologic lesions is pertinent to the topic, for their correction, as above stated, is essential to our propaganda of reconstruction.

Reverting now to the consideration of operative technic and the sequelae, positive and negative, certain localized phases of operative surgery in the rhinopharyngeal tract have become, within the past few years, most highly developed from an operative standpoint. The surgery of the nasal septum, the middle turbinate and ethmoidal sinuses, the pharyngeal orifice or the eustachian tube and the maxillary antrum have particularly shared in this progressive development—in fact, have become so specialized as to be associated with the name and procedure of certain eminent clinicians.

We may assume that those who skilfully and readily work beneath the perichondrium will elect this form of relief or its modification in preference to the varied procedures by saw, chisel, knife, electric burr and cautery.

Perhaps the most common type of deviation, presenting a frequent result of unrecognized traumatism, is shown in Figure 1, with a high bulging to the right and compensatory sweep below and overdevelopment of the ridge on the left. This simple form of deformity indicates but little explanation with the elaborate directions of Freer, Ballenger and others and the marvelous armamentarium provided therefor.

Figure 2 presents a type considerably more difficult, with a double compensatory vertical sweep, while in Figure 3, with both anterior and posterior nodular deformities, frequently invisible behind until the turbinates are well shrunken, is portrayed a type of disturbance most gratifying in its relief but frequently neglected or overlooked by the comparatively inexperienced nasal examiner.

As bewildering as the attempt at matching striped blades of oriental grass is the analysis and classification of irregular types of deviation. In the more intricate forms the assumption is justified that the skilful operator must be a mechanical expert, and I recall the ingenious suggestions of bevel saw and the button and ligature retention.

In my experience, perhaps the most successful nasal reconstruction resulted from three distinct operations: first, the removal of a vertical strip of cartilage, 3 or 4 mm. in width, from the anterior right nares to relieve the dislocated end of the triangular cartilage; then leaving a column which happened to remain in the median line, a formal submucous resection posteriorly on the left side for high compensatory bulge, and finally an external nasal operation which consisted in chiseling the nasal process of the superior maxillae on either side and swinging over an atrociously deformed external nose. The newly-constructed organ was of normal contour with evenly divided internal nares; there was restoration of the normal membrane, and a marked subsidence of eustachian symptoms which had well-nigh become organic.

In discussion of the operative technic, a successful replacement of the septum requires certain fundamental operative rules, and these are harmonious with the general principles of surgery: First, traumatism should be reduced to the minimum degree. This would mean an incision involving the simplest linear space. An increasing tendency in all general surgery would seem that of allowing sufficient room for careful observation, and the suggestions of Yankauer, Butt[11] and others for continuing this incision well over the angle of the floor is compatible with safety. Such an incision should be thoroughly carried to the cartilage. To the experienced operator, the feel of the knife will be a guide to the depth of the incision, as slight grooving in the cartilage can do no harm and emphasizes the depth.

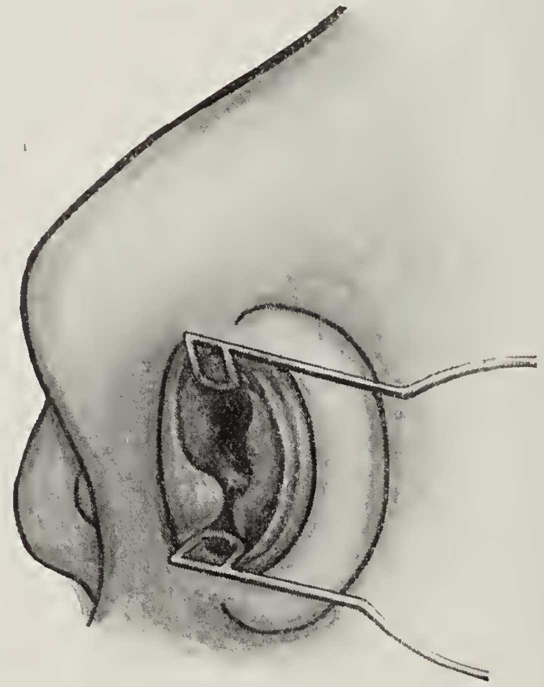

Fig. 3.—A type of deviation with both anterior and posterior nodular deformities.

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[10] Hilcher: Northwest Med., 1909.

[11] Butt: Med. Times, Laryng., 1912.

The important circulatory channels, even though nasal anastomosis is most kindly, should be preserved and delicate nerve fibrils in the mucous membrane retained. The extent of operation, while only absolutely completed, as Freer[12] suggests, with all vestiges of bone deviation removed, should nevertheless not pass to the point of requiring unnecessary supportive splint pressure. A patient's recuperative condition must be considered, his limit of shock should be appreciated, the possible devitalizing of tissues from excessive topical shrinking, and anesthesia must be kept within bounds; while hemorrhage, apparently alarming, is really inconsequential. In comparison with other major operations, it cannot be of advantage to wound vessels and bony structure to the extent of causing copious bleeding.

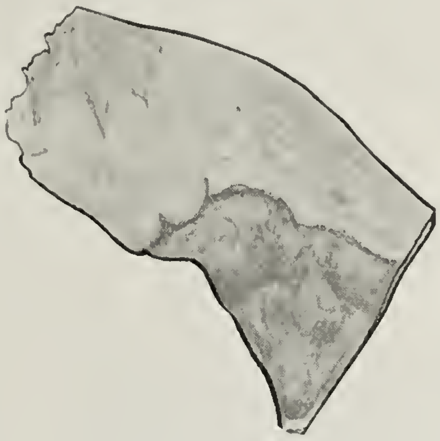

Fig. 4.—Portion of septum containing the segment from the posterior smooth end of which the section (Fig. 5) was taken.

In order to fulfil these conditions, I am inclined here to follow my custom in tonsillar operation and reduce the instrumentarium to the minimum. While most elaborate and ingenious instruments have been devised for meeting the varied forms of all angular exudancy and distortion, few septal operations really require more than half a dozen well-selected instruments, and this selection is designed to be compatible with the after-results required.

Freer's half-round-bladed septum knife, double-ended separator and reinforced edge retractor, Ballenger's swivel knife, Brünig's forceps for the perpendicular plate of the ethmoid and vomer, Schwartz' chisel for anterior ridge and Watson's small nasal speculum would complete an outfit and serve in everything but an exceptional case.

I am accustomed to use a simple septal knife, then a double-sided spatula of Freer, using the dull end to lift the membrane, then sliding the sharp end of the spatula obliquely through the cartilage, which I have not once perforated since the adoption of this method. The operation is then carried backward with gradual lifting of both perichondrium and periosteum, completing the first step as near to the floor and anterior and posterior extremities as possible, and leaving a smooth, ungrooved field.

It seems unimportant, with such carefully exposed field, whether Ballenger's swivel knife, or Brünig's forceps, or other means be used for removing triangular cartilage, perpendicular plate of the ethmoid and upper part of the vomer. Many authors have urged the rocking or bending of the septum. The adjacent portions of the vomer or ridge swing thus into place, if there be not too much redundancy of tissue. The small chisel for the anterior portion, and Brünig's forceps for the posterior will adequately lift out difficult portions, and it is important in the alignment of the septum, though perhaps not absolutely necessary, that the complete anterior projecting end should be removed, and particularly the deflected hook or exostosis posteriorly. Operatively, this procedure leaves a clean and comparatively uninjured operative field.

For the successful reconstruction of the septum, other points must be noted. The parts must be perfectly adjusted to secure primary coaptation and to prevent serous infiltration and hematoma. Angular incisions leave an extra granulating surface and a difficulty in the proximation of the folds. To prevent serous or hemorrhagic infiltration, a posterior point of drainage, as suggested by Butt and others, may advisably be made, well back between the folds of periosteum, as it can do no harm and stops a distressing complication with possible subsequent infection. The blood-vessels and delicate structures of the mucous membrane are then left in practically normal condition. The delay in secondary anastomoses is avoided if a minimum traumatism occurs.

Iglauer[13] suggests transplanting various substances to replace lost septal tissue, perforations, etc.—fat, skin, cartilage, bone, and other substances were investigated. This is not successful, hence, the importance of avoiding a gap and thus the necessity of replacing tissue, by leaving at least one perfect lateral surface of subsequent repair.

The operative sequelae of positive and negative type are nearly equal in number. The subjective relief of the patient, first, from his nasal stuffiness and associated irritation, and second the freedom from locked-up degenerated secretion are perhaps most consequential.

Alleviation of eye-strain and headache, relief of accompanying eustachian catarrh, and comfort to the nasopharynx from a remodeled air-current, are complements of the foregoing. The sinuses drain more freely and normally, their capacity as resonating chambers is improved, and slight colds do not irritate as before.

The work on the septum is capable of such careful analysis that accidents can in most cases be directly traced to faulty technic, which occurs here as in other forms of surgical interference.

Squamous epithelium replaces normal columnar epithelium in event of open cartilaginous granulation and gives rise to the constant irritating crusting, even without perforation. Perfect coaptation of the wound frequently leaves a scar which is almost invisible.

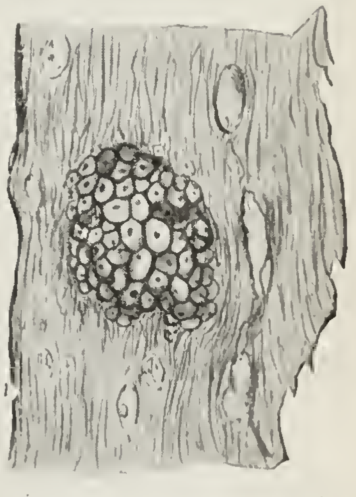

Fig. 5.—Slide showing fibrous tissue interspersed with vascular spaces, a certain amount of granular tissue and a well-formed nest of young, growing cartilage-cells.

The surface of the mucous membrane again becomes abnormally thickened and perhaps permanently hypertrophied from the undue traumatic pressure of excessive or unguarded splints. Whether the bismuth paste of Beck, the Cargile or other membrane-covered splints of others, or simple bismuth rubber strips of gauze (demonstrated to me by Fisher) are used, the result is perhaps nearly equal, if undue pressure be avoided. One cannot accept the belief that a degenerated slough, even though protective, can fail to produce deterioration to mucous membrane when present. I have not found it advisable to leave the cavity without splints, but I have obtained excellent results by covering them with thin rubber tissue, which facilitates removal and seldom leaves excoriation.

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[12] Freer, Otto T.: The Nasal Septum; A Description of the Author's Present Manner of Performing the Window Resection for Deflections, THE JOURNAL A. M. A., Sept. 30, 1905, p. 985.

[13] Iglauer: Tr. Proc. A. L. R. and O., 1913.

Packard[14] has reviewed the accidents and complications following operative procedures, quoting Lermoyez' classification as those of infectious, nervous and mechanical origin and in the nervous group widespread disturbance from simple neuralgias, vertigo, etc., even to asthma, laryngeal spasm and exophthalmic goiter.

It seems to have been the experience of those who have done considerable submucous work that it is best to adopt this procedure in practically every septal case. It is logical to assume that the preservation of a normal membrane is infinitely preferable to replacement of other tissue, and that a normal membrane with the slightest opening presents the smallest avenue for entrance of infection.

The most important point in diagnosis is to determine what is functional and what organic septal abnormality and, having determined the organic deviation, to form correct judgment as to the sequence of physiologic events in surrounding nasal and postnasal chambers.

Careful determination should be made as to the integrity of the mucous membrane, and if one side of the septum be sclerotic and thinned from previous erosion, as to whether the opposite membrane has sufficient vitality to form a safe retaining wall after operation.

After the suggestion of Roe,[15] the character of the external nose must be considered under these conditions: the firmness, the tip of the anterior nares, the degree of droop in the lateral folds, the type of fullness or aquilinity in external appearance, and the relation of the deflecting bulge to the outlets of the accessory sinuses.

Secondary injury to sinus or eustachian tube is usually due to locking infective secretions behind the deviation. I would make an especial plea for one particular procedure—beyond simple salt solution, antiseptics should be avoided in the nose at or near the operative period. In the Children's Hospital, it has been the custom to leave tonsils without interference after the operation, and the results have been uniformly as favorable as with other methods. The nasal secretion is naturally protective, and I deprecate the destruction of such secretion by either excessive washing or application of any active chemical solution whatever.

No traumatism, no undue pressure, complete removal of offending deviating structure, and avoidance of destruction of the natural resistance of the nose thus would seem to be the cardinal features in reconstructing a normal nose.

Believing that findings of any positive value should be recorded in contemporary literature for the sake of mutual benefit, I selected the topic of this paper in part as a vehicle to present the following rather interesting opportunity for study.

Figures 4 and 5 show a reproduction, first, of the septum containing the segment from the posterior smooth end of which the section was taken, and second, a reproduction of a slide showing fibrous tissue interspersed with vascular spaces, a certain amount of granular tissue and a well-formed nest of young growing cartilage-cells.

This particular patient presented himself about a year ago suffering from hay-fever neurosis of marked degree; examination of the posterior nasal cavity revealed too close propinquity of the septum and the lower portion of the middle turbinate. Submucous resection was advised and arranged for the following September and rather fortunately assistance was rendered by a careful student of septal surgery, Dr. Butt.

In separating the perichondrium posteriorly, a peculiar leathery resistance was found—a feeling resembling that of pressing on chamois-skin. This tissue doubled up somewhat but was fully and successfully separated, and a large segment of the cartilaginous septum removed. Comment was made by those engaged in the operation on the unusual folded feeling, but no other great difficulty was experienced even over the cartilaginous borders, and the inner surface of the perichondrium did not seem abnormal. The patient gave a history of having undergone a nasal operation by a specialist in western New York about two years previously, but he was somewhat doubtful about its nature.

The specimen, as portrayed in Figure 4, showed a smaller fibrous arc of reformed septum within the larger segment, forcing the conclusion that a successful submucous operation, though an insufficient one, had been done previously. The posterior hook-like end of the vomer also continued to cause disturbance. This specimen placed in weak formaldehyd solution and later in alcohol hardened into firm septum, and, on cross-section, as in Figure 5, revealed a well-formed nest of cartilage-cells, some evidence of reforming blood-vessels and a very firm union of the fibrous tissue and the adjacent portions of the cartilage.

Several points of interest arose from this demonstration: First, it was possible a second time to lift the perichondrium, probably a silent testimonial to the skill of the previous worker, and it was possible even to remove this adequately from the junction lines of the repaired and permanent septum. Second, the circulation in and around the septum seems to have been quite adequately restored, and the mucous membrane did not indicate the fact of a previous submucous operation. Third, the body of the repaired tissue was a dense fibrous stroma with occasional interspaces, perhaps circulatory, and containing this nest of growing cartilage-cells. Fourth, the consistency and strength of the septum seemed thoroughly adequate under all manipulative measures prior to the operation.

The question arises as to the reformation of cartilage growth. After careful examination and discussion with various physicians, I have come to believe that the cartilage is probably due to accidental growth and possibly a portion of cartilage left, though showing no bulging. The picture, however, presented both intranasally and subperichondrially and even after removal was that of a perfectly restored septum, somewhat thinner and more pliable than the original. My conclusion is in conformity with evidence repeatedly indicated, that cartilage itself does not reform. The weight of evidence in favor of the reassumption of anatomic and physiologic integrity is, however, most satisfactory.

### CONCLUSIONS

1. A submucous resection, properly and completely done, will reconstruct a perfect, functional septum.

2. If a careful superior margin be left, even with scant anterior and posterior sthenic removal, the align-

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[14] Packard: Diseases of the Nose and Throat.

[15] Roe: Med. Rec., New York, 1905.

ment in the nose externally and internally will be satisfactory and adequate.

3. If the bulging extremities of the nasal tubercles, ridge, and vomer, when obstructing the nares, are not relieved, the result of the operation is unsatisfactory to the patient.

4. The removal of posterior pressure is more important than a harmonious anterior picture, and unequal space in front does not necessarily disturb respiratory and drainage functions.

5. Fresh anastomoses will restore obliterated vessels to the extent of presenting a normal vascular septum if traumatism has not been unreasonable.

6. Areas in which mucous tissues are lost and replaced by squamous epithelium will probably crust, allow occasional intermittent hemorrhage and irritate the nose.

7. Perforations may be avoided if at least one firm side of mucous membrane is allowed to remain intact.

8. In soft, collapsible roof and sides a greater margin of cartilaginous and bony ring should be left to support the flexible nose and prevent drooping.

9. Drainage and perforation posteriorly will not injure the nose and will prevent exudate and hematoma of the septum.

10. Pressure of pads and splints should be avoided by protection of their surfaces and adequate judgment as to amount easily tolerated.

11. Reflex and other symptoms associated with the indication for operation will gradually disappear completely in a large percentage of cases.

12. Submucous removal is the method of preference for all septal procedures, and when carefully and completely performed may afford immeasurable relief.

13. The natural secretion of the nose will prove sufficient for postoperative antisepsis.

14. The new fibrous replaced septum bears approximately the same relation to the perichondrium and periosteum as before.

15. There is no evidence that the softer reorganized septum carries any functional disadvantage, even in its vasomotor relations.

1901 Chestnut Street.

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**Truth-Telling by Physicians.**—Everyone makes mistakes, and on this account if on no other, in the practice of such an inexact science as medicine, a proper humility as to our ability to forecast the future is becoming in members of the profession. The effect of truth—given that it is the truth—on suffering humanity is to be reckoned with in a discussion of the advisability of communicating medical facts to patients. The wise physician realizes that human nature is most diverse in its aspects; he takes into account the greatest number of the traits of character of his patients; he is more often taciturn than talkative; he thinks twice before speaking the truth.—*Boston Med. and Surg. Jour.*

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# VALUE OF ROENTGENOGRAPHY IN DIAGNOSIS OF DISEASES OF LARYNX AND TRACHEA*

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The Roentgen rays have proved to be a great aid to the rhinologist and otologist in the diagnosis of diseases of the accessory cavities of the nose, and in the study of the pathology of the mastoid region. In the field of laryngology, on the other hand, the Roentgen rays have been employed chiefly for the study of the development (ossification) and physiology of the larynx. The very complete atlas issued by Thost[1] of Hamburg in 1913 represents the first systematic attempts to study the pathology of the larynx by means of the Roentgen rays.

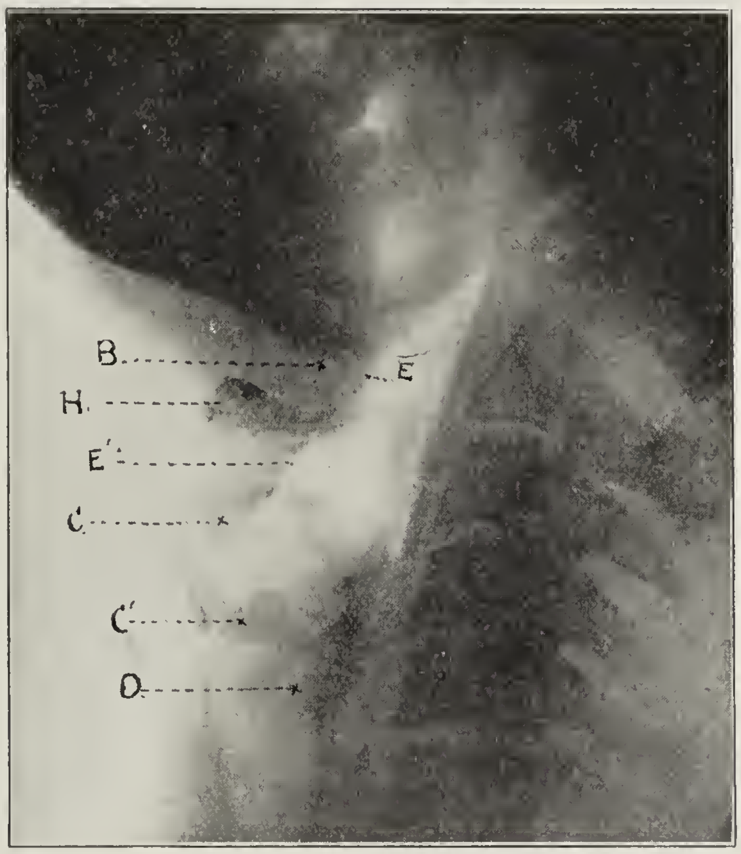

Fig. 1.—Normal larynx of a man, aged 45; *H*, body of hyoid bone. *B*, base of tongue; *E*, *E'*, epiglottis. *C*, *C'*, markedly ossified thyroid cartilage; note the ascending and descending horns of same. *D*, cricoid cartilage. The lumen of the trachea, larynx and pharynx are well delineated.

### PHYSIOLOGY

In the domain of physiology the Roentgen rays have demonstrated some interesting facts concerning certain functions of the larynx. Thus the long-debated question as to whether the cricothyroid muscles act as depressors of the thyroid cartilages or as elevators of the cricoid has been definitely settled in favor of the latter by the studies of Moeller and Fischer.[2] The various positions assumed by the lips, tongue, soft palate and larynx during phonation have been accurately determined by the beautiful roentgenograms of Scheier.[3] More remarkable than these are his[4] Roentgen studies of deglutition, in which he was able to portray the position of the bismuth mass in the fractional part of a second required for it to pass the larynx. According to Thost,[1] roentgenography will demonstrate the well-developed muscular apparatus in the larynges of professional singers.

### OSSIFICATION OF THE LARYNX

The Roentgen rays are particularly valuable for the study of the normal process of ossification of the laryngeal cartilages, and in order to appreciate some of the pathologic conditions of the larynx it is important that we should be familiar with the usual course of ossification. According to Scheier[5] and Fraenkel,[6] ossification usually begins during the eighteenth or nineteenth year of life, and in both sexes is first noted in the lower part of the posterior border of the thyroid cartilages. From this region it gradually ascends along the posterior border. Ossification then gradually extends forward along the inferior border of the thyroid, giving rise to an L-shaped mass of bone.

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Thost, A.: Archiv und Atlas der normalen und kranke Kehlkopf des Lebenden im Roentgenbild, Fortschr. a. d. Geb. d. Röntgenstrahlen, 1913.

[2] Moeller and Fischer: Arch. f. Laryngol. u. Rhinol., 1903, xv.

[3] Scheier, M.: Arch. f. Laryngol. u. Rhinol., 1909, xxii, No. 2.

[4] Scheier, M.: Zur Physiologie des Schluckakts, Schafer-Passow Beitr., 1911, iv, Nos. 1 and 2.

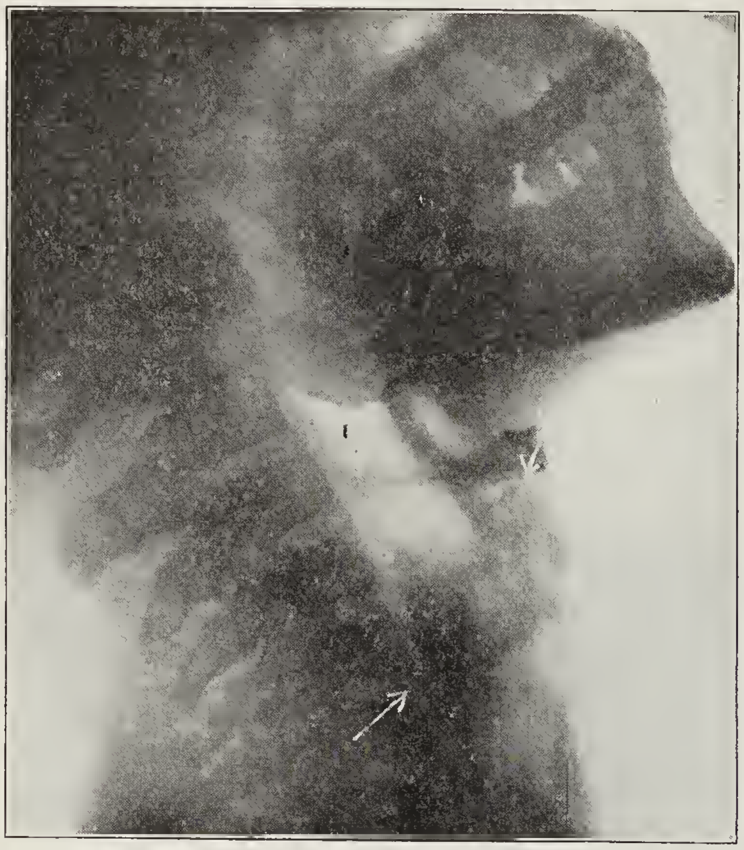

Fig. 2.—Marked ossification of thyroid cartilage in a man aged 50. Note sharp outline of the epiglottis. Upper arrow rests on the body of the hyoid bone.

In the male, a new center arises at the inferior thyroid notch and another along the superior thyroid border, and by the gradual coalescence of all these centers the cartilage eventually may be completely surrounded by a bony frame (after the fortieth year). See Figs. 1 and 2.

In the female the same process may occasionally occur, but more characteristic for this sex is the freedom from ossification in the anterior portions of the thyroid wings.

An oblique bony line dividing the thyroid into two islands is common in the male, but practically always absent in the female.

In the cricoid the process begins in the seal portion and gradually extends forward into the ring portion of the cartilage.

The arytenoids are next in order and the tracheal rings are among the last to show signs of ossification. Roentgenoscopy has proved that ossification may also occur in the epiglottis.

### TECHNIC

Roentgenography of the larynx in the living is easily carried out. The patient sits on a chair or lies on a couch with the plate (8 by 10) in contact with the side of the neck and parallel to the median plane of the body. The patient is instructed to hold his breath and not to swallow during the exposure, which requires about six seconds. A profile picture of the larynx is thus obtained with one side of the larynx superimposed on the other, but the side in contact with the plate comes out very distinctly.

All the roentgenograms which form the basis of this paper were taken for me by Dr. Sidney Lange, to whom I am greatly indebted, and who in another paper will more fully describe the technic.

### THE NORMAL LARYNX IN THE ROENTGENOGRAM

The roentgenogram reveals the following structures (Fig. 1):

The horse-shoe shaped hyoid (*H*) bone and its two processes stand out sharply, as does the base of the tongue (*B*). The epiglottis (*E*) can be seen projecting between the wings of the hyoid bone. The thyroid cartilage (*C, C′*) more or less ossified, is very prominent, while the cricoid (*D*) is covered to some extent by the descending horns of the thyroid. The ventricle of Morgagni is frequently outlined as an oval clearer space in the anterior portion of the thyroid. The arytenoids and aryepiglottic folds and the cricothyroid space can be distinguished. The lumen of the larynx appears distinctly as a lighter area continuous below with the well-defined lumen of the trachea in which the rings, when ossified, stand out distinctly. Before ossification occurs the cartilages are not well delineated, but the air-passages themselves stand out sharply and distinctly in the roentgenogram. (See Fig. 5).

### TUBERCULOSIS OF THE LARYNX

Quite characteristic for the roentgenogram of this disease is a peculiar hazy indistinct outline of the laryngeal cartilages, giving the impression of an overexposed picture. This type of picture recurs so frequently with the tuberculous larynx that it has great value from a diagnostic point of view. It indicates very clearly that the tuberculous process is not confined to the lining mucosa of the larynx, but that

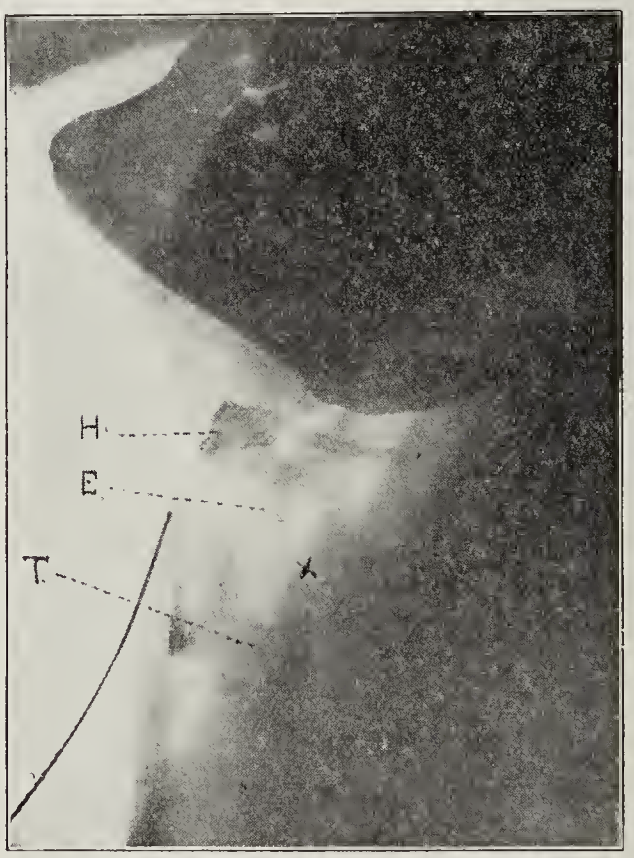

Fig. 3.—Tuberculosis of larynx in a man aged 33, with advanced pulmonary tuberculosis. Subcutaneous tuberculous (?) fistula, containing probe in front of thyroid cartilage. Infiltration of aryepiglottis folds demonstrated at *X*. Hazy appearance of *T*, thyroid cartilage, that is, resorption of lime-salts characteristic for laryngeal tuberculosis. Note dense center of ossification in anterior unaffected portion. *H*, hyoid bone, and *E*, epiglottis well delineated. Note lumen of larynx and trachea.

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[5] Scheier, M.: Ueber die Ossifikation des Kehlkopfes, Arch. f. mikr. Anat. u. Entwicklungsgeschichte, 1901, lix; Schäfer-Passow Beitr., 1910, iii, No. 4.

[6] Fraenkel, E.: Fortschr. a. d. Geb. d. Roentgenstrahlen, 1908, xii, 152.

changes occur in the underlying cartilage associated with the resorption of bone. This is distinctly analogous to rarefying changes so frequently noted in roentgenograms of the long bones when the joints are the seat of tuberculous disease. In addition to the changes in the cartilage the infiltration of the soft parts, such as the aryfolds, stand out distinctly. Defects or infiltration of the epiglottis give characteristic pictures.

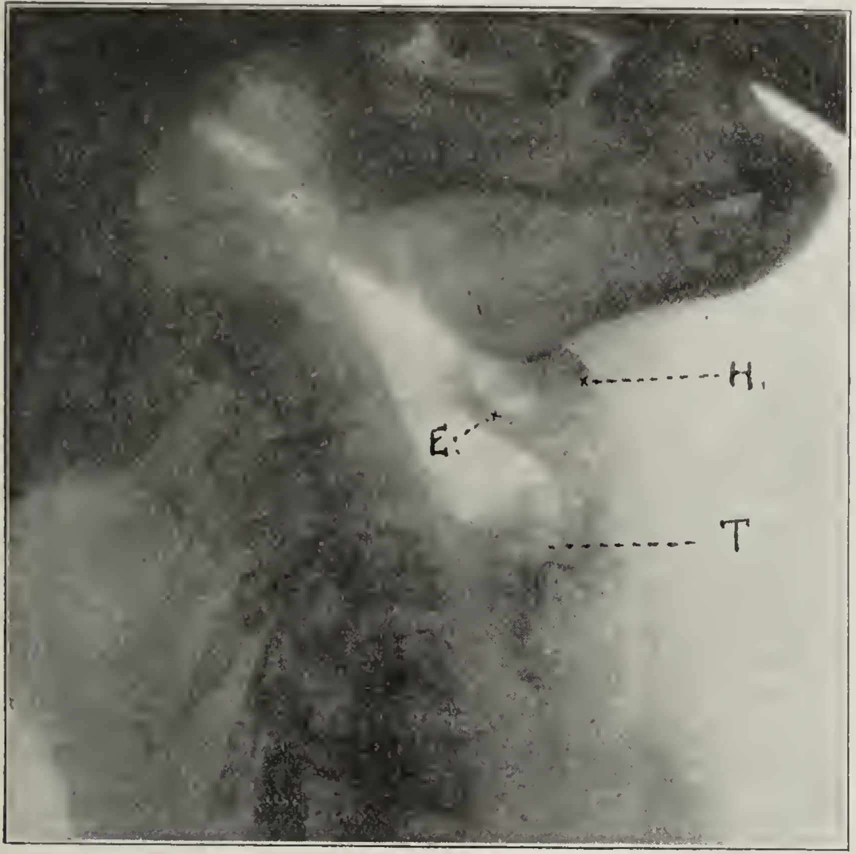

Fig. 4.—Case of carcinoma of hypopharynx in a woman aged 40. The peculiar punched-out appearance of the thyroid cartilage, *T*, is regarded by Thost as characteristic (?) for carcinomatous invasion of the thyroid cartilage from the pharynx (see text). *H*, the hyoid bone, *E*, epiglottis and the laryngotracheal lumen clearly delineated.

Roentgenography offers another demonstration of the fact that tuberculous lesions are almost always more extensive than the image in the laryngeal mirror would indicate. (Fig. 3).

### SYPHILIS

In contrast to tuberculosis, tertiary syphilis of the larynx is usually associated with a tendency to proliferation rather than to resorption of bone. The roentgenograms in syphilis, therefore, give sharp distinct pictures of the ossified portions of the larynx (Thost). Infiltration or defects in the soft parts may also be made out. In the roentgenogram of a healed case coming under my observation a peculiar cavity, probably due to a former necrosis, is seen above the thyroid cartilage. In another healed case of laryngeal and pharyngeal syphilis associated with the formation of dense cicatrices in the pharynx, the distortion of the lumen of the larynx by cicatricial traction is very well demonstrated.

In doubtful cases, roentgenography should be of considerable value in demonstrating syphilitic perichondritis and in differentiating syphilis from tuberculosis.

### CARCINOMA

Carcinoma of the larynx usually occurs in the ossified larynx of the aged, and this tends to obscure intralaryngeal tumors. Nevertheless, a massive tumor can often be made out, and if the lumen be encroached on, the narrowed air-passage can be seen. Tumors of the epiglottis or aryfolds are more readily delineated. In carcinoma of the hypopharynx, with secondary involvement of the larynx, Thost describes roentgenograms with a sieve-like appearance of the thyroid cartilage which he attributes to carcinomatous invasion of the ossified cartilage. Since the same picture may occur in normal larynges, however, and since I have not found it in any of the four intralaryngeal cancers which have been roentgenographed, and but once in three cases of carcinoma of the pharynx, it seems to me that he has overestimated the importance of these findings. (Fig. 4).

### STENOSES OF THE LARYNX

In obstruction of the larynx or trachea by foreign bodies, or by tumors or cicatrices within the air-tract, or by compression from without, very interesting roentgenograms can often be obtained. The tumor is often visible and the narrowed lumen appears distinctly.

In one of my cases of papilloma, which required tracheotomy, the roentgenogram shows the entire lumen obliterated above the tracheotomy tube. In a second case of stenosis due to cicatrization following intubation and tracheotomy for diphtheria, the roentgenogram, taken for control, showed a complete restoration of the lumen after treatment.

Roentgenography demonstrates very beautifully the deposits of lime-salts which so frequently occur when the laryngeal or tracheal cartilages have been incised. Thus in a patient who has worn a tracheal cannula for seven years the fistula from the skin to the trachea is completely encased in calcified tissue (Fig. 6).

Considering the difficulties often encountered in examining cases of stenosis by the direct method, a preliminary roentgenogram should often prove to be a great aid to the laryngologist. This is especially true of foreign-body cases, or in cases of aneurysm, goiter or enlarged thymus. (Fig. 5).

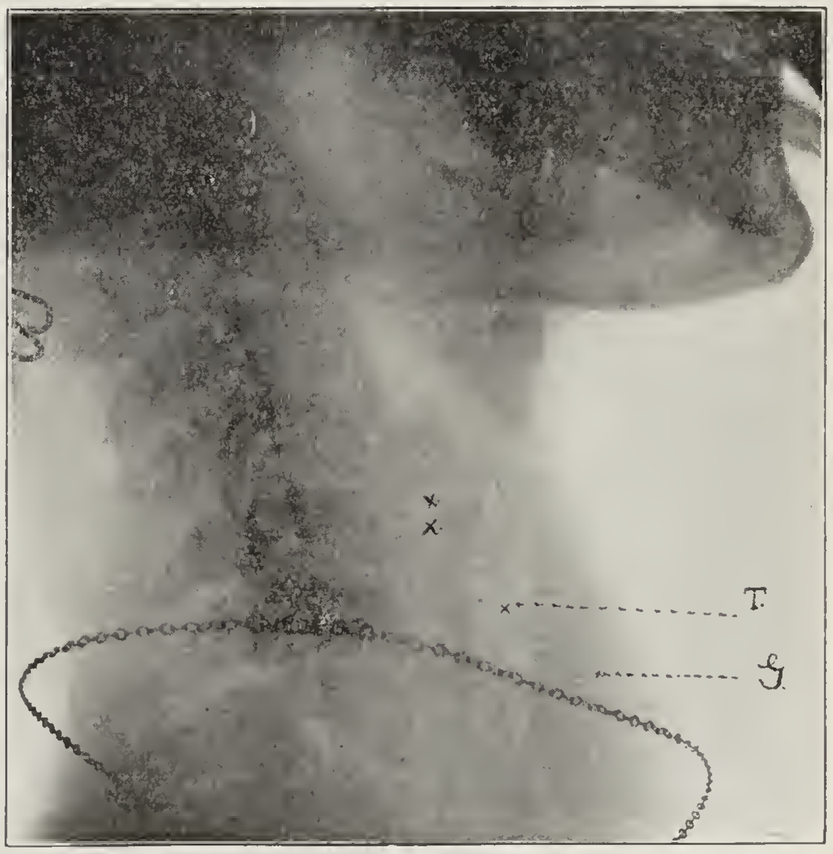

Fig. 5.—*G*, moderate-sized goiter, showing its relation to the trachea, *T*, in a girl aged 19. At *X*, *X*, slight ossification in posterior portion of thyroid cartilage. Air-passages delineated by clear zone.

### RARE DISEASES AND FRACTURES OF THE LARYNX

In addition to the diseases described above, Thost has made interesting Roentgen studies of the gouty larynx and of pemphigus of the larynx. In certain so-called nervous lesions of the throat, he has demonstrated on the bodies of some of the cervical vertebrae new-formed spines and ridges to which he attributes the "nervous" symptoms.

In a limited number of cases, I have fractured the larynges in cadavers and have then had roentgenograms taken. In each instance fracture-lines can be demonstrated (Fig. 7). I hope to be able to report more fully on this particular subject at some future time.

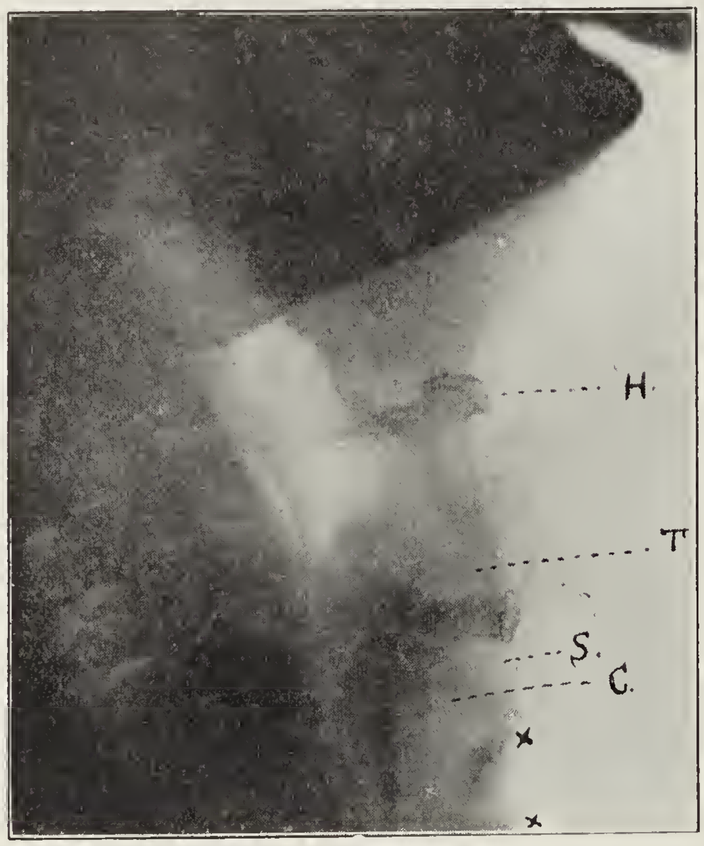

Fig. 6.—Calcified tissue at *X, X,* encasing a tracheotomy fistula in a patient who has worn a tracheotomy tube for seven years. *C,* the cricoid cartilage. *S,* cricothyroid space. *T,* the ossified thyroid with its inferior and superior horns. *H,* the hyoid bone, and the epiglottis, are well delineated.

### CONCLUSIONS

Satisfactory diagnoses of diseases of the larynx and trachea can usually be made by the ordinary method of examination, but our observations for the most part are limited to a study of the changes in the lining mucous membrane and give no certain information concerning the changes in its underlying and adjacent structures.

The Roentgen examination gives additional information concerning the pathologic changes in the underlying cartilages, which are more or less involved whenever the laryngeal mucous membrane is the seat of a chronic disease process, such as tuberculosis or syphilis.

In stenosis or distortion of the lumen of the larynx or the trachea, roentgenography usually reveals the seat, the nature and the extent of the lesion. The knowledge thus gained before operative procedures are undertaken on the larynx is of great value. Roentgenography also enables us to study the effects of operation and the position of tubes, etc.

Owing to the ease with which it is carried out, the Roentgen method is of a special value in the examination of children or nervous patients.

In concluding I wish to express my appreciation of the kindness of Drs. A. B. Thrasher, S. E. Allen and William Mithoefer in placing some of their patients at my disposal for Roentgen study.

22 West Seventh Street.

### ABSTRACT OF DISCUSSION

**Dr. G. E. Pfahler**, Philadelphia: The more or less new work done by Dr. Iglauer in the diagnosis of disease in the larynx opens up a new field in which I am sure we will make progress. We have all seen these things, but most of us have failed to interpret them properly, but with this aid we will certainly make rapid advances in this respect. I have not made much attempt to diagnose diseases of the larynx. In my studies of the larynx and neck I have seen some of these changes but did not interpret them properly. Dr. Skillern and I presented a paper on sphenoidal disease three years ago and the more I use the method and the more I study these sinuses, the more I am convinced of the value of this work. The two sphenoid outlines can be compared directly and if looked at as a whole one stands out more clearly than the other and the definite outline of the sphenoid can be noted in nearly every one of the plates. We should be just as careful in interpreting the sphenoid sinuses as the others.

**Dr. P. M. Hickey**, Detroit: The work that has been shown this morning in the differentiation of soft tissue details would be accentuated by the recent improvements which are coming out in the ability of the roentgenologist to control the performance of his tubes. We have been missing the soft tissue details because we have not been able to control accurately the performance of the tube. We have used the three gradations, hard, medium and soft, with no exact means of differentiation. The late improvements which some of the roentgenologists have placed at our disposal, in getting exact regulation of the tubes for soft tissue details, will enable us to make greater progress along this line. One thing about the trachea is the importance of the outline in the anteroposterior position, with the plate against the chest, of substernal thyroid, where perhaps there is no visible tumor on the outside, and yet where compression of the trachea can be beautifully demonstrated on the plate.

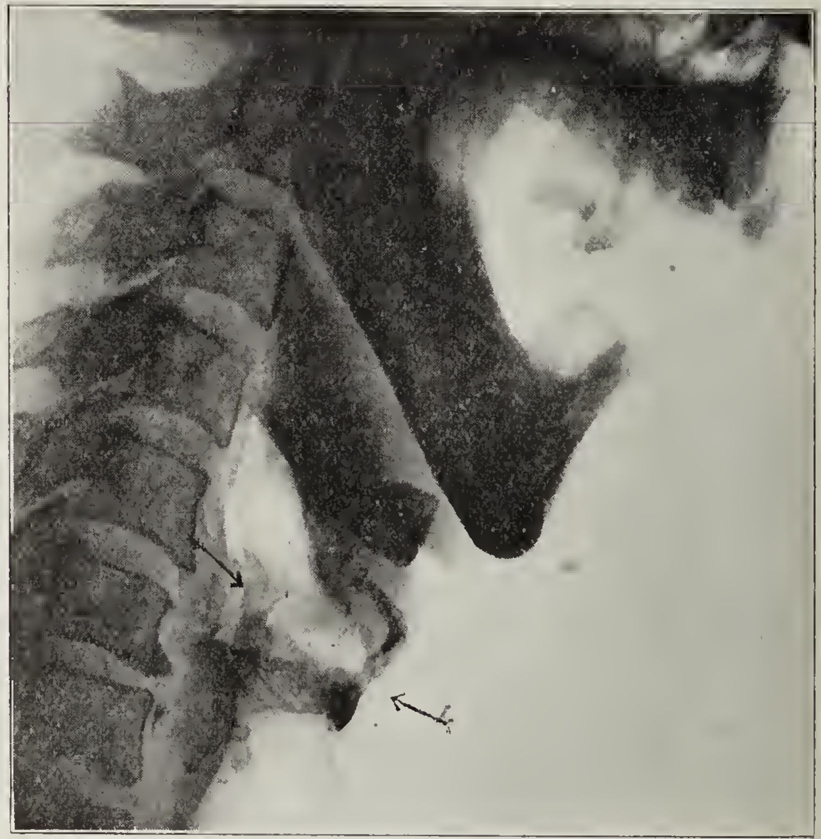

Fig. 7.—Fractured larynx in cadaver of a man aged 69.

**Dr. E. W. Caldwell**, New York: Will Dr. Iglauer explain again the difference between the calcification of the larynx alleged to be characteristic of syphilis, and that which is alleged to be characteristic of carcinoma? Also does he think that calcification or ossification in the larynx is essentially different from the same process in other cartilages, such as the costal cartilages? Has he observed that the degree of calcification of the larynx bears any relation to the amount of calcification of other cartilages in the same individual?

Dr. Mark D. Stevenson, Akron, Ohio: I recently had a case of marked stenosis of the larynx which necessitated immediate tracheotomy. The roentgenograms showed conclusively that it was a case of acromegaly. The pictures demonstrated ossification of the larynx and the condition of the pituitary body.

Dr. G. C. Johnston, Pittsburgh: I had the pleasure of examining the patient just referred to by Dr. Stevenson, a case of acromegaly, and the examination of the larynx was interesting. I had not previously associated these cases of acromegaly with involvement of the larynx at all. The patient had the typical gingerbread-man hands and characteristic features. Not long ago in investigating some pituitaries, we found one that was ideal for the Cushing operation, having all the indications. The surgeon went in to perform submucous resection and just when he was completing that and was about to enter the sphenoid there was a gush of pus which was a contra-indication for going further. The lesson is not to look too much in one place. We failed to see the evidence of necrosis in the hard palate. We must be looking for trouble all the time or we will find it without looking for it.

Dr. A. I. Weil, New Orleans: I have had little experience with roentgenograms of the larynx except one case in which its use was shown, that of a man who had had ossification of the arytenoids which had sloughed out, so that he coughed up one complete arytenoid, and later the other. He brought the specimens to me and when we looked into the larynx there was sinking of the arytenoid region, but we could not have told to what it was owing if we had not seen these specimens. With the roentgenogram, although the picture was hazy, it was easy to see the absence of the arytenoids. Without that it would have been impossible to state the condition that had preceded his presenting himself for treatment. I have used the Roentgen ray in bone lesions in retropharyngeal abscess on several occasions, and find it a very valuable aid to examination with the probe. It outlines very clearly the cavity and aids in the treatment.

Dr. Harris P. Mosher, Boston: This paper teaches that we should take more radiograms of the larynx and endeavor to learn to interpret them properly. I had a rather embarrassing and somewhat humorous case of a retired manufacturer who had taken up farming. He was building a chicken coop and had a lot of staples in his mouth, and thought that he had swallowed one. Sometime later he had some disturbance and went to a general physician who took a roentgenogram and told him the staple was there, and brought the patient down for me to see. On looking at the roentgenogram I was a bit suspicious; I examined the man by the direct method, and was still more suspicious. I sent him for another picture and found that what had shown in the first picture was nothing more nor less than the hyoid bone.

Dr. George F. Cott, Buffalo: All laryngologists acknowledge the value of roentgenograms but the average cases that the practitioner sees are not the ones shown. When there is considerable thickening in the larynx it shows, but when there is a rarefying condition the Roentgen ray shows nothing, and they are the cases that the average practitioner sees.

Dr. L. E. LeWald, New York: I had two cases of retropharyngeal abscess that we were able to differentiate successfully in children. A physician who saw one of the cases was of the opinion that it was tuberculosis of the cervical vertebrae, with probably abscess of that origin, which would preclude opening the abscess in the pharynx. Roentgenoscopy disclosed not only absence of any bone lesion in the vertebrae but also, very distinctly, the outlines of an abscess in the pharynx, and it was opened successfully. Another patient in whom there was swelling in the pharynx, associated with tuberculosis of the cervical lymph-nodes, showed an outline in the pharynx sufficiently well to warrant incision. One other case of interest was that of a supposed tumor, as carcinoma of the upper end of the esophagus, in which the Roentgen ray enabled us to exclude a tumor and make a diagnosis, when taken together with other symptoms, of glossolabiolaryngeal paralysis.

Dr. Samuel Iglauer, Cincinnati: Dr. Hickey referred to pictures of the trachea. I did not go into that subject much because it has been worked out pretty well by the roentgenologist. I have a picture, however, which shows a kink in the trachea due to pleuritic adhesions pulling it out of line. In compression of the trachea by a thyroid tumor, it is, of course, necessary to have anteroposterior pictures. Dr. Caldwell asks about calcification and ossification in the larynx. It is difficult to reduce the matter to rules, but I think according to the work of Fraenkel and Scheier, that it begins at about the age of 19. Sometimes you find it at 14 or 15 years, but you may find a woman as old as 100 without any distinct ossification in the anterior portions of the thyroid cartilage. Calcification usually precedes ossification. I mentioned the relation of the vertebrae to laryngeal conditions. With an abscess in the retropharynx, it is very important to study the condition of the vertebrae. I have had no experience with acromegaly and am interested in the report made by Dr. Stevenson and Dr. Johnston. With regard to Dr. Weil's case, some studies have been made on the question of dislocation of the arytenoid cartilages, and it has been possible to diagnose the condition by the Roentgen ray. As to Dr. Mosher's case, it is easy to understand how that mistake could be made, as the hyoid bone would have the appearance and shape of a staple. Just the reverse of his experience occurred to me. A patient was brought to me with the statement that roentgenogram had shown no foreign body, but I had another taken which revealed a safety pin which had been in the larynx for six months.

# THE FEEDING VALUE OF SANATOGEN COMPARED WITH COMMERCIAL CASEIN WITH RESPECT TO MAINTENANCE AND GROWTH

JOHN PHILLIPS STREET, M.S.
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The proprietary preparation "Sanatogen" is claimed to consist of about 95 per cent. casein and 5 per cent. sodium glycerophosphate. The analysis of C. B. Morison[1] is as follows:

| | |
|---|---|
| Water | 9.97 |
| Total nitrogen | 12.81 |
| Nitrogen, ppt. by acetic acid | 12.54 |
| Casein | 80.01 |
| Ether extract | 0.11 |
| Ash | 5.59 |
| Sulphur, total | 0.73 |
| Sulphur in casein | 0.64 |
| Phosphorus, total | 1.49 |
| Phosphorus in casein | 0.69 |
| Phosphorus in inorganic form | 0.11 |

In connection with the above analysis it was demonstrated that sodium glycerophosphate was present. Sanatogen, therefore, consists essentially, on the water-free basis, of about 90 per cent. casein and 5 per cent. sodium glycerophosphate, with a small amount of an unidentified nitrogenous compound containing both sulphur and phosphorus, and a small amount of phosphorus in inorganic combination. The manufacturers claim that the two essential ingredients exist in Sanatogen as a definite chemical compound. Certain authorities, on the other hand, have insisted that the casein and glycerophosphate have not been chemically combined and that Sanatogen is simply a mechanical mixture of the two. Which claim is correct we will not consider here, for indeed it is of little importance, for whether or not chemically combined the action of the digestive fluids of the body would speedily break down the alleged compound into its constituents, and the body would have casein and the glycerophosphate offered for its use, just the same as though they had been offered as a mere mechanical mixture.

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[1] Morison, C. B.: Rept. Conn. Agric. Exper. Station, 1912, p. 197.

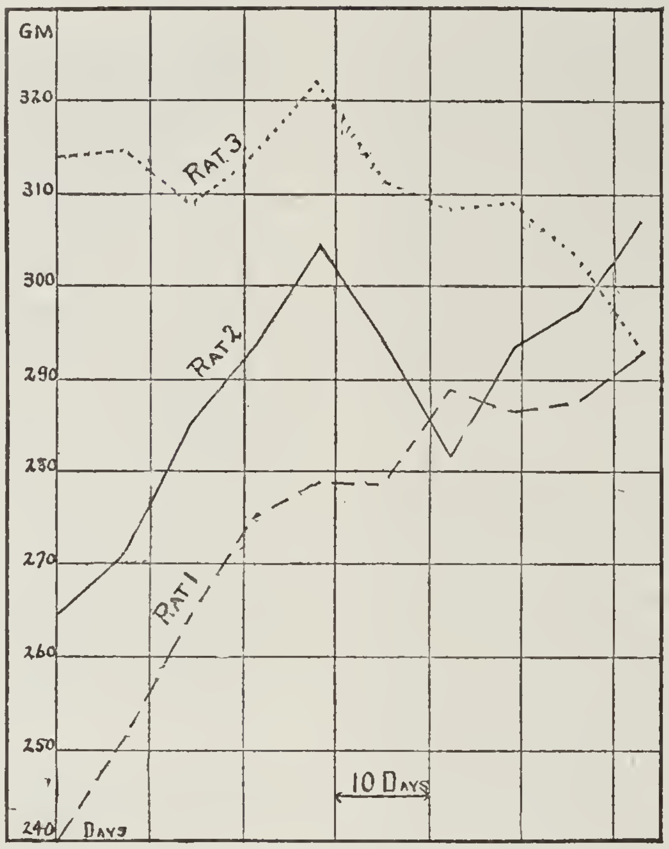

Chart 1.—Growth curves of Rats 1, 2 and 3, on Ration 1: Casein.

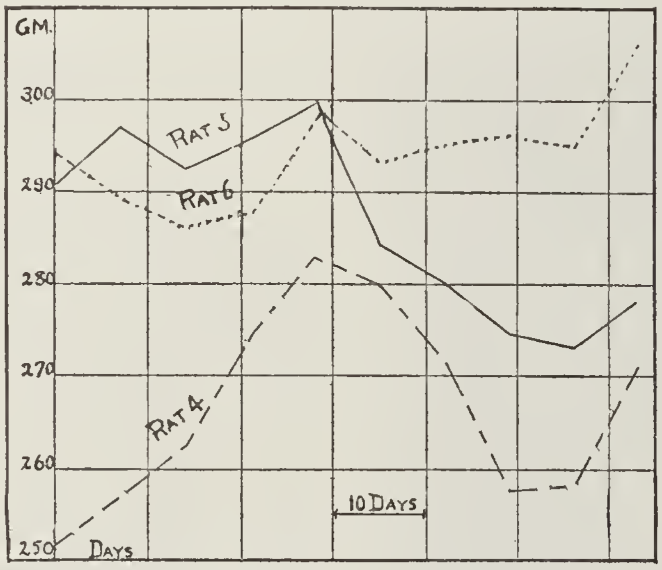

Chart 2.—Growth curves of Rats 4, 5 and 6, on Ration 2: Sanatogen.

It being apparent that Sanatogen consists almost entirely of casein and sodium glycerophosphate, the former well-known ingredient making up nine-tenths of its weight, the question naturally arises how a mixture of these two common substances can acquire, simply by that admixture, unusually valuable properties not possessed by the two components. Leading physiologists quite generally agree that phosphorus in the form of glycerophosphates influences metabolism very little. Furthermore, it is obvious that the food value of the small amount of glycerin present must be slight. It is apparent, therefore, that whatever nutriment or energy Sanatogen supplies must be dependent on its main constituent, casein.

Sanatogen is commonly sold at retail in 100 gm. or 200 gm. packages for $1 and $1.90, respectively. It is possible that in larger quantities these prices might be shaded somewhat, but the fact remains that the ordinary retail purchaser of Sanatogen pays for it about 1 cent per gram, or about $4.50 per pound. If the value of Sanatogen depends on its casein, one might ask, in all fairness, why should the patient pay $4.50 per pound for Sanatogen when he can secure ordinary commercial casein for 8.5 to 10 cents per pound? (The Casein Mfg. Co. of New York quoted to me their No. 60 casein at 10 cents per pound in 5-pound lots, 8.5 cents per pound f. o. b. Bainbridge, N. Y., in 100-pound lots, and 8.5 cents per pound, freight paid, in 500-pound lots.) I have purchased Sanatogen from a wholesale druggist at the rate of $2.75 for 400 gm., or $3.12 per pound, so that under the most favorable conditions the cost of Sanatogen is more than thirty times as great as the commercial casein in question.

Is the consumer justified in paying this exceedingly high price for purified casein? The following feeding experiments were carried out to answer this query.

### FEEDING EXPERIMENTS

White rats were chosen for the experimental animals because of their adaptability for tests of this kind, as shown by the extended successful experience of Osborne and Mendel, and also because, by using white rats, I could take advantage of the equipment and the experience of my colleagues, Dr. T. B. Osborne, Prof. L. B. Mendel and Miss Edna L. Ferry.

The value of Sanatogen as compared with commercial casein was studied from two points of view:

1. Its value in maintaining the weight of mature rats.
2. Its value in promoting the growth of young rats.

### I. THE MAINTENANCE OF WEIGHT OF MATURE RATS

The Sanatogen used contained 12.88 per cent. of nitrogen, and the casein, 12.82 per cent., so that from the point of view of nitrogen content they were practically equivalent, gram for gram.

Six healthy male animals were

TABLE 1.—WEIGHTS OF CASEIN RATS, ON RATION NO. 1, OVER A PERIOD OF NINE WEEKS*

| Date | Rat 1 | | | Rat 2 | | | Rat 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Weight, gm. | Gain or Loss, gm. | Food Eaten, gm. | Weight, gm. | Gain or Loss, gm. | Food Eaten, gm. | Weight, gm. | Gain or Loss, gm. | Food Eaten, gm. |
| 1/2 | 240.0 | ...... | ..... | 264.6 | ...... | ..... | 314.1 | ...... | ..... |
| 1/9 | 250.8 | +10.8 | 73.7 | 270.9 | + 6.3 | 85.2 | 314.6 | + 0.5 | 95.7 |
| 1/16 | 264.3 | +13.5 | 89.3 | 284.9 | +14.0 | 99.2 | 308.7 | — 5.9 | 117.9 |
| 1/23 | 274.9 | +10.6 | 90.7 | 293.5 | + 8.6 | 107.7 | 313.8 | + 5.1 | 116.5 |
| 1/30 | 278.6 | + 3.7 | 80.2 | 304.5 | +11.0 | 100.5 | 322.2 | + 8.4 | 116.7 |
| 2/6 | 278.3 | — 0.3 | 82.4 | 294.2 | —10.3 | 97.0 | 311.2 | —11.0 | 119.9 |
| 2/13 | 288.7 | +10.4 | 85.5 | 281.5 | —12.7 | 94.2 | 308.2 | — 3.0 | 125.6 |
| 2/20 | 286.4 | — 2.3 | 86.1 | 293.3 | +11.8 | 86.8 | 309.0 | + 0.8 | 126.8 |
| 2/27 | 287.6 | + 1.2 | 81.1 | 297.6 | + 4.3 | 100.7 | 303.4 | — 5.6 | 129.3 |
| 3/6 | 292.6 | + 5.0 | 80.1 | 307.4 | + 9.8 | 103.1 | 292.4 | —11.0 | 101.0 |
| Total | ..... | +52.6 | 759.1 | ..... | +42.8 | 874.4 | ..... | —21.7 | 1,049.4 |
| Average per week | ..... | + 5.8 | 84.3 | ..... | + 4.8 | 97.2 | ..... | — 2.4 | 116.6 |

* The growth curves of Rats 1, 2 and 3 are given in Chart 1.

selected, Rats 1, 2 and 3 being fed the casein ration and Rats 4, 5 and 6 the Sanatogen ration. At the beginning of the experiment the casein rats were 257, 360 and 376 days old; the Sanatogen rats, 249, 321 and 275 days old, respectively. These weight conditions, if anything, slightly favored the Sanatogen rats, as they were slightly less mature, and a greater growth might naturally be expected.

The rations fed had the following percentage composition:

| Ration 1 | | Ration 2 | |
|---|---|---|---|
| Casein | 20 | Sanatogen | 20 |
| Protein-free milk* | 28 | Protein-free milk* | 28 |
| Lard | 8 | Lard | 14 |
| Unsalted butter | 18 | Unsalted butter | 18 |
| Corn starch | 26 | Corn starch | 20 |

* Osborne and Mendel: Feeding Experiments with Isolated Food Substances, Carnegie Inst. of Washington, Publ. 156, 1911, Part 2, p. 80.

The rats were weighed twice a week for nine weeks, a record of the food consumed also being kept. Table 1 shows the weekly weights of the casein rats, the weekly gain or loss, and the weekly consumption of food. Table 2 gives similar data for the Sanatogen rats.

TABLE 2.—WEIGHTS OF SANATOGEN RATS, RATION NO. 2, OVER A PERIOD OF NINE WEEKS*

| Date | Rat 4 | | | Rat 5 | | | Rat 6 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Weight, gm. | Gain or Loss, gm. | Food Eaten, gm. | Weight, gm. | Gain or Loss, gm. | Food Eaten, | Weight, gm. | Gain or Loss, gm. | Food Eaten, gm. |
| 1/2 | 251.8 | ..... | ..... | 290.6 | ...... | .... | 294.0 | ...... | ..... |
| 1/9 | 257.1 | + 5.3 | 73.4 | 297.2 | + 6.6 | 86.3 | 289.1 | — 4.9 | 58.4 |
| 1/16 | 262.4 | + 5.3 | 89.8 | 292.4 | — 4.8 | 88.9 | 286.1 | — 3.0 | 76.8 |
| 1/23 | 274.4 | +12.0 | 97.3 | 295.7 | + 3.3 | 92.8 | 287.6 | + 1.5 | 85.8 |
| 1/30 | 282.7 | + 8.3 | 95.5 | 299.5 | + 3.8 | 92.3 | 298.6 | +11.0 | 90.9 |
| 2/6 | 279.8 | — 2.9 | 97.7 | 284.2 | —15.3 | 87.7 | 292.9 | — 5.7 | 89.8 |
| 2/13 | 271.2 | — 8.6 | 96.1 | 280.0 | — 4.2 | 94.9 | 295.1 | + 2.2 | 99.7 |
| 2/20 | 257.5 | —13.7 | 91.6 | 274.9 | — 5.1 | 96.4 | 296.0 | + 0.9 | 93.9 |
| 2/27 | 258.0 | + 0.5 | 93.5 | 273.0 | — 1.9 | 103.3 | 295.0 | — 1.0 | 95.1 |
| 3/6 | 270.9 | +12.9 | 94.8 | 278.1 | + 5.1 | 94.9 | 306.3 | +11.3 | 89.4 |
| Total | ...... | +19.1 | 829.7 | ..... | —12.5 | 837.5 | ..... | +12.3 | 779.8 |
| Average per week | ..... | +2.7 | 92.2 | ..... | — 1.4 | 93.1 | ..... | + 1.4 | 86.6 |

* The growth curves of Rats 4, 5 and 6 are given in Chart 2.

Certainly the above data show no superiority of Sanatogen over commercial casein. In fact the results might be taken to suggest a slight advantage for the cheaper article, if one were warranted in drawing fine distinctions from a limited number of animals.

To conclude, *a comparative feeding of six male white rats during nine weeks showed no nutritive superiority of Sanatogen, costing $3.12 per pound, over commercial casein costing 10 cents per pound.*

## II. THE PROMOTION OF GROWTH IN YOUNG RATS

In the second series of experiments ten male rats were used with four different rations. In these, casein and Sanatogen were compared, using both Osborne and Mendel's "protein-free milk" and their "artificial protein-free milk IV."[2] Butter fat was also substituted for the unsalted butter used in Rations 1 and 2.

The percentage composition of the rations fed was as follows:

| Ration 3 | | Ration 5 | |
|---|---|---|---|
| Casein | 20 | Casein | 20 |
| Protein-free milk | 28 | Artificial p.-f. milk IV | 29 |
| Lard | 8 | Lard | 8 |
| Butter-fat | 18 | Butter-fat | 18 |
| Corn starch | 26 | Corn starch | 25 |
| **Ration 4** | | **Ration 6** | |
| Sanatogen | 20 | Sanatogen | 20 |
| Protein-free milk | 28 | Artificial p.-f. milk IV | 29 |
| Lard | 14 | Lard | 14 |
| Butter-fat | 18 | Butter-fat | 18 |
| Corn starch | 20 | Corn starch | 19 |

Two male rats were used with each of Rations 3 and 4, and three with each of Rations 5 and 6. They were all healthy young rats ranging from 57 to 71 days old. As in the first series of experiments the rats were weighed twice a week and a record kept of the food consumed. Rations 3 and 4 were fed for 77 days, Rations 5 and 6 for 35 days.

Table 3 shows the weekly weights and gains or losses of the rats fed Rations 3 and 4.

Rat 8 suffered more or less from diarrhea during a considerable part of the experiment, covering a period from March 16 to April 9, and from April 13 to May 11. The food intake correspondingly decreased during those periods.

The difference in the gains in weight shown by the four rats are not great and certainly do not warrant the conclusion that Sanatogen possesses any marked superiority over the commercial casein in promoting growth. The slightly increased gains shown by Rats

TABLE 3.—COMPARATIVE WEIGHTS OF RATS FED RATIONS 3 AND 4

| Date | Weights of Rats, Ration 3, Casein, Protein-Free Milk | | | | Weights of Rats, Ration 4, Sanatogen, Protein-Free Milk | | | |
|---|---|---|---|---|---|---|---|---|
| | Rat 7 | | Rat 8 | | Rat 9 | | Rat 10 | |
| | Weight, gm. | Gain or Loss, gm. | Weight, gm. | Gain or Loss, gm. | Weight, gm. | Gain or Loss, gm. | Weight, gm. | Gain or Loss, gm. |
| 3/9 | 142.2 | ...... | 108.0 | ...... | 127.8 | ...... | 107.0 | ....... |
| 3/16 | 152.8 | +10.6 | 120.3 | +12.3 | 129.1 | + 1.3 | 116.0 | + 9.0 |
| 3/23 | 165.7 | +12.9 | 135.1 | +14.8 | 144.6 | + 15.5 | 134.5 | + 18.5 |
| 3/30 | 178.6 | +12.9 | 140.4 | + 5.3 | 160.0 | + 15.4 | 149.8 | + 15.3 |
| 4/6 | 187.8 | + 9.2 | 148.8 | + 8.4 | 173.1 | + 13.1 | 143.8 | — 6.0 |
| 4/13 | 198.5 | +10.7 | 157.6 | + 8.8 | 185.6 | + 12.5 | 166.1 | + 22.3 |
| 4/20 | 204.6 | + 6.1 | 164.6 | + 7.0 | 194.8 | + 9.2 | 179.4 | + 13.3 |
| 4/27 | 210.3 | + 5.7 | 167.2 | + 2.6 | 204.6 | + 9.8 | 191.0 | + 11.6 |
| 5/4 | 223.0 | +12.7 | 179.6 | +12.4 | 222.9 | + 18.3 | 204.7 | + 13.7 |
| 5/11 | 223.6 | + 0.6 | 191.6 | +12.0 | 236.4 | + 13.5 | 210.8 | + 6.1 |
| 5/18 | 231.5 | + 7.9 | 203.6 | +12.0 | 240.0 | + 3.6 | 218.6 | + 7.8 |
| 5/25 | 237.4 | + 5.9 | 213.9 | +10.3 | 247.3 | + 7.3 | 226.7 | + 8.1 |
| Total | ..... | +95.2 | ..... | +105.9 | ..... | +119.5 | ..... | +119.7 |

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[2] Osborne and Mendel: Jour. Biol. Chem., 1913, xv, 317.

9 and 10 are entirely incommensurate with the cost of the Sanatogen. All of the rats showed a vigorous growth and exceeded the average weight expected for rats of their respective ages, based on the long series of observations of Osborne and Mendel, as shown in Table 4.

TABLE 4.—WEIGHT OF RATS 7 TO 10 COMPARED WITH AVERAGE WEIGHT OF RAT OF SAME AGE

| Rat | Age in Days | Final Weight, gm. | Average Weight for Rat of Same Age, gm. |
|---|---|---|---|
| 7 | 148 | 237 | 204 |
| 8 | 138 | 214 | 201 |
| 9 | 145 | 247 | 204 |
| 10 | 134 | 227 | 197 |

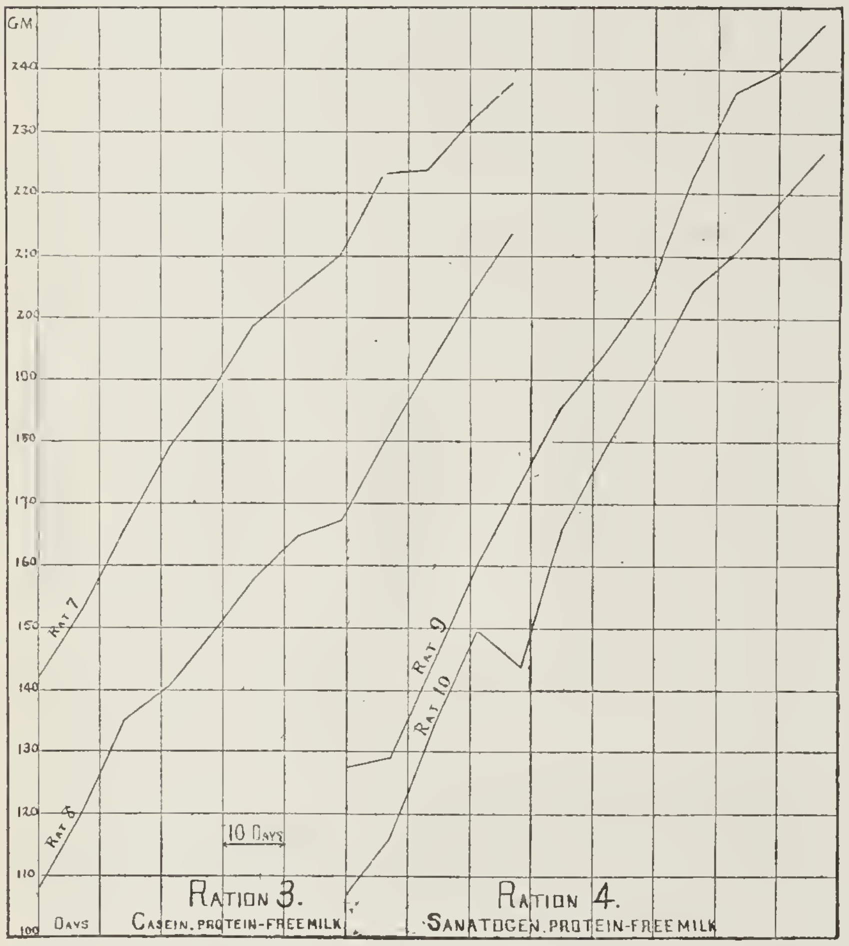

Chart 3.—Growth curves of Rats 7, 8, 9 and 10 on Rations 3, Casein, protein-free milk, and 4, Sanatogen, protein-free milk.

Rat 13 suffered more or less from diarrhea throughout the whole experiment, and Rat 16 suffered similarly during the first two weeks.

The results secured by Rations 5 and 6 compared with Rations 3 and 4, the only difference being that natural protein-free milk was used in the latter and artificial protein-free milk in the former, are most striking. Such results were anticipated from the experience of Osborne and Mendel in feeding similar materials. All of my rats, except Rat 13, a casein rat, showed a decided loss in weight after five weeks' feeding on rations containing artificial protein-free milk. These losses amounted to 19.7, 9.0, 23.1, 6.7 and 27.6 gm., whereas rats fed on the same rations, except for the form of protein-free milk, gained, during the same period of five weeks, 56.3, 49.6, 57.8 and 59.1 gm. The fact that one casein rat fed on the artificial protein-free milk showed a substantial gain is without significance, as such exceptions to the general rule occur occasionally, and, furthermore, this rat also during the last week of the experiment likewise lost weight. The extent of these losses compared with what the average normal male rat weighs at a corresponding age is shown in Table 7.

TABLE 5.—WEIGHTS OF RATS FED RATION 5, CASEIN, ARTIFICIAL PROTEIN-FREE MILK*

| Date | Rat 11 | | Rat 12 | | Rat 13 | |
|---|---|---|---|---|---|---|
| | Weight, gm. | Gain or Loss, gm. | Weight, gm. | Gain or Loss, gm. | Weight, gm. | Gain or Loss, gm. |
| 3/9 | 132.1 | ...... | 110.0 | ...... | 99.0 | ...... |
| 3/16 | 130.4 | — 1.7 | 116.8 | + 6.8 | 110.3 | +11.3 |
| 3/23 | 136.8 | + 6.4 | 130.8 | +14.0 | 108.6 | — 1.7 |
| 3/30 | 137.1 | + 0.3 | 138.0 | + 7.2 | 100.2 | — 8.4 |
| 4/6 | 127.1 | —10.0 | 143.9 | + 5.9 | 95.5 | — 4.7 |
| 4/13 | 112.4 | —14.7 | 143.6 | — 0.3 | 90.0 | — 5.5 |
| Total | ..... | —19.7 | ..... | +33.6 | ..... | — 9.0 |
| 4/20 | 146.7 | +33.7 | 170.7 | +27.1 | 104.0 | +14.0 |

* Date 4/20 covers use of mixed food.

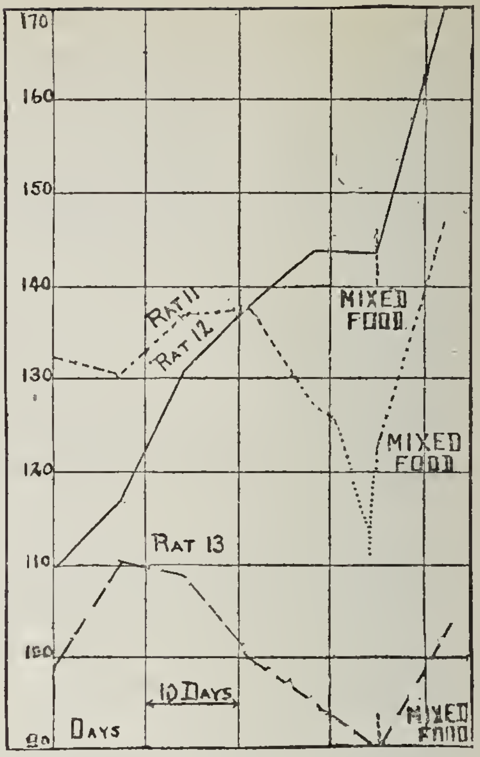

Chart 4.—Growth curves of Rats 11, 12 and 13, on Ration 5: Casein, artificial protein-free milk.

TABLE 6.—WEIGHTS OF RATS FED RATION 6.—SANATOGEN, ARTIFICIAL PROTEIN-FREE MILK*

| Date | Rat 14 | | Rat 15 | | Rat 16 | |
|---|---|---|---|---|---|---|
| | Weight, gm. | Gain or Loss, gm. | Weight, gm. | Gain or Loss, gm. | Weight, gm. | Gain or Loss, gm. |
| 3/9 | 118.4 | ...... | 111.3 | ...... | 101.3 | ...... |
| 3/16 | 126.2 | + 7.8 | 116.2 | + 4.9 | 100.0 | — 1.3 |
| 3/23 | 126.6 | + 0.4 | 123.4 | + 7.2 | 98.0 | — 2.0 |
| 3/30 | 124.7 | — 1.9 | 123.3 | — 0.1 | 98.7 | + 0.7 |
| 4/6 | 110.2 | —14.5 | 112.3 | —11.0 | 88.7 | —10.0 |
| 4/13 | 95.3 | —14.9 | 104.6 | — 7.7 | 73.7 | —15.0 |
| Total | ..... | —23.1 | ..... | — 6.7 | ..... | —27.6 |
| 4/20 | 130.3 | +35.0 | 135.3 | +30.7 | 106.4 | +32.7 |

* Date 4/20 covers use of mixed food.

That these losses in weight were not due to any inherent weakness in the rats is shown by the fact that by feeding Rats 11 to 16 for one week after the termination of the experiment with Osborne and Mendel's

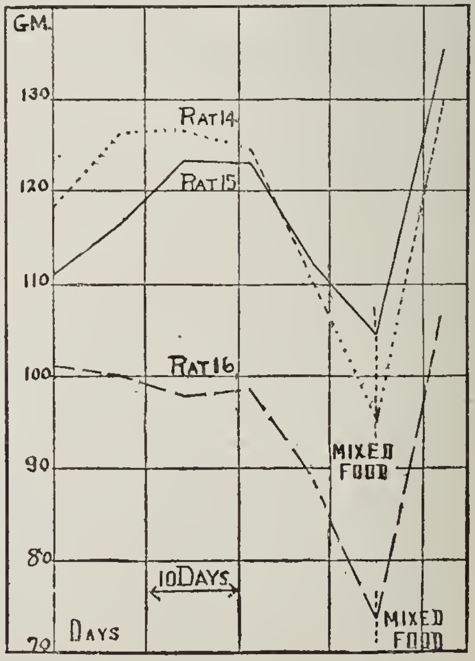

Chart 5.—Growth curves of Rats 14, 15 and 16, on Ration 6: Sanatogen, artificial protein-free milk.

"mixed food" (a mixture of dog bread, sunflower seeds, vegetables and meat) very large gains were secured in every instance, ranging from 14 to 35 gm.

The growth curves for Rats 7 to 16 are shown in Charts 3, 4 and 5.

TABLE 7.—WEIGHT OF RATS 11 TO 16 COMPARED WITH AVERAGE WEIGHT OF RAT OF SAME AGE

| Rat | Age, Days | Final Weight, gm. | Average Weight of Rat of Same Age, gm. |
|---|---|---|---|
| 11 | 106 | 112 | 167 |
| 12 | 106 | 144 | 167 |
| 13 | 99 | 90 | 162 |
| 14 | 106 | 95 | 167 |
| 15 | 92 | 105 | 153 |
| 16 | 96 | 74 | 158 |

To conclude, *a comparative feeding of four male white rats during eleven weeks, showed, if anything, a slightly greater, but insignificant, increase in weight for Sanatogen over commercial casein. In a ration in which artificial had been substituted for natural protein-free milk, Sanatogen showed no advantage over commercial casein in checking the failure in weight of the rats.*

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# BACTERIOLOGY OF CHOLECYSTITIS AND ITS PRODUCTION BY INJECTION OF STREPTOCOCCI *

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The bacteriology of cholecystitis, as worked out heretofore, is largely the bacteriology of the contents and not the tissue of the gall-bladder wall. (The mechanism of infection of the gall-bladder and the production of gall-stones have not been fully worked out experimentally.) In a previous paper I pointed out that when streptococci, from various sources, attain a certain grade of virulence, they are prone to produce on intravenous injection cholecystitis and gall-stones, with large numbers of streptococci as the nuclei. In this connection the observations in the following case are of interest:

A woman, aged 62, with infected tonsils, high blood-pressure, and a chronic arthritis, involving chiefly the small joints of the hands, contracted a "cold" and acute tonsillitis. Ten days later she developed a typical acute attack of cholecystitis. The symptoms continued for three weeks without jaundice. Then the pain shifted and the next day jaundice appeared, which deepened for a week and then gradually subsided. Jan. 19, 1914, five weeks after the beginning of the attack, an operation was made by Dr. Bevan. There was found a healing area, 1 by 1.5 cm., of necrosis at the fundus; but otherwise the gall-bladder was nearly normal.

The bladder was moderately distended with bile containing mucus and three soft "mulberry" cholesterin stones. Cultures from the bile were sterile; streptococci, colon bacilli and gas bacilli developed from the center of two of the stones, while from the emulsion of the excised piece of tissue only streptococci developed. The streptococci from both of these sources produced grayish-green, moist, non-hemolyzing colonies on blood-agar and marked precipitation and acidity on dextrose-agar. They formed chains of diplococci and a large number of round cocci, which were often in masses, like some of the strains obtained from gastric ulcer. Sections from the wall of the gall-bladder, stained by Gram's method, showed a moderate number of streptococci.

Dog 57, of medium size, was injected intravenously, January 22, with the growth of the streptococcus from the wall of the gall-bladder in 90 c.c. of ascites-dextrose broth, suspended in 7 c.c. of sodium chlorid solution.

January 24: Lame in the left hind leg. Fluid from knee-joint turbid. Cultures were made.

January 26: Cultures from knee-joints showed four, green-producing, non-hemolyzing streptococci.

January 30: Found dead. Acute cholecystitis, enteritis, localized pancreatitis and nephritis. The wall of the gall-bladder was edematous, from 3 to 6 mm. thick; the mucous membrane was velvety, and covered in areas with a loosely adherent exudate; the cavity was distended with brownish fluid, containing masses of pus and mucus; pressure on the gall-bladder failed to discharge bile until the plug of the mucopus in the diverticulum was removed by passing a probe and by making firm pressure; a moderate number of dark concretions, of the consistency of putty, were found in the masses of mucopus in the gall-bladder and in the plug in the diverticulum. Smears from the crushed concretions, washed repeatedly in sodium chlorid solution, showed many streptococci. The liver was normal; there were whitish streaks in the medullary portion of the kidney, most numerous and largest near the pelvis, where a number of small ulcers were found; the cortex appeared normal; the urine contained leukocytes, some albumin and bile, and was highly acid; the mucous membrane of the lower end of the small intestine was hyperemic and covered with exudate in which were many streptococci; the fluid in the knee-joints was slightly turbid; the stomach, large intestine, adrenals, thyroid, lungs and heart were normal.

The bile, the plug of mucus and the wall of the gall-bladder yielded large numbers of streptococci. The joint fluids and the pelvis of the kidney gave a few colonies of non-hemolyzing streptococci. The blood remained sterile. Sections of the wall of the gall-bladder showed marked thickening and degeneration of the mucous membrane. Gram-Weigert stains show a large number of streptococci, especially in the submucosa.

The fluid contents of the gall-bladder, the center of stones, and particularly parts of the wall of the gall-bladder of twenty-nine cases of cholecystitis have now been studied according to my new method.[1]

I wish here to express my very great appreciation for the opportunity afforded me recently at the Mayo Clinic where most of the cases occurred.

In five cases, the cultures from the wall were negative and in these the microscopic evidence of any changes was slight. In the remaining twenty-four cases, in all of which increase in thickness and other changes were more marked, streptococci were isolated in all but three and in pure culture in ten. In sixteen cases streptococci were found in the wall when the contents were sterile or contained only the colon bacillus. The colon bacillus was found with the streptococcus in only ten cases, once in pure form, once in association with the *Bacillus welchii,* and once with the staphylococcus. *Bacillus mucosus* was found in two cases of very acute cholecystitis. In two, diphtheroid bacilli were found and in one the fusiform bacillus was found. The fluid contents, usually bile, were examined in twenty-six cases: In twelve it was sterile; streptococci were found six times, colon bacilli nine times; staphylococcus three times; the *Bacillus mucosus* twice, and the fusiform bacillus once. The center of gall-stones have been examined in thirty cases. Only two proved sterile; from the rest, streptococci were isolated in all but three, fourteen times in pure form and five times in association with the colon bacillus; the center of the stone, in one case, showed the typhoid bacillus in pure form while the center of two stones and the wall of the gall-bladder in a case with a clinical diagnosis of typhoid cholecystitis showed streptococcus in pure culture; in two cases the center of stones contained colon bacillus and the *Bacillus welchii,* and one the latter organism only; in some instances, streptococci were demonstrable in smear preparations from the center. Cultures from other portions of stones were usually sterile. The adjacent lymph-glands were examined in five cases. Streptococci were found in four, pure in three cases and in association with the *Bacillus welchii* in one case. In the cases in which a pure culture of the streptococcus was obtained from the tissue of the gall-bladder there seemed to be a definite relation between the number of colonies which developed and the degree of change, especially if relatively recent inflammation was present.

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[1] Rosenow, E. C.: The Newer Bacteriology of Various Infections as Determined by Special Methods, The Journal A. M. A., Sept. 12, 1914, p. 903.

A comparison of the results obtained from the bile, the stones and the wall of the bladder, in the individual cases, shows that a bacteriologic examination of the fluid contents gives trustworthy results only in the acute stage of the disease; during convalescence and in chronic cholecystitis the results are of little value and may be misleading. In chronic cholecystitis the bacteriology of the center of the stones is similar to that of the wall of the bladder.

The effect of the various organisms on intravenous injection has been tested in dogs and rabbits. All of the five strains of streptococci isolated from the wall of the bladder, one strain from an adjacent lymph-gland, and two out of five strains from the center of stones showed a marked affinity for the gall-bladder soon after isolation, and frequently produced no lesion elsewhere. Varying doses produced cholecystitis in nearly every animal injected. The severity of the lesions in the animals often corresponds to that found in the cases from which the strains are isolated. This affinity is soon lost, however, on cultivation as well as on animal passage. Five strains of colon bacilli, the one strain of typhoid bacillus, and one strain of the *Bacillus mucosus* in no instance showed any tendency to localize in the gall-bladder. It was not possible to produce cholecystitis with the streptococci by injecting them into the portal system, even with strains which produced cholecystitis practically every time when injected into the vein of the leg, and only localized cholecystitis developed at the point of puncture when the injection was made directly into the gall-bladder. In the animals which lived for a time, there was not infrequently observed the beginning formation of gall-stones containing numerous streptococci similar to the conditions found in several of the patients.

The strains of streptococci from the different cases show a striking similarity and resemble closely those from ulcers of the stomach. They produce either small, moist, grayish-brown or grayish-green, nonadherent, non-hemolyzing colonies on blood-agar; they ferment mannite, lactose and salicin; they produce short chains in liquid mediums with clumps of cocci somewhat resembling staphylococci; they are of a rather low virulence, yet somewhat more virulent than strains from gastric ulcers, as manifested by their resistance to phagocytosis, by the smaller dose necessary to kill, and by the fact that, when cultivated for a time, they acquire affinity for the stomach and duodenum while the strains from ulcers, when passed through one or two animals, acquire affinity for the gall-bladder at the same time as they lose affinity for the stomach.

On animal passage, two of the strains produced both cholecystitis and pancreatitis, the lesions in the latter being most marked in the head of the pancreas.

The lesions most commonly observed other than cholecystitis, when these strains are injected especially in rabbits, are: ulcer of the stomach, hepatitis about the gall-bladder, myositis and myocarditis, arthritis, appendicitis and colitis.

The common presence of streptococci in the wall of the infected gall-bladder and in the center of gall-stones, often in pure culture, while absent from the bile and their affinity for the gall-bladder in animals are strong evidence that streptococci are the cause of cholecystitis in man far more frequently than believed and serves to explain the good results reported by some as following cholecystectomy in cases of myocarditis, arthritis and other conditions.

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# END-RESULTS IN CASES OF GASTRIC AND DUODENAL ULCER *

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In 1899 Dr. Robert B. Greenough and I[1] reported on the condition of 187 patients with gastric ulcer treated at the Massachusetts General Hospital for the preceding ten years. We were able to show that "of 114 patients, 80 per cent. were discharged cured or relieved, but at the end of an average period of five years only 40 per cent. remained well." The mortality at the same time (due to gastric disease) was 20 per cent. Among the men it was 30 per cent., in women 9 per cent. The excessive mortality of ulcer among men, its occurrence in life a decade later than in women, and the absence of fatal cases of hemorrhage in women, point to a difference of the ulcer in the two sexes. . . . The failure of medical treatment to effect a lasting cure in 60 per cent. of the patients indicates the need of surgical intervention in other than emergency cases of this disease." These figures aroused wide-spread comment, because gastric ulcer had previously been considered a disease in which cure was the rule.

Fifteen years have intervened since the preceding compilation. Revolutionary changes have taken place in the knowledge and in the treatment of the disease. Duodenal ulcer is now considered as frequent in occurrence as gastric ulcer. Undoubtedly, in the previous report, a considerable number of duodenal ulcers were classified as gastric. In this series an attempt has been made to distinguish between the gastric and duodenal ulcers. This was difficult even with the knowledge gained in the operating-room. As a matter of fact, my personal division of the cases showed them to be within three of being divided equally. Surgery has wrought the other change in our attitude. Whereas, in the 187 cases occurring at the Massachusetts General Hospital in the ten years ending in 1898, but four patients were operated on, to-day operation is a common event. Justification, therefore, exists for another report on the end-results of treatment of duodenal and gastric ulcer, even apart from the fact that very favorable statistics concerning the present treatment of the disease are again being published.

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* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Greenough and Joslin: Gastric Ulcer at the Massachusetts General Hospital, 1888-1898, Am. Jour. Med. Sc., August, 1899.

The purpose of this paper is to call attention to the outcome, after the lapse of many years, of a group of cases of gastric and duodenal ulcer. It is not the intention to emphasize the medical or surgical treatment, but to show end results. Some of the cases were treated by me, but as a rule they were seen in consultation with physicians. The medical treatment of ulcer is sufficiently well known but not sufficiently well carried out.

It has been possible to ascertain the present condition of 91 per cent. of all the cases seen by me in private practice during the last sixteen years. As the whole value of the paper rests on this fact, we are more than glad to take this opportunity to acknowledge that so large a percentage of cases could never have been traced without the persistence of my secretaries, Miss Helen Leonard and Miss Florence Newnham. I am also greatly indebted to Dr. Hugh P. Greeley, without whom the cases could not have been selected and analyzed and to whose critical judgment I owe much.

### METHOD OF SELECTION OF CASES

All cases showing digestive symptoms of any kind from 1898 to date, including even gall-stone cases, were collected from my records and analyzed for this report. This was necessary because to-day duodenal ulcer would be recognized in cases in which it was not recognized ten years ago. A number of cases of duodenal ulcer were thus found which were not originally so diagnosticated. The basis on which the diagnosis of ulcer rested was (1) the history, with especial attention to the symptoms of hyperacidity, pain, hemorrhage, perforation, the duration of the case and the after-history; (2) the knowledge acquired by surgery; (3) necropsy reports.

The total number of cases was 234. Table 1 shows the number of cases seen each year.

TABLE 1.—NUMBER OF CASES SEEN EACH YEAR

| Year | No. | Year | No. |
|---|---|---|---|
| 1898 | 3 | 1908 | 14 |
| 1899 | 1 | 1909 | 8 |
| 1900 | 3 | 1910 | 15 |
| 1901 | 4 | 1911 | 28 |
| 1902 | 9 | 1912 | 30 |
| 1903 | 17 | 1913 | 31 |
| 1904 | 12 | 1914 | 8 |
| 1905 | 23 | | |
| 1906 | 14 | Total | 234 |
| 1907 | 14 | | |

The present condition of the patient in 213 cases, or 91 per cent., is known.

### SEX; AGE; AT ONSET AND DURATION

The number of male patients was 142, and the number of female patients was 92. These figures form an interesting contrast to the Massachusetts General Hospital series before cited, for in that series there were 5 females to 1 male.

The average age of the male patients when first seen was 45 years and 2 months, but this does not represent the age at which the symptoms of ulcer began. The average age of onset of the ulcer in the males was 38 years and 8 months. The average age of the female patients when first seen was 36 years and 4 months, and the onset began at 30 years and 10 months; in other words, symptoms had existed for five years and six months, and at an age eight years earlier than that of the males. The statement is approximately correct that six years intervened between the onset of symptoms of all the cases and the time they first came for treatment. Undoubtedly this interval was greater rather than less. The duration of the disease in patients at present not relieved is eleven years. The duration in many cases was, in the patients' words, "as long as I can remember," but these could not be included in our tabulation because a definite time of onset was not known. The duration between onset and operation in thirty of the eighty-two patients surgically treated was ten years. In other words, the patients came to the surgeon, at an average, four years later than to the physician. The importance of the long duration of this disease cannot be too much emphasized. It lends support to skepticism about the high percentage of cures so frequently reported by physicians and surgeons. Twenty-one of the patients were 60 years old or over when first seen. One patient was successfully operated on at the age of 86, for which the entire credit is due to Dr. E. A. Codman, who, remembering the patient's indigestion, discovered the ulcer during an emergency operation for a twisted ovarian pedicle.

### SYMPTOMS

The severity of the disease is readily seen from the frequency of severe symptoms. Vomiting was present in 147 cases, 63 per cent. Pain existed in 184 cases, 74 per cent. Hyperacidity, as shown by the symptoms, or in a large number of cases by gastric analysis, appeared 134 times, or 54 per cent. Hemorrhage was noted in 71 cases, 30 per cent.; but this figure is low because these statistics of hemorrhage were compiled from facts learned at the first examination, whereas, occasionally, hemorrhage occurred later for the first time. Hemorrhage was occasionally observed at a time after operation when the trauma of the operation could be excluded.

Perforation developed 9 times, 4 per cent. Six of these patients were operated on, and two recovered. Of the remaining 3 patients, 2 died and 1 recovered, to die five years later of pulmonary tuberculosis. This patient, following perforation, coughed up pus for a considerable length of time.

Stasis was present in 41 cases, 17 per cent. To me it was a surprising fact that 3 of these patients with marked stasis, after periods of nineteen, fourteen and ten years respectively, must be considered as relieved and yet without surgical treatment.

### RESULTS OF TREATMENT

The results of treatment are classified under the headings of "At Present Well," "Relieved," "Unrelieved," and "Dead." The term "At Present" is inserted because in too many cases in which the patients are considered cured, the ulcer recurs. Undoubtedly, a considerable proportion of patients now well will later develop symptoms. The term "Relieved" in this paper is liberally interpreted. Many patients recorded as relieved are merely relieved, and acknowledge that this condition is only attained by rest and a careful diet. In this group are also included many who before reaching this improved stage had a recurrence of symptoms. The term "Unrelieved" is self-explanatory. Under the heading "Dead," care has been taken to avoid the error of crediting deaths to medical or surgical treatment when these were simply intercurrent and had no relation to digestive trouble. There were 11 such instances. Two patients died of pneumonia, two of cancer of the colon and two by accident, while apoplexy, tuberculosis, cirrhosis of the liver, brain-tumor and cancer of the breast each claimed one.

*Medical Treatment:* The total number of medical cases traced was 131, of which 51 patients are well at present, 55 are relieved, 16 unrelieved, and 9 dead. Three of the 51 patients now well have had a recurrence of symptoms after being first treated, and of the 55 patients relieved, 19 have had such recurrence. In other words, of the 131 medical cases followed to the present time, 39 per cent. of the patients were cured, 42 per cent. relieved, 12 per cent. unrelieved, and 7 per cent. dead.

The causes of death of the 9 medically treated patients were as follows:

Cancer of stomach 2, cancer of duodenum 1, perforation 2, of which one was a typical case of paroxysmal vomiting in a child, hemorrhage 2, and inanition 2.

TABLE 2.—RESULTS OF MEDICAL TREATMENT IN 131 CASES OF GASTRIC AND DUODENAL ULCER

| At Present | Number | Per Cent. |
|---|---|---|
| Well | 51 | 39 |
| Relieved | 55 | 42 |
| Unrelieved | 16 | 12 |
| Dead | 9 | 7 |
| | | 100 |

*Surgical Treatment*: It would be manifestly unfair to report the results of the surgical treatment without emphasizing that:

1. A surgical case means a medical failure. In all of the 82 surgical cases the patients were operated on because medical treatment had failed.

2. Among the surgical failures are necessarily included two types of cancer cases—those cases of ulcer in which the patients die, after months or years, from cancer, and also cases in which there might be a difference of opinion as to whether these cases should have been excluded from the ulcer series on the ground that they were cancer from the outset or had become cancer at the time of operation.

3. Several of the cases of perforation were transferred to the surgeon at a time when the whole responsibility really rested on the medical attendant.

4. A number of patients were transferred to the surgeon for operation debilitated by inanition or prolonged hemorrhages.

In drawing my own inferences from the surgical treatment of the eighty-two surgical cases, I should deduct from the group of twenty-six surgical deaths nine cases of cancer of stomach or duodenum for example, one of these patients at 75 years of age with a history of ulcer of twenty years' duration, showed cancer when operated on by the surgeon. He was given complete relief by gastro-enterostomy for a year and three-quarters and died painlessly six months later, yet that case although surgically classified should not be considered a surgical failure. I would also deduct two cases of perforation, because they occurred at a time when, even without perforation, the patient was *in extremis*, and also one case because of inanition of the patient. It is true that twenty-six of the eighty-two patients operated on are now dead, but with the deductions which I feel are justified, this is reduced to fourteen, a surgical mortality of 20 per cent. In ten of the surgical cases, 12 per cent., the patients are still unrelieved. Thirteen, or 16 per cent. are relieved, though before reaching this half-happy stage after the surgical intervention, five had recurrence. Thirty-three, or 40 per cent. are now well, and of this number only three have had recurrence since operation. It will thus be seen that despite the handicaps which were heaped on the surgeon, his percentage of cures, 40 per cent., is approximately the same as that of the physician. If we discard the twelve deaths for which the surgeon might well not be held responsible, 47 per cent. of the surgical patients are well.

But I will now ask you to look at the matter from another point of view. If one should add all the surgical cases to the medical cases, for they were medical cases before they were surgical in this particular series, and then classify these surgical cases as medically unrelieved, we should then have 213 medically treated patients, of whom there are but 51, or 24 per cent., who recovered under medical treatment! The remainder, 162 patients, 76 per cent., were only partially relieved, unrelieved, dead, or forced into the surgeon's hands. It is my impression that this is the correct way in which to regard the medical treatment of gastric ulcer. In other words, medicine cures only approximately 24 per cent. of the ulcer patients, and of these there is a considerable chance for later relapse. Surgery helps out medicine and adds another 15 per cent. to those cured. In other words medicine and surgery together have given back complete health to 39 per cent. of 213 ulcer patients seen or treated by me in the last sixteen years.

TABLE 3.—RESULTS OF SURGICAL TREATMENT IN 82 CASES OF GASTRIC OR DUODENAL ULCER

| At Present | Number | Per Cent. |
|---|---|---|
| Well | 33 | 40 |
| Relieved | 13 | 16 |
| Unrelieved | 10 | 12 |
| Dead | 26 | 32 |

TABLE 4 (REVISED FROM THE FOREGOING).—RESULTS OF SURGICAL TREATMENT IN 70 CASES OF GASTRIC OR DUODENAL ULCER TREATED SURGICALLY *

| At Present | Number | Per Cent. |
|---|---|---|
| Well | 33 | 47 |
| Relieved | 13 | 19 |
| Unrelieved | 10 | 14 |
| Dead | 14 | 20 |

* This table was compiled from the foregoing table after the deduction of 12 deaths for which the surgeon was not responsible.

The causes of death in the surgical cases were as follows:

Cancer of stomach 7, cancer of duodenum 2, soon after operation 7, perforation 3, abscess of lung 2, empyema 2, pneumonia 1, pancreatic fistula 1, embolus 1.

It is noticeable that there is no case of jejunal ulcer; in fact, no patient with jejunal ulcer occurred in the series. In but five of the eighty-two cases was it necessary to operate twice.

The number of surgeons who operated on these 82 patients was 36. Two surgeons operated on 37 patients, and 4 surgeons on 15 others, while 30 patients were operated on by as many different men.

The type of operation was as follows:

| | |
|---|---|
| Gastro-enterostomy | 61 |
| Infolding the ulcer, drainage, adhesions and exploratory laparotomy | 15 |
| Resection | 3 |
| Unknown | 3 |

It is noticeable in how few instances the ulcer was resected. I must record that one of the severest cases was the one in which fully one-third of the stomach was removed, and this operation was one of the most successful of the group. The case is particularly interesting in that the reason for this extensive resection was due to the report of an eminent pathologist that cancer was present, but on the following day his careful study of the section removed revealed no cancer. It is not appropriate for the physician to comment on the type of operation. The physician has enough responsibility of his own in the treatment of ulcer of the stomach and duodenum.

In Table 5 the combined results of medical and surgical treatment are given.

TABLE 5.—COMBINED RESULTS OF MEDICAL AND SURGICAL TREATMENT IN 213 CASES OF GASTRIC AND DUODENAL ULCER OBSERVED DURING THE LAST SIXTEEN YEARS

| Present Condition | Number | Per Cent. |
|---|---|---|
| Well | 84 | 39 |
| Relieved | 68 | 32 |
| Unrelieved | 26 | 12 |
| Dead | 35 | 16 |

### CANCER SUBSEQUENT TO ULCER OF THE STOMACH AND DUODENUM

Twelve, or 6 per cent. of the 213 patients have up to the present time died of cancer. The statistics on this point, however, are complete only for the forty-six patients now dead. Of these, 26 per cent. succumbed to cancer. In other words, one out of every four of the patients with ulcer of stomach or duodenum, which have been followed to their death, died of cancer.

### CONCLUSIONS

1. In a study made of 234 consecutive cases of gastric and duodenal ulcer seen in private practice during the last 16 years, 213 cases, 91 per cent., were traced to date.
2. Of these cases 142 were in men, 92 in women.
3. The average age in men was 45 years and 2 months when first seen, but the age at onset was 38 years and 8 months. The average age in women was 36 years and 4 months, but at onset 30 years and 10 months. The average duration of the ulcer in the patients still unrelieved is eleven years; the average duration of the ulcer before the cases reached the surgeon, ten years.
4. There were 131 patients who were treated medically throughout, and of these at present 51, or 39 per cent., are well, 55, or 42 per cent., are relieved, 16, or 12 per cent., are unrelieved and 9, or 7 per cent., are dead.
5. Of the patients who were operated on when medical treatment had failed, 82 were traced and of these 33, or 40 per cent. are well; 13, or 16 per cent. are relieved; 10, or 12 per cent. are unrelieved, and 26, or 32 per cent. are dead.
6. Deducting 12 deaths for which the surgeon should not be held responsible there are 70 surgical cases in which 33 patients, or 47 per cent. are well; 13, or 19 per cent. relieved; 10, or 14 per cent. unrelieved, and 14, or 20 per cent. dead.
7. The combined medical and surgical results show at present: well, 84 patients, 39 per cent.; relieved, 68 patients, 32 per cent.; unrelieved, 26 patients, 12 per cent.; dead, 35 patients, 16 per cent.

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# GASTRIC CANCER IN THE YOUNG

## A STUDY OF SIXTEEN INSTANCES IN PATIENTS UNDER THE AGE OF THIRTY-ONE *

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The sixteen instances of gastric cancer in the young forming the basis of this report were found in my study of the records of 721 pathologically demonstrated cases of cancer of the stomach at the Mayo Clinic and at Augustana Hospital. It is thought that their analysis will demonstrate certain facts of value in anticipating or detecting this grave malady at an age when it is not commonly suspected.

Those who wish to familiarize themselves with the literature on this subject may refer to the excellent monographs of Welch,[1] Osler and McCrea,[2] and Dock.[3]

A summary of previous reports on gastric cancer in the first three decades may be of service. Six instances (often rather dubious as to cancer) have been recorded below the age of 10. In the second decade, thirteen cases are described. In but eight of these were there reliable pathologic reports. In the thirteen instances occurring in the third decade, few descriptions are accompanied by pathologic findings. Many of the patients in this group, however, appeared to have been affected with a gastric malady, seemingly malignant.

### INCIDENCE

The relative frequency of gastric cancer in the young varies with the individual series studied. In a small series, as, for example, the beautifully analyzed 150 cases of Osler and McCrea, the proportion was 4 per cent. In a large series, collected for statistical purposes from various non-related sources throughout the world, as in the 2,038 instances tabulated by Welch, the ratio is 2.8 per cent. In my own group of 721 consecutive cases, examined by a uniform method (and a distinctly American experience), the percentage was 2.2 per cent.

Sex: There were nine females and seven males. Age: The youngest patient was aged 18; the oldest just past 30 years. The average age of the series was 27.8 years. Status: Twelve patients were married. In two instances (12 per cent.) there was a family or blood-relationship history of cancer. Only twice were more than ordinary indulgence in tobacco or alcohol noted. Apparently occupation had no eitologic significance.

### DURATION OF ALL GASTRIC COMPLAINTS

Most useful facts are brought out by study of this phase. The shortest time was four months, while in one instance the gastric disturbance had persisted for fifteen years. The average length of time of the disability was 4.2 years.

Consideration of the earlier part of those histories in patients exhibiting protracted gastric complaints not infrequently reveals the fact that there is in the

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* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* Because of lack of space this article is abbreviated in The Journal by the omission of a table. The complete article appears in the Transactions of the section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped, addressed envelope.

[1] Welch: Proceedings Boston Society for Medical Improvement, v, Appendix, p. 109.

[2] Osler and McCrea: Cancer of the Stomach, Philadelphia, 1900, p. 16.

[3] Dock: Am. Jour. Med. Sc., June, 1897, p. 665.

early stages a different clinical presentation of the disease than is exhibited towards its end. It would seem that the observation of occasional cases of cancer in which the duration of the gastric history had been long drawn-out, doubtless led such clinicians as Dock[3] and Mathieu[4] to venture the opinion that cancer of the stomach in early life runs a somewhat slow course. This opinion appears well-founded if one considers both the "pre-cancerous" and the evidently cancerous portions of the history.

### TYPES OF GASTRIC HISTORIES

In respect to types the histories divide themselves quite sharply into two groups: Group 1 includes cases in which there appeared a gastric affection, pernicious in nature and progressively downward in course, in patients in whom there had been no previous gastric ailment. Group 2 comprises a number of cases in which, previous to the time at which they came under observation for a gastric disease of a malignant kind, there had been gastric complaints which frequently conformed to the type which we call clinically "peptic ulcer."

*Group 1.*—Two of the sixteen cases studied fall into this class. The average duration of all symptoms was 4.5 months. In these two cases the disease was from its inception progressively and perniciously downward in course and type, and there was no alteration in the character of the affection. There were, clinically, rapid emaciation, continuous abdominal discomfort, early onset of vomiting, development of epigastric tumor and departures from the normal in the test-meal analysis. Laparotomy revealed large, inoperable growths, with extensive involvement of the lymph-nodes and pancreas. One patient died within twelve days following operation; the other lived a year.

*Group 2.*—This includes fourteen cases. These patients had been affected for an average time of 4.8 years with some gastric malfunction. In type the early part of their affection had been roughly classed among the "dyspepsias." A careful analysis of the character of these dyspepsias reveals useful facts. In five instances (36 per cent.) the gastric complaint and course had fully satisfied the symptom-complex which we ascribe clinically to peptic ulcer. In four cases (25 per cent.) so-called ulcer features were definite at some stage in the early period (in one instance in this group there was frank gastric hemorrhage). In four other cases (25 per cent.) the long-term history previous to onset of evident malignancy was that of peptic ulcer of irregular type. In the remaining case gall-stone attacks were typical through four years, and the stones were later found at laparotomy.

The second part of the histories of cases making up Group 2 was typical of gastric malignancy. While this phase differed widely in character from the early manifestations, yet it could in nowise be distinguished clinically from the whole course of the ailment in the two cases making up Group 1. If one had not carefully analyzed the early histories of these fourteen cases in Group 2 he could have in no way showed their clinical variation from cases in Group 1. The period of evident malignancy in Group 2 averaged 7.8 months in duration. The most rapid progress was three weeks; that most extended nearly three years.

It might be useful to emphasize the fact here that of this group of gastric cancer cases in the young with long-time histories, 86 per cent. satisfied or approximated our present-day clinical complex of peptic ulcer at some time during a period averaging 4.8 years, previous to the time when the course became malignant; that during this time medical treatment availed nothing and the surgical opportunity for cure was usually neglected; that the cases in this group, due to some unknown cause, did not pursue a course of chronicity of benign type, but later evidenced malignant pointings, and that the malignant course of the cases in this group exhibited an average duration nearly half again as long as occurred in cases of Group 1 in which no previous gastric disorder had been observed.

### CLINICAL DATA

*Appetite.*—In six instances (38 per cent.) the appetite was poor. In the remaining cases it was usually fair.

*Bowels.*—All cases exhibited some degree of constipation.

*Weight Loss.*—In the two instances of short-term cancer, (the so-called "primary cancers"), the average loss of weight was 17 pounds. In the early period of the group of cases with long-term histories, weight loss generally occurred during the "spells" of the disability, but was rapidly regained during the succeeding quiescent stages. In some of these spells the weight loss ran as much as 35 pounds. In the late stage of cases of this type (the malignant period) the weight loss averaged 31 pounds. It was continuous and accompanied by other evidences of cachexia. Some rapid weight losses were observed, namely, 20 pounds in two weeks.

*Abdominal Pain or Distress.*—In some degree, this was noted in all patients. It was commonly located indefinitely in the epigastrium, but occasionally the complaint was of distress in the back or the high "pit." In two instances pains of so severe a degree and of such spasmodic character were noted that perforation was believed to have taken place.

In the two cases comprising Group 1 above ("primary cancers") the pain was never severe, never definitely localized, was continuous, but was generally aggravated by the ingestion of food or drink. In these instances the common pain relief was obtained by limiting the amount of ingested food, vomiting at the height of distress, and, occasionally, by alkalies.

Of the fourteen cases included in Group 2 above (those in which the patients had had gastric distress before malignancy became evident), twelve (85 per cent.) had pain in "spells" or "attacks." In seven instances, the pain at such times had borne fairly definite relation to food ingestion; in four instances, even when malignancy had supervened, the food relief of pain persisted. In ten cases former food relief of pain had changed to food aggravation of pain, as the malignant process became manifest. In this group of fourteen cases the common modes of pain relief were vomiting, lavage, limited or varied diet, alkalies, food intake and some form of opiate.

*Abdominal Tenderness.*—This was exhibited on palpation in all instances. In 38 per cent. it was located generally in the epigastrium. In three instances, the maximum tenderness was in the left epigastrium. In rare instances was abdominal tenderness, such as is characteristic of chronic ulcer of the perforative type, noted even when laparotomy showed that the peritoneum had become extensively involved.

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[4] Mathieu: Semaine méd., 1895, p. 225.

*Epigastric Tumor.*—Tumor was palpated in six cases (38 per cent.) in the entire series (See Table). In but one instance was a large mass demonstrable. In the cases presenting no definite tumor, peculiar stiffness of the abdominal wall with a sense of deep resistance was frequently observed.

Four times free fluid was shown to be present in the abdominal cavity before laparotomy. These were inoperable cases. In three, metastases, as in the left supraclavicular region and pelvis, were noted before operation. These patients had hopeless involvement.

*Eructations and Pyrosis.*—These were commonly noted, particularly when gastric motility had been interfered with.

*Vomiting.*—Vomiting, with or without nausea, was observed in all the cases at some time (usually in the terminal stage) in the course of the disease. In the two "primary cancers," vomiting came on daily soon after taking food, was large in quantity, rancid in odor, but never "coffee-colored."

In the fourteen instances in which malignancy had terminated a long-term gastric history, vomiting occurred from one to eight hours after meals; in but one instance was it "coffee-colored;" in all instances it contained food particles, was of a rancid odor and relieved abdominal distress. In eight cases "delayed" vomiting was observed. Such sign was usually associated with pyloric stenosis and huge, dilated stomach.

### LABORATORY DATA

*Blood.*—In the fourteen instances in which the hemoglobin was estimated, it averaged 66 per cent. The range was from 25 per cent. to 70 per cent.

*Stool.*—In ten instances (62.5 per cent.) altered blood was chemically demonstrated by the benzidin or the guaiac tests.

*Test-Meals.*—In fifteen instances facts of much interest were obtained by this mode of examination of gastric function. One case returned no information by test-meal analysis because the stomach-tube could not be advanced beyond the cardia. There was obstruction due to extensive local growth.

*Gastric Emptying Power.*—In eleven cases (73 per cent.) motility was interfered with and there was retained food at the end of twelve hours. In such instances, dilatation of the stomach of various degrees had invariably occurred.

*Gastric Acidity.*—In no case was achylia shown. The average *total acidity* was 59. It ranged from 28 to 64.

*Free hydrochloric acid* was absent in but one instance. This was a case of fulminant, primary cancer. The average free hydrochloric acid estimation for the entire series was 26. It ranged from as low as 3 to as high as 60. The highest free hydrochloric acidities were noted in association with large, cancerous ulcers.

*Combined hydrochloric acid and acid salts* averaged 18.1. It ranged from 0 to 50.

*Lactic acid* was demonstrated by the modified Uffelmann test in six cases (40 per cent.).

*Altered blood* was proven by chemical test in gastric contents twelve times (80 per cent.).

*Microscopic Examination of Unfiltered Gastric Extracts.*—In but six instances (40 per cent.) were organisms of the Boas-Oppler group definitely identified. In eight cases (53 per cent.) yeasts and sarcinae were present. Microscopic food bits were recognized in nearly 90 per cent. of instances.

### THE LAPAROTOMY FINDINGS

Two cases had been explored before coming to us. Both the patients had been operated on within the year. At both abdominal sections the surgeon had made a clinical diagnosis of "benign" gastric ulcer of the chronic type, yet both of these patients were dead from inoperable, general cancer before a year had elapsed! The resection of the ulcer or the microscopic examination of a bit of extirpated tissue at the time of the initial laparotomy doubtless would have made known earlier the prognosis and have prevented further surgery. It might have saved life.

*Location of the Malignant Process.*—Abdominal section revealed five instances in which the pylorus was involved; nine cases in which the lesser curvature and some part of the surface of the viscus were affected; one instance of infiltration at the cardia, and one case of general carcinosis.

*Lymph-nodes* had been invaded in fourteen out of the sixteen cases in this series. Nine times secondary growths were demonstrated in the liver, pancreas, omenta or pelvic organs.

*Character of Neoplasms.*—In eight instances, extensive ulcera carcinomatosa were present. They were of the medullary type. In the remaining cases, adenocarcinomatosa of the common type were demonstrated.

### OPERATIVE PROCEDURES AND OUTCOME

In four instances exploration only was possible. In five cases some form of resection was performed with or without gastrojejunostomy. In the remaining seven patients "drainage operations" to fit the case at hand were devised.

Nine patients died within one and one-quarter years following operation. To the other patients of this series was granted a lease of life of from two to more than five years.

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## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. JOSLIN AND SMITHIES

Dr. J. N. Hall, Denver: There are certain chances of error in the diagnosis of gastric ulcer that do not come to one's attention unless the cases come to operation. In case hemorrhage occurs it draws attention to the possibility of ulcer and makes the diagnosis easier. I recently had a case showing pain, hyperacidity and distress and I found that the patient had had trouble ten years before. I believed that this was undoubtedly a recurrence, and had expressed that opinion to the surgeon. At exploratory operation we found the marks of an old ulcer 4 or 5 inches from the pylorus, a condition which it would have been impossible to diagnose without operation. The acute symptoms were caused by a chronic intermittent pinching of the pylorus in a Treitz's hernia which caused the blood to leak through into the stomach. In another case there had been a long-continued history of gastric symptoms in a patient who came from the country and who was a hard drinker; when I saw him he was nearly moribund from a violent hemorrhage believed to be from ulcer. I found it due to a thrombosis of the superior mesenteric artery, associated with cirrhosis of the liver which had followed alcoholism. In another case there was a chronic pinching of the superior mesenteric vessels under the root of the mesentery. For a long time there was slow bleeding, leading us to believe he had an ulcer, but none was found. I have seen two or three cases from three to six months after appendicitis with symptoms of ulcer caused by dragging down of the pylorus by the omentum. Some of these cases have obscure and continuous pain and it is difficult to figure them out. Time and again, I have found a minute hernia, not larger than a grain of wheat, and these slight hernias often give the symptoms of pyloric ulcer. This is probably caused by chronic reflex irritation of the stomach which continues until symptoms of ulcer appear. Again we see patients with the severe pain associated with ulcer, and with jaundice. Two or three operations have been performed with the idea that we were dealing with gallstones, because of the pain and jaundice, and the surgeon was chagrined when the real condition was found to be duodenal ulcer. In such cases the large duodenal ulcer had spread and compressed the common bile duct.

Dr. F. B. Lund, Boston: Dr. Joslin's paper gives a good idea of the ultimate results in surgery of the stomach. I do not think, however, that he ought to speak of a surgical mortality of 20 per cent. in gastric ulcer without making it plain that that is not the operative mortality. The operative mortality in my own cases is 5 per cent. The function of the surgeon in gastric ulcer is to interfere in cases which have resisted medical treatment and alter the conditions so that the ulcer may heal. This good end is accomplished in from 60 to 80 per cent. of the cases that are operated on. I understand that Dr. Joslin reported a case of duodenal ulcer in which the patient died in the sanatorium six months after the operation, as a surgical death. To my mind, this was not a surgical death, but a surgical failure; surgical interference failed to cure the ulcer and the patient died in six months, not because of, but in spite of it. Only those who die while still in hospital should be called surgical deaths. This, of course, would make the surgical statistics look very much better.

Dr. Frank Billings, Chicago: I think Dr. Joslin's statistical paper is only of relative value. Dr. Joslin acknowledges that the diagnosis of ulcer was not made in some of the earliest cases seen and that some of the patients were seen only in consultation. Therefore, there may be a question of diagnosis in some of the series. Thirty surgeons operated on thirty patients. How many physicians managed the medical treatment? What operations were performed? What was the medical management? If medical treatment failed, why? Of what did the patients surgically treated die? My experience is that ulcer of the stomach is usually mismanaged medically by the average practitioner. Statistics, to mean anything of value, must be more explicit in details of both medical and surgical treatment.

Dr. J. A. Lichty, Pittsburgh: It seems from Dr. Joslin's paper that neither the medical nor surgical treatment of ulcer is altogether ideal. From his paper we learned that 43 per cent. of the 213 cases were supposed to be cured. This is, of course, a low percentage of cures in a condition which is, after all, not so frequently fatal. This may be explained by the facts submitted. It seems the patients were not seen by the internist until the ulcer had run a course, on an average, of five and one-half years, or by the surgeon until the ulcer had run a course, on an average, of ten years. It is to this part of Dr. Joslin's paper I wish to direct attention—the necessity for early recognition of gastric and duodenal ulcer. The low percentage of cures is due more likely to the length of time which expires before any proper treatment is undertaken. The irreparable damage occurs before the internist sees the patient and not during the interval between the internist and the surgeon. In other words the patient likely lost his chance for cure before either internist or surgeon saw him. This is a difficult problem to meet. It is not always the fault of the physician. The patient will carry soda-mint tablets and alkaline powders for years before consulting a man who is capable of diagnosing gastric or duodenal ulcer, and it is not the fault of the laity alone; even physicians themselves in their own cases pursue the same course. In our teaching in medical schools, the symptoms of so-called "dyspepsia" should not be considered lightly, but should be looked on always as the evidence of some pathologic condition until the contrary is proved. If all the means at our disposal are employed it is not so difficult to make a diagnosis in early cases of acute or open ulcer. It is only after ulcers have been present for some time that they become so difficult to diagnose. We have now many tests, as for occult blood in the stools, the string test, roentgenoscopy, gastroscopy and others. If all the tests are employed and the patient's history carefully studied the diagnosis can be made easily in the early cases of open ulcer. I am sure this 48 per cent. of cures can be brought up also by teaching the laity to apply early for treatment in cases of gastric disturbance. If patients are seen during the first month or during the first two or three, or even five months, and proper medical treatment is instituted, I am sure more than 48 per cent. will get well.

Dr. Alexander Lambert, New York: Did Dr. Joslin try to calculate the end-results with the two surgeons who had 34 cases and the thirty surgeons who operated in the 30 cases? What was the difference in results between those who were in the habit of performing these operations and those who performed them relatively infrequently? It is known that the gastro-enterostomy opening into the stomach is apt to close if the pyloric opening remains patent. It is only when the pylorus is definitely stenosed that the gastro-enterostomy remains open. If 45 per cent. of the patients operated on, and about 50 per cent. of all patients treated medically remained unimproved, it must show that neither medically nor surgically have we worked out a successful treatment for these chronic ulcers of the stomach. Of course there is no question that in those old chronic ulcers in which there is scar tissue and a stenosis or deformation around the pylorus and a definite mechanical obstruction at this point, surgical procedure is the only method by which relief may be obtained. In other chronic ulcers, however, without the deformation of the stomach, so many different kinds of medical treatment have been tried that it is impossible to say, by any given set of statistics, whether or not really purposeful medical treatment had been accurately carried out. Until we are able to answer the questions of etiology of duodenal and gastric ulcer and base our treatment on this knowledge, it does not seem to me that we will be able to obtain much better results than those that are reported by Dr. Joslin, for if medical treatment gives but 39 per cent. of so-called cures and surgery gives but 45 per cent., there is such little difference between these results that it cannot be said that either one or the other offers much advantage, and neither medicine nor surgery has, as yet, worked out a proper method of treating these ulcers of the stomach and duodenum.

Dr. F. A. Speik, Los Angeles: What Dr. Billings and Dr. Lambert said is true. Patients do not pay enough attention to the early symptoms of ulcer, but it is also true that the physician whom they consult early does not work hard enough to determine whether the diagnosis should be of gastric and duodenal ulcer. Diagnoses are made of indigestion or dyspepsia and the patient is put off with palliative treatment. Many of Dr. Joslin's cases came to him eight or nine years after the onset. They surely consulted some physician before they did him, but the correct diagnosis was not made. Dr. Joslin's medical failures are not due to incorrect medical treatment, but they are due to the lack of early recognition, and therefore due to the lack of proper treatment. Many of his cases presented surgical complications when they came to him. Surely he cannot call all surgical cases medical failures, because not only are the ulcers not recognized and not treated, but also many are latent until some such surgical complication as mechanical obstruction, perforation, perigastric adhesion, etc., takes the patient to the physician. These must be recognized as surgical cases and not treated medically. There are definite indications for medical treatment and relative and absolute indications for surgical treatment. The surgical cases are those that may be relieved mechanically, such as perforation, which demands immediate diagnosis and operation, pyloric obstruction with actual cicatricial narrowing, with obstruction of high grade (but pyloric closures due to inflammatory swelling and spasm are medical cases), perigastric adhesions, hour-glass stomach, etc. Hemorrhage in 97 per cent. of the cases calls for medical treatment. In a medical case a gastro-enterostomy does not necessarily heal the ulcer. If the pylorus is patent the gastric juice will continue through it and take off the granulation tissue and the ulcer does not heal. In Dr. Sippy's clinic, motor meals on the gastro-enterostomized stomach show that the stomach does not empty itself faster than normal. Our failures in gastric and duodenal ulcer are due to the lack of early diagnosis and the lack of an energetic medical treatment. The medical man should work harder to make the early diagnosis of ulcer and should also pay more attention to detail in his treatment; then there will be fewer medical failures.

Dr. Allan A. Jones, Buffalo; There should be no unpleasant contention between the medical and the surgical men with respect to the care and treatment of gastric and duodenal ulcer. I often wish that medical men could operate, not that they would operate so often as surgeons do, but that they might apply this form of mechanical therapeutics. What is surgery but mechanical therapeutics? It is not a question of medicine or of surgery but of the accurate diagnosis in a given case at a given time and in a given condition. If the patient does not make satisfactory progress under medical treatment then one should resort to surgical treatment. Statistics are apt to be misleading and are sometimes useless, but if Dr. Joslin's paper shows anything it is that our best results follow medical treatment, but that at the proper time and under proper conditions surgery must be chosen. So far as the results of medical treatment in gastric and duodenal ulcer are concerned, the real and only valuable statistics we could compile would be compiled by personal supervision of every patient in the hospital kept under the immediate care of special nurses, as the control of the diet is most important. It is difficult to control the patient's diet when he is out of the hospital. Von Leube, some years ago, reported 556 cases in which the treatment consisted of absolute rest in bed, a milk diet, the application of poultices over the epigastrium and the administration of little or no medicine, and in these there were 95 per cent. of cures. I do not know the end-results in this series of cases, nor do I know how many recurrences there were, but there was probably a large number. The study of the end-results in a series of cases, as made by Dr. Joslin, is timely and important.

Dr. J. R. Verbrycke, Washington, D. C.: I call attention particularly to the thread test, the benzidin reaction for occult blood and the roentgenogram. With a few exceptions I hold the clinical history subservient to these tests. A thread smeared with blood does not always positively indicate an ulcer, but small localized spots always in the same place on several threads has in my experience been almost infallible. I rarely make a positive diagnosis of ulcer without a positive benzidin reaction. When we learn the value of these tests as well as their limitations, we will make much earlier diagnoses and so secure better end-results. I am still finding more gastric than duodenal ulcers. The number of duodenal cases has markedly increased, but through our increasing facilities for diagnosis the gastric ulcers have kept pace. By the thread and the roentgenogram—the only reliable means of localization—I am finding many to be on the lesser curvature and have encountered about thirty in that location in the past two years. The localization of ulcer is important both for prognosis and for the treatment. A duodenal ulcer operated on with gastro-enterostomy and closure of the pylorus usually gives spectacular results, while, on the other hand, ulcer of the lesser curvature may not only be cured by operation but the symptoms may be aggravated unless the ulcer is excised. Our criterion for cure should be just as strict as our endeavor is earnest to make a diagnosis in the first place. It is not sufficient that the patient does not have symptoms. I always have the patient report, after his treatment, once a month for a year bringing a specimen of stool to be examined for occult blood. Occult blood often appears months before a return of subjective symptoms. If the patient has no return of symptoms or occult blood for twelve months, we can call him cured.

Dr. Anthony Bassler, New York: Until more is learned of the etiology and pathology of ulcers, statistics on results of treatment will be useless. To say so many ulcers have been treated either medically or surgically and to give results without discussing the etiology and the varied pathology of ulcers is holding the subject back. I think that Dr. Joslin's statistics present too few cures by both the medical and surgical methods of treatment. I agree with Dr. Billings and Dr. Lambert; the subject cannot be presented *in toto* from the medical or the surgical side alone. The unfortunate status of affairs in this condition makes one case of ulcer in which the etiology and pathology have been worked out of more worth than statistics on a thousand treated in which neither one of these is mentioned. It is probable that so far as results from treatments are concerned, division can be made between soft and hard forms, for in my experience it depends on the absence or presence and extent of fibrous tissue and the character of cell infiltration whether medical or surgical measures are successful. Our knowledge of etiology, the old divisions of pathology, the overusing the length of clinical course for differentiation between acute and chronic forms, and even the revealments of the operating-room are still far short of what we must learn properly to understand gastroduodenal ulcer.

Dr. George Douglas Head, Minneapolis: How long a time have these operated patients been under observation subsequent to operation? We all know that the history of gastric and duodenal ulcers is one of remissions and exacerbations. A tremendous amount of statistical material has been brought to our attention from the surgical clinics during the last few years purporting to give the operative end-results of gastric and duodenal ulcer after one, two or three-year periods. In discussing the cure of gastric and duodenal ulcer, we as medical men are thinking in the terms of five, ten or even more years and our statistics are based on these figures, while the surgeons are giving their results in terms of one, two, or at most five-year periods. No surgical statistics exist showing the results of operative treatment over a ten-year period. In order intelligently to compare the end results of the surgical and medical treatment of gastric and duodenal ulcer the same standard of time interval must be adopted by both surgeons and internists. Over how long a period of time were Dr. Joslin's series observed subsequent to operation? We must not deceive ourselves in the analysis of statistical material offered in proof of one method or the other for the cure of gastric and duodenal ulcer. We must approach the whole subject in a broad but scientifically critical spirit.

Dr. J. D. Dunham, Columbus, Ohio: The occurrence of gastric cancer in patients under 30 years of age is quite infrequent. I have seen three, in two women and one man, aged 18, 24 and 30 years, respectively. In every instance there was increased hydrochloric acid and the total acidity was increased. All were of the fulminating type. All three cases were proved by operation and histologic examination of the specimens to be true cancer.

Dr. M. H. Fussell, Philadelphia: I have not heard a word spoken of indigestion; it has probably been purposely left out. Yet I would venture to say that practically every patient whom Dr. Joslin has seen was treated for indigestion long before it was thought that the condition was gastric or duodenal ulcer to be treated either medically or surgically. Many cases will continue to be treated for flatulence, epigastric pain and disturbance and for indigestion until they are far beyond hope from medical treatment and in many cases from surgical treatment. It is a fact that numerous conditions bring about symptoms which are called indigestion. The functional cases of indigestion are not due to any surgical condition whatever. In such conditions as gastric ulcer, infectious gall-bladder disease, chronic appendicitis, carcinoma, and others, the true condition is often not recognized until the patient is far beyond the help of either medical or surgical treatment. When one sees a patient with what is commonly called indigestion, that patient should be gone over carefully from head to foot to find out just what is the matter. Then treatment should be according to the indications. I think we are entirely unjustified in treating these case with alkalies and other internal remedies for months and years until they become difficult to diagnose. It is not the early cases as described in the text-books that are hard to diagnose but the border-line cases. When a patient has been given all the advantages of medical treatment and does not improve it becomes our duty, after a reasonable period, to have an exploratory operation to find out what is the matter, for an exploratory operation is less dangerous than long-continued medical treatment that is giving unsatisfactory results.

Dr. J. M. Rector, Columbus, Ohio: I agree with Drs. Joslin and Smithies in emphasizing the importance of early diagnosis in these conditions of the stomach. I would also call attention to Dr. Vaughn's theory of infection as it relates to the causes of gastric ulcer, and to recommend the trial of certain therapeutic measures before a gastro-enterostomy is determined on. In Dr. Vaughn's theory it is shown that a ferment caused by bacteria infesting the mucosa attacks the mucosa destructively, whereon the body cells, if the cell resistance of the host be sufficient, begin themselves to produce ferments to overcome and destroy bacterial ferments. Thus the resistance of the patient becomes a factor, and the drainage and motor function of the stomach important considerations. In case of interference with drainage, I wish to urge a serious attempt to restore the elasticity and tone of the gastric muscles by pneumatic gymnastic methods before such a measure is resorted to. As Cannon points out, "The essential fallacy in the idea of gravity drainage from the stomach results from a failure to regard the pressure relations in the abdominal cavity. The weight of the alimentary canal, as such, is approximately that of water. The food swallowed or undergoing gastric digestion has approximately the weight of water. The pressure in any part of the inactive alimentary canal, as Weisker proved, is due to the weight of the overlying abdominal organs. If the canal is inactive, therefore, the food is as if surrounded by water. Water resting in water is, of course, in exact equilibrium, and even when the body is in the upright position, and a large artificial opening connects the stomach and the intestine, water will not run out; 'because of the hydrostatic relations in the abdomen, gravity can have no effect.' 'Drainage' in the common usage of that term is therefore impossible. That the food may move onward through the alimentary canal, muscular contraction is necessary to create a difference of pressure." If gastro-enterostomy is done when gastric tone is deficient, it will fail because there can be no drainage without muscular contraction. This is the explanation of "vicious circle," and the reason for the undoing of many gastro-enterostomies.

Dr. Elliott P. Joslin, Boston: I agree with Dr. Lund that if the surgeon gets his cases of gastric and duodenal ulcer in a favorable condition he may obtain from 90 to 95 per cent. of recoveries. Dr. Lichty hit the point when he said that cases of ulcer would do better if treated early. In my series of 213 successive cases, there was an average history of six years of discomfort before seeking treatment. I hope no one else will report a series of cases coming to treatment after having suffered so long. I purposely did not attempt to draw comparisons between the thirty patients operated on by thirty surgeons and the thirty-seven operated on by two surgeons, because the number was too small. Probably four-fifths of the surgical cases were treated during the last three or four years; consequently the surgical end-results showing 47 per cent. of cures cover a far shorter period of time than do the medical end-results. The statistics, therefore, are favorable to the surgeon. Dr. Billings criticizes the value of these statistics because the cases have been treated by many medical men and necessarily (?) show very poor results. In the last series of cases which I reported some sixteen years ago, with Dr. Greenough, the criticism was likewise made that the results were unusually poor. In that series 114 cases were reported and it was stated that 80 per cent. were discharged from the hospital cured. At that time the Massachusetts General Hospital was under the dominating influence of two of the best men in medicine in America—F. C. Shattuck and R. H. Fitz—and there is no doubt but that these men carefully treated the patients with ulcer of the stomach. Yet when we came to analyze the 80 per cent. of cures and ferreted the patients out after five years, we found that only 40 per cent. were well or even relieved, quite as in this recent series. There is little doubt that if Dr. Billings studies the records of the Chicago hospitals, he will find 80 per cent. of the patients with ulcer of the stomach or duodenal ulcer have been discharged as cured, but if he should be able to follow 91 per cent. of the series after five years have elapsed, he would probably discover that the percentage of cures had dropped far below that figure. Is it not proper to ask Dr. Billings to present a similar series of 234 or more cases of gastric and duodenal ulcer and to trace out the end-results of 91 per cent. of them after a period of five years? Should this be done, I think he would allow that our statistics are correct. In the paper we did not attempt to discuss the medical treatment of ulcers, but rather to show what happened to patients who had had the disease, in the hope that we all might treat our patients better.

Dr. Frank Smithies, Chicago: The whole subject of gastric ulcer is in a state of transition. Confusion arises from medical men trying to interpret surgical statistics, and vice versa. The life history of chronic peptic ulcer is one of periodicity of symptoms and signs. It is a disease prone to recover and recur, seemingly quite irrespective of what type of medical treatment we use. Many cases called "medical gastric ulcers" have been shown by laparotomy not to be ulcers at all. This is especially true in persons under 30 years of age. In these patients, practically the same clinical picture is presented when the lesion is in the appendix or gall-bladder. In this event pyloric spasm, and vagotonic hyperacidity are responsible for the discomfort. Unfortunately, the statistics of peptic ulcer have been confused by this false ulcer group. "Medical ulcers," so-called, do, however, occur. They are apparently, in their life history, quite a different pathologic process from the chronic ulcer. Hence, this type of ulcer cannot in any way be compared, statistically, with the "surgical" ulcer. A medical ulcer is something that can rarely be seen or felt and manifests itself only by its symptoms, whereas, a "surgical" peptic ulcer can be seen and felt, examined pathologically, and definitely described and recorded. It would seem that Dr. Joslin is quite justified in giving the statistics that he has presented. It shows us our limitations in the subject. He has gone quite as far as possible in the comparison of things, which, from their different clinical and pathological nature, it is impossible to compare. Concerning the value of the occult blood-tests and the "string test," both these maneuvers may lead us to make grave mistakes, unless carefully checked. I have used three hundred strings. In 167 instances, peptic ulcer was proven operatively. In but seven instances were the findings suggestive of a "positive" string-test. When it is recalled that ulcers only bleed intermittently, it will be seen what a factor of chance there is in relying on this test for useful, clinical information. Tests for blood in the feces by means of guaiac or benzidin must be very carefully interpreted. Patients on a meat-free diet may give typical reactions if they are eating chlorophylaceous vegetables, or food rich in iron compounds.

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**Black Versus White Operating Sheets.**—Black and white operating sheets are compared in the 1913-1914 "Report of the Medical and Sociological Departments of the Colorado Fuel and Iron Company" as follows: "The advantages of a dark sheet are: It absorbs light, rests the eye, and the predominating reflection is from the wound. The disadvantages of the white sheet are: It reflects strongly, tires the eye and produces feeble contrast. It is contrast that is desired. The dark sheet is to the surgeon what the dark room is to the ophthalmologist."

## LANDRY'S PARALYSIS

### REPORT OF A CASE, WITH NECROPSY *

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Many cases have been reported since Landry first described a disease characterized by a rapidly ascending paralysis passing from the lower to the upper extremities, thence to the cranial nerves, causing various paralyses, and ending fatally in the course of six or seven days with involvement of the vagus and respiratory failure. The pathologic changes in the early cases were negative. This may have been due to the insufficient methods of examination in part, but even in later reports very few changes have been found at times, as in the case fully reported by Pfeiffer,[1] in which changes in the peripheral nerves only were found to be present.

In the literature of this subject, which is considerable since Landry in 1859 described his case, we find various lesions recorded in which either polyneuritis or spinal cord or bulbar inflammatory involvement has been present, or all in combination. Leyden and Goldscheider hold that it may assume any or all of these forms. The cord changes are usually hyperemia, perivascular infiltration and hemorrhage; at times interstitial neuritis. All authors agree that it is of infectious origin and attempts have been made to isolate a specific organism.

The case I shall record may be of interest, as it was observed from the onset, and a careful post-mortem examination has been made.

*History.*—W. E., boy, aged 15 years; previous history negative. Sept. 27, 1913, he complained of pain and weakness in the lower extremities, which increased in severity until October 11, when he was admitted to St. Vincent's Hospital, in New York, in the service of Dr. Constantine J. MacGuire. Examination of the heart and lungs and abdominal organs was negative. There was paralysis of the lower extremities, with loss of reflexes and tenderness over the larger nerve trunks. No anesthesia.

*Laboratory Findings.*—The urine was negative. The spinal fluid was clear; Fehling's reduction test was positive; the globulin was slightly increased; cells were 7 per c.mm. Smears and cultures for bacteria were negative. The Wassermann was negative; throat cultures negative. An examination of the blood showed 23,500 white cells, with 86 per cent. of polymorphonuclears, 2 per cent. of transitionals and 12 per cent. of lymphocytes. October 17 there was paralysis of the external rectus of the left eye. The eye grounds were negative.

*Course.*—The weakness gradually extended to the upper extremities, with loss of power, which in the course of a week became complete in the hands and arms. October 29 there was difficulty in swallowing and complete paralysis of the muscles of the right eye and of the superior oblique of the left eye (Dr. Kelly). November 7 there was dyspnea and difficulty in swallowing. All of these symptoms gradually increased in severity, and death occurred November 21 from respiratory failure.

*Necropsy.*—The necropsy, macroscopically, showed intense congestion of the cord; no other lesion. Microscopically, there was an interstitial neuritis of the sciatic nerve and congestion of the anterior horns, without perivascular infiltration or meningeal involvement. The medulla showed involvement of the cranial nerve nuclei and degeneration of the axis cylinders for a short distance from the cell body. The whole picture differentiated it from poliomyelitis. The brain, at the time of this report, had not been examined. The microscopic study of the case was made by Dr. John H. Larkin.

### CONCLUSIONS

We have here, therefore, a case of ascending paralysis, with attending neuritis, which followed the usual course of extension, later involving the upper extremities and the bulbar nerves, resulting in respiratory failure. The pathologic findings are definite, involving both the peripheral and central nervous systems. The course of the disease was longer than that usually described, extending over six weeks, but otherwise the case was typical in its clinical manifestations.

46 East Fifty-Second Street.

### ABSTRACT OF DISCUSSION

DR. WALTER B. SWIFT, Boston: The great question in this field of investigation, as everybody knows, is whether or not Landry's paralysis and anterior poliomyelitis are identical disease-entities. It seems strange that, as the years go by and these cases of Landry's paralysis appear, no one takes the crucial step that is to result in determining this point. The research that would do it is this: Emulsify the cord from a Landry's paralysis patient and inject it into a monkey. If the animal has anterior poliomyelitis in consequence, the identity would be indicated.

DR. EDWARD D. FISHER, New York: That would, of course, be a very essential point if we could get it done. It depends more or less on the pathologic findings. As stated, the report of the case from the pathologic findings would seem to put it outside of the possibility of being poliomyelitis. No micro-organisms were found. The final test would be as mentioned by Dr. Swift.

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## MORBIDITY REPORTS AND STATISTICS *

### A DISCUSSION OF THE PROVISIONS OF THE MODEL STATE LAW FOR THE REPORT OF CONTROLLABLE DISEASES

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### EVOLUTION OF HEALTH DEPARTMENTS

While in this country city boards of health in some instances date back more than a century, and state boards of health have been in existence, some for as long as fifty or sixty years, there has been during the last ten or twenty years a marked growth in their activitives. Health departments are going through a process of evolution, in which they are seeking to adjust themselves to modern thought and recently acquired knowledge. They are in one of the crucial formative periods.

Realizing that they are destined to occupy a broad field, health departments have taken on themselves or had given to them one activity after another, some intimately related to the public health, others in which this relation is more remote. In this taking on of new activities, there has appeared to be a tendency in many instances to forget or ignore the central idea for which they have been founded and about which they must evolve, the control and prevention of disease. There has been a tendency for health departments to take unto themselves the control of all things relating directly or indirectly to the public health and many things relating more especially to social betterment. This course offers special difficulties, as well-nigh all things the community does, practically all its activities, are related more or less closely to its health. There is hardly a department of city or state government which in its activities is not associated at least remotely with the general health.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Pfeiffer: Brain, 1913, xxxv, part 4.

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

### CENTRAL IDEA OF HEALTH DEPARTMENTS

The work which must remain the central idea of the health department is the control of disease.

The control of disease depends on knowledge of its prevalence and the conditions under which it occurs. It has repeatedly been possible to eradicate yellow fever by acquiring exact information of the occurrence of each case. It will be just as necessary to secure similar information of the ocurrence of cases, to eradicate or to control effectively any of the equally dangerous, but more common, preventable diseases. It will probably be found as easy to eradicate typhoid fever or tuberculosis from a community as it is to eradicate yellow fever. In the future, public opinion will probably make it the duty of health departments to eradicate these diseases or at least to maintain an effective control over them. When this time comes health departments will need to be larger than at present and have increased appropriations. There is hardly a state or city health department in the continental United States, the total appropriations of which might not be economically and advantageously expended in the control of any single one of the commoner communicable diseases, such as scarlet fever, typhoid fever, or tuberculosis. One of the first requirements of the future health department will be exact information of the occurrence of each and every recognized case of the diseases it is attempting to prevent.

The need of having this information of the prevalence and geographic distribution of diseases has been realized by physicians in the United States for many years, and the subject has repeatedly come before the American Medical Association in one form or another. At the meeting in 1855 the following resolution offered by Dr. J. W. Thomson was adopted:

> Whereas, few subjects of greater interest and importance could be presented to the consideration of the American Medical Association, now representing most of the States and Territories of the Union, than the attainment of a correct medical topography of each, with a history of its prevailing diseases, and most successful treatment of the same; therefore be it
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> *Resolved*, That with this view and conviction, this Association appoint a special committee for each State and Territory represented, . . . whose duty it shall be to report on its medical topography, epidemic diseases, and the most successful treatment thereof, and that the same shall continue to hold their office for three years. . . .

At this meeting Dr. J. G. Orton introduced a resolution supplementing the preceding. The resolution, which appears not to have been adopted, was in part as follows:

> *Resolved*, That each county medical society, or (in parts of the country where such has not been established), any duly organized medical association, be requested to amend its constitution by attaching therunto the following article:
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> "It shall be the duty of each member of this society to keep a faithful record of the diseases which may fall under his observation during each month, according to the classification adopted by this convention in May, 1847, stating the age and sex, occupation and nativity of the patient, the average duration of the disease, and finally, their recovery or death, and to report the same in writing to the secretary, on or before the first day of February of each year, who shall transmit a digest thereof to the State Medical Society and also to the appropriate committee appointed by the American Medical Association for its reception."
>
> *Resolved*, That each incorporated hospital, infirmary and asylum be invited to furnish a copy of their annual reports for the use of the committee of their respective states.
>
> *Resolved*, That the state committees appointed by this Association to report on the prevailing diseases of their respective localities, shall receive and arrange a digest of the reports transmitted to them by the secretaries of the various county societies, and report the same at the annual meeting of this association.

In 1883 Michigan passed a law requiring householders, hotel keepers, keepers of boarding-houses, or tenants, to report immediately to the health officer or board of health all cases of "small-pox, cholera, diphtheria, scarlet fever, or any other disease dangerous to the public health."

The notice was to state the name of the patient, the name of the disease, and the name of the householder or hotel keeper giving the information; also the address where the patient was to be found. Physicians were similarly required to report cases and when the physician reported a case the householder or hotel keeper was not required to do so.

The Michigan law seems to be the first one looking toward the comprehensive collection of information with regard to the prevalence of disease, and for a number of years the work was carried on with intelligence and perseverance under the able supervision of Dr. Henry B. Baker, then secretary of the state board of health.

### IMPORTANCE OF MORBIDITY REPORTS

The question of morbidity reports is one of the most difficult problems to be solved by the state authorities. A number of states have been endeavoring earnestly to solve the problem within their respective jurisdictions. Considerable progress has been made in several instances. In 1912 the State of Virginia had 31 cases of diphtheria reported for each death registered, the District of Columbia had 26 cases for each death, Rochester, N. Y., had 31, and Salt Lake City had 53. In the same year Virginia had over 16 cases of typhoid fever reported for each death, Hartford, Conn., had 19 cases, Denver, 16 cases, and Worcester, Mass., 14 cases. With morbidity reports of this degree of completeness the respective health departments have definite information of the prevalence of these diseases and the conditions under which cases are occurring. They possess information which makes them masters of the situation at all times.

The administration of health matters comes within the jurisdiction of the several state authorities. It belongs to the police powers retained by the states, and not delegated to the Federal Government. This makes in the continental United States forty-eight sanitary authorities, and makes it possible to have forty-eight different laws, each with different requirements, for every phase of public-health administration. While this is possible it is by no means necessary nor is it for the common good. The identity of needs and purposes should and will cause a mutual exchange of ideas and a general selection of the best for common adoption. Thus, the states will develop a closer union in sanitary administration.

For this purpose some form of public-health congress or council with representatives from the several states is necessary. With this idea in mind the Congress of the United States in 1902 provided for conferences of the state and territorial health authorities with the Federal Public-Health Service. These conferences have been held annually and at the one held in Minneapolis in June, 1913, there was adopted a standard model law for morbidity reports. The law was drafted in tentative form by a committee appointed two years before and was the subject of full discussion and amendment by the conference.

A discussion of the provisions of this law cannot be other than of interest to all in any way connected with public-health administration.

### MODEL HEALTH LAW REQUIREMENTS

Section 1 of the law makes it the duty of the state department of health to keep currently informed of the occurrence, geographic distribution and prevalence of the preventable disease throughout the state, and for this purpose establishes in the state department of health a bureau of sanitary reports.

The purpose of this section will be apparent to all familiar with the control of disease. The only rational reason for the existence of a state department of health is that it may control the controllable diseases throughout the state either directly or through the local health authorities. In either instance disease cannot be controlled in the absence of dependable current information of the occurrence and geographic distribution of the cases.

No one would think of attempting to control cholera, plague, or yellow fever without providing for some means of getting early information of each case. This is one of the things to be considered and for which provision must be made in every sanitary campaign against these diseases, but it is just as true in the control of any other disease. Whenever a health department sincerely attempts to lessen the prevalence of tuberculosis in its jurisdiction it will need to know of, and will require the notification of all cases of the disease. Whatever control the health department can exercise over such diseases as diphtheria, scarlet fever, measles, epidemic cerebrospinal meningitis, can be exercised only through a knowledge of the occurrence of cases. Communities in a measure control the incidence of typhoid fever by the installation of pure water supplies and in some cases by requiring the pasteurization of milk, but these things are but factors. Pure water and pasteurized milk will but lessen the incidence of typhoid fever, and a knowledge of the occurrence of cases is still necessary not only to control the other factors which spread the disease, but to know when the measures taken are inefficient or need adjustment. Given a city with an absolutely pure water-supply and with the lowest of typhoid-rates, it would still be necessary that any cases that did occur should be immediately reported because each case would show a break in the community's sanitary wall which needed attention.

Vaccination and re-vaccination will protect a community against small pox. Nevertheless, that community would be foolhardy and unmindful of its welfare which did not require the notification of cases of this disease, for occasional cases may occur even in the best vaccinated communities. What is true of this disease is true of every other. Control is impossible without a knowledge of when and where, and under what conditions cases are occurring.

Section 2 of the law names the diseases of which cases shall be notified. The list is divided into four groups: (1) infectious diseases, (2) occupational diseases and injuries, (3) venereal diseases, and (4) diseases of unknown origin. The first three groups include most of the diseases which occur in this country and which, with our present knowledge, may be controlled. They consist of the diseases for the control of which presumably health departments have been established.

Group 1 includes the infectious diseases, among which will be found those which have been reportable in many states for some time.

Group 2 includes occupational diseases and injuries. Occupational diseases constitute a class which in this country have but recently received anything like the amount of attention they deserve. Practically all occupational diseases are preventable and are subject to control. During the last fifty years there has come about a marked change in industrial conditions, not only in the United States, but in other countries as well. There have grown up immense manufacturing plants, large shops employing thousands of hands. There have been developed new and complex labor-saving machines, new processes have been evolved, new fabrics and materials are now being used and with this evolution of industrial methods and conditions there have arisen new occupational diseases and an increasing incidence of older ones. In an industrial community approximately one-third of the population is engaged in shops and factories, or similar places of labor, so that industrial hygiene and the prevention of occupational diseases has grown apace with our industrial development until industrial hygiene now constitutes an important factor in national and community hygiene.

Since 1911 fourteen states have enacted laws requiring the report of certain, or all occupational diseases. These laws for the most part have been impossible of enforcement, at least they have been in most instances unsatisfactory. Nevertheless, they show a recognition of the importance of knowing where cases of occupational diseases are developing. Every case of occupational disease shows the existence of conditions capable of producing disease, conditions which should be removed so that they will not produce the diseases in others. The first step in the control of occupational disease, as in the control of other diseases, is to secure a knowledge of where and under what conditions cases are occurring.

Group 3, the venereal diseases, constitute a group which offer great difficulties in their control. It will be a long time before it will be possible to have all cases of these diseases notified. They have been made notifiable in a number of states and properly so, for there are few diseases which cause more injury to the community than do these. Every case represents a focus of infection from which the disease may be and usually is spread to others, and it is only proper that each and every case be so controlled that it shall be impossible for the infection to be spread.

The fourth group of diseases includes pellagra and cancer, diseases of unknown origin, and the purpose of the notification of the existence of these is, not that the disease may be controlled, but because of the possibility that a knowledge of the relative prevalence and geographic distribution of these diseases and the conditions under which cases occur may be of assistance in the search for their origin.

Section 3 of the law requires physicians to report each and every case, or suspected case, of any of the notifiable diseases in his practice to the local health officer, this report to be made either by mail or by special messenger. The report, which is to be in writing, is to show the date; the name of the disease or suspected disease; the name, age, sex, color, occupation, address, and school attended or place of employment of the patient; number of adults or children in the household; the source or probable source of infection or the origin or probable origin of the disease, and the name and address of the reporting physician. If the disease is, or is suspected to be small-pox, the report in addition is to show whether the disease is of the mild or the virulent type, and whether the patient has ever been successfully vaccinated. If the patient has been successfully vaccinated, the number of times and the dates, or approximate dates of such vaccination are to be given. If the disease is, or is suspected to be, cholera, diphtheria, plague, scarlet fever, small-pox, or yellow fever, the physician is, in addition to the written report, to report the case immediately to the local health officer in the most expeditious manner available. If the disease is, or is suspected to be, typhoid fever, scarlet fever, diphtheria, or septic sore throat the report is also to show whether the patient has been, or whether any member of the household in which the patient resides, is engaged or employed in the handling of milk for sale or preliminary to sale.

The reason for the various data required in the report is readily apparent. The dating of the report is necessary. The giving of the name, age, sex, color, occupation and address are necessary for identification and for statistical purposes. The school attended or place of employment gives early information to the health department as to where the disease has been contracted and also where others have been exposed and contacts will be found. The number of adults and children in the household indicates the nature of the precautions that will need to be taken to prevent the spread of the disease, while the stating of the source or probable source of the infection or origin of the disease by the physician would often give useful information to the health department. The requirement for the notification of cases of disease should always provide for the report of suspected cases, and there should be connected with every health department an expert diagnostician of the controllable or notifiable diseases.

A health department that has not on its staff such a diagnostician is not in a position to control the notifiable diseases. Much as one might wish to believe that physicians never err in diagnosis, in practical health administration one is compelled to face the fact that many physicians see few of these diseases and their experience is therefore limited. The most, therefore, that a physician should be asked to record on a notification report is that the disease is, or is suspected to be of a certain kind. The health department should verify the diagnosis. The provision requiring that in cases, or suspected cases of cholera, diphtheria, plague, scarlet fever, small-pox, or yellow fever, the physician shall, in addition to the written report, give immediate notice to the health department in the most expeditious manner available, enables the use of the telephone or at times of the telegraph, or in the absence of these means a special messenger might be used. The need for the expeditious notification of these diseases does not require explanation.

The requirement that in cases or suspected cases of typhoid fever, scarlet fever, diphtheria, or septic sore throat the reports shall also show whether the patient has been, or any member of the household in which the patient resides is engaged in the handling of milk, is made because of the well-known fact that these diseases are frequently spread by milk, and the control of the disease and the protection of the community depends on the protection of milk-supplies from persons infected with these diseases.

The requirements of Section 4 with regard to the notification of cases is made to apply to patients in hospitals or other public or private institutions and to physicians attending these patients.

Section 5 of the model law provides that whenever a person is known to be, or is suspected to be affected with a notifiable disease and no physician is in attendance, then an immediate report of the case shall be made to the local health officer by the person in charge of the patient. Teachers, or other persons employed in public or private schools including Sunday schools are required by the law to report immediately to the local health officer each and every known or suspected case of a notifiable disease in persons attending or employed in their respective schools.

The blanks to be used in making the written reports are to be supplied by the state department of health through the local health officers and are to conform to a standard form adopted by the conference of state health authorities. These blanks are printed on a post-card. This is believed to be the most convenient form of report for the physician as it does not require an envelope and needs no addition of postage.

Section 8 requires local health officers within seven days after the receipt by them of reports of cases of the notifiable diseases to forward by mail to the state department of health the original written reports made by physicians, after having first transcribed the information given in the respective reports in a book or other form of record for the permanent files of the local health office. On each report thus forwarded the local health officer is to state whether the case to which the report pertains was visited or the case otherwise investigated by a representative of the local health office, and whether measures were taken to prevent the spread of the disease or the occurrence of additional cases. If the patient was not visited or otherwise investigated by a representative of the local health office it is evident that the diagnosis might have been incorrect, and if no measures were taken to prevent the spread of the disease or the occurrence of additional cases the question might well be asked, What was the use of the report?

Section 10 of the law provides that whenever there occurs within the jurisdiction of a local health officer an epidemic of a notifiable disease the local health officer shall, within thirty days after the epidemic shall have subsided, make a report to the state department of health of the number of cases occurring in the epidemic, the number of cases terminating fatally, the origin of the epidemic, and the means by which the disease was spread, except that, whenever the state department of health has found it necessary to take charge of the control and suppression of an epidemic, the local health officer having jurisdiction need not make this report. This provision will give a connected account of the outbreaks of controllable diseases occurring within a state. They will also show what measures were taken locally to control the outbreaks and whether the measures were efficient.

Section 11 provides that no person shall be appointed to the position of local health officer until after his qualifications have been approved by the state department of health. If the control of disease in local jurisdictions and the protection of the public health is to be in charge of local health officers it is absolutely essential that there be some means of having their competency and eligibility passed on. Also, if the state department of health is to be made responsible in any way for health conditions within the state, it must have some control over the local health authorities. If responsibility for the control of disease within a state is not placed on the state health department, one might well ask, what is the purpose of the state health department?

Section 12 of the law provides that where there are no local health officers, and in localities where although local health officers have been appointed, adequate provision has not, in the opinion of the state department of health, been made for the proper notification, investigation, and control of the notifiable diseases, the state health department shall appoint properly qualified sanitary officers to act as local health officers and to prevent the spread of disease in and from such localities.

Section 13 makes it a misdemeanor for a physician or other person wilfully to fail to comply with the provisions of the act. It seems perfectly proper to assume that no physician who works against the community's interest and places obstacles in the way of the control of disease and public health administration by intentional failure to report to the health department the cases of notifiable diseases among his patients should be allowed by a state to practice medicine.

Section 14 of the law provides that no license to practice medicine shall be issued to any person until after the applicant shall have filed with the state licensing board a statement signed and sworn to before a notary or other officer qualified to administer oaths, that he has familiarized himself with the requirements of the law. A copy of this sworn statement is to be placed on file with the state department of health. This is simply to guarantee that every licensed practitioner will be familiar with the law with regard to the notification of disease.

The provisions of the model law slightly amended have already been adopted by the State of Kansas through regulations promulgated Dec. 13, 1913. As opportunity affords other states will undoubtedly take similar action.

## ABSTRACT OF DISCUSSION

Dr. A. T. McCormack, Bowling Green, Ky.: After listening to Dr. Trask's paper, it seems easy to understand why resolutions passed in 1842 and 1855 calling for morbidity statistics had so little effect, and I fear that future essayists will report the recommendation of such bills as this as quite as ineffectual as these resolutions passed fifty years ago. Such a health organization as Dr. Trask has described would be delightful, but I venture to say that when it becomes possible for any health organization to have enough inspectors to confirm every diagnosis of a preventable disease reported to it by the practicing physicians of the jurisdiction, the millennium will already have arrived. On what meat would Dr. Trask have us feed our sanitary inspectors to make them so much more competent than the average reputable physician? Inspectors are selected from the medical profession; they are educated and trained alike, and a commission and a salary add but little to the stature or qualifications of the average man. Morbidity statistics are of tremendous importance. For them to be of real value accurate diagnoses are essential, but, instead of having an inspector to confirm the work of each physician, would it not be better for us to demand that those physicians who are unable to make accurate diagnoses should be excluded from the practice of medicine? In fact, is this not the purpose of every medical registration law in the land? The time has come when we know something definite about preventable disease. In almost every jurisdiction we are getting actual results, and instead of further centralization of our health organization with its result in dry statistics and ultrascientific and impracticable atmosphere, it has seemed to me that the family physicians, scattered all over the country, compose the great bulk of the sanitary force that are to save this country from the thralldom of preventable diseases. I do not believe for one moment that such an army of inspectors as is contemplated by Dr. Trask is necessary or that it will ever be created in this country except as we develop such a practical conception of state medicine that it will transform the family physician into the community physician and thus enroll the whole medical profession as practitioners, first, for the prevention of all the diseases possible, and, secondly, for the treatment of the non-preventable diseases. A health organization, to be successful, must have the confidence and support of the medical profession; and any statistics made by that profession, until the individuals composing it are competent to make a diagnosis, are of no real value.

Dr. Tom Williams, Washington, D. C.: Dr. Trask spoke of occupational diseases, and that is a matter which must be taken into serious consideration in the immediate future of public-health matters; because workmen's compensation acts are coming into force all over the country. Let us herein be forewarned by the measures of Germany, France, in part, and England with regard to the dangers of the workmen's compensation acts. Of course, we all admit the need of workmen's compensation acts, and the importance of protecting the workingman against want on account of accidents in his occupation; but what has actually happened in the demonstration is this, that in Germany the present upkeep of the fund of indemnity for workmen's compensation exceeds that for the German army, per annum, which is colossal.

Of those cases, however, 75 per cent. belong to a category which is very little understood by most practitioners, and which in consequence very few men know how to manage, but which can be met quite simply. I refer to neurotic disturbances, neurasthenias, neuroticisms. Most of these cases are amenable to proper treatment, and all are preventable. Although some of the patients are actually simulators, who pretend disease for the sake of indemnity, many of them are genuinely disturbed "neurotically" by the idea that they are no longer fit for work, as a consequence of some accident. These cases can be well dealt with by modern methods of psychopathology; and it is just as well that public officials dealing with the administration and the passing of acts for workmen's compensation should be aware of this fact so as to be ready to anticipate and prevent what has occurred in Germany. We have had to take hold of the scandal of indemnification for railway accidents so that now we no longer expend public money and money of corporations in large amounts for pretended injuries.

Dr. S. L. Jepson, Wheeling, W. Va.: The fact is, whatever local laws or state laws we may have to-day on the subject of reporting disease, nearly all these laws fail of enforcement; and I do not see how they can be enforced. We have in our state law a provision, for instance, for the reporting of births, with a fee of 25 cents each attached. The counties refuse to pay the 25 cents; and, therefore, the doctors refuse to report the births. They fail to report cases of infectious disease promptly, except in the cities where there is a vigorous health department, or in case of small-pox. How to induce our physicians to make these early reports is the proposition of greatest importance. Perhaps Dr. Trask can give us a little further light on that subject.

Dr. Martin Friedrich, Cleveland: There is a provision in this model health code that, within seven days after notification of a communicable disease, the local health officer must report it to the state board of health. There is also an item in which he has to state what he has done; for, as Dr. Trask added, "if nothing is done, what is the use to report diseases?" Very good; but if, after the disease or the epidemic is reported to the state board of health, the state board of health does nothing, what is the use to report to it? In towns and villages around Cleveland, where not infrequently little epidemics of scarlet fever, diphtheria, etc., occur, the local authorities frequently do little or nothing to confine the disease, and as the people come almost every day to Cleveland to sell their produce, for instance, milk, you can readily see there is danger for us. There ought to be an item in the code which would make it mandatory for the state board of health to act when the local authorities do not.

Dr. I. D. Rawlings, Chicago: Not one item is presented in this model bill that would not be feasible in Chicago. We are absolutely prepared to carry out all the provisions; and what is applicable in Chicago should be in many of the other cities of the states and even in the rural districts. We have found in Chicago that some of our physicians will not do their full duty unless compelled. We are now prosecuting some of these for failure to comply with our city ordinances requiring the reporting of contagious diseases. In diphtheria we insist on a positive diagnosis. If the physician does not take a diagnostic culture, we insist on the health officer doing so, and, if necessary, two diagnostic cultures are taken. We require placarding in Chicago for scarlet fever and measles cases; but we do not for German measles. Some of our physicians, as a subterfuge, would report a good many scarlet fever and measles cases, as German measles in order to avoid placards. To circumvent that, we wrote into our instructions the following:

"As mild cases of scarlet fever or measles are not infrequently mistaken for German measles, resulting in a localized epidemic of these diseases, and as a few physicians report the more serious eruptive contagious diseases as German measles in order to avoid placards and quarantine, the health officer will inspect all cases reported by physicians as German measles. If after examination the health officer regards the case as a contagious disease requiring placards instead of a case of German measles, he will telephone a report to the division chief. The case will be assigned promptly to a supervising health officer, who shall make one or more attempts to reach the attending physician by telephone, and if successful, ask him to see the patient with him. In any event the supervising health officer must promptly see the case. If a disease is found requiring placards, the supervising health officer must quarantine and make report in usual form." We inspect every case of unvaccinated chicken-pox to confirm the diagnosis of the attending physician. I believe this bill is absolutely feasible—in our city at least.

Dr. Charles J. Hastings, Toronto, Ontario: I quite agree with Dr. Rawlings that a well-organized department of health in any municipality ought to be able to carry out every clause of the act as presented. With regard to the report of cases I think it is frequently our fault in not keeping in close enough touch with the general practitioner. In my judgment, the most valuable asset that any department of public health has is the entire cooperation of the profession in the municipality for which the health officer is responsible. It is not uncommon for physicians in Toronto to call up the department of health, if there is any doubt with regard to a case of communicable disease, and ask to have one of our diagnosticians call and see the case. By doing so we relieve the family physician of the responsibility of having the family quarantined. The honest physician is frequently placed in an unfavorable position with his patients by an unscrupulous doctor who has attended a case next door and did not report it. I am thankful to say that we rarely have cases of this kind, but when we do we prosecute them forthwith. It is our duty to do so both to the public and to the honorable and conscientious physician who promptly reports his cases. I presume all departments of health require two negative swabs for release of diphtheria cases. I think that departments of health should require that some physician from their laboratory take the releasing swab. This also relieves the family physician from being accused by their patient for keeping them quarantined unnecessarily long and at the same time prevents the faking physician from sending in a bogus culture. I am sorry that Dr. Trask passed over the matter of venereal diseases so lightly as he did. I think there is nothing that will bring down the anathemas of future generations on the activities of departments of health more than our absolute disregard for the control of venereal diseases, a class that is probably of more national importance than all other communicable diseases combined; and yet we are in a sense practically disregarding them, afraid to touch them, on account of — what? Of the conditions under which they are contracted. Departments of health have nothing to do with the conditions under which they are contracted. If we are going to handle these diseases efficiently we must handle them as we would small-pox, diphtheria, or any other communicable disease, we must divorce them from the social aspect entirely. We have nothing to do with that; we have simply to deal with the dangers to humanity of these diseases. If we go on, with our heads buried in the sand, as we have been doing in the past, there is going to be great reflection on our deficient administration.

Dr. J. W. Trask, Washington, D. C.: I am grateful to Dr. McCormack for bringing out the phase of the subject that he did; because others, probably, look at it from the same point of view. Our country has a vast area and a varying density of population. To one whose experience has been largely in a semirural territory, in which, because of its scattered population, progress in securing satisfactory morbidity reports has naturally been delayed, the model law may seem utopian. It is entirely practical as has been shown by those who have just stated that they were already carrying out most of its provisions and that their communities were ready to carry out the remainder. The law is in operation in Kansas in the form of regulations adopted in December, 1913. I prefer not to think of morbidity reports as statistics. When we get sufficiently complete reports, their compilation will furnish us with morbidity statistics; but the main object of the notification of disease is its control in practical everyday health administration. One of the hopeful things is the great interest that is being shown, not only by the people in general, but also by the medical profession, in advancing public-health activities. Every physician who believes in greater public-health activities and in the control of disease, must necessarily abide by his state laws or regulations for the control of disease; he reports his cases and, in addition, shows an interest in the efficient control of disease in his community. Dr. Friedrich's point is fundamental. If nothing is done as a result of the report of a case of notifiable disease, why the report? That can be considered a proper question whether it concerns the primary report to the local health department or the secondary report of the local health department to the state health department. If nothing is done the report has little value. The statistical value of it is not sufficient if actual preventive measures are neglected. I purposely omitted Dr. Hastings' point—venereal diseases—not because I did not believe that they constitute one of the major public-health questions. When we get confidence in the importance of our work and really believe in its value; when we divorce from the health department the licensing of plumbers and the control of plumbing, we will occupy our time with such big, important questions as the control of venereal diseases.

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**General Practice as a Specialty.**—General practice has, in a certain sense, become a specialty. It is true that its ranks contain a larger number than any other branch of the profession, but the large increase of the number of whole-time appointments and of specialists of every conceivable variety in the last few years and months raises a doubt as to how long this numerical preponderance will obtain. But we are at least assured that there is no danger of the extinction of the general practitioner. The intimate personal relation between the individual patient and his doctor is an essential factor which no changed conditions can completely eliminate. It is on the general practitioner that the eyes of the public and the profession are now turned, and we are confident that the trust will be completely justified.—*British Medical Journal.*

# UNFAVORABLE COMPLICATIONS FOLLOWING AN INTRADURAL INJECTION OF NEOSALVARSAN

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In the treatment of syphilitic affections of the nervous system three principal methods are at our disposal, namely, intravenous injection of the drug, intradural injection of autosalvarsanized serum (Swift-Ellis), and intradural injection of neosalvarsan (Ravaut). According to the majority of competent observers the first procedure has proved to be of little avail, especially in cases of late manifestations of syphilis of the nervous system, in tabes for example. The reason lies partly in the impermeability of the meninges for the drug. The other two methods aim at a direct contact of the drug with the cerebrospinal axis. Salvarsan, in the light of our present experience, must be abandoned for this purpose by virtue of its caustic action. As this caustic feature is eliminated in neosalvarsan, the latter is the one to be applied.

After the unsuccessful attempts of Wechselman in 1912 and Marinesco in 1913, also of Levaditi and Marie in the same year, Ravaut[1] reported very satisfactory results from direct injections of neosalvarsan into the spinal canal. U. J. Wile, in this country, followed strictly the special technic devised by Ravaut, and in a recent contribution[2] describes the results of his experience with fifteen patients distributed as follows: Tabes seven; paresis five; cerebrospinal syphilis three. Out of this group seven showed marked improvement; the patient with cerebrospinal syphilis gave better results than the cases of tabes and paresis; the tabetic patients without bladder and rectum disorders have been especially benefited by the treatment. In view of this experience Wile expresses confidence in the method of intradural injections of neosalvarsan as devised by Ravaut. As a careful observer he points out two interesting features in this treatment, however, against which he cautions the therapeutist. First, he advises the use of only very small doses of the drug, and secondly, the involvement of the bladder and rectum seem to serve as a contra-indication for the treatment.

My latest experience in the treatment of syphilitic involvement of the nervous system consists chiefly in the use of autosalvarsanized serum. Subject to a later publication in detail, I may say at present that this method has given me far more satisfactory results than any other old or newer methods. Stimulated by the work of Ravaut I attempted to apply his procedure in a case of tabes. In view of Wile's favorable report[2] I feel it a duty to call attention to most undesirable consequences which may follow the use of Ravaut's technic of intradural injection of neosalvarsan.

The patient, a man of 35, presented all the typical symptoms of tabes dorsalis. At the time he came under my observation, pain in the lower extremities, ataxia, incontinence of urine and constipation were the most conspicuous manifestations. Formerly, I was told, he had the usual course of treatment with iodids and mercury. At this time the Wassermann reaction of serum and spinal fluid was positive.

I proposed at once the treatment with autosalvarsanized serum which was promptly accepted. The result from one injection was gratifying. The pain had almost disappeared, the ataxia improved, also the incontinence of urine decreased considerably. Constipation remained unaltered.

For a period of two months the patient felt very comfortable. Soon, however, the bladder disturbance returned. As the Wassermann reaction was at this time positive, the patient finally accepted the offer to have another intraspinal injection which he had repeatedly refused during the past two months. With the patient's consent I had recourse this time to a direct intradural injection of neosalvarsan instead of the autosalvarsanized serum. Accordingly I had the fluid prepared after Ravaut's technic. The solution used was 6 per cent. of neosalvarsan in distilled water. As each drop of the solution contained 3 mg. of neosalvarsan, only two drops were injected from a specially constructed and very accurately graduated syringe. The lumbar puncture was made with a needle the end of which fitted the graduated syringe. After a small quantity of spinal fluid had flowed out of the cannula and been collected in a tube for diagnostic purposes, the syringe was attached and the fluid allowed to run into it in order to mix with the drug. Then the mixed fluid was pushed gently into the canal. The procedure of mixing was repeated the second time. The patient was then placed in Trendelenburg's position.

One-half hour after the injection the patient commenced to complain of severe pain in the lower limbs, which in subsequent days became more and more pronounced. Vomiting appeared on the same day and kept up for six consecutive days. Retention of urine took the place of the former incontinence. Incontinence of feces made its appearance. All these symptoms continued without relief. On the fifth day small erythematous patches appeared on the glans penis, on the scrotum and on the sacrum. They gradually became larger and finally distinctly gangrenous.

Two weeks after the injection the patient presented the following condition: He was unable to stand or walk; he suffered agonizing pain in the lower limbs so that sleep was impossible; retention of urine and incontinence of feces were exceedingly disturbing; the gangrene of the above mentioned areas was becoming more and more profound; the temperature reached 102 and 103 F.; he vomited daily, lost his appetite and was losing weight. Gradually the condition grew more and more alarming and finally he expired.

This case seems to militate against the direct intradural use of neosalvarsan notwithstanding the favorable reports of Ravaut and Wile. It is possible that Wile's suggestion with regard to the sphincter complications as being a contra-indication for this treatment has its *raison d'être* here. Nevertheless the damage done by this procedure even in one case sufficiently deserves the attention of those who contemplate the use of this method. Perhaps further investigations on animals and a more carefully elaborated technic will enable us to view the method in a more favorable light. In a recent contribution Corbus[3] reports an experience similar to mine.

1812 Spruce Street.

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[1] Ravaut: Ann d. méd., 1914, p. 49.

[2] Wile, Udo J.: The Technic of the Intradural Injections of Neosalvarsan in Syphilis of the Nervous System, THE JOURNAL A. M. A., July 11, 1914, p. 137.

[3] Corbus, B. C.: Cerebrospinal Examinations in "Cured" Syphilis, THE JOURNAL A. M. A., Aug. 15, 1914, p. 550.

# APPLICATION OF RADIUM IN THE BLADDER FOR CARCINOMA

## WITH REPORT OF TWO CASES

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To review at this time the various surgical conditions to which radium has been applied would be without gain, in view of the very recent development of our knowledge and use of this new element, which is being brought to our attention almost daily. We believe, however, that in reporting our cases, we are presenting for the first time a complete history of the action of radium as applied in the bladder in cases of carcinoma, accompanied as they are by cystoscopic examinations before and after application, microscopic examinations of the tumors and end-results.

After a careful review of the literature we find very few cases in which radium was applied in the bladder in cases of carcinoma. One case is reported by Cauhape in which he applied radium to the bladder for carcinoma of the prostate with cure in nine months. These applications were made with radium attached to a catheter and introduced into the bladder per urethram. Twenty-five mg. of radium were used and the applications made every three days, each application lasting two hours. Wickham and Degrais in their latest work do not mention the use of radium in the bladder. The Radium Institute of London in 1912 reported two patients treated with results not noted, and also two patients for prophylactic treatment, reported as improving. The Royal Infirmary of Edinburgh reported no bladder cases in 1912. The foregoing constitutes about all the information that we could obtain, demonstrating that in only one authenticated case, (that of Cauhape) is there any definite report as to the nature of the tumor, amount of radium used, length of application and end-result.

The two cases that have come under our observation are as follows:

Case 1.—M. J. T., aged 34, consulted us, Sept. 23, 1913. Family history shows that father probably died of carcinoma of stomach. Patient gives history of hematuria for about five years, occurring at intervals of about three months until recently, when attacks became very much more frequent. There had been no pain until shortly before the patient's visit to us. At this time the patient complained of hematuria and sharp pains in right inguinal region radiating to pelvis. Examination showed patient to be in fair physical condition. There was a left bubonocele. In right inguinal region a mass about the size of an orange could be felt. This mass was hard, immovable and extended down into the pelvis. There was edema of the right thigh. Cystoscopy showed a tumor, about the size of an English walnut, situated in the trigon, midway between its center and the opening of the left ureter in the bladder. The tumor was friable. The right ureter was obstructed, but showed urine escaping. Examination of metastatic growth, microscopically, showed the tumor to be carcinoma.

Oct. 7, 1913, a suprapubic cystotomy was done. A tube containing 15 mg. of radium was attached to the lower end of a Freyer tube and introduced into the bladder in direct contact with the tumor and allowed to remain in place for twelve hours. No discomfort was complained of by the patient at any time during the application. The same tube of radium after removal from the bladder was buried in an incision over the metastatic growth and allowed to remain in place for twelve hours. The bladder wound was completely closed on the eleventh day after the operation. Recovery from the operation was uneventful except for unaccountable attacks of pyrexia, beginning forty-eight hours after operation, lasting for three days and recurring again at the end of a week. Three such attacks occurred. Cystoscopy, December 8, two months after operation, showed that the tumor of the bladder had entirely disappeared. The mucous membrane of the bladder appeared normal. Both ureteral openings were obstructed. The metastatic tumor in the groin was about the size of an English walnut. The patient died six months after operation from general asthenia and hydronephrosis due to obstruction of ureters by metastatic growths in the pelvis.

Case 2.—B. K., aged 67, was first seen by us Jan. 4, 1914. Family history was negative. Patient complained of frequency of urination day and night for about eighteen months. During the last three months he has had pain in the region of the bladder and perineum accompanied by frequency and hematuria. He has lost about 40 pounds in the last three months. His appearance is cachectic. He was discharged from the German Hospital, after ten days' observation, as having an inoperable case. Residual urine was 12 ounces, bloody and ammoniacal. Blood-pressure from 190 to 170. Blood examination: White cells, 18,000; polynuclears, 83 per cent.; lymphocytes 11 per cent.; eosinophils, 1 per cent. Rectal examination shows large hard prostatic tumor. Cystoscopy shows large bleeding tumor slightly to left of left ureteral opening; smaller tumor near the right ureteral opening; also large eroded and bleeding tumor at site of prostate. The entire mucous membrane of the bladder appears infiltrated. Diagnosis: Carcinoma of prostate and bladder.

Patient entered hospital January 6, and a permanent catheter was introduced for drainage and irrigation preparatory to operation, suprapubic cystotomy, which was performed January 8. A tumor the size of an egg at the site of the left ureteral opening was removed. A tumor on the right side, somewhat smaller, was also removed. A V-shaped section was removed from the prostatic tumor. The prostatic growth is considered by us to have been the primary focus in this case. The section taken from the prostate also provided better drainage through the urethra. The same procedure in the use of the radium was pursued as in Case 1. The bladder was closed in three weeks. The same unaccountable pyrexia occurred as in Case 1. Patient was discharged from the hospital February 5, about four weeks after operation. At this time the patient was passing clear urine four times a day and every three hours at night at our direction to prevent distention of bladder and reopening of suprapubic wound. Patient gained 26 pounds in weight in two months. Cystoscopy, April 22, showed bladder mucosa apparently normal, the surfaces from which tumors had been removed appearing as small pale, depressed areas. All of the surfaces appeared to be covered by normal mucous membrane. Rectal examination showed prostate greatly diminished in size and of normal consistency. Residual urine, 3 ounces.

The pathologic report of Case 1 is from the laboratory of St. Francis Hospital; the pathologic report of Case 2, is from the laboratory of the City Hospital.

### CONCLUSIONS

1. We may without danger, even without discomfort to the patient, place in the bladder as much as 15 mg. of radium and allow it to remain as long as twelve hours.

2. We believe that we have shown that radium has the power to remove a tumor of the bladder (carcinoma) and of the prostate within a period of two

months. It has also been demonstrated in Case 1 that radium has had a very decided effect in reducing the size of a metastatic growth associated with carcinoma of the bladder.

3. No difference seems to have been evident in the result whether or not part of the tumor was removed. In Case 1 no part of the tumor was removed, while in Case 2 a considerable portion of the tumors was excised.

4. We are of the opinion that the peculiar pyrexia associated in both cases was due to an absorption following the destructive influence of the radium on the tumors. A thorough investigation did not disclose any other cause.

We wish to take this opportunity of thanking Dr. Wolf Freudenthal for the use of the radium applied in these cases.

10 West Sixty-First Street—1847 Madison Avenue.

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## A CASE OF BACILLUS DYSENTERIAE SEPTICEMIA

W. T. De Sautelle, M.D., Knoxville, Tenn.

In the literature at my disposal, instances of isolation of the *Bacillus dysenteriae* from the blood during life seem to be very few in number. Darling and Bates (*Jour. Med. Sc.*, 1912, cxliii, 36), report a fatal case from which they recovered from the circulating blood the *B. dysenteriae* of the Shiga type. All of the references at hand either make no mention of the *B. dysenteriae* entering the general circulation or state positively that it does not do so. It seemed to be of interest therefore to report the following case which was seen in consultation with Dr. C. G. Hutson of this city.

The patient was a 3-weeks-old breast-fed infant which had been in perfect health before the onset of the disease. For a day or two the baby refused to nurse, became irritable, restless and did not sleep. The child was stupid and listless, whined at times and objected to the slightest touch. Physical examination revealed no abnormalities or pathologic processes in any of the organs. The temperature was 103 and pulse 180. At this time there was no diarrhea. In consideration of the fact that the grandmother of the infant was suffering in the same house with typhoid fever, a blood-culture was made. As we were unable to enter a vein, the blood was taken from the great toe and placed in bouillon from which the *B. dysenteriae* was obtained in pure culture. Although the baby's toe was carefully cleansed and the blood dropped directly into the bouillon, we did not give much significance to the result of the culture.

The baby continued to have a fever varying from 101 to 104.5 in spite of antipyretic measures and also developed a watery diarrhea. Five days later the baby suddenly began to have severe convulsions which came on every few minutes and lasted from five to ten minutes. When seen the hands, face and feet were very cyanotic, the pulse thirty to the minute, the breathing of the Cheyne-Stokes type, the pupils dilated and inactive to light, divergent strabismus, the tendon reflexes absent (at the first examination they were normal), and the child comatose. Through a lumbar puncture needle the spinal fluid flowed out quite rapidly, but contained at least one-half blood. The fluid came as bloody at the end of the flow as at the beginning, in fact, the needle was withdrawn and reintroduced at three different places with the same result. After the removal of 3 or 4 c.c. spinal fluid the convulsions ceased for a time, the pulse and respiration improved, and the cyanosis cleared up. The child died several hours later. Post-mortem was refused.

The spinal fluid obtained was carefully placed in bouillon and an organism found which was identical in all respects with the one obtained in the blood-culture.

The organism cultivated from the blood and spinal fluid had the following characteristics: It was a Gram-negative short bacillus, only sluggishly motile, and did not produce indol in five days or coagulate or digest milk. It produced acid in litmus milk and this remained so for three days. In dextrose, levulose, lactose, mannite, galactose, maltose and dextrin bouillon this bacillus produced acid but no gas in twenty-four hours. Saccharose and inulin were unchanged. At the end of three days the mediums remained unchanged.

The organism corresponding to these reactions is the bacillus "Rosen" (from dysentery) and we therefore concluded that this was a case of *Bacillus dysenteriae* septicemia. The finding of the same organism in the bloody cerebrospinal fluid and the blood taken from the child's toe convinced us that the organism had been present in the general circulation from the onset of the illness. Death was no doubt due to the cerebral hemorrhage rather than to the toxemia. Nevertheless this case with the fatal case previously mentioned would lead one to think that the advent of the *B. dysenteriae* into the general circulation means a fatal outcome of such cases. More reports of *Bacillus dysenteriae* septicemia are necessary, to be sure, before drawing such a conclusion.

The source of infection could not be ascertained. The child was breast fed and the parents denied having given it any other food. It may have been given unboiled water, but this they also denied. The sick grandmother handled the infant and even kissed it on the mouth several times. The diagnosis in her case, however, was unquestionably typhoid fever, as a blood-culture done by Dr. A. L. Smith in our laboratory revealed an organism identical in all its reactions to the *Bacillus typhosus*.

417 Holston Bank Building.

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## HYGROMA OF THE GROIN

Percy Willard Roberts, M.D., New York

The following case of hygroma in the groin is of interest on account of its apparent rarity and also because the method by which healing was finally induced is not commonly in vogue.

Surgical literature contains very little concerning hygroma in the groin. In a carefully prepared paper by Dowd in the *Annals of Surgery* for June, 1913, in which are reported several of his own cases, he goes over the literature of hygroma and refers to the fact that it seldom appears in the groin. A rather painstaking search fails to reveal any reported instances of cystic formations in this region, though, doubtless, cases have been noted, for the abundant supply of lymphatic tissue here would indicate a fertile field for their development.

The patient was a boy of 16 who was sent me with a diagnosis of psoas abscess, to which clinical appearances pointed. There was present at the upper and anterior aspect of the right thigh a large tumor extending from the groin half way to the knee, with the characteristic feel of a tense abscess. On the outer side of the thigh there was a discharging sinus through which a probe could be passed to a point over the head of the femur. Examinations of the hip-joint and spine were, however, negative, as were also roentgenograms of these parts.

Nevertheless, the clinical picture was one of cold abscess. The swelling had enlarged rapidly, having developed in three months without pain or temperature, and there was no history of injury or infection.

The patient was taken to the Post-Graduate Hospital, and incision of the tumor resulted in the evacuation of about a quart of a clear, straw-colored fluid which contained no pathogenic organisms. Exploration revealed a multilocular cavity extending to the ramus of the ischium without definite source of origin, the bone not being involved. There was no connection with the sinus on the outer side of the thigh. The cavity was lined with an extremely delicate membrane, but there was apparently no limiting membrane of a fibrous nature, the resistance of the muscles and fascia acting as a retaining wall.

The cavity was thoroughly scraped and allowed to drain. A few days later a constriction half way toward the ischium closed and the upper end of the cyst rapidly refilled, necessitating a second opening, which was followed by scraping and the application of iodin. The sinus on the outer side of the thigh, which was probably the remains of a ruptured cyst, was also thoroughly scraped. Both cavities were treated with iodin, phenol (carbolic acid), bismuth and argyrol over a period of fourteen weeks without any attempt at healing from the bottom, although both contracted in circumference. There was still a free secretion of clear fluid.

In view of the effect of the Roentgen ray on old tuberculous sinuses, many of which will heal under its influence, the patient was given a four-minute exposure with a hard tube. At the end of ten days both sinuses had begun to fill in at the bottom. Three other similar exposures at intervals of ten days completed the cure.

The laboratory report on the scrapings removed from the cavity was not conclusive, owing, no doubt, to the fact that the specimen was taken at the second operation and did not include enough of the lining membrane to determine its exact nature. It would seem, however, that from the delicacy of the lining membrane, the multilocular character of the cyst and the rapidity and force of its growth, the case should properly be classified under the head of hygroma.

40 East Forty-First Street.

## Therapeutics

### PREVENTION IS GREATER THAN CURE

(*Continued from page 1761*)

### IX

### EUGENICS

This very large social, economic, medical, religious and legal subject should receive a passing thought in this series on preventive medicine.

Briefly, heredity and environment are the two factors that are most prominent in the production of physical and mental health. Environment may improve or mar heredity, but cannot change it. Heredity is therefore the most important factor in raising and developing an ideal race. Scientific selection in breeding animals and plants has proved its value beyond all possible refutation. The importance of good environment for the perpetuation of physical and mental health is so well understood that it requires no discussion. But environment will not eliminate a hereditary tendency to disease or to mental or physical insufficiency. Neither will environment develop perfect mental and physical health when there is an inherited deficiency, although environment can markedly improve deficiency caused by injury or acquired by disease.

The long gestation, still longer nursing, and yet longer helpless period of the human embryo and human infant demand the long nourishing care of the mother by the father and by the community. This means that for at least two years the father must provide food, protection and comfort, if not luxury, for the mother and child as well as for himself. If he fails in this duty, some other person, some charity, or the community must assume the duty. This being the fact, worthless, incapable and mentally or physically diseased fathers are a tax on the community.

All kinds of beautiful and necessary charities are succeeding in their aim to raise to adult life defective children, as well as to save the well and strong. A large number of these mentally, physically, and often through heredity, morally defective persons assert the right to marry, and do so, and another crop of defective children is the result. Our orphan asylums, hospitals, sanatoriums, homes, insane asylums, jails and prisons are being overfilled in consequence of the foregoing conditions. What are we going to do about it?

The environment of prospective fathers and mothers and their future children is being constantly improved by the public health advances now being made in all communities, but as has been stated, this will not prevent the ravages of inherited disease (syphilis, epilepsy, insanity, imbecility, physical weakness) or of the inherited tendency to disease (tuberculosis, cancer, gout, diabetes, alcoholism, etc.), any more than environment can produce twins, beauty, geniuses or permanent health. In fact, improved environment is doing more for the defectives in all lines than for those of good heredity, who would survive a less improved environment.

The question for discussion, then, in this one on eugenics is, who shall marry, and who shall have children? It seems doubtful whether the law or the state can, in the present status of the human age and of civilization, enforce scientific selection or compel complete physical and mental examination of a man and woman before they may be allowed to marry. Public health and welfare education, medical teaching and instruction, and the higher education emanating from the church may, in a few decades, make this problem one that is readily decided by the families of the contracting parties, or even by the young man and young woman most deeply interested. On the other hand, it is possible that the age is ripe for an insistence that known defectives and known diseased individuals be allowed to marry only when the other member of the contracting parties is made cognizant of the fact, and also that means be taken to prevent offspring from such alliances. Such defectives often breed readily and lavishly, and their progeny are often no comfort to themselves, and are more than likely to become a future, if not an immediate, tax on the community and state. This brings up the question of either prohibiting marriages of defectives (known to be such through public charities or public institutions and hence not ascertained by the compulsory examination of private individuals), or of legal sterilization of such defectives.

### THE SCHOOL QUESTION

The following are a few suggestions of important subjects that medical men should impress privately on their families and publicly in their communities:

1. A child should be healthy before it goes to school (adenoids, tonsils, teeth, anemia, debility, etc.).
2. The kindergarten methods of teaching should be investigated, as some parts of this teaching are objectionable, and especially should the eyes of these young children not be overtaxed.
3. The best age for a child to attend a kindergarten is from 4 to 6 years; but the ordinary child at 6 years of age is too young to enter real school work. It would be ideal, from a physical point of view, if the child could then have one year, or in some instances two, in a "play school," combining physical exercise with moral and mental development. Then the child would be well fitted to attend real school.
4. The location of school buildings is important, and the architecture and equipment of such buildings are very important.
5. There should be well-equipped playgrounds in all cities.

6. The books, pencils and other school paraphernalia should be antiseptically cleaned, and clean aprons could well be provided for dirty kindergarten children.

7. Teachers should be mentally efficient, and should be physically examined at regular intervals as to their health. A physically and mentally "fit" teacher is essential for good school work.

8. Open air or open-window schools, and luncheons for underfed children should be inaugurated.

9. Kissing and the exchange of pencils and penholders among children should be discouraged.

10. There should be a trained nurse attached to each large school.

11. There must be medical inspection, if not medical examinations.

12. There should be segregation for feeble-minded, as well as for otherwise defective children. Anemic children, and those with a tuberculous tendency should be in open air rooms.

13. Night schools should have medical and sanitary supervision, especially if such schools are held in the rooms occupied by the children in the daytime.

14. The crime of child labor should be prevented.

### SCHOOLHOUSES

The location of the city school cannot always be carefully selected; the school must be placed where it is most needed. The country school, however, should be located high and dry, and with a careful consideration of its sanitation, that is, its water-supply and the proper management of its sewerage system.

There is no excuse for having a country school more than two stories, and if possible, a city school should be but two stories high. The frequent going up and down of long flights of stairs is especially bad for growing girls. The light should be sufficient, and should not shine directly into the pupils' eyes, but should best enter the room from the left and the rear. The blackboards should be so placed as to receive the best light. The temperature should be from 65 to 68 F. Moisture should be sufficient, but not excessive.

The desks and chairs should be very carefully selected, and one or both should be adjustable as to height. Even with such adjustment the children should not be kept too long sitting, but should have walking, or simple calisthenic exercises to stimulate the circulation and ease the muscles.

The floors should be hard finished, so that they may be readily cleaned with vacuum cleaners, and the furniture should be such that it can be readily cleansed with antiseptics, when such are needed. In fact, daily washing of the floors with some antiseptic may be advisable. The toilet and washing arrangements should be of the best, and sanitary drinking facilities should be installed in every school.

Some one or more rooms should be arranged as open-window rooms. Every large school should have a private examining room for the use of the examining physician and the trained nurse. Every school, if possible, should have a properly equipped playground.

### HOURS IN SCHOOL

The kindergarten is undoubtedly good for children whose mothers cannot care for them and who otherwise would be on the street, but the kindergarten teaching is often bad for children who are already pushed mentally in their own homes. We are not sufficiently careful to prevent mental fatigue in schoolchildren, and the number of hours generally devoted to school work is much too great. R. O. Clock[1] has studied this subject, and makes suggestions which should be carefully considered. He believes that from 7 to 8 years of age two hours of actual school mental work is sufficient; from 8 to 9, two and one-half hours; from 9 to 10, three hours; from 10 to 12, four hours; from 12 to 14, five hours. The longer periods should, of course, be broken up into two sessions. At all ages the sessions should be interrupted with from fifteen to thirty minutes' recess for fresh air and relaxation. It has been ascertained that a child at 6 has brain fatigue and his attention tires after fifteen minutes of concentration; from 7 to 10, after twenty minutes of concentration; from 10 to 12, after twenty-five minutes of severe work; and from 12 to 16 after thirty minutes. The best brain work has been found to be accomplished in the morning, and fatigue is more rapid in the afternoon, and more rapid when there are bad air and dark or overheated rooms. The brain activity is increased after gentle muscle exercise; hence the advantages of calisthenics and recesses.

It is little less than a crime to spur on brain work without proper exercise and outdoor play, and some pupils, little more than children, are stimulated to mental overactivity and to attain high standing without regard to whether or not they have time for fresh air. Before the age of 12 years a child should not be required to study at home. The crime of pushing children forward, rushing their advance from one grade to another, should cease. The child should advance by natural ability and natural progress. Cramming and pushing to get a certain amount into his brain at a certain date, and then to get him out of his grade into another to make room for one who is being pushed and crammed in the grade below should be abolished.

### OUTDOOR EXERCISE

Playgrounds, and regular hours for their use, and the occasional presence and direction of games or exercises by a physical instructor, all work for the great good of the future sturdy citizen.

Weak children should not be allowed to play or exercise to exhaustion. Also, even with strong children, the necessity for bodily repair by rest periods should be urged. The story of nutrition, metabolism and elimination of waste products, and the repair during rest should be understood by all teachers. The bedtime hour for children of different ages should be taught by the teachers.

Competitive physical, and even mental tests or stunts are bad, very bad for some. It is always injurious for growing boys and girls to sustain long physical strain, and it should not be allowed by school boards in schoolchildren. This does not mean that under proper jurisdiction there should not be baseball games for boys and basketball games for girls, etc., but competitive stunts, as just stated, should not be allowed. Secret societies which cause jealousies and cliques and ill feelings should not be allowed, although certain open, non-secret societies whose membership is reached by good work and whose object is to accomplish good work are often excellent training.

*(To be continued)*

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[1] Clock, R. O.: Dietet. and Hyg. Gaz., September, 1912.

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SATURDAY, NOVEMBER 21, 1914

## WHAT RENDERS A DIET INADEQUATE?

In the nutrition investigations of the present period there is an unmistakable tendency toward emphasizing the qualitative aspects of the dietary quite as prominently as the purely quantitative features of the food intake. The appreciation of the importance of an adequate supply of food units has become wide-spread in the ranks of the layman as well as the specialist. The need of energy for the working of the human mechanism has become quite as self-evident as is the necessity of fuel in the omnipresent automobile. The principle of the conservation of energy and matter is recognized on all sides. The less familiar conception of the specific rôle of certain food substances is only beginning to make its influence felt. The story of the vitamins and the part they may play in the pathogenesis of such diseases as beriberi and scurvy is preparing the way for a wide-spread interest in what has hitherto been relegated to a minor part in nutrition.

Writers on animal nutrition have long employed the expression "balanced ration" in connection with feeding practices in modern agriculture. By this they refer to a mixture of the nutrients in which the proteins, fats, carbohydrates and inorganic ingredients are present in certain relative proportions. The requirement of an irreducible minimum of protein and of inorganic salts has become obvious; but how inappropriate even the so-called balanced ration may be under some circumstances was plainly demonstrated in the Wisconsin experiments with cattle[1] in which failure followed the attempt to supply the nutrients from a single plant source. It is evident that there are details of composition with respect to the food-supply which scarcely suggested themselves in the cruder surveys of the nutrition situation, but which nevertheless spell success or failure in any prolonged dietary regimen.

The reason that the importance of hitherto unsuspected features was not recognized earlier may lie in the fact that most individuals are accustomed to a fairly wide range of food products—a condition under which deficiencies in minor, though important, constituents are less likely to arise. The extremes in nutrition are therefore most likely to appear under experimental conditions; and in this field of knowledge, as in so many others, the laboratory animals have furnished new and useful points of view from which to approach the problems of the human dietary. In illustration we may refer to the newest studies from Professor Hofmeister's laboratory in Strassburg published just prior to the outbreak of European hostilities which threaten to put an end to so much of the best in the medical sciences of to-day. Oseki[2] had shown that it was possible to keep mice in good nutritive condition for considerable periods of time on a diet of coarse rye bread, the *Kommissbrot* of the Germans. This product may accordingly be designated as a food both quantitatively and qualitatively adequate for the species investigated. It appears, however, according to the newest experiments of Tachau,[3] that additions of apparently innocuous substances, including sugar, fats and certain salts, may suffice to render these appropriate diets no longer suitable for adequate nutrition.

The conversion of a diet which seems to meet the requirements of an animal satisfactorily, into one obviously inappropriate, by the mere superposition of products that commonly enter into the dietary, would scarcely have been suspected a few years ago. In the mice under consideration the disproportions in the food, produced by large additions of sugar or fat, resulted in gradual decline of body-weight ending in death. To explain this, various hypotheses suggest themselves. Anorexia may have resulted from the "one-sided" diets, leading to gradual inanition from insufficient food intake. The digestibility of the ration may have become impaired by the unusual preponderance of individual foodstuffs. The upset in the usual interrelations of protein, fat and carbohydrate may have made itself felt in some feature of intermediary metabolism. After all, it matters little whether any or all of these explanations apply in this case. The lesson to students of human nutrition lies in the warning that much remains to be learned before we can pronounce the final word with respect to what constitutes a balanced ration.

In Tachau's experiments some of the animals received additions of undue amounts of certain salts—sodium chlorid, sodium phosphate, sodium sulphate, sodium lactate—to the otherwise suitable ration. In these cases, in contrast to what happened when the organic admixtures were added, upsets in the osmotic phenomena of the organism frequently made their appearance, leading to an abnormal distribution of water and the exhibition of edema. The production of this symptom by the continued administration of salt in large quantities belongs among experimental novelties. An added interest is attached thereto because a similar phenomenon has been described in infants after ingestion of excessive quantities of salt.[4] In the adult "latent" accumulations of fluid do not become evident so readily in the same way.

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[1] Unappreciated Factors in Diet, editorial, The Journal A. M. A., March 2, 1912, p. 637.

[2] Oseki, S.: Untersuchungen über qualitativ unzureichende Ernährung, Biochem. Ztschr., 1914, lxv, 158.

[3] Tachau, P.: Versuche über einseitige Ernährung, I, Biochem. Ztschr., 1914, lxv, 253.

## THE SIGNIFICANCE OF GLYCURONIC ACID

How sugar is burned up, or metabolized in the organism is a question that interests every one who has to deal with the nutritive functions of the body either in health or disease. The discovery of glycuronic acid, $COOH.(CHOH)_4.CHO$ — a compound closely related to glucose and other carbohydrates and derived therefrom by slight oxidation—as an occasional constituent of the excretion early gave occasion for the speculation that it is derived from carbohydrate in the body. A further step in the way of hypothesis has been to look upon glycuronic acid as an intermediate product of sugar destruction—a stage in the physiologic conversion of the carbohydrate into its final end products, water and carbon dioxid. The fact that when certain toxic products, like menthol, camphor, and many other substances, particularly alcohol derivatives, are introduced into the organism they are eliminated as conjugated glycuronates in no way controverts the hypothesis; for it is easily conceivable that the noxious substances of an alcoholic type combine with glycuronic acid as it is formed, and by uniting with the latter in transit, as it were, through the process of metabolism, they become detoxicated prior to their elimination.

To postulate that any substance represents an intermediate step in the disintegration of a foodstuff in metabolism implies that it is itself easily destroyed in the organism and, under ordinary circumstances does not make its appearance anywhere in the body in any quantity. The failure to meet these criteria ought, we believe, to take a compound out of the category of an intermediate product. These statements apply, of course, only under conditions of health and reasonable feeding. Sugar is a normal product easily consumed by the body; yet there are conditions of disease, like diabetes, in which it fails to undergo the usual conversion into end products.

Glycuronic acid has already been investigated with a view to securing answers to the questions raised. Mayer[1] has reported an apparently ready destruction of this substance when it was introduced into the organism, and his studies have formed the basis for the textbook statements that glycuronic acid is ordinarily readily burned up in the body. The experiments of Mayer are now directly contradicted by the newest researches of Biberfeld[2] at the pharmacologic institute of the University of Breslau. In these, glycuronic acid was recovered almost quantitatively unchanged when it was introduced parenterally into animals. The suggestion thus afforded of the improbability that glycuronic acid is an intermediate stage in the oxidation of the carbohydrates is strengthened by the comparable physiologic indestructibility of other acid oxidation products of the sugars. Neither gluconic acid, $COOH.(CHOH)_4.CH_2.OH$, nor saccharic or mucic acids $COOH.(CHOH)_4.COOH$ are readily destroyed in the body. These facts point to glycoronic acid as an abnormal rather than normal stage in metabolism.

## ABSORPTION OF THE CEREBROSPINAL FLUID

Of the problems connected with the cerebrospinal fluid, some of which have been discussed recently in these columns,[1] that of the paths of absorption of the fluid has been the subject of much interest. Key and Retzius, Quincke and others showed the continuity of the cranial and spinal subarachnoid spaces, in which the fluid is found, and held, with most later observers, that absorption takes place by way of the venous sinuses through the pacchionian granulations and the lymphatic system.

The methods of study have comprised the microscopic examination of the meninges, which has revealed nothing conclusive, and the injection of suspensions of granules, of viscous fluids, of emulsions or of true solutions. The injection of anything but true solutions is open to the serious objection that the paths sought are those of the absorption of an easily flowing fluid and not solids or clogging fluids, which are caught in the meshes of the arachnoid. Weed[2] gives the results of the injection of a true solution of potassium ferrocyanid and iron ammonium citrate into the subarachnoid spaces during life, with subsequent precipitation of Prussian blue wherever the fluid penetrates in the head and neck by fixation of the tissues *in situ* by a 1 per cent. solution of hydrochloric acid in liquor formaldehydi.

By this method, Weed concludes that the chief pathway of absorption is the venous sinuses. After injection of the fluid into the spinal subarachnoid spaces, he finds the path taken by the fluid to be throughout the cranial subarachnoid spaces, and thence, by way of "arachnoidal villi," into the great sinuses. The sinus into which this occurs chiefly is the superior longitudinal, but practically all the others take some part in the drainage.

That the absorption is chiefly cranial Weed believes is shown by the much more rapid absorption and excretion in the urine of phenolsulphonephthalein from the cranial spaces than from the spinal, after ligation of the cervical cord and meninges. He finds that the cerebral, as distinguished from the pachymeningeal, vessels play no part in the drainage of the fluid under normal conditions of pressure, and that the subdural spaces are excluded from participation in this escape, since no connection exists between them and the subarachnoid spaces.

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[4] Freund, W.: Jahrb. f. Kinderheik., 1914, lix, 421. Meyer, L. F.: Ibid., 1910, lxxi, 1. Schloss, E.: Ibid., 1910, lxxi, 296. Krasnogorski, N.: Ibid., 1910, lxxii, 373. Köppe: Ibid, 1911, lxxiii, 9.

[1] Mayer, P.: Ztschr. f. klin. Med., xlvii, 68.

[2] Biberfeld, J.: Zum Verhalten der Glukuronsäure im Organismus, Biochem. Ztschr., 1914, lxv, 479.

[1] The Production of Cerebrospinal Fluid, editorial, The Journal A. M. A., March 28, 1914, p. 1018. New Facts About the Cerebrospinal Fluid, Current Comment, Sept. 19, 1914, p. 1037. The cerebrospinal Fluid, editorial, Nov. 14, 1914, p. 1764.

[2] Weed: Jour. Med. Research. 1914. xxxi. 51.

The path of escape from the subarachnoid spaces into the sinus he finds to be the "arachnoidal villi." These are projections of arachnoidea into the wall of the sinus, usually about veins entering the sinus, and most numerous in those areas where the great cerebral vessels enter. The arachnoidal tissue, as it passes backward and inward in the wall, becomes myxomatous, and is capped at its end, where it lies in close apposition to the endothelium of the sinus, by one or many layers of mesothelial cells, through which and the endothelium the fluid enters the lumen. Usually these villi are confined to the wall of the sinus, but in adults they may be seen projecting into the lumen, and the myxomatous portion forms the groundwork of the pacchionian granulations. Weed states further that projections of arachnoidal mesothelial cells occur in all portions of the dura, especially about the sagittal and cavernous sinuses, serving as intradural channels for cerebrospinal fluid, which explains the weeping of fluid from the exposed dura after removal of portions of the calvarium during life. He believes that the passage of fluid through the villi is a filtration, rather than a process of osmosis or secretion, since the Prussian blue granules are found in the cells and lumen of the sinus even with high concentrations of injection fluids, and retrograde passage of fluids occurs through the villi on obstruction of the return venous flow from the head.

The lymphatic system appears to play an accessory part in the absorption of cerebrospinal fluid, since after injection into the spinal subarachnoid spaces, Prussian blue is found in the cervical lymph-channels and glands and in the perineural lymph-spaces of the cranial and spinal nerves. About the olfactory nerves, in the meshes of the connective tissue reticulum and in the lymphatic channels of the nasal mucous membranes, large amounts of Prussian blue are found. Weed cites several cases in which fluid containing potassium ferrocyanid ran out of the nose during injection. This drainage seems to occur in a like manner, but to a lesser extent, along the other cranial and spinal nerves.

Briefly, then, we may conclude from the results of Weed's valuable work that the escape of cerebrospinal fluid is chiefly by filtration through arachnoidal villi from the subarachnoid spaces into the venous sinuses, with an accessory path from the perineural spaces of cranial and spinal nerves through the tissue spaces about the nerve to the lymphatic vessels.

## SOME FEATURES OF BONE GROWTH

Although calcium is admittedly an indispensable constituent of the diet, the need of this element is far more acute during the period of growth than in adult life when the bony structures, rich in lime and other tissues, have been fully developed. The period of gestation — in reality, likewise a period of growth in a special sense — is excepted, and also the time of lactation, when milk comparatively rich in calcium is being secreted in abundance.

A deficiency in the intake of calcium during the period of adolescence is more than likely to entail disturbances in the development of the osseous tissues. This is, of course, a fact too familiar to admit of discussion here. Nevertheless, the actual character of the bone defects which result from such deficiency is by no means so certain as the supposed familiarity of the subject would lead one to conjecture. Perhaps the morphologic pathologists are confident of their ability to recognize a bone rendered defective from the lack of the essential lime salts. The pathologic chemist is far from convinced as to the indications of abnormal composition under these circumstances. Has not the problem of rachitis and of osteoporosis remained a topic of controversy until the present day?

The lack of satisfying knowledge with respect to the effects of a shortage of calcium in the diet is attributable in the case of the human subject in largest measure to the inability of the student to examine material from suitable cases. Comparatively few investigators have contributed tissue analyses bearing on this topic. Furthermore, the variations in the food intake of the growing infant or child are rarely extreme with respect to their deviation from the normal, so that the effects are never very pronounced and are likely to be concealed when they are contrasted with the broad range of a "general average." For these reasons our best information has come and is further likely to come from carefully planned experiments on animals during their period of growth.

Very recent studies by Weiser[1] in Professor Tangl's institute at Budapest are of peculiar interest, because they involve experiments on growth with diets differing solely in their content of calcium. The ration poor in calcium contained 0.055 per cent. of this element, in comparison with 0.448 per cent. in the comparable dietary. The prolonged lime-poor feeding brings about very apparent changes in growth, which early manifest themselves in undersize or underweight by contrast with control animals. If the calcium deficiency is continued the appetite fails and then nutritive decline may actually ensue. There are, of course, extreme conditions for actual practice, yet they are the outcome of diet deficiencies that are not apparent to the eye and sometimes call for very expert knowledge.

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[1] Weiser, S.: Zur Kenntnis des Einflusses kalkarmer Nahrung auf die Zusammensetzung der wachsenden Knochen, Biochem. Ztschr., 1914, lxvi, 95.

How many mothers, or even physicians, realize that corn and meat, for example, are very low in calcium? Are they informed as to the distribution of calcium in common foods?

The bones of the individuals deprived of sufficient calcium exhibit a physical make-up that may readily reveal itself in a cursory examination. They are likely to be thin, pliable, deformed and fragile. The skeleton is not necessarily retarded in its external growth, but the bones supplant part of the lack of mineral constituents by an added richness in water.

One of the novelties revealed in Weiser's research is the unexpected presence of not inconsiderable quantities of alkalies—sodium and potassium—in the lime-poor bones. Magnesium, which has been believed by some to replace the calcium when the latter is not available, is after all not correspondingly conspicuous. The changes in the distribution of the inorganic components of the bone are not alike in all parts of the skeleton. The deviations are least conspicuous in the skull and most prominent in the ribs and spinal vertebrae. Many of these facts here elaborated from recent researches have been demonstrated in the past. They will bear repetition so long as the rôle of specific components of the diet is not appreciated more deeply than it appears to be at present in medical circles.

## AS TO SANATOGEN

For several years it has been known by physiologists that all proteins taken into the stomach are disintegrated into their fundamental components, the amino-acids, and that they are not absorbed at all as proteins, except in most minute amounts under exceptional conditions. Therefore, no matter what protein is taken as food, the material obtained from this protein by the body is a group of amino-acids, always pretty much the same except in relative proportions, whatever the food. A few proteins lack certain essential amino-acids, but any ordinary diet supplies enough, and more than enough, of each and every amino-acid. Furthermore, since the proteins are completely disintegrated before absorption, it follows that any adventitious chemical substance that is bound to a protein taken in the food does not enter the blood and circulate in the body in the same protein compound.

All the facts stated above are elementary, and should be known by any and every physician who pretends to keep even approximately abreast of the science of medicine. If there are any who do not know these fundamentals, and from certain unwelcome evidence we fear there are, they must be resigned to being told just where they stand. Certainly they have no good excuse for their lack of information, for the physiologists and biochemists have informed them of modern advances in innumerable ways. For ten years and more these facts have been discussed and demonstrated in societies and in medical publications. And yet — there is Sanatogen, prescribed by Geheimrats, Hofrats and also by doctors, and testimonialed as abundantly by men with medical degrees as Duffy's whisky is by centenarians. One can merely throw up his hands. If, as the exploiters of Sanatogen declare, the product "has been endorsed by von Noorden, Ewald, Dührssen, Eulenburg, Neisser, Binswanger, Leyden, Krafft-Ebing, Tillmanns, Tunnicliffe and thousands of other earnest, reputable physicians," we can only say that their earnestness has not been in the direction of grasping fundamental advances in medical sciences, however great the reputation they have gained may be.

In this issue[1] we print another report of exact experimental observation which shows, as was obvious beforehand, that Sanatogen has the properties of its constituents, namely, casein and glycerophosphates. Nothing more nor nothing less could be the case. Bottling dried cottage cheese plus some glycerophosphates, and raising the price many times, may increase its psychic effect, but it will not alter its physiologic action. These facts we have presented often enough, but the amount of paid advertising the proprietors of this compound find it profitable to carry in the United States makes us feel obliged to give them this bit free. That laymen may be persuaded to purchase Sanatogen in the belief that it possesses some occult powers not to be found in its constituents is not surprising. By blatant and persistent advertising, the public can be fooled into buying any product — however valueless — for which medicinal claims are made. But that physicians should prove equally gullible is a sorry commentary on the scientific attainments of the followers of a learned profession.

## NEW EXPERIENCES WITH INTRAVENOUS NUTRITION

Not long ago we called attention to the successful experiments of Henriques and Andersen of the physiologic institute at the University of Copenhagen in the field of intravenous nutrition.[2] They succeeded in keeping animals alive for very considerable periods of time by the device of a continuous intravenous injection of nutrients, either by way of the jugular vein or through a splenic vein. By such parenteral "feeding" of completely digested proteins, together with suitable non-nitrogenous food materials, it was possible to secure retention of nitrogen, that is, positive or favorable nitrogen balances in the organism. Inasmuch as the nitrogen in such nutrient solutions was supplied essentially in the form of amino acids, not only is their significance for the nutritive functions thereby conspicuously demonstrated, but also the probability of a protein synthesis within the tissues themselves is brought into prominence.

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[1] Street, J. P.: The Feeding Value of Sanatogen Compared with Commercial Casein with Respect to Maintenance and Growth, THE JOURNAL A. M. A., this issue, p. 1831.

[2] See Henriques, V., and Andersen, A. C.: Ztschr. f. physiol. Chem., 1913, lxxxviii, 357; Intravenous Nutrition, editorial, THE JOURNAL A. M. A., Jan. 31, 1914, p. 385.

There is no undue flight of scientific imagination in assuming, from the facts of intravenous nutrition with amino acids just recited, that a synthesis of protein can take place in the animal body from the ultimate products of digestion even when they do not traverse the intestinal wall. The latter was, for a long time, looked on as the seat of protein synthesis. It is not impossible, therefore, that digestion products introduced directly into the circulation with avoidance of the alimentary tract may be excreted into the lumen of the bowel, only to be there reabsorbed and thus utilized in the normal manner, whatever that may be. Indeed, it is even conceivable that the injected products come into direct contact with the intestinal epithelial cells through the blood-stream, without the necessity of reaching the interior of the bowel to accomplish this. The problem of the possible participation of the cells of the digestive tube in the resynthesis of protein from digestion products or amino acids constantly recurs.

In a new series of researches Henriques and Andersen[3] have furnished direct evidence bearing on the possible rôle of the intestine in protein metabolism. They have repeated their intravenous feeding experiments on animals from which the entire enteric tract, from the duodenum to the rectum, had been surgically removed. Even in these individuals there was a favorable nitrogen balance. The experiments were not prolonged, owing to the early death of the subjects for reasons that are not apparent; but while they lasted, the indications were in harmony with the other evidence, where we have presented on previous occasions,[4] that the truly nutritive or synthetic functions can be conducted quite apart from the bowel itself.

The significance of the completeness of the digestive processes is emphasized anew in the most recent Danish investigations.[3] Whereas amino-acid mixtures are readily tolerated by intravenous injection and are assimilated, solutions of partially digested proteins — proteoses and peptones—are extremely toxic when introduced into the organism in this direct way. This fact has long been appreciated, but these more elegant experiments have served to confirm anew the current teaching respecting the non-availability of the preliminary products of digestion, such as may be formed in the stomach, for example. Native proteins like casein, egg-white, and even inactivated homologous serum fail to satisfy the nutritive requirements when introduced parenterally; although the serum is not so toxic as are the other protein products mentioned. The "foreign" character of even the purest proteins injected directly into the blood-stream is further betrayed by their prompt excretion through the kidneys.

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[3] Henriques, V., and Andersen, A. C.: Untersuchungen über permanent-intravenöse Injection von Peptonen und genuinen Proteinen, Ztschr. f. physiol. Chem., 1914, xcii, 194.

[4] What Becomes of the Protein Digestive Products, editorial, The Journal A. M. A., Jan. 24, 1914, p. 303.

# Current Comment

## TYPHOID CARRIERS

Now that the quality of public water supplies has been greatly improved and the practice of milk pasteurization has been widely introduced, outbreaks of typhoid attributed to typhoid carriers are becoming more conspicuous than formerly, although probably they are not really more frequent. A remarkable epidemic due to food infected by a carrier was recently reported by Sawyer,[1] and while this was perhaps exceptional in the number of persons infected at one time, it emphasizes the grave danger of allowing carriers to have to do with the preparation or handling of food intended for general consumption. The still more recent typhoid outbreak at Lehigh University with more than fifty cases and several deaths has been traced likewise by the Pennsylvania State Department of Health to a kitchen employee who proved to be a healthy carrier. Such instances — and they are multiplying fast — suggest that wherever feasible, employees handling foods liable to spread infection should be examined for a possible agglutinating reaction in the blood. In case the reaction is positive, and even when it is negative, but there is a definite history of typhoid fever, bacterial examination of stools and urine should be made. Although such a procedure is not possible in all cases, there are nevertheless institutions where agglutination, and, when necessary, other tests can be made with a minimum of difficulty. Application of the test could probably be made with little inconvenience in connection with the student dining halls of many educational institutions where proper bacteriologic facilities and expert service exist. We know of at least one American university where such a routine examination of the employees concerned in the handling of food has been practiced for several years past. The disaster at Lehigh shows that such precautions are justified, and that with our present knowledge of typhoid causation some responsibility in this regard may be justly expected from college authorities. There are also many hospitals, sanatoriums and public institutions in which the necessary facilities and skill for such examinations exist or could be readily provided, and here, too, it is true that to be forewarned is to be forearmed. In the future uncomfortable questions may be asked when carrier outbreaks occur in large institutions that are provided with bacteriologic facilities.

## THE TESTES AND THE SYMPATHETIC NERVOUS SYSTEM

It is a recognized fact that removal of the primary reproductive organs—gonadectomy, as it has lately been termed—may exercise an undeniable influence on the disposition and emotions of the individuals concerned. Psychologists tell us that emotions are the mental representatives of bodily activities. Impulses arising from the viscera or the periphery of the body may accordingly be interpreted in the form of emotional states. Inasmuch as the sympathetic nervous system is closely involved in the functioning of the internal organs and the blood-supply of different parts of the body, the logic of the situation leads one to inquire into a possible interrelation between all of the factors here discussed, particularly the association of dispositional changes following castration with alterations in the sympathetic system. Dr. Wheelon[1] of the Northwestern University Medical School in Chicago has made a careful comparison of certain vascular responses in dogs before and after removal of the testes, in order to secure information as to the effects of such operations on the general functions of the body. His work indicates that normal blood-pressure is only slightly changed as a result of gonadectomy. The irritability of the myoneural junction of the arterial walls, as determined by comparative responses to the same dosage of epinephrin, was constant, within the limits of experimental error, before and after castration. Sympathetic irritability, on the other hand, was clearly lowered after the operation. This was ascertained by the behavior of the circulatory system to nicotin, which was used as a vasomotor stimulant in these cases because of its selective action on the sympathetic nervous system. The evidence was made more convincing by the added fact that testicular grafts were apparently found to restore irritability in castrates practically to normal. Wheelon concludes that a relationship actually exists between the normally functioning testes and the irritability of the sympathetic nervous system proper. Deprived of these sexual organs, the individuals exhibit structural changes followed by alterations in their physiologic and emotional processes.

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[1] Sawyer, W. A.: Ninety-Three Persons Infected by a Typhoid Carrier at a Public Dinner, The Journal A. M. A., Oct. 31, 1914, p. 1537.

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[1] Wheelon, H.: Extirpation of the Testes and Vasomotor Irritability, Am. Jour. Physiol., 1914, xxxv, 283.

## THE AVERAGE DURATION OF SICKNESS

It is recognized that much of our data regarding disease is practically valueless because the statistics recorded in different localities and for different purposes are not intelligently coordinated. The facts are on record, but the deductions which can be drawn only from carefully tabulated facts are too often lacking on account of the incompleteness of the records. One of the most promising features about the present public health situation is that the facts regarding disease are beginning to be subjected to the same careful scrutiny and mathematical analysis that have in previous years been given to life insurance tables and other tabulations of business facts. The Prudential Insurance Company of America has issued a reprint containing an address before the National Organization for Public Health Nursing, on "Practical Statistics of Public Health Nursing and Community Sickness Experience," by Mr. Frederick L. Hoffman. After commenting on the well-known lack of uniformity in recording the statistics of visiting nurses, of terminology and of completeness of records, Mr. Hoffman presents the statistics of visiting nurses' associations for Baltimore, Boston, Chicago and Philadelphia for 1912 and 1913. Tabulating these reports, he finds that the four associations in one year gave attention to 58,933 patients, making 429,620 calls, or an average of seven calls per patient. After discussing the general condition of hospitals and hospital treating throughout the country in an endeavor to establish the essentials of an analysis on this subject, Mr. Hoffman finds that the average duration of sickness, as far as can be determined from the fragmentary records, was eleven days for ages under 44 and twenty-three days for ages over 45, and that the average nursing duration for sickness for patients over 45 is seventeen days for males and twenty-five days for females. Many other interesting facts and deductions are presented. Mr. Hoffman's painstaking study of a large mass of hospital reports and statistics is of distinct value, although the most important point emphasized is the meagerness and incompleteness of our data.

## AMINS AND URTICARIA

In a recent issue of The Journal, attention was directed to the occurrence of preformed amins in the foods we eat.[1] It was there pointed out that many of these products derived from bacterial decomposition of proteins are already known to exhibit pharmacologic potency, such as an unmistakable effect on blood-pressure, as well as other physiologic phenomena. We are now reminded of an interesting and novel observation by Eustis[2] on the action of one of these amins—betaimidazolylethylamin, derived from the amino-acid histidin. The introduction of a very small amount of this substance through superficial abrasions of the skin promptly gives rise to a localized edema resembling urticaria. This fact has prompted the assumption that betaimidazolylethylamin formed in the gastro-enteric tract may be responsible for urticaria of alimentary origin.[3] On this hypothesis a rational dietotherapy of such urticaria is at once suggested. Eustis proposes, for example, effective purgative treatment along with abstinence from protein in the diet for some days. He says that the intestinal toxemia can readily be judged by frequent examination of the urine for indican, the presence of which is used as a guide to the allowance of the amin-yielding protein in the diet. There are various theories as to the origin of urticarias. Some of the cases of the disease are singularly intractable. Doubtless they have a manifold cause or origin. The amin hypothesis is surely not without significance.

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[1] The Amins in Common Foods, editorial, The Journal A. M. A., Oct. 17, 1914, p. 1398.

[2] Eustis, A.: Urticaria—An Experimental Lesion Produced by the Local Application of Betaimidazolvlethylamin; Its Relation to Intestinal Toxemia, New Orleans Med. and Surg. Jour., 1914, lxvi, 730.

[3] Eppinger, H., and Gutman, J.: Zur Frage der vom Darm ausgehenden Intoxikationen, Ztschr. f. klin. Med., 1913, lxviii, 411.

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**The Uniqueness of the Individual.**—It is impossible to make the inevitable course of a man's destiny comprehensible in all details. Every man from his birth to his death is a unique phenomenon with no exact counterpart in the past or in the future. The observer understands things only within the limits of his own peculiar nature.—Gerhardt Hauptmann.

# Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

## CALIFORNIA

**Personal.**—Dr. Rudolph H. Kocher has been appointed instructor in research medicine in the Hooper Foundation of Medical Research of the University of California, Berkeley. ——Dr. James W. Keeney, San Francisco, is reported to be critically ill at his home.——Dr. Fletcher G. Sanborn returned to his home in Los Angeles, October 24, after an absence of eight months in charge of the Hospital Uyak, Alaska.——Dr. Benjamin F. Walker, Stockton, is in charge of a special first-aid corps organized by a Parisian banker.

**New Medical Building.**—Working drawings have been completed for the new pathologic building to be erected by San Francisco at the city and county hospital site. The plans call for a two-story building, 97x155 feet. This will contain on the first floor an operating amphitheater, human and animal rooms, inside and outside kennels for housing animals for scientific investigation, a specimen department and cadaver room. On the upper floor will be located two laboratories with the necessary preparation and animal rooms.

## COLORADO

**Personal.**—Dr. J. E. Perkins, mayor of Denver, recently visited Indianapolis to study and inspect the activities of the health board and other departments of the municipal government.——Dr. Franklin E. Wallace, Pueblo, has been elected a member of the state legislature.——Fire in the McPhee Building, Denver, October 3, seriously endangered Dr. Walter A. Jayne who was asleep in his apartment when the fire broke out. He was overcome by smoke, but was rescued by the fire department.

**Health Seekers Bureau of Denver.**—At a recent meeting of the Denver physicians, the tuberculosis supervisor of the Denver Visiting Nurses' Association told of his work of setting incoming health seekers on the road to life and strength. The physicians adopted a resolution indorsing the work of the supervisor and volunteered to have one of their number assist him during his office hours. Health seeking new comers will find at the rooms of the Denver Visiting Nurses' Association at Fifteenth and California Streets, not only the supervisor, but a physician who will give them an examination and advice between 9:30 and 11 a. m. on Mondays and Thursdays.

## GEORGIA

**Atlanta Roentgenologists Organize.**—On October 29 the Atlanta Roentgen-Ray Society was formed, with an initial membership of fifteen. Pending the adoption of a constitution and by-laws, Dr. George M. Niles was made acting president and Mr. B. E. Sale, acting secretary.

**Pellagra and Hookworm at Milledgeville.**—The Georgia State Sanitarium at Milledgeville has been selected by the United States government as a station for experimental work in pellagra cases. The patients will be segregated and kept under special treatment and diet, the work being done under the charge of two experts of the United States Public Health Service.——According to examinations made by specialists from the State Board of Health, the percentage of hookworm infection is about 50 per cent. It is estimated that 1,000 cases exist in Baldwin County.

## ILLINOIS

**Personal.**—Dr. William A. Diffinbaugh, Dundee, was thrown to the ground while cranking his automobile, October 23, and fractured his ankle. He is under care in the Sherman Hospital, Elgin.——Dr. Anthony G. Wittman, of the staff of the Elgin State Hospital, has been made medical director of the new Alton State Hospital.

**Tuberculosis Dispensary Opens in Quincy.**—The dispensary established in Quincy by the Adams County Tuberculosis Association was opened for the inspection of the public November 7, and received patients on the following day. The dispensary will be open on Mondays, Wednesdays and Fridays at hours to accommodate all classes of people.

**Elgin Superintendent Seeks Betterments.**—Dr. Henry J. Gahagan, superintendent of the Elgin State Hospital, has asked the State Board of Administration for a tuberculosis hospital at an estimated cost of $50,000, a building for incurably insane women at an estimated cost of $35,000, an extension to the dining-room of the institution, and an addition of 500 acres of land to the hospital farm.

### Chicago

**City to Establish Public Laundry.**—Health Commissioner George B. Young announced November 13 that one of the Municipal Bath Houses will soon be turned into a Municipal Laundry for the benefit of the women in the tenement districts.

**Anti-Typhoid Inoculation in Holland.**—Dr. Caroline Hedger has been asked to go to Rotterdam, Holland, taking with her antityphoid vaccine sufficient for 10,000 Belgian refugees in Holland, where typhoid fever has already appeared. The Chicago Woman's Club has already contributed $300 toward Dr. Hedger's fund. The antityphoid vaccine has been offered free.

**Physicians Urge Increased Hospital Accommodations for Contagious Diseases.**—Members of the Chicago Medical Society, speaking before the Association of Commerce, November 4, appealed for enlarged hospital accommodations for cases of contagious diseases. It is said that there are more than 40,000 cases in the city every year and that only about 10 per cent. of the number are sent to hospitals; also that the lack of hospital facilities causes failure to report many cases of contagious diseases to the health commissioner for quarantine.

**Morals Board Plan.**—The council committee on health has recommended the creation of a morals commission of five members whose work will be to study immorality in all its forms, its causes and effects; to recommend measures for the prevention of venereal disease; to report violations of the state laws or city ordinances covering immorality; to study the legal action necessary for the supression of disorderly resorts within three miles of the city; and to recommend measures for the physical and mental rehabilitation of fallen women. The commission is to make reports from time to time to the mayor and city council.

## INDIANA

**Eye Inspection Ordered.**—The Indianapolis City Board of Health has ordered an inspection of the eyes of all school-children, with special reference as to their ability to see ordinary type at an ordinary distance.

**Small-Pox in Whiting.**—E. L. Dewey, commissioner of the department of health, states that since October 14, sixty-one cases of small-pox have been reported to his department. This department established an isolation hospital October 10. Sixty-one patients have been admitted since that date, and thirty have been discharged. Dr. Edward K. Newton is the resident physician, assisted by four graduate nurses. All children admitted to the public and parochial schools must be successfully vaccinated. Nearly all of the new cases developing are unvaccinated adults. One thing very noticeable about this epidemic is that of variety of types of the disease. One baby aged 3 weeks was admitted on the fifth day of the eruption, a typical confluent type. Those unvaccinated adults for the most part are severe discrete types, a few confluent.

## KENTUCKY

**Trachoma in Butler County.**—Dr. James O. Carson, Bowling Green, with his assistant, spent from October 27 to 29 in Butler County inspecting for trachoma the eyes of the children of fifteen school districts on the north side of Green River. Dr. Carson will make a report of his findings to the State Board of Health, and will also lay the matter before the United States Public Health Service in the hope that a treatment station may be established in this section of Kentucky.

## LOUISIANA

**Postgraduate School Opens.**—The New Orleans Post-Graduate School of Medicine opened for its first session October 26. Dr. Homer J. Dupuy, Jr., is president; Dr. Wilhelm Kohlmann, vice-president, and Dr. Joseph A. Danna, secretary, of the institution. The faculty is composed of staff members of the Charity Hospital, Touro Infirmary, Hotel Dieu and the Presbyterian Hospital.

**Reciprocity with California.**—At the meeting of the Louisiana State Board of Medical Examiners, October 29-31, a resolution was adopted that the board would accept for registration without examination in Louisiana, all applicants from California who can comply with the rules governing reciprocity with Louisiana. The board announces that an examination will be held in New Orleans, June 3 to 5.

**Personal.**—Dr. Espy M. Williams, Patterson, has resigned from the Louisiana State Board of Medical Examiners on account of his removal from the Fourth District, and Dr. Leon J. Menville, Houma, has been appointed to fill the vacancy.——Dr. George W. Lewis, New Orleans, fell October 26, fracturing his left arm at the wrist.——Dr. Arthur W. De Roaldes, New Orleans, who has been ill with pneumonia, is reported to be convalescent.——Dr. Allen J. Perkins, Lake Charles, while driving near Mallard Junction, October 23, narrowly escaped death when a magazine shotgun was discharged at his buggy.

### MARYLAND

**Personal.**—Dr. Joseph W. Holland, Baltimore, has been elected vice-president of the Queen Anne's County chapter of the Eastern Shore Society.——Dr. Frederick H. Baetjer, Baltimore, who was operated on for the removal of glands near the shoulder, October 30, is reported to be doing well.

**Adler Memorial Annex Dedicated.**—The Adler Memorial wing of the Children's Hospital School, Baltimore, was dedicated on November 12, Dr. Frank T. Goodnow, president of the Johns Hopkins University, making the principal address. The new wing, which is the gift of Simon C. Adler, contains twenty-four beds on the second floor. On the floor below there is a room for the children's use as a playroom, a diet kitchen and a room for Roentgen-ray work.

**Foot-and-Mouth Disease in Maryland.**—On account of the epidemic of the foot-and-mouth disease among the cattle of Maryland, Dr. Nathan R. Gorter, Commissioner of Health of Baltimore, has issued a proclamation cautioning the public to heat all milk to the boiling point before using, in order to destroy the infection. The state veterinarian is making a thorough investigation and immediately quarantining all dairies and herds where the disease is discovered. Shipment of milk from such dairies is prohibited by the State and City Health departments and by the State Live Stock Sanitary Board. The City and State Health departments are cooperating with the Live Stock Sanitary Board in the warfare on the disease, and men from these departments have been sent to Highlandtown and to Howard County to see that all proper precautions are taken to prevent the communication of the disease to human beings.

### MASSACHUSETTS

**Personal.**—Dr. Barry H. Calkin, Boston, after twenty years of practice in Jamaica Plain, has left for his new home in Nova Scotia.——Dr. Lemuel F. Noble, Boston, sailed for Europe, November 7.——Dr. Aubrey J. Collins, Boston, has been appointed a medical inspector of the health department.

**Baby-Saving Sunday.**—Many prominent physicians of the United States occupied the pulpits in Boston churches, October 8, preliminary to the meeting of the American Association for the Study and Prevention of Infant Mortality. In their addresses these physicians sought to show the causes of infant mortality and how it may be reduced.

**Brigham Hospital Formally Opened.**—Exercises in celebration of Founder's Day was held at the Peter Bent Brigham Hospital, Boston, at which the principal addresses were delivered by Drs. William H. Welch, Baltimore, and Frank Billings, Chicago, who emphasized the advantages of a teaching hospital. John P. Reynolds delivered the symbolic silver key of the institution to President Alexander Cochrane and Dr. Harvey Cushing, Boston, speaking on behalf of the staff, reviewed the difficulties of getting so large a plant into full operation and stated that he considered the proximity of the Harvard Medical School as the keystone to the hospital's future success.

### MICHIGAN

**Sicilian Surgeon in Detroit.**—Dr. Franco Bonnarito, professor of surgery in the University of Palermo, Sicily, held a clinic and delivered a lecture at Grace Hospital, Detroit, recently.

**Personal.**—Dr. James Gostanian, Sault Ste. Marie, after fourteen years' practice in Baraga, has moved to Detroit, October 29. The Chippewa County Medical Society gave a dinner in honor of Dr. Gostanian at the Park Hotel, Sault Ste. Marie.——Dr. Benjamin T. Goodfellow, Clio, suffered a fracture of two ribs in an automobile accident near Clio, November 3.——Dr. James N. Garber, Detroit, who was injured in an automobile collision, October 26, is convalescent and expects to resume practice soon.——Dr. Warren H. Taylor, Flint, is suffering at his home from the effects of a cerebral hemorrhage, October 29.——Dr. Orlando E. Harvey, Howell, assistant superintendent of the state sanatorium, has resigned and will practice in Iowa.——Dr. Albert L. Laing, Escanaba, has been appointed local surgeon for the Soo Line.——Dr. George A. Kirker, Detroit, who has been ill at his home with heart trouble for several weeks, is reported to be improving.

### MINNESOTA

**Health Body Joins Consolidated Charities.**—The Municipal Anti-Tuberculosis Committee of St. Paul, on October 30, voted to go out of existence and unite with the Associated Charities of St. Paul.

**Southern Minnesota Physicians to Meet.**—The annual meeting of the Southern Minnesota Medical Association will be held in Mankato, December 1 and 2, under the presidency of Dr. Hugh F. McGaughey, Winona.

**Personal.**—Dr. Christian F. Carstens, Keewatin, has been transferred to the Rood Hospital, Hibbing.——Dr. John W. Lee, Minneapolis, who has just returned from abroad, was arrested in Dublin on suspicion of being a spy.——Dr. Eugene A. Hutchins, Minneapolis, is critically ill at Asbury Hospital in that city.

**Specialists Elect Officers.**—At the annual meeting of the Minnesota Academy of Ophthalmology and Oto-Laryngology, the following officers were elected: president, Dr. Edward J. Brown, Minneapolis; vice-presidents, Drs. John H. James, Mankato, and Thomas S. McDavitt, St. Paul; secretary-treasurer, Dr. John H. Morse, Minneapolis.

**Diphtheria.**—One hundred and twenty-one cases of diphtheria were reported in St. Paul, October 29, as against thirty cases during October last year. The health department expected soon to have all cases isolated and the spread of he disease stopped. Forty-one cases were also reported in Minneapolis by the school nurses for the week ended October 30.

### MISSISSIPPI

**Higher Entrance Standard.**—At a regular meeting of the Mississippi State Board of Health on Oct. 26, 1914, a resolution was adopted that the definition of a reputable medical college be amended to read as follows: One which is classed as A plus or B by the American Medical Association until Jan. 1, 1919. After this date said colleges shall require an entrance qualification in addition to four years of standard high school work, one year of college work, including courses in physics, chemistry, biology and a modern language. This to apply to all who graduate in 1919, or thereafter. Those graduating before this to be allowed credit for four years or more of regular practice instead of this additional qualification. This is the twenty-fourth state to adopt this higher requirement.

### MISSOURI

**Anti-Tuberculosis Campaign.**—Dr. Louis C. Boisliniere of St. Louis delivered a series of lectures on tuberculosis in six towns in Knox County, October 26 and 27. The campaign was conducted under the auspices of the Knox County Medical Society and was financed by the county court of Knox County.

**Health Meet Postponed.**—The Missouri Valley Health Congress, planned to meet at St. Joseph, November 27-28, has been postponed until some time in February on account of the wide interest manifested by the health workers. The scope of the congress will be enlarged and adequate preparations made for the meeting in February.

**Physicians to Have Right of Way.**—An ordinance was passed in the St. Louis Municipal Council recently, which gives physicians the right of way on public streets. Heretofore the fire department equipment, ambulances, United States mail wagons, police patrols and street railway repair wagons have been the only vehicles which had the right of way.

**Medical History Exhibit.**—The St. Louis Medical History Club is collecting articles for an exhibit at a loan exhibition illustrating the medical history of St. Louis and Missouri to be conducted under the auspices of the Missouri Historical Society. The exhibition will be held in Jefferson Memorial Building, beginning December 2 and will continue for two weeks.

**Elected to the Legislature.**—The following physicians, all reputable practitioners, have been elected members of the state legislature: In the Senate, Dr. W. Lee Welch, Mountain View, and Dr. John S. Wallace, Brunswick; in the House of Representatives, Dr. Thomas B. Cook, Rayville, Ray County; Dr. Guy B. Mitchell, Branson, Taney County; Dr. James A.

Waterman, Breckenridge, Caldwell County; Dr. James R. L. Womack, Houston, Texas County; Dr. Cassius M. C. Wilcox, Kirksville, Adair County.

## NEBRASKA

**Medical Fraternity Chapter Organized.**—On November 2, a chapter of the Alpha Omega Alpha Society was organized at Omaha in the medical department of the University of Nebraska. The charter members being the dean, Dr. Willson O. Bridges, Drs. Irving S. Cutter, Charles W. M. Poynter, Oscar T. Schultz and Palmer Findley, and Messrs. Blaine A. Young and J. Jay Keegan.

## NEW JERSEY

**Dispensaries Opened.**—A room in the Paterson City Hall has been asked for as a free dispensary and was opened October 31. The dispensary will receive patients at 9 a. m. and 2 p. m., and will be in charge of City Physician Dr. James F. Briody and Assistant Physician Dr. Joseph W. Williams.——The Tuberculosis Clinic for West Hudson, located at 41 Kearny Avenue, Kearny, established by the Hudson County Board of Freeholders, was opened for inspection, October 17. Dr. Alfred A. Mutter, Arlington, is in charge of the clinic.

**Newark's Experience with Vaccination.**—A folder with this title is now being distributed by order of the Board of Health. Among the figures given for the small-pox epidemic of 1901-1902 are the following: In 195 cases, totally without vaccination, 56 deaths resulted. Among 70 vaccinated persons exposed to small-pox in their homes, 4 deaths occurred. Among 131 cases in which the vaccination mark was more than 5 years old, there were 12 deaths. In 7 cases in which the vaccination mark was less than 5 years old, there were no deaths.

## NEW YORK

### New York City

**Training Teachers for Defective Children.**—The department of New York University for the training of teachers of defective children has 115 teachers enrolled. A clinic has been conducted in connection with this department and the indications are that its facilities will soon be taxed.

**Handbook of the Bureau of Infectious Diseases.**—A new edition of the Handbook of the Bureau of Infectious Diseases is now ready for distribution. Its scope has been considerably widened so that it now embraces a description of the varied activities of this bureau in all its details. It is at one time a manual of instruction for employees of the bureau and a book of information to students of this department of public health work. On request copies will be sent to those interested.

**Milk Pasteurization and Foot-and-Mouth Disease.**—The outbreak of foot-and-mouth disease in a large herd of cattle at Woodhaven, L. I., and possibly also at another large dairy farm on Long Island, led to the adoption at the meeting of the Board of Health, November 13, of resolutions requiring the pasteurization of all milk brought into the city. It is said that 99 per cent. of the supply is pasteurized under ordinary conditions, so that this order will not carry with it any serious hardship for dairymen.

**Factory and Shop Inspection.**—The Health Department has formulated plans providing for the sanitary inspection of all shops and factories in this city. The information thus acquired will be turned over to employers and employees who can then cooperate to secure any needed reforms. The department also announces that through its Bureau of Public Health it will be glad to assist in formulating sanitary industrial standards for the prevention of occupational diseases. This movement is the outgrowth of the garment workers' strike four years ago, when it was ruled that every industry should be responsible for the sanitary conditions in that industry.

**Inquiry into Coroner's Officers.**—This inquiry is being conducted before Commissioner Wallstein, and thus far a number of coroners and officials of the Health Department have been examined. The testimony presented showed that in 5,749 deaths investigated during the year 1913, necropsies were performed in only about 13 per cent. Dr. James Ewing expressed it as his opinion that this was far too small a number, and pointed out that New York got along with practically no aid from the science of legal. medicine and that it was highly inadvisable to allow any one not trained in pathology to diagnose causes of death. A great deal of evidence has been presented, showing that in many instances the cause of death in the coroner's reports is very inadequately stated.

## NORTH CAROLINA

**Medical Legislators.**—Among the members of the medical profession recently elected to the legislature are Dr. Alfred A. Kent, Lenoir and Dr. E. J. Tucker, Roxboro.

**Fund for Distressed Belgians.**—Dr. Samuel Westray Battle, Asheville, who was appointed by the governor, chairman of the North Carolina State Committee of Mercy to solicit aid for the distressed Belgians, has already $1,000 in hand contributed by the citizens of Asheville.

**State Board Exhibit.**—The State Board of Health made a creditable exhibit at the recent state fair at Raleigh. One of the attractive features of the exhibit was the analysis of a number of patent and proprietary articles, exposés of which have already been made in The Journal.

## PENNSYLVANIA

**The Pittsburgh Bulletin on Contagious Diseases of Children.**—The October number of *The City's Health,* the monthly bulletin issued by the Pittsburgh Department of Health, is devoted especially to scarlet fever, diphtheria, measles and whooping-cough. Figures are given showing the abrupt fall in the diphtheria death-rate since the introduction of antitoxin in 1894, the rates per 100,000 population being 140 per 100,000 in the five-year period 1889-1893, 54 per 100,000 in 1894-1898 and 26 per 100,000 in 1909-1913.

**Personal.**—Dr. John H. Galbraith, Altoona, has been transferred from the associate staff of the Altoona Hospital to the active staff in the orthopedic department.——Dr. William A. Lynott, Scranton, has been appointed a member of the medical staff of the Federal Bureau of Mines in charge of the eye division.——Dr. Charles F. Altmiller has tendered his resignation as pathologist of the Bloomsburg Hospital.——Dr. F. McCall Keating, Philadelphia, has been appointed pathologist, and Dr. W. Wellington Woodward, West Chester, has has been made anesthetizer at the Chester County Hospital.

### Philadelphia

**Insanitary Conditions in Schools.**—A report compiled by Dr. Walter S. Cornell, head of the medical inspection of the public schools says the sanitary condition of the public schools covering 304 buildings gives 586 specific statements of insanitary conditions.

**Aid Association Election.**—At the annual meeting of the Aid Association of the Philadelphia County Medical Society, November 9, the following officers were elected: president, Dr. Jacob R. Shellenberger; vice-president, Dr. James C. Wilson; secretary, Dr. Lewis H. Adler, Jr., and treasurer, Dr. John B. Turner.

**The Making of a Woman Physician.**—Motion pictures of the life of a woman medical student were shown for the first time at a private exhibition held at the Woman's Medical College. The pictures, entitled "The Making of a Woman Physician," recently were made at the college and consisted entirely of actual scenes, showing professors and students at their work and play. These films are to form part of the College exhibit in the Educational Building at the San Francisco Panama-Pacific World's Fair.

**Personal.**—Dr. Seneca Egbert, dean of the Medico-Chirurgical College, was the guest of honor at a banquet given by the first-year class of that institution at Kugler's, November 5. ——Dr. Edw. K. Tullidge, a resident of Philadelphia but attached to the Department of Charities, New York, will leave shortly for Vienna, Austria, to serve in the field hospital corps of the Austrian army.——Dr. John E. B. Buckenham has been appointed by Director Harte of the Department of Health and Charities, as superintendent of the Philadelphia Hospital for Contagious Diseases at a salary of $3,000 a year. Dr. Buckenham has been acting superintendent provisionally, succeeding Dr. William H. Walsh, who became superintendent of the Children's Hospital.——Dr. John A. Kolmer, pathologist at the Municipal Hospital for Contagious Diseases, has been appointed to the staff of that institution by Director Harte.

## SOUTH CAROLINA

**Sanatorium Site Selected.**—The site for the State Tuberculosis Hospital has been selected at State Park. The legislature has made an appropriation of $10,000 for the institution, for which plans are being prepared.

**Personal.**—Dr. William Weston, Jr., Columbia, has been elected chief of staff in the new children's clinic recently opened in that city.——Dr. Thomas J. Strait, Lancaster, has resigned as senator from Lancaster County to accept the position as superintendent of the State Hospital for the Insane, Columbia.

### TEXAS

**Measures Against Trachoma in Schools.**—A campaign against trachoma in Texas City carried on by the Mothers'-Teachers' Association began October 28, with the examination of schoolchildren. If the parents of children found to have the disease are unable to pay for treatment, the children will be given treatment at the expense of the Mothers'-Teachers' Association.

**Personal.**—The office of Dr. Ralph Bailey, Gatesville, was destroyed by fire, November 1, with a loss of about $2,000.——Dr. Ernest W. Nitsche, Jr., Dallas, and Dr. Harold L. Warwick, Fort Worth, are attending the wounded in hospitals in Berlin and France, respectively.——Dr. Alva W. Carnes was pinned under his overturned automobile near Hutchins, October 8, but was only slightly injured.——Dr. Jim M. Hart, Woodbine, was thrown from his buggy in a collision with a street car, October 2, and painfully injured.——Dr. Frederick K. Fisher, Galveston, was injured in a collision between two automobiles, September 29.——Dr. George W. Nibling, San Angelo, has been elected secretary pro tem. of the Tom Green County Medical Society, succeeding Dr. Lester C. G. Buchanan, San Angelo.

### WISCONSIN

**Personal.**—Dr. Sidney H. Wetzler, Milwaukee, suffered severe injuries and burns when his automobile overturned in Milwaukee, November 7.——Dr. Daniel Hopkinson, Milwaukee, who suffered amputation of a toe recently, is convalescent.——Dr. Raymond C. Meyer, Elkhart Lake, has been appointed local surgeon for the Chicago, Milwaukee and St. Paul Railway.——Dr. Albert F. Schlick, Algoma, has been adjudged insane and ordered committed to the Northern State Hospital.

### CANADA

**Personal.**—Hon. Dr. Joseph O. Reaume, Windsor, Ont., who for many years was minister of public works for Ontario, has been appointed registrar of the county of Essex.——Drs. Herbert J. Hamilton and Edmund E. King, Toronto, have been elected to the Medical Council of Ontario for the territorial divisions of West and East Toronto, respectively. Sir James A. Grant, Ottawa, the only surviving member of the original Medical Council of Ontario, has again been reelected representative for the University of Ottawa.——Dr. Edward Worthington, surgeon to H.R.H., the Duke of Connaught, has left for England on his way to the front.

**Canadian Medical Colleges.**—Eighteen students have registered in the first year at the University of Alberta in the faculty of medicine. Dr. Allan C. Rankin, bacteriologist to the university, accompanied the first Canadian contingent abroad.——The number of medical students registered in the first year at Dalhousie University, Nova Scotia, is thirty-four, which is inclusive of dental students. No one has yet been appointed to the chair of pathology in this university.——One hundred and ten freshmen have been enrolled at McGill University. The Faculty of Medicine offers to furnish the staff for a general hospital for service in the European war.——There are seventy-six freshmen in medicine at Queen's University, Kingston, Ontario. Dr. A. H. Lothrop, formerly of Columbia University, has been appointed Professor of Biological Chemistry. The faculty has offered to equip a general hospital for the front.

**Hospital Notes.**—The Moncton (N. B.) General Hospital has received a contribution of $1,000 from the Ladies' Aid toward the $8,000 required for completion of the proposed nurses' home of the hospital.——Thirty thousand dollars is to be expended on a new hospital at Miramichi, N. B.——A new hospital is to be built at Timmins, Ont., by the Hollinger Gold Mines Company. It will contain thirty beds.——A new wing was formally opened recently in connection with the Galt, Ont., hospital.——The Owen Sound Hospital, Ontario, is establishing a maternity ward.——The government of the province of Quebec will contribute $15,000 a year to the hospital at Maisonneuve.——The new hospital at Sherbrooke, Quebec, has been opened. It cost $88,229.——Dr. James C. Fyshe, Montreal, Que., superintendent of the Edmonton General Hospital, accompanied the first contingent to England.——Wainwright, Alberta, is to build a hospital at a cost of $10,000.——Dr. B. L. Wickware has resigned as superintendent of the Moose Jaw General Hospital, Saskatchewan.——A hospital was recently opened at Summerland, B. C. It will accommodate about thirty-five patients.

### GENERAL

**Health Sermons in Richmond.**—Fifteen of the pulpits of Richmond were filled November 8 by physicians in attendance at the annual meeting of the Southern Medical Association, who preached special "health sermons."

**Iron Mountain Surgeons State Meeting.**—The third annual meeting of the Arkansas Association of Iron Mountain Surgeons was held at Little Rock, November 17 and 18, under the presidency of Dr. Charles S. Holt, Fort Smith, Ark.

**Hookworm in Panama.**—The Rockefeller Hookworm Commission has established a station on the Isthmus of Panama for systematic work against hookworm which seems to prevail to a degree hitherto unsuspected. Of the first 1,000 persons examined at the laboratory, more than 700 were found to be harboring hookworm.

**Executive Committee for San Francisco Session.**—The Executive Committee of the Local Committee on Arrangements for the next annual session of the American Medical Association, to be held June 22-25, 1915, in San Francisco, is as follows: Dr. Herbert C. Moffitt, chairman; Dr. Solomon Hyman, secretary, and Drs. Emmet Rixford, George B. Somers, J. Henry Barbat, William P. Lucas and Philip Mills Jones, all of San Francisco.

**New York and New England Surgeons Meet.**—The twenty-fourth annual meeting of the New York and New England Association of Railway Surgeons was held in New York City, October 21-22, under the presidency of Dr. Clifford A. Pease, Burlington, Vt. New York City was decided on as the place for the meeting which celebrates the quarter-century anniversary of the organization of the association, and the following officers were elected: president, Dr. William H. Marcy, Buffalo, N. Y.; vice-presidents, Drs. David H. Lake, Kingston, Pa., and Halbert G. Stetson, Greenfield, Mass.; corresponding secretary, Dr. George Chaffee, Brooklyn; recording secretary, Dr. John H. Reid, Troy, N. Y.; and treasurer, Dr. James K. Stockwell, Oswego, N. Y.

**Meetings of Railway Surgeons.**—The Southern Association of Railway Surgeons held its annual meeting in connection with the meeting of the Southern Medical Association at Richmond, November 9, under the presidency of Dr. Duncan Eve, Nashville, and elected the following officers: president, Dr. Thomas H. Hancock, Atlanta; vice-president, Dr. Southgate Leigh, Norfolk, Va.; and secretary, Dr. Clarence H. Vaught, Richmond, Ky.——The twentieth annual meeting of the Big Four Railway Surgeons Association, New York Central Lines, was held in Indianapolis, November 12, and the following officers were elected: president, Dr. Isaac L. Firebaugh, Robinson, Ill.; vice-presidents, Drs. Walter M. McGaughey, Greencastle, Ind.; Clayton W. Russell, Springfield, Ohio, and John C. Sexton, Rushville, Ind.; and secretary-treasurer, Dr. Leonard A. Ensiminger, Indianapolis.

### FOREIGN

**Santoro Prize Given to Discoverer of Induced Pneumothorax.**—For his pioneer work on treating pulmonary tuberculosis by an artificially induced pneumothorax, Professor Forlanini of the chair of clinical medicine at the University of Pavia has been awarded the Santoro prize of 10,000 lire ($2,000). This prize is given every two years by the Academy of Sciences at Rome for the most important contribution to science that has direct practical application.

**The New Frankfurt University.**—The issue of the *Frankfurter Zeitung* for October 25 is devoted entirely to the ceremonies connected with the inauguration of the newly founded university at Frankfurt a. M. It opens with five departments, the medical faculty having enrolled Edinger, Ehrlich, Embden, B. Fischer, Göppert, Herxheimer, Neisser, Rehn, Schwenkenbecher, Sioli, Spiess, Voss, Walthard and others to a total of twenty professors. Many of them are now at the front and there will be few students this year but the university has been duly launched. The Kaiser is said to have signed the statutes of the university on the historic date, August 1. There has long been a nucleus for a university at Frankfurt in several scientific institutes; pioneers in research and accomplishment. Chief among these is the birth-place of the side-chain theory, the Institute for Experimental Therapy and Cancer Research, of which Paul Ehrlich is director. Another is the G. Speyer Institute for Experimental Chemotherapy, where salvarsan first saw the light.

**Deaths in the Profession Abroad.**—F. Gerlier, aged 74, the Swiss physician who first described in 1886 what he called *vertige paralysant,* a disease attacking farm laborers and stablemen, characterized by attacks of pain, paresis, vertigo, ptosis and muscular contractions. The disease was prevalent for a time in his district but then died out. It is comparatively frequent in Japan, but rarely encountered elsewhere.——S. Engelsted of Copenhagen, at one time editor of the *Ugeskrift for Laeger,* and chief of the board of public health, aged 91.——K. Heilbronner, professor of nervous and mental disease at the University of Utrecht, succumbed to apoplexy last month, aged 44.——D. Morisani, one of the leading surgeons of Italy, professor of surgery at the University of Naples and author of numerous works on surgical subjects and of methods of suturing the intestine, fractured patella, etc., aged 65.——Our German exchanges this week add ten more names to the long list of members of the profession killed at the front. Among them is O. Loeb, privatdocent of pharmacology at the University of Göttingen; J. Diebitsch, G. Herrenschneider, Hermann, W. Kösel, W. Magnus, Paradies, Sauberzweig, Timmermann, Wertheim, H. Schultz and H. Barth of Berlin. Ten others are reported as wounded.

## WAR NOTES

**German Surgeons Decorated.**—It is reported from Copenhagen that 118 medical officers have been decorated with the iron cross.

**New Appointment.**—Col. Michael W. H. Russell, R.A.M.C., has been appointed deputy director general of the Army Medical Service and temporary surgeon-general in succession to Surgeon-General W. G. Macpherson, A.M.S.

**Practice of Medicine in France Opened to Belgian Physicians.**—The *Medicina Contemporanea* of Lisbon states that a movement has been initiated by the members of the profession in France to throw down the barriers to the practice of medicine in that country for registered physicians from Belgium who may wish to reside in France.

**Compulsory Accident Insurance for University Students.**—The *Wiener klinische Wochenschrift* states that all students matriculating at the University of Vienna are required now to take out an accident insurance policy for which they pay about 13 cents (50 heller) for the semester. This is in accordance with a state decree, dated September 18, and includes all persons between 15 and 65.

**Epidemic Diseases.**—The *Wiener klinische Wochenschrift* of October 22, reports for the week ending October 3, 98 cases of cholera in Austria proper (9 in Vienna) and 231 in Hungary, with 11 cases in Vienna since that date. The *Berliner klinische Wochenschrift* reports 617 cases of dysentery in Prussia in the week ending October 3, and states that cholera has appeared at Kiev, and plague at Saloniki and Lisbon.

**Servian Government Desires Medical Aid.**—The Servian government is in immediate need of the service of qualified bacteriologists and physicians experienced in the treatment of epidemic diseases. The terms of service and remuneration will be made by arrangement. Applicants who are interested should submit their offers with references to the Secretary of the Servian Legation, 195 Queens Gate, London, S.W.

**American Red Cross at Breslau.**—Our German exchanges of October 20 mention the arrival at Breslau of the American Red Cross party in charge of Dr. Breadbury, accompanied by Count Talleyrand as the representative of the German Red Cross. There are twelve physicians and fifty-two nurses in the party and half of this number were distributed among the Breslau hospitals while the other half continued the journey to Vienna. Four cars with supplies for dressings, etc., were left in Breslau as the special train went on its way.

**Funds Required for Physicians of Belgium.**—A professional Belgium committee has been formed, consisting of Professors Stiénen and Jacobs of the University of Brussels, Professor Béco of Liége, Professor Schockaert of Louvain and Professor Benglemans, secretary of the National Therapeutic Society of Belgium, for securing immediate relief for doctors and pharmacists deprived of means of livelihood and an annuity fund for the windows and orphans of those killed in the war. Details will be arranged by a central committee in London, representing the United Kingdom.

**Physicians Decorated for Bravery in the Field.**—The *Wiener klinische Wochenschrift* brings each week an official list of three or four physicians whose name and regiment are thus published by the Austro-Hungarian authorities in token of appreciation for distinguished services and bravery. In addition to these the cross of Franz-Joseph order has been bestowed on Drs. J. Janak, K. Brust and A. Hocevar. The gold cross with the ribbon of the bravery medal has been given to R. Stigelbauer and R. Kaiser. Others decorated are M. Szabo, L. Redlich and R. Kraus. The iron cross has been bestowed on 120 physicians in active work with German troops at the front, including Kümmell, Rehn, Löffler, Payr, Römer, Salomon and Posner. It has also been presented to the trained nurse, Miss Scherhans, at the head of the nursing staff of the German army. She has been working on the eastern battle-line.

**Wounded Soldiers and Sailors.**—Between October 24 and 26 hospital ships arrived at Southampton, bringing nearly 2,000 invalid wounded troops, including a number of Belgians and Germans, who were sent to hospitals in various parts of Great Britain.——On October 26 the Hospital Ship *Oxfordshire* reached Queenstown from Boulogne, bringing twenty-six wounded officers and 700 wounded non-commissioned officers and men.——An anonymous donor has offered a fully equipped emergency naval hospital to the government, and this hospital, known as the Fourth Naval Hospital, has been erected in close proximity to the Royal Naval Hospital, South Queensferry. The buildings comprise a central administration block of eight rooms with wards radiating from the center of each side and from three of the angles.——The Second Southern General Hospital now has about 600 patients, not including the convalescent branch at Bishop's Knoll. The largest portion of the patients are composed of wounded and sick from the expeditionary force.——The Welsh Military Hospital, offered in behalf of the principality by the Prince of Wales to the War Office, has been accepted and has been located at Netley, to go overseas when required. The buildings are portable and of wood and galvanized iron, and will accommodate 104 patients in four wards pavilions. The hospital is in command of Lieut.-Col. A. W. Sheen, R.A.M.C.

**Care of Wounded in Germany.**—The surgeon-general of the German army, von Schjerning, published recently in a German lay paper (*Norddeutsche Allg. Zeitung*) the following report on the care of wounded and the health of the troops in the western seat of war. He commented on the difficulties inseparable from the rapid advance of the troops and the fact that at times the violence and long continuance of the artillery fire often rendered it impossible to seek the wounded on the battle-field, because "for days at a time certain points were shelled furiously. Every day many were wounded. The large battles and skirmishes over such a long extent of firing-line has made the care of the wounded extremely difficult. Surgeons and bearers had to submit to the military exigencies of the campaign, and there were many hours when it would have been madness to attempt to bring in the wounded. On the whole, however, the arrangements proved satisfactory in every way. All the wounded had their wounds bandaged on the battle-field, and this done so well that often, in fact, nearly always, the first dressing could be left unmolested until they reached the home zone. The severely wounded were brought at once to the field hospital and then to the base hospitals. As the troops were constantly pushing forward, the field hospitals had to be constantly changed and prompt transference to the base hospitals was necessary. But all was done with as little discomfort as possible. The slightly wounded were taken to the base hospitals in carts, autos or on foot; in one week there were about 40,000 to 50,000 of these, and they were all sent back to the home zone. Every train and vehicle bringing ammunition or other supplies to the front was emptied at once and sent back filled with the wounded. Only very rarely any actual hospital trains came through to the front. We had to use freight trains as we could not let the wounded accumulate for fear of bringing on epidemics. We have succeeded in avoiding this. The health of the troops is good. Catarrhal enteritis —isolated mild dysentery cases—is growing less frequent, and there are only scattered cases of typhoid.

"Of course the journey in the freight cars was not always comfortable for the wounded. But it was better to send the lightly wounded back home where they could get good shelter and care than to let them lie around in more or less demolished houses and often without adequate care. I reiterate: The transportation was satisfactory and the wounded were well taken care of at practically every station. I inspected personally 30,000 wounded at Coblentz, Liége, Namur, Sedan, Montmedy and elsewhere along the front and I did not find one who was not properly bandaged. The work on the battle-field and in the base hospitals was the hardest. Physicians and nurses worked day and night with the utmost devotion of all their energies, and I am glad to say that this was fully appreciated by the Kaiser and the military officers. The large number of iron crosses which have been bestowed on the physicians with the army testifies to the appreciation of their devoted labors. Of course some wounded man here or there did not have everything to suit him and especially the family complained at times. War nowadays takes no regard for anyone. But it would be too bad to generalize from a few scattered cases, as sometimes happens.

"There are 9,000 physicians in the field. How many are left at home, and who is adapted for service in the field and willing? Surgeons are needed in the home zone too, and as we have sent the wounded back home to be taken care of, the main task is thus placed in the hands of medical men in the home zone, so that we hope there are plenty of physicians and nurses for this task. Many nurses here at the front can find no work to do. It is utterly impossible to use them on the battle-field under present conditions of warfare and the frightful artillery fire. In one of the base hospitals I met Kraus and Pfeiffer and both confirmed my impression that the organization, the personnel and the supplies in the medical department answered all requirements, and they volunteered in addition that the work of the medical men on the firing-line was beyond all praise. As further testimony to this I mention the words of admiration for the work of the medical department spoken by the chaplain in chief for the army who has been at the front. Everywhere under the sign of the Red Cross kindly hands are ready to help and care for the wounded. We can be quite serene. The only thing that has given us trouble at times hitherto has been the transferring of the wounded from the field to the base hospital. But for this service further means of transportation have already been provided. Our Berlin autobus has proved the most useful; I took seventy-five of these along with me at the opening of the campaign. Several other cities have now sent us their park autobuses. And as now the supply of dressing materials and drugs is regularly replenished, we can be content."

## LONDON LETTER

London, Oct. 30, 1914.

### Great Britain During the War

A visitor to this country would see nothing in the demeanor of the people to show that we are engaged in the greatest war the world has ever seen and in a life-and-death struggle to maintain our position among the nations of the earth; a war which is bringing death into many homes and into every circle in the land. The general feeling is one of calm determination to see this thing through which has been forced on us. In the streets he would notice some changes. At every turn the khaki-clad recruits are encountered and in the fashionable shops there is an unwonted quietness; but elsewhere the motto of the war, "business as usual," requires no enforcing; every one goes about his work as usual, the amount of unemployment is not abnormal, and the necessaries of life have advanced little in price. In London by night a great change would be noticed. The German dropping of bombs from aeroplanes on cities has caused great restriction of street lighting in London. The number of street lights is diminished and those which are used are covered above so that they cannot be seen from aeroplanes. Shopkeepers are not allowed to show lights which illuminate the streets. The metropolis is in semidarkness. As a result a few persons have been run over by motor cars and killed. Many of the theaters have reduced the usual evening performances to two in the week and give matinees instead. Wounded are arriving in such numbers that all the hospitals in the country, permanent and improvised, are being used for their accommodation. In three days as many as 2,000 were landed at Southampton. Over 700 wounded Irish soldiers have been landed at Cork from a hospital ship and distributed in hospitals in the South of Ireland. The War Office has accepted 247 hospitals organized by the British Red Cross, containing 8,077 beds. Free lectures are being given to the public on camp, ship and hospital hygiene, and the usual ambulance lectures have been greatly increased in number and attended by women in large numbers.

#### EFFECT ON THE MEDICAL PROFESSION

It has been necessary to increase the army medical corps by a large number of surgeons drawn from civil practice who enlist for the period of the war. This has created a shortage of practitioners, particularly of the young men who enter the service of institutions. As a consequence appointments usually filled by men are now offered to women physicians in greater numbers than they can take them. Another effect is a shortage of medical students at the schools, so great as to threaten a deficiency in the supply of physicians in the future. Not only have medical students gone to the front as dressers, but many have enlisted as ordinary soldiers. At Cambridge only sixty-four medical students have entered this year as compared with 116 last year. At one college noted for its medical studies thirty-two entered, but only seventeen came into residence. In order to supply the demand for army surgeons the various medical corporations have antedated their examinations this year. On the field of battle many army surgeons who have distinguished themselves by their bravery in attending to the wounded are mentioned in dispatches and some have met their death. Every number of the medical journals contain obituaries of physicians who have fallen.

#### THE DRUG SUPPLY

The first effect of the war was greatly to increase the price of imported drugs; but now many drugs have fallen, though the general level is still much above normal. Large shipments of many drugs have been received, and the advice issued by the government, given in a previous letter to The Journal, to avoid as far as possible prescribing drugs of which the supply was restricted, appears to have been followed. Some drugs, however, have continued to advance in price. Atropin is extremely dear and phenol (carbolic acid) is three times its normal price, because not only is it extensively used as an antiseptic, but it is also employed in the manufacture of explosives. On the other hand, some drugs are lower in price than normal. Menthol is an example for the reason that supplies which would ordinarily have gone to Germany have been diverted to English ports.

### Sanitation in Training Camps

The local government board has called on the medical officers of health to cooperate with the military medical authorities regarding the insuring of satisfactory sanitary conditions for the various training camps of the home army, which at the time of writing contain over 700,000 men. The points on which special advantage from such cooperation is looked for are (1) provision of suitable water supplies and prevention of their contamination; (2) disposal of garbage and refuse; (3) drainage and conservancy, and (4) control of infectious diseases and disinfection. The good effects of this cooperation were soon manifest, and it is worthy of note that up to October 10 among 600,000 men there had been only ten cases of typhoid fever. A committee is to be formed consisting of members of the society of medical officers of health and the military medical authorities to coordinate this work.

### Prize for Army Sanitation

The Chaddwick Trustees have announced that they will award the Gold Medal with a premium of £50 to the medical officers of the army and navy, respectively, who shall be adjudged, on the nomination of the Directors General of the respective services, to have achieved the most toward promoting the health of the army and navy, the military medical authorities to coordinate their work. The War Office has also lost no time in sanctioning the construction of an apparatus devised by Mr. James Menzies and Dr. Myer Copland for a system of destructive distillation of sewage, capable of providing for 12,000 men in the field.

### Khaki the Usual Costume

Not only in universities "khaki's your only wear," for, besides being accepted as "academic costume" at Oxford and Cambridge, barristers have been allowed to appear in khaki in court, in place of the time-honored wig and gown on throne, that is, those who are called up in their territorial regiments and can get leave to attend to some of their professional duties.

### The American Women's Hospital at Paignton

An interesting note on the American Women's Hospital, by Mr. Ernest Lane, F.R.C.S., Surgeon to St. Mary's Hospital, London, who is in charge, appears in the *St. Mary's Hospital Gazette* for October. Mr. Paris Singer placed his residence at Paignton, overlooking Torbay, on the beautiful Devon coast at the service of the American ladies, and the entire cost is sustained by Americans. It contains 200 beds with operating theatre, Roentgen-ray room and admirable lavatory and bathing accommodations. September 27, at twenty-six hours' notice, the hospital received its first batch of wounded, 130 in number, from Mons and Soissons. They landed at Southampton and went by train to Paignton, where they were transferred without a hitch, in good spirits. Most of them had not had their clothes off for two or three weeks, and had had little food, some having lain wounded in the trenches for two or three days. The cases were naturally septic for the most part, but being nearly all shrapnel wounds discharged freely from an open surface. A second batch of twenty-nine cases, mostly convalescents from Davenport, was received October 5, and a further batch of 121 October 6. The rapid recoveries made under rest, good food and skilful care is indicated by the fact that of the first 159 cases, seventy had been discharged by October 6. The executive staff of the hospital consists of Lady Arthur Paget, Mrs. John Astor, the Duchess of Marlborough, Walter Burns, Esq., Lady Randolph Churchill, Mrs. William Eustis, Mrs. Walter Burns, Lady Henry, Mrs. Hoover and Mrs. Owen.

### Casualties

In no previous war have the medical casualties been so heavy. So far as I have been able to keep track, at the time of writing, and taking army and navy together, there are killed 16, wounded 18, prisoners 46, missing 14. The large number of prisoners is partly accounted for by the rear guard action of the period between the retreat from Mons and the time at which the allies assumed the offensive. Naturally in the retreat many wounded and medical officers in charge had to be left behind, and thus became prisoners.

## PARIS LETTER

Paris, Oct. 29, 1914.

### The Death of Dr. Emile Reymond

Dr. Emile Reymond, senator of the department of the Loire, has just met a heroic death. He was wounded while reconnoitering in an aeroplane above the German lines. He kept his head in spite of cruel suffering and, continuing to steer his machine, brought it down between the German and French lines. While being removed in the ambulance, the intrepid aviator was able to report with precision the result of the mission that he had accomplished. The commanding general gave him the cross of the Legion of Honor at his bedside.

Emile Reymond was born at Tarbes, April 9, 1865. He was the son of the great engineer, Francisque Reymond, who was director of the Ecole centrale. Emile Reymond was a laureate of the Académie des sciences, of the Faculté de médecine and of the Assistance publique. He published important surgical works, and had already acquired a reputation as a practitioner when, at the death of his father, he was elected senator. Reymond early perceived the possibility of the great development of aviation and became its ardent advocate before the senate. Aug. 29, 1910, he passed brilliantly his examination for pilot and afterward accomplished numerous flights across France, even making his electoral campaign in an aeroplane. The same year he was placed at the head of the national committee of aviation and used his greatest efforts to have the aviation branch of our army provided with 700 aeroplanes. Dr. Reymond believed that the aeroplane might be of great utility for the health service as a means of facilitating the search for the wounded on the battle-field after action and perhaps even afford rapid transportation to the ambulances.

At the time of the declaration of war, Dr. Reymond, who was a major of the first class in the military health service, insisted on being transferred to the corps of aviators and sent to the firing-line. He left with a squadron of the army of the east and his courageous conduct earned him mention in the order of the day.

### The Treatment of Wounds Received in Battle

In one of the last sessions of the Société de chirurgie de Paris, several papers on this subject were read.

Dr. Paul Riche, surgeon of the hospitals of Paris, believes that it is necessary to distinguish carefully between bullet wounds, which are the only aseptic ones, and wounds from shrapnel and shell. In the case of the latter, abstention from operation must not be confused with conservation. The aim should always be conservative, but it is necessary also to operate freely and early, and when there is a gaseous septicemia to operate if the traumatic lesions compromise the future function of the member or if they do not, to make deep incisions beyond the zone infiltrated with gas. The latter point is essential.

Dr. Rochard, surgeon of the hospitals of Paris, while agreeing with Dr. Riche, emphasized the good results he has obtained with a relatively strong solution of phenol. Dr. Henri Toussaint, military physician, emphasized the advantages of early and preventive incision of wounds even in treatment at the front for wounds made by shrapnel or fragments of shell. When once a sufficient channel of exit has been opened to the products of infection, it is necessary to refrain absolutely from attempting to close the wound either by suture or by clip. Toussaint has observed two cases in which clips appear to have caused phlegmonous complications which improved after the removal of the clips and drainage of the wounds.

As for puncture, Dr. Picqué believes that it is necessary to distinguish between septic and aseptic wounds, of which the first only should be incised.

### The Transportation of the Wounded

Since the beginning of the war, the government has been trying to improve the transportation of the wounded and has taken up with the railway companies the creation of sanitary trains. The companies have organized a certain number of sanitary trains, composed in part of freight-cars, arranged to permit the transportation of the wounded on litters and in part of cars arranged for the wounded who were able to travel seated. Nine wounded men may be transported in a freight car and forty may travel in a car arranged for those who can travel seated. Altogether these trains can transport 70,000 wounded. The minister of public health is, moreover, studying at present, means of using boats and of removing soldiers from the field of battle by canals, rivers and smaller streams. Forty-four wounded men, with all the medical staff and supplies needed, may be transported on a boat. While transportation by water is slow, it is accomplished without shock, and under such conditions that the wounded may be treated as if in a hospital.

### Aid for Belgian Students

At its last session, the council of the Université de Paris unanimously resolved that Belgian students who before the war had been matriculated in one of the universities of their own country might become matriculated in the schools of the Université de Paris without having to pay the matriculation, inscription and library fees. Young Belgians from the Belgian establishments of secondary education will likewise be received if they fulfil the conditions exacted by the Belgian universities. In default of diplomas and certificates, the young people may prove their qualifications by such means as are possible, for instance, certificates of French or Belgian diplomatic or consular agents.

### Localities Without Physicians and Physicians Without Patients

Many communes in the vicinity of Paris and in the departments have been left without physicians by the mobilization. Also the invasion of the north and northeast of France has driven out a certain number of physicians who are deprived of all resources and all patients. The Société médicale des hôpitaux de Paris has therefore requested of the dean of the Faculté de médecine to constitute himself a receiving center for the requests from communes for physicians and for the applications of physicians without practice.

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## *Marriages*

Frederick Elmer Munch, M.D., Chicago, to Miss Alma B. Kundert of Racine, Wis., at Martintown, Wis., October 28.

Frank Samuel Child, Jr., M.D., to Miss Helen Horton Bayles, both of Port Jefferson, L. I., N. Y., October 22.

Victor Eugene Kaufman, M.D., Canton, Ohio, to Miss Ella Lucille Moody of Carrollton, Ohio, October 20.

Frank Joseph Sykora, M.D., Brainerd, Minn., to Miss Adelaide Stoll of Little Falls, Minn., October 27.

Frank Burton Stephenson, M.D., Indiana, Pa., to Miss Elizabeth H. Wood of Philadelphia, October 28.

Howard Albert Hamilton, M.D., Drynob, Mo., to Miss Lois Brown of Springfield, Mo., October 11.

Hugh Owen Williams, M.D., Balaton, Minn., to Miss Ada E. Chrysler of Granville, Ohio, October 15.

John Graham Davis, M.D., Lincoln, Neb., to Miss Lenore Barber of West Pittston, Pa., October 22.

Karl Brooks Sturgis, M.D., Augusta, Me., to Miss Alice W. Fiske of Rockland, Me., October 28.

Firmadge King Nichols, M.D., to Miss Helen Marienne Spangler, both of Baltimore, October 24.

Morris Braude, M.D., Chicago, to Miss Dorothy Rosenstein of Mishawaka, Ind., recently.

William Frederick Becker, M.D., to Mrs. Becker, both of Chicago, October 27.

# Deaths

**Joseph Scribner Gibb, M.D.** University of Pennsylvania, Philadelphia, 1880; a Fellow of the American Medical Association and College of Physicians of Philadelphia; from 1882 to 1892 outdoor physician to the Philadelphia Department of Charities and Corrections, and surgeon to the police department; from 1881 to 1884 in charge of the nose, throat and ear department of the Northern Dispensary; since 1893 professor and emeritus professor of diseases of the throat and nose of the Philadelphia Polyclinic; laryngologist to the Episcopal Hospital; who was seized with a cerebral hemorrhage at the Overbrook Golf Club, November 6; died at his home in Philadelphia, November 7, aged 55.

**James Bartlett Brewster, M.D.** Bellevue Hospital Medical College, 1866; a member of the Massachusetts Medical Society and formerly state medical examiner; surgeon of the Forty-Fourth Massachusetts Volunteer Infantry and assistant surgeon of the Second Division, Ninth Army Corps, during the Civil War, and surgeon-general of the Department of Massachusetts of the Grand Army of the Republic; at one time acting assistant surgeon in the United States Public Health and Marine Hospital Service; died at his home in Phillips, Mass., November 7, aged 73.

**Osmon Beverly Campbell, M.D.** Northwestern Medical College, St. Joseph, Mo., 1881; Jefferson Medical College, 1884; a Fellow of the American Medical Association; formerly president of the Tri-State Medical Society of Iowa, Illinois and Missouri; Western Gynecological and Surgical Association and Medical Society of the Missouri Valley; widely known as a surgeon of St. Joseph, Mo.; dean of the Central Medical College and professor of gynecology and abdominal surgery; died in his home in St. Joseph, November 11, after an illness of two years, aged 54.

**George Livingston Peabody, M.D.** College of Physicians and Surgeons in the City of New York, 1873; later professor of materia medica and therapeutics in his Alma Mater and from 1884 to 1887 a trustee and member of the council of Columbia University; formerly attending physician to New York Hospital, and consulting physician to the Roosevelt Hospital, New York City; died at his home in Newport, R. I., October 30, from heart disease, aged 64.

**George Stanley Lynde, M.D.** College of Physicians and Surgeons in the City of New York, 1866; a member of the Medical Society of the State of New York, New York Academy of Medicine and New York Pathological Society; for more than twenty-five years a member of the New York Board of Health and from 1907 to 1912 chief diagnostician of the board; died in the New York Hospital, November 5, after a surgical operation, aged 53.

**Walter D. Green, M.D.** University of Pennsylvania, Philadelphia, 1886; resident physician at the Presbyterian and Pennsylvania hospitals until 1892; then for two years medical inspector of the Philadelphia Bureau of Health, and in 1894 port physician of Philadelphia; aged 53; while a patient at a sanatorium in Bellemeda, N. J., October 25, wandered to the tracks of the Philadelphia and Reading Railroad and was struck and killed by a train.

**Sarah R. Munro, M.D.** Woman's Medical College of Pennsylvania, Philadelphia, 1872; a member of the Wisconsin State Medical Society; for many years a practitioner of Milwaukee; visiting physician to the House of Mercy and a director of the House and Home Farm School for Boys at Dousman, Wis.; died at her home in Milwaukee, November 3, aged 74.

**Herman Reeve Ainsworth, M.D.** New York University, New York City, 1866; a member of the Medical Society of the State of New York and its vice-president from 1905 to 1907; president of the Steuben County Medical Society in 1874; a member of the American Association for the Advancement of Science; died at his home in Addison, N. Y., September 3, aged 73.

**Henry Northam Bryan, M.D.** Jefferson Medical College, 1884; Medico-Chirurgical College of Philadelphia, 1895; a Fellow of the American Medical Association, and a member of the Medical Club of Philadelphia; for eleven years head of the surgical staff of the Medico-Chirurgical Hospital; died at his home in Philadelphia, November 2, aged 61.

**John Ernest Gould, M.D.** Western Pennsylvania Medical College, Pittsburgh, 1895; a member of the Medical Society of the State of Pennsylvania; died at his home in Pittsburgh, October 28, aged 44.

**Albert Gallatin Jones, M.D.** St. Louis Medical College, 1855; Chicago Medical College, 1860; for twenty-five years a practitioner of Milton, Ill., since that time a farmer near Kingston, Mo., and for the last four years a resident of Hamilton, Mo., and president of the Farmers' and Merchants' Bank in that city; died at his home, August 10, from arteriosclerosis, aged 81.

**James Taylor Woodburn, M.D.** Louisville (Ky.) Medical College, 1876; a member of the Kentucky State Medical Association; for twenty years a member of the board of health of Muhlenberg County, Ky.; and from 1910 to 1914 mayor of Central City, Ky.; died at his home in Central City, November 2, from nephritis, aged 64.

**Ira F. Hart, M.D.** Jefferson Medical College, 1852; formerly a member of the American Medical Association; a surgeon of Volunteers throughout the Civil War; editor of the *Saturday Evening Review* and of the *Elmira Advertiser* for many years; died at his home in Elmira, N. Y., October 30, from senile debility, aged 84.

**Leo O. Egginton, M.D.** Western Pennsylvania Medical College, Pittsburgh, 1907; formerly pathologist to the Independence (Iowa) State Hospital; died at his home in Juneau, Alaska, October 21, from appendicitis, aged 32.

**James Jerome Hassett, M.D.** Rush Medical College, Chicago, 1890; a member of the Illinois State Medical Society and of the Illinois State Board of Health; died at his home in McLeansboro, Ill., October 28.

**Amos Jesse Newell, M.D.** Rush Medical College, 1892; formerly a member of the American Medical Association; of West Pullman, Chicago; died in the Meadville, Pa., City Hospital, about October 21, aged 59.

**Malcolm Duane Lewis, M.D.** University of Missouri, Columbia, 1875; a member of the Missouri State Medical Association; died in his office in Columbia, Mo., October 22, from cerebral hemorrhage, aged 68.

**James W. Money, M.D.** University of Louisville, Ky., 1874; a pioneer practitioner of Central Kansas; died at his home in Herington, Kan., about October 14, from cerebral hemorrhage, aged 65.

**William Ivan Senkler, M.D.** University of Toronto, Ont., 1891; L.R.C.P. and L.R.C.S. Edinburgh and L.F.P.S. Glasgow, 1892; died at his home in Vancouver, B. C., July 29, aged 46.

**William Henry Downey, M.D.** Harvard Medical School, Boston, 1898; a member of the Massachusetts Medical Society; died at his home in Taunton, Mass., October 1, aged 49.

**Blythe Jackson Callantine, M.D.** Rush Medical College, 1913; after his graduation an intern in St. Luke's Hospital, Chicago; died at his home in Clifton, Ariz., October 28, aged 29.

**Ely Bradley, M.D.** University of Pennsylvania, Philadelphia, 1857; a member of the Medical Association of the State of Alabama; died recently at his home in Belleville, Ala., aged 78.

**J. Franklin Barnes, M.D.** Bellevue Hospital Medical College, 1875; a member of the Schuyler County (N. Y.) Medical Society; died at his home in Watkins, N. Y., about October 29.

**Edward F. Gifford, M.D.** Cleveland Medical College, 1893; of Erie, Pa.; died in the Hamot Hospital in that city, October 23, from septicemia due to an operation wound, aged 48.

**Joseph Foster Dorsey, M.D.** Starling Medical College, Columbus, Ohio, 1870; died at his home in Dresden, Ohio, October 22, from cerebral hemorrhage, aged 79.

**William Garrett Stone, M.D.** Vanderbilt University, Nashville, Tenn., 1879; formerly of Columbus, Ohio; died at Greenwood, Miss., about October 15, aged 59.

**Adam Lindsey Wright Webb, M.D.** University of Toronto, Ont., 1903; of Brighton, Ont.; died September 11, from accidental poisoning by toadstools, aged 35.

**Daniel J. Reeder, M.D.** Georgia College of Eclectic Medicine and Surgery, Atlanta, Ga., 1882; died at his home in Atlanta, October 24, aged 58.

**Archibald C. Leslie, M.D.** McGill University, Montreal 1890; of Kathryn, N. Dak.; died at McVille, N. Dak., about October 23, aged 54.

**James Weir Renwick, M.D.** University of Toronto, Ont., 1875; died at his home in Courtland, Ont., July 3, aged 67.

**John L. Fitzporter, M.D.** Washington University, St. Louis, 1871; died at his home in St. Louis, October 23.

# The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

## ARTICLES REFUSED RECOGNITION

(*Continued from page 1778*)

### Reports of the Council on Pharmacy and Chemistry

[The abstracts that follow deal with articles which, having been refused recognition. were not deemed of sufficient importance to require lengthy reports. A previous instalment of abstracts appeared in The Journal, Nov. 14, 1914.]

### Lysoform and Lysoform Crude

Lysoform, made by the Lysoform Gesellschaft, Berlin, Germany, according to the information submitted, is a watery solution of potash-soap containing 6-7 per cent. of formaldehyde. Crude Lysoform is said to contain 10 per cent. of formaldehyde and to be made from cheaper oils, such as linseed oil.

Examination showed that the name "Lysoform" was blown in the glass and that a circular was wrapped around the trade package which recommended its use in conditions such as the following: "bites," "furunculosis," "softening abscesses," "insect-bites," "chronic and acute catarrhs" and "catarrh in the throat." The name was blown in the glass of the sample package of Crude Lysoform and the following claims appeared on the label:

> "Eingeführt in den Heilstätten zur Bekämpfung der Tuberkulose."[1]
>
> "Bestes Mittel zur Verhinderung und Beseitigung von Tierseuchen aller Art bei Pferden, Rindvieh, Schweinen, Schafen, Katzen, Hunden u. Geflügel."[2]

The referee recommended that these objections, constituting conflicts with the rules of the Council, be brought to the attention of the Lysoform Gesellschaft, and also that evidence be requested for the assertion made that soap is efficient as a means of removing the local effects of formaldehyde, and for Lysoform's asserted "thorough efficiency as a powerful disinfectant." The referee pointed out that the papers of Pfuhl (*Hygienic Review*, 1902-3), Symanski (*Jour. Hyg. and Infect. Dis.*, 1901-3) and Seydewitz (*Centralbl. f. Bacteriol.*, 1902-3) used in the advertising circular for Lysoform really show that Lysoform possesses only a moderate germicidal action and that the claim that Lysoform is a powerful disinfectant is misleading, especially in view of the work of Seydewitz (1902) who states that it requires a longer time of action than other disinfecting agents.

The referee's report having been adopted by the Council it was sent to the manufacturer Dec. 19, 1913. No action having been taken to remove the reported conflicts with the rules or to present evidence to substantiate the claims made, the Council voted that Lysoform and Crude Lysoform be refused recognition.

### Phecolates, Phecolax, Phecozymes and Phecotones

Phecolates, Phecolax, Phecozymes and Phecotones were submitted by F. Waldo Whitney, New York, with "literature" indicating that they are designed to form parts of a system of treatment founded on the theory of autotoxemia, which they are supposed to prevent by their action on the functions of the intestinal canal. The different preparations consist in the main of mixtures of well-known remedies. The basic preparation is Phecolates, which contains bile salts in combination with phenyl salicylates and benzo-naphthol in about one-eighth the regular doses and hence not likely to be of any real service. Since the proportions of these ingredients ought to be regulated by the physician according to the needs of the individual patient, they should not be combined in fixed proportions. The name is not so framed as to indicate the principal ingredients.

Phecolax contains, in addition to the ingredients of Phecolates, phenolphthalein and cascarin, of each one-half grain.

Phecozyme is made more complex than Phecolax by the introduction of additional phenyl salicylate and of pancreatin. Phecotone contains ten ingredients.

Extravagant claims such as the following are made:

> "Our Health is governed by our bowels; Our bowels are governed by our nerves; Our nerves are governed by our digestion; our digestion is governed by Phecolates."

The Council voted to refuse recognition to Phecolates, Phecolax, Phecozymes and Phecotones as unscientific articles with objectionable names.

### Serum Vaccine, Bruschettini

The Serum Vaccine, Bruschettini, sold by R. G. Berlingieri, New York, has for its aim the destruction of the tuberculous cell and the facilitation of its elimination by the natural expulsion process, it being held that this constitutes a victory in the struggle against consumption as much as obtaining the death and elimination of the specific bacillus. The description for the preparation of this "Serum Vaccine" is complicated and makes the impression that it is based on a number of unproved hypotheses.

After an examination of the evidence submitted the Committee on Serums and Vaccines recommended to the Council that further consideration be postponed until the manufacturer submit proof of the value of the preparation. The Council having agreed to the recommendation, this action was communicated to the American agent for Serum Vaccine, Bruschettini, June 14, 1913. After waiting nearly a year for evidence to substantiate the claims made for the product the Council voted that Serum Vaccine, Bruschettini, be refused recognition. This action having been communicated to the manufacturer, the information was received September, 1914, that the Serum Vaccine is now used only in slight cases.

### Sherman's Non-Virulent Tubercle Vaccine

Consideration of this product of G. H. Sherman, Detroit, having been requested, the Committee on Serums and Vaccines examined the information and advertising matter submitted. It then recommended that in view of the far-reaching claims made for this preparation, for example, that "comparatively small doses of the killed organism will produce a marked immunizing response to the virulent human tubercle bacillus," that consideration be postponed, and the manufacturer be requested to submit evidence—reports of animal experimentation and case reports—to substantiate his claims. After waiting more than six months for the required evidence, the Council voted that Sherman's Non-Virulent Tubercle Vaccine be refused recognition.

### White Sulphur Salts

White Sulphur Salts, put on the market by the White Sulphur Springs, Inc., White Sulphur Springs, W. Va., is said to be an effervescing salt containing sodium phosphate, magnesium sulphate, sodium sulphate, and sodium citrate with an effervescing base consisting of sodium bicarbonate, citric and tartaric acids and saccharin. It is claimed that one teaspoonful of the mixture represents "the approximate equivalent of one glass of the White Sulphur Spring Water." Comparison showed that the composition of White Sulphur Salts as claimed did not agree with the submitted analysis of White Sulphur Spring Water, the spring water containing calcium, strontium, iron, manganese, lithium, silica and alumina, which were not present in the artificial salts. Further, one teaspoonful of the manufactured sulphur salts to a glass of water would contain from 50 to 75 grains of the several salts, whereas the White Sulphur Spring Water would contain approximately 8 grains of the several salts. White Sulphur Salts being neither an artificial form nor an approximate equivalent of White Sulphur Spring Water, the Council held it not eligible for inclusion with N. N. R. or the appendix.

### Unguentum Selenio Vanadic (v. Roemer)

Unguentum Selenio Vanadic (v. Roemer) is an ointment manufactured by A. von Roemer, Brooklyn, N. Y., and put on the market by Schering and Glatz, New York. It is claimed to contain 1 per cent. of selenium oxycyanid and 1 per cent. of vanadium chlorid "so prepared and incorporated into a modified lanolin base as to insure complete absorption." The preparation is recommended in the later stages of inoperable carcinoma, sarcoma, epithelioma and other malignant tumors, as a substitute for morphin and other narcotics to control pain, as a modifying (ante-operative) treatment in the middle stage of malignant cases presenting the characteristics of being inoperable, and as a prophylactic treatment of recurrences and metastases following excision of malignant tumors. It is also recommended for use in slow-healing surgical wounds, abscesses, tuberculous and mixed septic and gangrenous processes, etc., in lupus, acne, eczema, psoriasis, scabies, erythemata, adenomata, angiomata, papillomata, etc. The use of the ointment is further recommended by systemic inunction in septicemia, pneumonia, erysipelas, cerebrospinal meningitis, septic rheumatism, septic neuritis, etc. The Council voted that the preparation be not accepted for inclusion with New and Nonofficial Remedies because no evidence has been submitted that the vanadium and selenium are absorbed or that they produce any of the effects claimed.

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[1] Introduced into sanatoriums for the treatment of tuberculosis.

[2] Best means for the prevention and suppression of epidemics among horses, cattle, swine, sheep, cats, dogs and poultry.

When the preceding report was sent to Schering and Glatz, the firm expressed surprise that evidence of the absorption of selenium and vanadium should be requested. On June 8 the firm wrote that within a few days one or more tests would be sent by which the presence of selenium and vanadium in the urine could be demonstrated. These tests were not received. So far (November, 1914) no evidence of the value of the preparation either in carcinoma or in any of the very long list of other diseases in which it is recommended has been submitted, and, the pharmacologic evidence that such a preparation would be of value in such conditions being practically nil, the Council authorized publication of this report.

(*To be continued*)

## IODIA

### Report of the Council on Pharmacy and Chemistry

The following report on Iodia was adopted by the Council and its publication authorized.

W. A. Puckner, Secretary.

Iodia is put on the market by Battle and Company, under the claim that it contains potassium iodid in combination with iron phosphate and vegetable "principles." It is extravagantly recommended for use in many and varied conditions. For instance, it is "an unexcelled altero-reconstructive," "almost a specific" in eczema and rheumatism and "a highly efficient form of iodin," which will not produce iodism!

The therapeutic effects of iodids result from a chemical transformation by which molecular iodin is set free in the tissues, thus producing a mild degree of iodism. It follows, then, that a preparation which cannot give rise to the symptoms of iodism cannot be expected to produce the therapeutic effects of the iodids. The claim that Iodia is therapeutically efficient without producing iodism therefore justifies suspicion, to put it mildly.

In view of the exaggerated tone of the advertising, together with the fact that a report from the Chemical Laboratory of the American Medical Association showed marked discrepancies between the formula and the composition of Iodia, it seemed desirable to investigate this product. The report of the laboratory, which is given below, shows conflict with Rule 1 (secrecy of composition) and with Rule 2 (false claims of standardization). A discussion of the claims made for Iodia follows the report.

#### LABORATORY REPORT

The composition of Iodia is given thus:

> "Formula.—Iodia is a combination of active principles obtained from the green roots of Stillingia, Helonias, Saxifraga, Menispermum and aromatics. Each fluid drachm also contains two and one-half grains Iod.-Potas. and one and one-half grains Phos.-Iron."

We are told that:

> "Its several ingredients are selected with scrupulous care, and the most exacting methods are constantly employed to insure absolute uniformity and maximum therapeutic potency."

This "formula" is an absurdity: First, the amounts of the "active principles" of the plants named are not given; second, these "principles," with the possible exception of menispermum alkaloids, have not been isolated; and, third, ferric phosphate and potassium iodid are incompatible! Incidentally, there are no methods whereby it is possible to secure "absolute uniformity" of a mixture such as Iodia is claimed to be.

Qualitative tests demonstrated the absence of iron and the absence of all but traces of phosphorus compounds (0.015 gm. phosphorus per 100 c.c.). Minute traces of alkaloids, possibly from menispermum, were found (that amount being about 0.004 gm. per hundred c.c. of the preparation). Therapeutically this quantity is entirely negligible. Determinations of iodid demonstrated the presence of only about 60 per cent. of the amount of potassium iodid claimed. The "formula" for Iodia is false and misleading.[1]

#### DANGEROUS RECOMMENDATIONS

One of the Iodia labels reads:

> "Indications.—Syphilitic, scrofulous and cutaneous diseases, dysmenorrhea, menorrhagia, leucorrhea, amenorrhea, impaired vitality, habitual abortion and general uterine debility."

Such recommendations are likely to lead to self-drugging in conditions that are not only dangerous to the individual but also a menace to the community. The preparation thus conflicts with Rule 4 of the Council. After admitting the need of efficient iodid medication in certain stages of syphilis and after exaggerating the frequence and severity of symptoms of iodism, an advertising circular entitled "Practical Therapeutics" asserts:

> "Iodia then is the preparation of iodid of potassium to be preferred whenever it requires to be administered in large doses or for prolonged periods of time . . .
>
> "Not only does the association of the iodid of potassium with the vegetable alteratives offer a measure of protection against iodism but the latter exert depurative effects on their own account . . ."

It is generally accepted that in certain stages of syphilis the only hope of success lies in efficient iodin medication. The exploiters of Iodia state that a dose of the nostrum contains 2½ grains of potassium iodid; actually it contains only 1½ grains. To urge physicians and the public to depend on this product for efficient iodid medication constitutes an unwarranted therapeutic exaggeration (Rule 6) which approaches criminality. The reason Iodia does not produce iodism is that, in the doses recommended, the iodin action is extremely feeble.

Likening the human body to a factory and discussing the "break downs" which are likely to occur, a circular entitled "Always Trustworthy" says:

> "When administered in proper dosage, Iodia stimulates organic functions, promotes the elimination of waste products, and re-establishes metabolic activity. It increases the solvent properties of the blood, and arrests abnormal tissue metamorphosis. In other words, it lends material assistance to weakened cells and curbs those unduly active. Iodia, obviously, has a wide range of indications. It has been most generally and successfully employed, however, in Syphilitic, Scrofulous and Cutaneous Diseases, Rheumatic and Gouty Ailments, Dysmenorrhea, Menorrhagia, Leucorrhea, Amenorrhea, Impaired Vitality, Habitual Abortion and General Uterine Debility, and wherever a reliable altero-reconstructive is required."

These recommendations show that in addition to the objections already given, this nostrum is an unscientific shotgun mixture. This brings it in conflict with Rule 10 (unscientific articles inimical to the medical profession and the public).

It is recommended that Iodia be refused recognition.

## Correspondence

### Priority in Discovery of Drainage Apparatus

*To the Editor:*—In The Journal, Nov. 7, 1914, p. 1667, I observe an article by Dr. Lucian W. Smith of Lafayette, Ind., on "Suprapubic Prostatectomy with Special Reference to Drainage."

As to the drainage apparatus which is the point of the article: A reference to the *Annals of Surgery* for April, 1896, also for October, 1899, will show the same thing described in full as my invention. Or rather, I credited the principle—though far less simply carried out—to Dr. Snow, a dentist of Buffalo, who first employed it many years earlier; and ever since then dentists everywhere have made use of it to empty of saliva the sublingual space during dental operations.

In the *Annals* articles quoted my device will be found also employed for estimating the amount of urine passed and for washing out the bladder.

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[1] It should be noted that the discrepancies here reported between the actual and the claimed composition of Iodia were pointed out more than thirty years ago by A. B. Lyons (Detroit *Lancet*, October, 1882, vi, 157-8), who found that Iodia was deficient in iodid content and practically free from iron.

To quote from only one author, where if desired several could be cited, on page 416 of Dr. G. E. Brewer's work on surgery the same device is illustrated for his article on suprapubic cystotomy, and is credited to me.

I have no doubt that Dr. Smith thought of this quite independently, and is simply unfortunate in that another writer happened to be born earlier. Indeed, so simple and at the same time practical and efficient is this mode of draining any cavity from its top instead of its bottom that the wonder is that this idea is not reborn yearly!

Let me remark, in conclusion, that I make the necessary loop in the exit tube from the reservoir by tying a simple knot in this tube. This makes it self-retaining. And the smaller the loop and the nearer down toward the floor it is placed, the better does the apparatus work. The Y-connection entering from the tube to the bladder should join as closely above the loop aforesaid as it conveniently can.

A valve at the lower end of the exit tube is not necessary. Any little weight, such as a door-key or a pebble fastened to the tube-end, holding it under water, is alone needed.

Robert H. M. Dawbarn, M.D., New York.

### Alphonso Corti Correspondence

*To the Editor:*—Apropos of your interesting account of Marquis Alphonso Corti (The Journal, Nov. 7, 1914, p. 1676), I enclose a letter on file in the correspondence of the late Prof. Joseph Leidy which may interest your readers. Some years ago on a visit to Milan and Turin I got in touch with members of his family now living in Milan. I had hoped to obtain Professor Leidy's replies to the Corti correspondence. Though I understand some of his correspondence was preserved, there was unfortunately nothing of scientific interest.

Joseph Leidy, M.D., Philadelphia.

Turin, August 1, 1852.

*My Dear Sir:*—Having seen from your interesting observations on the microscopic structure of cartilage that you occupy yourself with microscopic anatomy—I am not aware of any one else doing so in America, I avail myself of the very kind offer of Mrs. White, returning home from here, to send you a copy of the first part of my research on the organ of hearing of mammalia. I was obliged to make my studies principally on domestic animals because it is very difficult in Europe to obtain wild animals, which will be easier for you in America. As you will see that my discoveries on that subject are not without interest to physiology—I wish I might induce you to repeat my observations and extend them over a larger number of wild animals.

I should be very happy to keep up a scientific correspondence with you on physiology and microscopic anatomy. I am at the beginning of my scientific career, and I will direct all my endeavors to the physiological anatomy of animals.

My already long letter will perhaps have annoyed you. Excuse me for it; but science and more than any other the study of nature brings men near to each other and will probably later bring me on a visit to your native country, the most wonderful both for its political institutions and for its natural productions.

You will greatly oblige me with an answer [and], believe me, My dear sir,

Your obedient servant,
Alphonso Corti,
at Turin, Kingdom of Sardinia.

I enclose two short German articles of mine and two Italian ones of my friend Dr. d. Filippi, Professor of Zoology and Director of the Zool. Mus. here.

To Dr. Joseph Leidy,
Philadelphia Academy of Sciences.

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**The Neglect of Vital Statistics.**—If the unborn historian of hygiene in the twentieth century shall find one anomaly more curious than any other, it will be that the twentieth century, opening with prodigious resources immediately available, ran a third or half its course before these resources became so standardized that each unit of power might be accounted for in a definite scheme of vital statistics.—J. S. Fulton.

## Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### SEWER AND WATER PIPES IN THE SAME TRENCH

*To the Editor:*—In a town where it is exceedingly expensive to dig ditches owing to the rocky formation, would it be advisable or objectionable to lay the sewer pipe and the water pipe in the same ditch?

Charles W. Sult, M.D., Flagstaff, Ariz.

Answer.—The proximity of sewer pipes and water pipes is not altogether free from objection, but if the water pressure is constant and the sewer pipe is laid with tight joints there will probably be little risk under ordinary conditions. Careful construction should obviously be insisted on to reduce so far as possible the likelihood of an "accident."

### ARTICLES ON ABDERHALDEN'S METHOD

*To the Editor:*—Can you refer me to any articles treating of the diagnosis of disease by means of Abderhalden's serum reaction?

J. D. Blything, M.D., Bettendorf, Iowa.

Answer.—A list of articles on the serodiagnosis of pregnancy was published in The Journal, Oct. 12, 1912. In the issue of September 6, p. 788, the technic was described and a full list of references was given; Dec. 6, 1913, p. 2087, a list of references to articles appears; and May 16, 1914, p. 1576, a list of references to the use of the test in psychiatry, together with a description of the technic, was published.

### CEDAR POISONING—SOFTENING HARD WATER

*To the Editor:*—1. Lumber mill men frequently consult me for "cedar poisoning" on their hands. Is there such an ailment? If so, please give etiology, treatment and differential diagnosis from eczema and syphilis. I was of the impression that oil of cedar was soothing and mildly antiseptic.

2. Give a method of rendering hard water soft other than by boiling. This question was asked in a medical examination. The inhabitants of Kansas let the water freeze and then melt the ice. The result is soft water. Will you please explain why this is true? L. H.

Answer.—1. There are a large number of substances which produce irritation of the skin known as dermatitis venenata. The lists of these substances given in the works on dermatology are not complete but they do not include cedar. The diagnosis of such an affection would be most easily made by noting the recovery on removal of the supposed cause and the recurrence on renewed exposure. The diagnosis of eczema would be made by comparing the characters of that disease, which would probably persist after the cedar oil was removed.

2. Hard water can be softened by mixing it with a definite quantity of milk of lime which converts the carbonic acid into calcium carbonate and causes the precipitation of the calcium carbonate originally present in the water. When water freezes, the salts present in it are left behind so that the ice is very nearly pure water.

### NARCOPHIN

*To the Editor:*—Can you give me any data concerning Narcophin advised by Prof. Krönig as an anesthetic in obstetrics? I understand it is a proprietary double salt of morphin and narcotin but have no record of its percentage composition.

C. E. Dakin, M.D., Mason City, Iowa.

Answer.—The manufacturers state that Narcophin is a double salt consisting of morphin meconate and narcotin meconate in molecular proportions, containing about 30 per cent. of morphin alkaloid. They claim that it is a scientific substitute for opium and that it has advantages over morphin; specifically that it is much less liable to produce respiratory disturbance or nausea. Examination made in the A. M. A. Chemical Laboratory essentially verified the claims made in regard to the composition of Narcophin (*Reports of the A. M. A. Chemical Laboratory*, 1913, vi, 92). The Council on Pharmacy and Chemistry, however, was unable to accept the therapeutic claims made for the preparation and voted not to accept it for inclusion in New and Nonofficial Remedies.

# Medical Education and State Boards of Registration

## COMING EXAMINATIONS

Alabama: Montgomery, Jan. 5, 1915. Chairman, Dr. W. H. Sanders, Montgomery.

California: Los Angeles, December 8. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.

Delaware: Dover and Wilmington, December 8-10. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

Florida: Palatka, December 2-3. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Kentucky: Louisville, December 16-18. Sec., Dr. A. T. McCormack, Bowling Green.

Maryland: Baltimore, December 8. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton, Baltimore.

Missouri: St. Louis, December 14-16. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

New Hampshire: Concord, December 29-30. Regent, Mr. H. C. Morrison, Concord.

Ohio: Columbus, December 8-10. Sec., Dr. George H. Matson.

Pennsylvania: Philadelphia, December 1-3. Sec., Dr. N. C. Schaeffer, Harrisburg.

Virginia: Richmond, December 15-18. Sec., Dr. J. N. Barney, Fredericksburg.

### Higher Preliminary Requirements in Louisiana

A letter from Dr. E. L. Leckert, secretary of the Louisiana State Board of Medical Examiners, states that at the meeting of that board held October 29, a resolution was adopted that all students matriculating on and after June 1, 1915, in addition to a standard four-year high-school education, must present evidence of the successful completion, at an approved college or university, of one full year of work in biology, physics, chemistry and a modern language. This will apply to all applicants seeking licenses in Louisiana who graduate in 1919 and thereafter. This is the twenty-third state which has adopted the requirement of one or more years of collegiate work as the minimum standard of preliminary education.

### Delaware Regular and Homeopathic Report

Dr. H. W. Briggs, secretary of the Medical Council of Delaware, reports the written examination held at Dover and Wilmington, July 16-18, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 11, all of whom passed. Three candidates were licensed through reciprocity. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| Baltimore Medical College | (1913) | 80.4, 83 |
| University of Maryland | (1911) | 82.4 |
| New York Homeo. Med. Coll. and Flower Hosp. | (1913) | 91.5 |
| Hahnemann Medical College and Hosp., Philadelphia | (1914) | 92.4 |
| Jefferson Medical College | (1914) | 84.1, 87.7 |
| Medico-Chirurgical College of Philadelphia | (1914) | 81.4, 81.5, 87.7 |
| University of Pennsylvania | (1914) | 87.1 |

LICENSED THROUGH RECIPROCITY

| College | Year Grad. | Reciprocity with |
|---|---|---|
| George Washington University | (1906) | Maryland |
| Medico-Chirurgical College of Philadelphia | (1912) | Penna. |
| University of Pennsylvania | (1907) | New Jersey |

### Arkansas Eclectic May Report

Dr. C. E. Laws, secretary of the Arkansas Eclectic Medical Board, reports the oral and written examination held at Little Rock, May 12-13, 1914. The total number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 16, all of whom passed. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| Georgia College of Eclectic Medicine and Surgery | (1914) | 93.8 |
| American Medical College | (1912) | 82.2 |
| Eclectic Medical University, Kansas City | (1901)<br>(1914) | 83.8<br>75, 76.2, 77.7, 79.1, 80.2, 82, 84, 85, 86.6 |
| Eclectic Medical College, Cincinnati | (1870)<br>(1881)<br>(1906)<br>(1912) | 82.8<br>87.2<br>85<br>83 |

# Book Notices

Die Entstehung und Behandlung der Karzinome. Von Hofrat Dr. A. Theilhaber. Paper. Price, 8.20 marks. Pp., 182, with 17 illustrations. Berlin: S. Karger, 1914.

In the opening paragraph the author says that the statement commonly made that practically nothing is known concerning the cause of carcinoma is too pessimistic, and he declares that more is known to-day about the cause of carcinoma than is known about the cause of the majority of other diseases. He then takes up the causes of carcinoma under two headings: (1) local and (2) humoral. Under the first he mentions the usual headings: local irritation, chronic inflammation, trauma, scars, parasites (non-specific), etc., but brings out nothing new. Under the second are mentioned the influence of race and of social position, heredity, character of the food and of the soil, psychic excitement or depression, the structure and function of the internal organs, etc. After reading all the author has to say concerning the numerous causes of carcinoma one cannot fail to be impressed with the fact that the evidence in favor of each and all of them is insufficient. Under treatment considerable space is devoted to the use of the Roentgen ray. The author thinks, however, that the results are not very encouraging except in the cutaneous varieties. Concerning the use of the Roentgen rays after operation for the purpose of preventing a recurrence, the author says: "By intensive ray treatment the blood-forming organs are seriously damaged. The cells of the bone-marrow, the spleen, and the lymphatic tissues react strongly to the Roentgen and radium rays with nuclear destruction. On account of the great importance which the blood-forming organs possess when in good function as a prophyiactic against carcinoma it is not probable that by the use of the rays alone the percentage of recurrences is materially reduced. Experience with Roentgen carcinoma has shown that by the too frequent use of the rays the disposition to carcinoma may be even increased." Much the same views are expressed about radium and radio-active substances. The author says: "A pronounced elective effect of radium on the carcinoma cells is not present. Simply the carcinoma cells are more sensitive and react sooner than the normal cells, but the normal tissues do not remain unharmed."

Attention is called to the fact that destructive changes may take place in the healthy tissues which at first are not apparent and that in a number of cases extensive sloughing of the bladder and rectal walls has taken place months after the use of radium in carcinoma of the uterus, and that in carcinoma of the rectum extensive strictures have occurred without the carcinoma being healed. According to the author radium has not given much better results than Roentgen rays as a rule, and in many cases the Roentgen rays are to be preferred. Other methods of treatment discussed are diathermia, fulguration, chemotherapy, the injection of tumor extracts, autotherapy, and the injection of organ extracts. The author thinks he has seen some benefit from the use of diathermia and the injection of organ extracts, and recommends this treatment as a routine after operation in order to prevent recurrence. The work is another evidence of the great effort that is being made at the present time to solve the problem of cancer.

The Life and Letters of Nathan Smith, M.B., M.D. By Emily A. Smith. With an Introduction by William H. Welch, M.D., LL.D. Cloth. Price, $2.25. Pp., 185, with illustrations. New Haven: Yale University Press, 1914.

Nathan Smith was one of the makers of the history of medicine in New England. Not only this, but he was one of the most important characters in American medicine during the first three decades of the last century. Hence anything that contains facts regarding him or his work naturally must be of interest to medical men.

A good portion of this book is devoted to his letters to his pupil and friend, Dr. George C. Shattuck. These are especially interesting and enlightening, not only regarding Dr. Nathan Smith and his work, but also concerning conditions that prevailed at the time. Dr. Shattuck seems to have been a useful friend, if we may judge from the correspondence: "I wish also," Dr. Smith writes from Hanover, Sept. 15, 1807, "that you would apply to Mr. Dunn or Mr. Maynard, whom you think best, and procure of them on my account several things, viz.: one dozen oil flasks and one pound each of the following: nitric acid, muriatic acid and sulphuric acid. . . . I wish also, that if they can be obtained in Boston, that you would procure for me some earthen and glass retorts." And this from another letter to Dr. Shattuck: "I am continually troubling you about many things. I wish now that you would be so kind as to procure for me two tin reflectors and a tin canister, which you will find described in Henry's Chemistry, in his chapter on Caloric. If you can find a tinman who will make them for you, and you will transmit them to me by Mr. Williams, or Mr. E. Woodward, it would oblige me very much. I shall soon be able to transmit to you the means of paying for these things." In another letter, we read: "If you have a man in Boston who makes thermometers," etc. These are samples from his letters to Dr. Shattuck and they show the "practical" friendship that existed between these two historic medical characters. But, more important, they give us a glimpse of Dr. Smith's scientific interests and activities.

Dr. Smith is best known in connection with his work in medical education. He was the founder of the medical school of Dartmouth College and for some time the whole faculty. When this college was well started he was called to the new medical school at Yale, as "professor of theory and practice of physics, surgery and obstetrics"—a position which he held until his death. Meanwhile, another medical school was started and secured his services. This was at Bowdoin, in the new state of Maine. He was professor of theory and practice of medicine of Bowdoin for five years. Here his lectures were delivered in the summer and did not conflict with his work at New Haven. The University of Vermont started its medical department, the leading spirit in this enterprise being Dr. N. R. Smith, son of Dr. Nathan Smith. "While still faithfully discharging his duties at Yale and at Bowdoin, Dr. Nathan Smith visited the Burlington School and not only delivered courses of lectures there, but by constant correspondence with his son gave it the benefit of his wisdom and experience, thus as the colleague of his son in the enterprise aiding in the establishment of a fourth medical school in New England."

While instrumental in starting four medical schools, he was not a believer in multiplicity, for he says in one of his Shattuck letters, "I think the four schools which I have been concerned in bringing forward, in addition to Howard, will be as much as New England will bear." And then farther on he adds—and if he were living to-day it is quite likely he would make the same statement—"Every state should have one medical school and no more."

Those who are interested in the medical history of the United States will find this book not only profitable reading, but full of some interesting historical data.

Recreations of a Physician. By A. Stuart M. Chisholm. Cloth. Price, $2. Pp. 328. New York: G. P. Putnam's Sons, 1914.

This book contains ten essays on various subjects. Five—"Banquo," "The Symbolism of Names," "Royal Authors," "On Some Translations of Horace," and "The Picaro in Fiction"—are literary and historical, rather than medical. They make not only interesting, but also instructive reading for any one who appreciates good things. The chapters of special interest to physicians are: "Specialization," "Physicians as Men of Letters," "The Inherited Spirit of Medicine," "Some Features of the Science of Medicine in the Seventeenth Century," and "On the Prevention of Disease." They are all full of information. The chapter on the prevention of disease is a historical account of the development of quarantine, and of inoculation and vaccination against small-pox; also an account of the plague visitations, of the origin and development of the science of bacteriology, of the discovery of the transmission of yellow fever, etc. This chapter alone is worth the price of the book. The one on physicians as men of letters is a revelation. It shows that medical men have influenced literature much more than most of us imagine, and that more noted men of letters were disciples of Æsculapius than is generally understood.

These essays reveal their author as a physician of wide reading, who has been industrious in his recreation. Each of the essays is well and interestingly written, and, more important, is instructive.

The American Encyclopedia and Dictionary of Ophthalmology. Edited by Casey A. Wood, M.D., C.M., D.C.L., Professor of Ophthalmology, College of Medicine, University of Illinois. Volume III. Cataract in Diabetes to Cocain Carbolate. Cloth. Price, $6. Chicago: Cleveland Press, 1914.

Chief topics in this volume are cataract, ocular relations of neighboring cavities and choked disk. Each of these important subjects is treated in a full and thorough manner, the first occupying 269 pages, giving an indication of the monumental character of the work. The pace set in former volumes is well kept, there being the usual defects and excellences of style and quality incident to varied authorship of the different articles. As a minor defect might be mentioned the use in legends of such expressions as "Author's irrigator," etc. It would be much better to give the irrigator the name of the author of the article, avoiding the necessity of looking up the author's initials at the end of the article and then referring to the authors' key in the beginning of the volume. To the editor and his collaborators are due congratulations on the rapid progress of the work.

Radium Therapeutics. By N. S. Finzi, M.B., M.R.C.S., L.R.C.P., Chief Assistant in the X-Ray Department, St. Bartholomew's Hospital. Cloth. Price, $2. Pp., 112, with 25 illustrations. New York: Oxford University Press, 1913.

The author's effort in this little book has been, he says, "to place before the profession a brief and clear account of the action and (therapeutic) uses of radium and its rays." And it may be said at once that he has succeeded well in this rather difficult and altogether laudable task. He has first written very clearly of the physics of radium and of the technic of its therapeutic application, and, best of all, has given an account of what is known from histologic study of its effects on tissues; so that he puts its therapeutics uses on a rational foundation. His summaries of its value in various diseases are brief but explicit; and he is blessed with experience and a fine conservatism, so that his judgment on its value is sane and not overenthusiastic. The book is an excellent one in a difficult field.

Manual of Surgery. By Alexis Thomson, Professor of Surgery, University of Edinburgh, and Alexander Miles, Surgeon Edinburgh Royal Infirmary. Cloth. Second Edition. Volume III—Operative Surgery. Price, $3.50. Pp., 620, with 255 illustrations. New York: Oxford University Press, 1913.

The convenient size, large print, the many good illustrations and a splendid text combine to make this book a welcome addition to the surgeon's library. It is written concisely but clearly, and the field is covered fairly well. The work of American surgeons receives the attention it deserves, although so well-known and popular an operation as the Andrews imbrication in connection with inguinal hernia is not mentioned. The usual division of the subjects treated is made. The closing chapter on anesthesia is good. It is short but gives much valuable information. Whether or not it should have a place in a book of this kind is open to question.

Infant-Feeding. By Clifford G. Grulee, A.M., M.D., Assistant Professor of Pediatrics at Rush Medical College. Second Edition. Cloth. Price, $3. Pp., 314, with 29 illustrations. Philadelphia: W. B. Saunders Company, 1914.

The author in revising his book has made no radical changes, but has endeavored to add the substance of the accumulated scientific data of the two years since the original publication. It is a good practical presentation of the theories and classification of Finkelstein, of Meyer, of Czerny and of Keller on the infant-feeding problem. Supplemented by observations from the author's own experience.

# Miscellany

## Oil of Chenopodium as a Substitute for Thymol in Hookworm Disease

Thymol, largely used in the treatment of hookworm, is one of the many drugs which has increased in price as a result of the present European war. In a recent article Motter (*Pub. Health Rep.*, Oct. 2, 1914, p. 2651) discusses the substitution for thymol of an American drug, oil of chenopodium. As indicated by its popular name, wormseed oil, this drug has long had a reputation as a vermifuge. The plant from which it is obtained grows in waste places practically all over the United States. The oil is produced chiefly in Maryland, and the seed comes to a considerable extent from Maryland and Florida. It is said that oils distilled by different processes and from seed grown in different localities vary in efficacy. The value of the drug in the treatment of roundworms is recognized, and Schüffner and Vervoort (*München. med. Wchnschr.*, 1913, lx, 129) found it superior to thymol, naphthol or eucalyptus oil in the treatment of hookworm. Oil of chenopodium paralyzes but does not kill the parasite, which must be removed by free purgation. Unlike aspidium and thymol, wormseed oil can be followed by castor oil, which does not increase the toxicity. Schüffner and Vervoort gave 16 drops of wormseed oil every two hours for three doses; two hours afterward, a tablespoonful of castor oil with a teaspoonful of chloroform. Gockel gives the single dose as 8 drops for patients 6 to 8 years; 10 drops, 9 to 10 years; 12 drops, 11 to 16 years; over 16 years, 12 to 16 drops. If inordinate sleepiness, depression or other untoward symptoms occur, the chenopodium must be stopped at once, active purgation induced, and stimulation by oral or rectal administration of strong hot coffee begun.

## Medical Education of An Earlier Day

The *London Magazine*, a journal of note a century ago, in one of its issues during 1825 contains a somewhat satirical "dig" at the medical education of that period. One item reads:

"There are 3,500 medical practitioners in London, 900 in Paris, and not one in Jericho. If you ask aloud in the street in New York, How do you do, doctor? not fewer than nine passengers will answer you."

Concerning medical education in the British Isles, it says:

"We understand that there is a university called the University of Edinburgh, where ragged Scotch louts spend twenty or thirty pounds, and six months, in acquiring what is called medical knowledge. Others, richer and less ragged, spend three years, and twice as many hundred pounds; a few may occupy four or five. In Glasgow, they do pretty much the same. In both, they talk what is called Latin, and pay thirty pounds at the ends of these probations, have a velvet cap put on their heads, hear a speech from a man called a principal, and become M.D.—Doctors of Physic, or Medicine, for it is not absolutely agreed which (vide Term Reports, anno 1773. Boswell v. Johnson).—At Aberdeen again, physic is studied, learnt, acquired, for thirteen pounds twelve shillings, in about half an hour; attendance, on account of its inconvenience, being excused. At St. Andrew's, the facility is about as great; and thus, for thirteen pounds twelve shillings, a man acquires the right of 'purgandi, seignandi, accidendi, et trucidandi, impune per totam terram.' At Oxford and Cambridge, physic is acquired with the utmost certainty and facility, just as are other things in the same places; at Paris, Leyden, Göttingen and elsewhere, in other modes too tedious to detail. In England, generally, a student labors for seven years in spreading plasters, tying labels on bottles and applying packthread; but, in London, they dig up dead bodies and carve them, walk about an hospital and pay fifty guineas a year for the privilage of guessing what a man called an apothecary means, and what becomes of the money. Added to all this, in times of war, they go to the Peninsula, hew down legs and arms, and bore holes in skulls with a center bit, or do the same thing on board of a frigate. Then a few privileged ones wear scarlet cloaks, make a Latin speech, or listen to one, once in two hundred years, and vote all the rest to be ignoramuses."

# Medicolegal

## Hospital Liable for Death of Delirious Patient Jumping from Window

(*Wetzel vs. Omaha Maternity and General Hospital Association* (*Neb.*), *148 N. W. R. 582*)

The Supreme Court of Nebraska affirms a judgment against the defendant for $5,500 damages for the death of a patient who, while delirious, jumped from an unguarded window of his room on the third floor of the hospital, in the absence of the nurse, who said that she had not been gone five minutes, while another witness said it was nearly an hour. The defendant contended that there was no evidence of actionable negligence, particularly as the contract was to give the patient general, and not special, care, that the attending physician was selected by the patient or his friends, and that the nurse obeyed all of the physician's instructions. But the court points out that there was testimony tending to show that the patient, having typhoid fever in his own home, was taken to the hospital for better care and attention. When the hospital was called up by telephone to make arrangements for his care, it was said by whoever answered that general care was sufficient for a patient in such condition. The hospital was advised in advance that the patient had been delirious. To protect him from harm, the hospital nurse, on her own initiative, but with the subsequent approval of the physician, kept him for a time strapped to his bed. Then, though his fever remained high and his delirium continued, the straps were released by direction of the physician to permit frequent change of position, made necessary by premonitions of hypostatic pneumonia. The lower sash of the window was movable, unfastened and unprotected when he jumped out.

As law, the court holds that a hospital, incorporated and conducted for private gain, is liable in damages to patients for the negligence of its nurses and other employees. This rule of law rests on the general principle that a master is responsible for the torts or wrongful acts of a servant in the scope of his employment; and this doctrine applies to a hospital receiving for special care delirious patients, who on account of temporary conditions produce by fever or other ailments are not accountable for their own acts or conduct. A patient is generally admitted to a hospital, conducted for private gain, under an implied obligation that he shall receive such reasonable care and attention for his safety as his mental and physical condition, if known, may require. Any other rule would be a reproach to the law and to the hospital management. In the present case the evidence was sufficient to justify a finding that the patient was received under circumstances entitling him to the benefit of the principle stated. Duties which a hospital as such owes to a patient cannot be evaded by proof that the hospital nurse obeyed the instructions of the physician employed by him. Nurses necessarily have charge of delirious patients during the absence of physicians, while the responsibility of the hospital continues. Under the circumstances of this case, self-injury might well have been foreseen. It cannot be said as a matter of law that there was no proof of negligence on the part of the nurse or on the part of her employer. A nurse's absence of five minutes may amount to negligence. The question of negligence, under the circumstances here, was one of fact for the jury.

## Roentgen Ray Liability—Changing Physicians—Expert Evidence

(*George vs. Shannon* (*Kan.*), *142 Pac. R. 967*)

The Supreme Court of Kansas affirms a judgment against the defendant, a physician, for injury to the plaintiff in the negligent use of the Roentgen-ray machine in endeavoring to ascertain whether or not he had a stone in the kidney. The defense was that it was necessary to use the machine, that the plaintiff agreed to it, that if any injury resulted it was on account of the plaintiff's susceptibility to Roentgen-ray action, which could not in the exercise of ordinary care, caution and skill have been ascertained, and that if any burn developed as a result of the operation, it was through the plaintiff's own fault and negligence, and through his failure to follow the instructions to return to the defendant for further treatment.

The court holds that there was no error in an instruction to the jury that if the taking of such pictures in a proper and careful manner does not necessarily result in injury, then the fact that injury did result is some evidence (which may be rebutted) that proper care and skill were not exercised. Nor was there error in an instruction that "A physician is not released from liability for the burning of a patient by the use of the Roentgen ray by the fact that the patient quit the treatment of the physician after said patient was burned by the use of said Roentgen ray, and before said physician was willing that such patient should do so, or that said patient neglected to follow the instructions of the physician as to the use and care of the affected parts." The mere fact of discharging a physician or quitting his care and employing another physician by a patient who believes he has been injured by the negligence of the former physician is not in itself evidence of contributory negligence. In other words, the mere fact that a patient discharges or quits the care of his attending physician and employs another physician is not evidence of contributory negligence in an action by the patient against the former physician for negligence in the discharge of his duty to the patient. If any act of the plaintiff had been shown by the evidence to cause an aggravation of the injury, such evidence would probably have been pertinent in mitigation of damages, but the mere fact of a change of physicians did not raise the presumption that damages were increased thereby.

The defendant produced the testimony of a number of physicians, who were Roentgen-ray operators, which tended to show that a burn would not be expected by the use of the Roentgen ray with less than two or three times the amount of current actually used in this case, as shown by the testimony. On the other hand, there was evidence that the use made of the Roentgen-ray machine and current would be expected in ordinary cases to inflict the burn which the plaintiff suffered. On such conflicting evidence it was the especial province of the jury to determine the fact. This is a question of science in which the average juryman has no special knowledge to enable him to test the credibility and accuracy of testimony; still it does not follow that the mere number of witnesses on either side determines the preponderance of the evidence.

### Patient Who Testifies Waives Privilege

*(City of Tulsa vs. Wicker (Okla.), 141 Pac. R. 963)*

The Supreme Court of Oklahoma holds that a patient, suing a third party for damages for personal injuries, testifying as to the nature and extent of her injuries, and the time and place of treatment, waives the privilege granted by the statute, and renders admissible the testimony of her physician on those subjects. In this case Mrs. Wicker sought to recover for personal injuries alleged to have been occasioned by the negligence of the city in not guarding a dangerous excavation in the streets. During the trial she offered herself as a witness and testified as to the nature and extent of her injuries, as also that she consulted a certain physician, who prescribed for her, she remaining under his care about six months, after which time she called at his office for treatment on various occasions. The city endeavored to ascertain from the physician for what, if anything, he had treated her, and offered to show that he had never at any time prescribed or treated her for an injury to her hip received at the time of the alleged injury. The court holds that it was error to exclude the testimony of the physician, after the plaintiff had voluntarily testified as she had, as it was material, and the attending physician was best qualified to testify as to the nature and extent, time and place of the treatment of the injuries.

# Society Proceedings

## COMING MEETINGS

American Association of Anatomists, St. Louis, Dec. 28-30.
American Physiological Society, St. Louis, Dec. 27-30.
Amer. Public Health Association, Jacksonville, Fla., Nov. 30-Dec. 5.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Society of American Bacteriologists, Philadelphia, Dec. 29-31.
Southern Surgical and Gynecological Assn., Asheville, N. C., Dec. 15-17.
Western Surgical Association, Denver, Dec. 18-19.

## PHILADELPHIA COUNTY MEDICAL SOCIETY

*Meeting held Oct. 28, 1914*

The President, Dr. William Duffield Robinson, in the Chair

### Abdominal Pain; Its Significance and Diagnostic Value

Dr. John B. Deaver: At least 90 per cent. of all diseases begin with pain or give rise to it at some time in their course. Ordinarily, pain is the result of undue stimulation of nerve fibers by mechanical, chemical or thermal agents. Such pain is objective. There is a type of pain which has no external physical basis. It is a product of disordered mental action. This is subjective pain and is illustrated in the phenomena of hysteria. Such pain belongs to the domain of the neurologist. It is a confession of ignorance to give to pain a name which has no pathologic significance. All the various "algias" should be replaced by terms conveying an understanding of the underlying processes.

The first great obstacle to the appreciation of the significance of abdominal pain has been the belief that pain in this region usually was the result of disordered function. The second great difficulty in abdominal diagnosis is the inability of the nervous system accurately to localize sensations received from visceral areas. Pain in the abdomen is per se no evidence that the lesion is in the abdomen. Abdominal pain associated with pleurisy or pneumonia, particularly in children, is probably of a reflex nature. Angina may give rise to intense epigastric pain simulating acute surgical disease of the upper abdomen. It is in the milder forms and beginnings of disease that the location of pain is of the greatest value. Of all the organs in the abdomen the stomach presents the greatest variety of symptoms and the most difficult to analyze. If general disease of the stomach is excluded, gastric symptoms should prompt a careful and systematic survey of the abdominal organs. Insignificant chronic disease of the appendix may set up pylorospasm with pain, retention, fermentation and secondary gastritis. It is of the utmost importance to investigate the right iliac fossa of every case presenting epigastric symptoms commonly referred to the stomach. The diseased gall-bladder frequently masquerades as a gastric affection.

Abdominal adhesions are a common source of pain and call for immediate surgical operation. This pain should never be treated with narcotics. At least a year should elapse before operative relief of postoperative adhesions is advised, except in the case of serious symptoms. There is too much morphin used as a routine measure after abdominal operations. When pain makes its appearance on the second or third day or later following operation, the conditions chiefly to be considered are simple distention, peritonitis and obstruction. The most important single feature in differentiation is the character of the pain, whether wave-like and intermittent, or steady and associated with tenderness. The pain of distention and obstruction is, as a rule, colicky and wave-like; that of peritonitis, more steady, diffuse and unremitting.

#### DISCUSSION

Dr. John B. McAlister, Harrisburg: We often are unable to interpret the language of these pains, and in spite of all our knowledge of anatomy and pathology in the abdomen, exploratory operations for diagnostic purposes will be made. I was called to see a woman who was taken suddenly with severe pain which I felt sure was characteristic of renal colic. Operation revealed a fibroid tumor with considerable colloid degeneration. The woman had been in apparently good health until that attack of pain. I could not account for the severe pain except that there may have been a twisted pedicle. Another pain in the upper abdomen which is of supreme importance is that of acute pancreatitis or hemorrhagic pancreatitis. I have seen four of these cases. In the first and second cases the diagnosis was made at the necropsy; in the third and fourth the diagnosis was confirmed at the necropsy. The patients were adults without history of previous ill health.

Dr. J. Leslie Ellenberger, Harrisburg: Pain is a signal that something is wrong. We should not expect to get rid of pain without removal of the cause, and in ascertaining the cause the utmost care is necessary. I have seen a case presenting all the typical symptoms of appendicitis on admission to the hospital and on the following morning show signs of pneumonia.

Dr. Joseph Sailer: Pain is a subjective affair, something felt by the patient, which we cannot measure; and, while experience may give us a proper estimate of the patient's manifestation of pain, we may be deceived by those who exaggerate or underestimate its degree. It is astonishing how often patients with valvular heart disease and with tuberculosis of the lungs come to the physician complaining of gastric symptoms. Acute endocarditis in the early stages may so simulate abdominal conditions that operation may seem imperative.

Dr. Wilmer Krusen: I would emphasize the necessity of a bimanual examination in all cases of appendicitis to determine whether the appendicitis is coexistent with pelvic disease or whether all the symptoms are due to salpingitis. The pain of ectopic pregnancy is of such gravity that physicians should be mindful of its possibility in cases of abdominal pain. Also to be considered are the pains associated with neoplasms. In fibroid tumors there is pain due to pressure conditions. In no condition in gynecology is pain so beneficent as in malignancy. The surgeon would welcome the fact that a woman with beginning cancer had pain.

Dr. A. C. Morgan: It is very important that we differentiate between acute and chronic pain. In a large percentage of cases acute pain constitutes a surgical condition calling for prompt action to save the patient's life. I regard the term "dyspepsia" as a very dangerous one, because this condition is not present, but the stomach is giving us warning of trouble elsewhere. The man who is content with the routine treatment of "dyspepsia" with nux vomica, etc., is careless or ignorant and is not a credit to the profession.

Dr. James Tyson: I was called yesterday to see a patient with abdominal pain, paroxysmal in character, and with a history of traumatism. The attacks of pain were of slowly increasing severity, resulting in collapse. The patient's abdomen was swollen and to my inquiry of the location of pain he replied that it was general. Passing my fingers in the region of the appendix I found evident tenderness, yet there was nothing that was distinctive. I have not yet made a diagnosis of this case.

Dr. S. Solis Cohen: I would not eliminate functional disturbance of the viscus from among those conditions giving rise to pain in the abdomen. Organic disease is often overlooked from want of careful examination, but when careful study has been made, and the evidence points to the so-called functional disturbance, then the physician is justified in carrying out medical measures. Several times in my experience I have been unable to exclude appendicitis, gall-stones or gastric ulcer without exploratory operation. A better understanding of the great sympathetic nervous system would give us more light on such cases. There is such a condition as hysteria, but ninety-nine cases out of a hundred called hysteria are something else. In such cases I would advise exploratory operation. I want to confirm the comparative frequency with which acute pancreatitis expresses itself as epigastric pain. I have known cases in which death occurred prematurely because the significance of the pain was not realized. To make a diagnosis one must not study pain or any other symptom alone, but must study his patient thoroughly.

## MISSISSIPPI VALLEY MEDICAL ASSOCIATION

*Fortieth Annual Meeting, held at Cincinnati, Oct. 27-29, 1914*

*(Concluded from page 1787)*

### Certain Physical Signs Referable to the Diaphragm and Their Importance in Diagnosis

Dr. Richard Dexter, Cleveland: Conditions which involve the diaphragm may be divided into two groups: 1. Those in which the symptoms of involvement depend on the irritatation of the nerves which supply the diaphragm. 2. Those cases in which the position of the diaphragm is affected. Irritations of the pleural or peritoneal coverings of the diaphragm give rise to symptoms at a distance from the structure. The paths of pain distribution conform to type of the viscerosensory reflex in the sense of Mackenzie and Head. The inspiratory contraction of the diaphragm tends to draw the subcostal angle toward the median line. Under normal conditions this contraction is not strong enough to overcome the antagonistic action of the scalene and intercostal muscles. When the position of the diaphragm is lower than normal the contraction of the muscle will be more direct, and will, therefore, equalize or overcome the action of the scalenes and intercostals. The result will be a retraction of the costal angle toward the median line during inspiration. If the diaphragm is pushed up from below the power of its contraction will be lessened with the result that the subcostal angle will depart farther from the median line than usual.

### Relation of Gastro-Intestinal Tract to Joint Disturbance; Value of Eliminative Treatment

Dr. William A. Mowry, French Lick, Ind.: Derangements of the gastro-intestinal tract operate in the production of chronic affections, such as rheumatism, gout, obesity and probably diabetes. Among 244 patients suffering from joint disturbance, 59 had true gout and 93 had autotoxemic arthritis. Most of the cases were of the chronic type. The fingers and knees were affected equally in two-thirds of the cases, with toes, wrists, ankles and elbows next in order of frequency. Constipation was very frequent in these patients, a few had diarrhea, while some complained of alternating constipation and diarrhea. Only one-third gave a history of headache, usually coincident with stomach or bowel attacks. In forty-eight per cent. of the cases mucus was present in the stools, constantly or intermittently. About half of the patients complained of some form of indigestion, most frequently with eructation and regurgitations. Examination in most cases confirmed the diagnosis of gastritis, colitis, chronic appendicitis and probably cholecystitis. Immediate relief was given by internal irrigation, free purgation and diet. Salicylates were used in the autotoxemic group for the relief from pain, while fomentations and other hydrotherapeutic measures were regulated for each individual patient. Laxative waters were used; paraffin oil and castor oil were given when too large doses of a saline irritated the gastro-intestinal tracts. The results of treatment were most gratifying. Seventeen patients were relieved entirely from pain or stiffness in the joints; all but fifteen of the remaining showed marked improvement. Patients were instructed as to the importance of diet and regulation of the bowels to insure permanent benefit.

### Presidential Address: The Public and the Profession

Dr. D'Orsay Hecht, Chicago: The physicians of to-day are wading up to their necks into mysteries of research. The evenings are spent in dutiful attendance at the meetings of the medical society, and the nights under an avalanche of medical journals. There is a lamentable show of personal indifference for the microscope and test-tube. The commercialized general laboratory is an outgrowth of this. Another instance of our tension is the bread and butter physician's restless pursuit of research. Aside from the genuine fascination which the creative faculty is sure to have for some men of the academic type, there comes to my mind the thought that the many amateurs in research recruited from the heterogeneous mass of clinicians are attracted to it by the glamor of the name. By it physicians are diverted from the paths of the clinic, paths quite as congenial and in respect of their talents and equipment infinitely more promising. Medical society madness, instead of manifesting itself as a phase of the theory of relaxation, presents itself as a symptom of the gospel of intensive work, which it should not. There are thoughtful persons, appreciative of the work of the profession. Then there are others who capitalize themselves as antivaccinationists and antivivisectionists. The latter especially are even now spasmodically engaged in pseudoformidable campaigns against the very types of animal experimentation that have resulted in the greatest benefactions to man.

### Conservative Versus Radical Treatment of Eclampsia

Dr. J. Henry Carstens, Detroit: Pregnant women should have their blood-pressure taken frequently and also have the urine examined. If symptoms of toxemia develop, a most restrictive diet should be started and the woman placed in a position where she can have prompt medical attendance, preferably in a hospital. If convulsions occur, premature delivery should be brought about by slow process, if the case is mild. In severe attacks of convulsions, immediate delivery should be instituted by the so-called vaginal cesarean section, if the woman is about seven months' pregnant or thereabout. If the woman is at full term, and especially in a primipara, an abdominal cesarean section should be the operation of choice.

### Salvarsanized Serum in the Treatment of Locomotor Ataxia, Paresis and Cerebrospinal Syphilis

Dr. William Litterer, Nashville, Tenn.: After giving ninety intraspinal injections of neosalvarsanized serum to fifteen patients over a period of ten months, I have seen in some of these cases remarkable improvement which has persisted up to the present time. With perfect aseptic and cautious doses the method is practically devoid of danger. On account of the numerous areas of poor vascularization in the brain and cord, the most rational treatment of nervous syphilis appears to be the intraspinal administration of salvarsanized serum. Whether it will entirely annihilate the spirochete or whether there may still remain inaccessible foci of infection, which will make recrudescence possible after the lapse of time, the future alone can determine.

### Mortality and Morbidity of Appendicitis

Dr. F. F. Lawrence, Columbus, Ohio: The mortality is determined by: 1. The promptness of action after a correct diagnosis. 2. The period at which a correct diagnosis is made. 3. The patient, his resistance, his environment, and whether it is his first or one of many attacks. 4. The family doctor, his ability, his conscience and his courage. 5. The surgeon, his judgment, his skill, and his personal attention to detail. The morbidity depends on: 1. Delayed operations resulting in complications. 2. Abscess formation requiring prolonged drainage. 3. Inefficient drainage when drainage is required. 4. Incomplete operations. 5. Faulty technic which tends to irritate the peritoneal covering, strictures favoring adhesions, leaving the uncovered stump, disseminating infection by overlooking the physics of distention or of tension, and unnecessary trauma.

### Present-Day Conception of the Treatment of Nephritis

Dr. Arthur R. Elliott, Chicago: Improvements in treatment may be summarized as a better handling of the cardiac problem, a better standard of control in diet, and improved prophylaxis. Chronic focal infection may play an important part in the etiology of chronic nephritis. As a primary measure in treatment, every case should be examined thoroughly for infective foci and these obliterated by radical treatment when found. Syphilis and chronic lead intoxication are other insidious factors that must be combated.

In the vast majority of cases of chronic nephritis, during the stage of cardiac compensation, the total function of the kidneys is well up to normal. Aided by periodic functional testing to check up the kidney condition the diet may be so regulated as to maintain general nutrition and kidney conservation on a parity. I perform fluid and salt excretion tests in every case of chronic nephritis before laying down the diet. The most important item in the treatment of chronic nephritis is the preservation of cardiac compensation. The high blood-pressure and cardiac hypertrophy of chronic nephritis constitute a compensatory mechanism enabling the kidneys to maintain adequate function. They consequently are essential to the preservation of life and should be protected by every hygienic and dietetic safeguard. High blood-pressure should not be made the object of direct therapeutic attack. Nitrites should be reserved for emergency use to combat such developments as angina, cardiac asthma, etc. The appearance of dropsy in primary chronic nephritis almost invariably signifies the advent of cardiac failure. At this stage the digitalis bodies become the mainstay of treatment and should not be withheld because the blood-pressure is high, as they act just as well or even better with a high blood-pressure as with a falling pressure.

### Gall-Bladder Infections: Their Treatment From a Surgical Point of View

Dr. Louis Frank, Louisville: My operative work has been performed under gas-oxygen anesthesia and complete blocking, with preliminary drainage of the gall-bladder, and dividing the operation into two stages. After the gall-bladder has been permitted to drain for some time, and the patient's temperature has receded to normal and the jaundice has subsided, I do a secondary operation removing the obstruction from the duct. Under this plan the mortality has been materially reduced.

### Anuria: Its Etiologic and Surgical Phases

Dr. Hugh Cabot, Boston: Anuria should be classified according to its pathology. There are two types, the secretory and the excretory types. Classified by clinical causes, there are three types, the neuropathic, the destructive and the obstructive types. The diagnosis of anuria is always simple. Diagnosis of the cause requires care, use of all the means at our disposal and accurate deduction. Operation must be considered in all cases not due to destruction of kidney tissue. In cases of acute nephritis operation may tide over an emergency, but is rarely indicated. In cases due to obstruction of the ureter from without, operation will relieve the obstruction and is indicated when the cause is wholly removable, as in benign tumors. Operation is always indicated in anuria due to obstruction within the ureter. If both sides are obstructed, both should be operated on at the same sitting. If one is obstructed and the other has stopped secreting from reflex or other causes, operation is indicated only on the obstructed side.

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# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Insanity, Baltimore

*October, LXXI, No. 2, pp. 233-437*

1 Criticism of Psychanalysis. C. W. Burr, Philadelphia.
2 Pathology of General Paralysis. C. B. Dunlap, Ward's Island, N. Y.
3 Medical Examination of Mentally Defective Aliens: Its Scope and Limitations. L. L. Williams, Ellis Island, N. Y.
4 Applied Eugenics. S. Brown, Chicago.
5 Translation of Symptoms into Their Mechanism. C. L. Carlisle, Kings Park, N. Y.
6 Psychoses in Colored Race. M. O'Malley, Washington, D. C.
7 An Estimate of Adolf Meyer's Psychology. G. V. Hamilton, Montecito, Cal.
8 Dementia Praecox, Paraphrenia and Paranoia. G. H. Kirby, Ward's Island, N. Y.
9 *Mental Disturbances Associated with Acute Articular Rheumatism. R. H. Haskell, Ann Arbor, Mich.
10 Topographic Distribution and Functional Significance of Cortex Lesions and Anomalies in Dementia Praecox. E. E. Southard, Boston.
11 *Psychic Manifestations of Disease of Glands of Internal Secretion. E. M. Auer, Kalamazoo, Mich.

**9. Mental Disturbances in Articular Rheumatism.**—The exact cause or causes of mental disturbances during the course of acute articular rheumatism, Haskell states, are not clear. Many of the delirious episodes during the acute stage of the disease are undoubtedly pure fever delirium and should not be looked on in any sense as specific. There are those who, without other signs of psychopathic makeup, regularly show a delirium with only a slight rise in temperature. Such individuals may later develop an endogenous psychosis, seen not infrequently in manic-depressive patients. In the hyperpyretic cases, conveniently so-called, the increasingly high temperature is simply an expression of the extreme toxemia which is affecting the nervous mechanism of the heat regulating center as well as the brain cortex. Whether this toxemia is purely bacterial in origin is unknown. Kraepelin has utilized in the manufacture of a theory the observations that sometimes in these hyperpyretic cases all signs of joint involvement actually do disappear and suggests that the sudden resorption of this fluid floods the body with an excessive amount of some toxic substance which cannot be excreted or made innocuous fast enough to prevent damage to the cerebral cortex. In the protracted cases there are numerous additional factors. The prolonged toxemia, the altered metabolism as a result of this and the physical exhaustion from the disease, together, in many cases, with the added effects of various complications or several relapses of the polyarthritis, all serve to bring about the changes in the cerebral cortex.

The outcome in the superacute cases is imminently bad. The mortality is 82 per cent. In the acute infectious delirium the prognosis is more hopeful, but still serious. Fifty-two per cent. of this class die. In the more protracted cases of the late febrile or convalescent period the prognosis is uniformly good for recovery. The course is usually long, from several months to a year. The treatment is first that of the primary disease. Numerous reasons make it highly advisable that the patient be in a hospital and preferably one especially equipped for the treatment of acute mental conditions.

11. **Disease of Glands of Internal Secretion.**—Auer is of the opinion that in the etiology of the affective psychoses we are evidently dealing with a biologic disturbance. The glands of internal secretion physiologically act not as independent units but, on the contrary, mutually influence functional activity. The occurrence of insanity at puberty and adolescence after severe physical and mental strain and at the time of menopause, all periods when the metabolic changes of the body are intense, and the occurrence in syndromes unquestionably the result of disease of the glands of internal secretion of idiocy, imbecility, depression, mania and dementia suggest strongly that the true etiology of the affective psychoses lies in a functional disturbance of the glands of internal secretion.

### American Journal of Roentgenology, Detroit

*August, I, No. 10, pp. 361-397*

12 Roentgen Findings in Obscure Head Lesions. W. F. Manges, Philadelphia.
13 *Treatment of Cancer by Physical Methods, with and without Surgery. A. F. Holding, New York.
14 *Roentgen Ray Studies on Ileocecal Valve and Appendix. J. T. Case, Battle Creek.

13. Abstracted in The Journal, October 10, p. 1321.

14. Abstracted in The Journal, Nov. 8, 1913, p. 1744.

### Annals of Surgery, Philadelphia

*November, LX, No. 5, pp. 537-664*

15 *Early Diagnosis and Treatment of Sarcoma of Long Bones. W. B. Coley, New York.
16 *Experiences in Treatment of Malignant Tumors by Radium. R. Sparmann, Vienna.
17 *Ostitis Fibrosa Cystica. L. H. Landon, Philadelphia.
18 *Review of One Hundred Consecutive Operations for Goiter. C. H. Frazier, Philadelphia.
19 Chronic Cystic Mastitis. G. P. Müller, Philadelphia.
20 *Indications for and Variations in Technic of Eck Fistula. M. M. Peet, Philadelphia.
21 One Hundred and Ten Consecutive Cases of Appendicitis without Mortality. W. B. Brinsmade, Brooklyn.
22 Recent Traumatic Dislocations of Hip. C. R. Steinke, Philadelphia.
23 *Significance of Jackson Veil. D. N. Eisendrath and E. W. Schnoor, Chicago.

15. **Sarcoma of Long Bones.**—The chief requirement for the early diagnosis of sarcoma of the long bones, according to Coley, are a more careful study of all known clinical data; a larger clinical experience in the diagnosis of sarcoma of the long bones; early and repeated Roentgen-ray examinations in all cases of suspected swellings of the long bones, especially those following trauma; exploratory operation and microscopic examination of the tissue removed in selected cases, but not as a routine measure; realization of the importance of not placing implicit reliance on the negative report of the pathologist, especially when in conflict with clinical and Roentgen-ray evidence that is strongly positive.

16. **Treatment of Malignant Tumors by Radium.**—The hopes placed in radium as a new and successful means in the treatment of malignant tumors, Sparmann says, have not been realized. Moreover, the number of cases in which one might have recourse to radium therapeutics shrinks constantly as experience progresses.

17. **Ostitis Fibrosa Cystica.**—According to Landon the healing of fractures occurring at the site of these cysts is uniformly good and may result in cure of the cyst. Operative treatment, unless one can be quite sure from constant watching that the diagnosis is correct, is always justified. Although in selected cases and in the hands of experienced operators, resection with autogenous grafting has resulted favorably, curettement, crushing in of the walls and primary closure of the wound have been almost universally sufficient to procure a cure.

18. **Operations for Goiter.**—Of the 103 operations done by Frazier there were 80 thyroidectomies with no deaths. Of 3 thyroidectomies for malignant disease, there was one death, a sarcoma in a boy 11 years of age. Of 17 ligations, there were two deaths, both true exophthalmic goiters, one an acute case of six months' duration, the other a case in the terminal stage of the disease. The end results in the toxic cases were in accordance with those recorded from other clinics. Of the patients heard from, 90 per cent. had fully recovered or were greatly improved, and of the latter a number had been operated on within the last year. The completeness of cure, Frazier states, does not depend entirely on the successful removal of the gland. Two other factors must be considered: First, the care of the patients after the operation, which should, whenever possible, free the patient from physical and nervous strain for periods varying from several months to two years. The completeness of the recovery will depend on his appreciation of the need of this after-treatment and whether the circumstances permit of its enforcement. Second, the existence of chronic visceral disease at the time of the operation must be taken into account. Some of these patients are physical wrecks with organic lesions of heart, kidney and other organs, from which complete recovery is impossible.

Frazier emphasizes that the general practitioner has every right, if he so chooses, to try non-surgical means in the early stages of the disease before the myocardium or kidney or nervous system is permanently damaged. But if he fails to arrest the disease and does not advise operation in the curable stage, he should be just as severely censured as the practitioner who fails to call for surgical aid until his patient with acute appendicitis has developed peritonitis, or one with a callous ulcer of the stomach, carcinoma. The extraordinary recuperative power of patients with Graves' disease is amazing, and in most cases, sick as they are at the time of operation, they will almost uniformly be restored to perfect or reasonably good health.

20. **Technic of Eck Fistula.**—From a rather extensive use of the Eck fistula in dogs Peet considers the operation safe, entirely compatible with a normal life, and simple of execution. He prefers the modification of Carrel's technic. In cases of liver cirrhosis with ascites and in cases of thrombosis or other obstruction to the portal circulation, Peet considers the operation advisable, especially so in cases in which esophageal varices exist. In the latter condition, at least, he says, it should prove much superior to omentopexy.

23. Abstracted in The Journal, January 24, p. 324.

### Boston Medical and Surgical Journal

*November 5, CLXXI, No. 19, pp. 695-730*

24 *Anaphylactic Skin Reactions Excited in Hay-Fever Subjects by Pollen of Various Species of Plants. J. L. Goodale, Boston.
25 Forlanini's Artificial Pneumothorax. G. M. Balboni, Boston.
26 *Asthma in Children. Its Relation to "Egg Poisoning." F. B. Talbot, Boston.
27 Out-Patient Work in Massachusetts State Hospital for Insane. A. W. Stearns, Boston.
28 Transfusion in Treatment of Hemorrhagica Neonatorum. R. M. Green, Boston.
29 *Three Methods for Diagnosis of Tuberculosis by Sputum Examination. R. Ertischek, Rutland.

24. **Anaphylactic Skin Reactions Excited in Hay-Fever.**—Fifty-eight cases giving a history of hay-fever were examined by Goodale. The extracts were prepared by soaking the pure pollen for twenty-four hours in 15 per cent. dilution of alcohol and filtering. Forty-five cases were examined with reference to grasses. It was observed that in all positive cases the red-top, timothy and blue grass equally excited reactions. Of these cases eight were affected by grass alone, none of the other plants tested exciting reaction. Thirteen cases were affected both by grasses and ragweed alone. Six cases showed positive reactions toward grasses, ragweed and golden-rod, and a variety of other plants. Three cases showed positive reactions to grasses and roses alone. The beach grass was tested in twenty-seven cases. This, although flowering late in the season, excited positive reactions in eleven cases of the spring form, fifteen cases being doubtful or negative.

Ragweed was tested in 49 cases. Of these, 45 were positive, 4 being negative; 13 were affected by ragweed alone, no other plants tested exciting reaction. Sixteen were positive with reference both to ragweed and to golden-rod, but not to other plants. One case showed positive reactions to grasses, ragweed and roses, but not to golden-rod or to other plants. Forty-nine cases in all were tested for golden-rod. Of these, 26 were positive, 23 being negative. One case only showed positive reaction to golden-rod alone, without disturbance from other plants, all of the other positive golden-rod cases reacting also to ragweed.

Twenty cases were tested for yarrow, 5 being positive, 15 doubtful or negative. Beach wormwood was tested in 6 cases, 2 of them showing moderate reaction, 4 being negative. Field daisy was tested in 14 cases, 5 of them showing a moderate reaction, 9 being doubtful or negative. Burdock and fall dandelion were tested in 3 cases, showing each 1 positive and 2 negative results. Hawkweed was examined in 17 cases, 5 being positive and 12 negative. English daisy (*Bellis perennis*) was examined in 20 cases, 4 being positive and 16 negative. Pigweed was examined in 26 cases. Three of these were positive, and 23 were negative. Wild carrot, or Queen Anne's lace, was examined in 23 cases, only 1 being positive and 22 negative. Tansy was examined in 12 cases, 2 being positive and 10 negative. Two types of roses were tested, the early flowering Japanese rose and the late flowering prairie rose. The Japanese rose was examined in 19 cases, 3 being positive, the remainder without reaction. The prairie rose was tested in 8 cases with negative results. The mock orange was tested in 6 cases, 2 of these being positive. Tests were also made in a few cases with negative results of the following plants: California poppy, hawthorne, bayberry, frost grape, jack pine, peony, white oak, rhododendron, hardhack.

26. **Asthma in Children.**—Talbot is of opinion that the evidence at hand points to the fact that asthma is a manifestation of anaphylaxis, namely, a local manifestation in the lungs. It is conceivable that the urticaria which is seen on the skin may also come on the mucous membrane of the bronchi, and thus cause the symptoms of asthma. Asthma in a certain number of children is due to egg poisoning. Scarification of the skin and inoculation with egg white will show whether egg albumin is the specific cause of the asthma. Many, if not all cases of egg asthma may be immunized to egg white by feeding them with gradually increasing doses of egg albumin in capsules. When the egg idiosyncrasy is cured the asthma stops unless an idiosyncrasy to some other protein complicates the situation. Horse-asthma is an anaphylactic phenomenon due to protein of the horse and may be recognized by scarifying the skin and applying horse-serum. A similar reaction to the egg reaction results.

29. **Three Methods for Diagnosis of Tuberculosis by Sputum Examination.**—The methods used by Ertischek are as follows: 1. Direct smear. 2. Antiformin digestion. 3. Salting method of Davis. Out of 168 specimens examined, which form the basis of this report, 149 were negative to all three methods. Direct smear found four positives that the antiformin did not. Direct smear found six positives that salting did not. Antiformin found six positives that salting did not. Antiformin found four positives that direct smear did not. Salt solution found six positives that direct smear did not. Salt solution found six positives that antiformin did not. Three specimens were positive to all methods.

### Florida Medical Association Journal, Jacksonville

*October, I, No. 4, pp. 97-128*

30 Family Physician and Public Health. C. E. Terry, Jacksonville.
31 Enemas, Wise and Otherwise. G. M. Niles, Atlanta, Ga.
32 Conservative Abdominal Cesarean Section. C. L. Jennings, Jacksonville.
33 Vincent's Angina. Report of Case. W. G. McKay, Jacksonville.
34 Prostatic Hypertrophy. J. S. McEwan, Orlando.

### Illinois Medical Journal, Chicago

*October, XXVI, No. 4, pp. 221-486*

35 Society Largely Responsible for Most Potent Factors of Nervous and Mental Diseases. C. King, Atlanta, Ga.
36 Duty of State to Protect Society from Defective Individuals. W. S. Lindsay, Topeka, Kan.
37 Man's Tendency Toward Aberration. M. Solomon, Chicago.
38 Relation of Psychiatry to Medicine. C. Ricksher, Kankakee.
39 Bilateral Peripheral Facial Palsy. Report of Case. T. B. Throckmorton, Des Moines, Ia.
40 Diagnosis of Insanity. J. Grinker, Chicago.
41 An Experience in Pedagogy Among Chronic Insane. E. F. Leonard, Chicago.
42 Pathologic Characteristics of Habitual Criminal. P. E. Bowers, Michigan City, Ind.
43 Brain Heredity and Brain Hygiene. J. T. Searcy, Tuscaloosa, Ala.
44 Chronic Alcoholism. C. F. Read, Dunning.
45 Emotional Factor in Etiology of Suicide, Criminality, Insanity and Mortality. H. S. Munro, Omaha.
46 Insight in Cases Recovered from Manic-Depressive Attacks. S. N. Clark, Kankakee.
47 Wisconsin's Fight Against Degeneracy. F. I. Drake, Waupun, Wis.
48 Relation of Cerebellum to Labyrinth. T. L. Long, Cherokee, Ia.
49 Spurious and Genuine Treatment of Psychoses. T. A. Williams, Washington, D. C.
50 Prevention of Nervous and Mental Diseases. C. F. Neu, Indianapolis.
51 Commitment of Insane of United States. T. Diller, Pittsburgh.
52 Dementia Praecox with Special Reference to Treatment. H. A. Lindsay, Independence, Ia.
53 Abderhalden Reaction in Dementia Praecox. A. E. Sterne, Indianapolis.
54 Diagnosis and Treatment of Dementia Praecox. B. Holmes, Chicago.
55 Precautions and Limitations of Abderhalden Method in Examination of Mental Cases. A. Gehrmann, Chicago.
56 Demonstration of Abderhalden Test. C. E. M. Fischer, Chicago.
57 New Cook County Psychopathic Hospital. H. I. Davis, Chicago.
58 Psychosis Accompanying Pellagra. A. A. Thurlow, Norman, Okla.
59 What Are Indications for Restraint? H. J. Gahagan, Elgin.
60 Mental Forces. E. A. Foley, Jacksonville.
61 Sterilization, Segregation, or Custodial Care of Mental Defectives. M. Pogue, Lake Geneva, Wis.
62 Visual Imagery and Verbal Thought. C. H. Town, Lincoln.
63 Medicopsychologic Work in Courts. W. Healy, Chicago.
64 Reeducation of Attentive Control. G. W. Robinson, Kansas City, Mo.
65 Prevention of Epilepsy. O. S. Hubbard, Parsons, Kan.
66 Epileptoid Convulsions in Alcoholics and Their Relation to Genuine Epilepsy. E. W. Katzen-Ellenbogen, Trenton, N. J.
67 Public and Private Care of Epileptics in United States and Canada. W. C. Graves, Chicago.
68 Social Aspects of Epilepsy. M. D. Lynch, Chicago.
69 Coagulation Time of Blood in Epileptics. D. A. Thom, Palmer, Mass.
70 Case of Infantilism with Hypophyseal Insufficiency. E. B. McCready, Pittsburgh.
71 Rational System of Medical Physio-Psychologic and Mental Tests for Determination of Exceptional Development in Children. M. P. E. Groszmann, Plainfield, N. J.
72 Organic Brain Lesions in Mental Defectives. W. J. Hickson, Chicago.

73 Relation of Adenoids and Tonsils to Mental Deficiency. A. M. Corwin, Chicago.
74 Relation of Eyes to Mental Deficiency. O. Dodd, Chicago.
75 Feeble-Minded: Their Environment and Social Relation. H. C. Kehoe, Frankfort, Ky.
76 Nervous and Mental Findings in Feeble-Minded Children. J. J. Mendelsohn, Lincoln.
77 Physical Cause of Mental Disease. C. W. Sawyer, Marion, Ohio.
78 Mental States in Famous Chess Players. L. Miller, Toledo, Ohio.
79 Demonstration of Living and Stained Spirocheta Pallida. C. E. Sidwell and L. D. Smith, Chicago.
80 Principles and Technic of Lange Gold Colloid Test. L. D. Smith, Chicago.
81 Lange Gold-Sol Test in General Paralysis. G. W. Brock, Peoria.
82 Relation of Syphilis to Production of Feeble-Mindedness. G. Bliss, Ft. Wayne, Ind.
83 Control of Venereal Diseases. W. A. Evans, Chicago.
84 Technic for Mixing Materials in Wassermann Test by Drop Method. W. T. Mefford, Chicago.
85 Importance of Early Diagnosis in Locomotor Ataxia. R. C. Hamill, Chicago.
86 Transient Lesions in Early Paresis. B. F. Williams, Lincoln, Neb.
87 Intraspinal Injections of Neosalvarsan. G. W. Hall and R. C. Hamill, Chicago.
88 Salvarsan in Syphilis. W. A. Pusey, Chicago.
89 Surgery in Hospitals for Insane. E. M. Green, Milledgeville, Ga.
90 Presenile Psychosis. E. Z. Levitin, Peoria.
91 Case of Dementia Praecox. W. L. Treadway, Ellis Island, N. Y.

### Medical Record, New York

*November 7, LXXXVI, No. 19, pp. 783-824*

92 *Albumin in Sputum and Its Relation to Pulmonary Disease. G. R. Callender, Fort Bayard, N. M.
93 Problems of Life. H. M. Friedman, New York.
94 One Hundred and Fifty Cases of Twilight Sleep. J. Heller, Brooklyn.
95 Practical Points in Tonsillar Infection. B. Robinson, New York.
96 What Preparation Is There in Fundamental Branches in Dental Schools for Teaching Oral Surgery? A. H. Levings, Milwaukee, Wis.
97 Foot Troubles as Factor Affecting Human Efficiency. J. B. Tyrrell, Chicago.

92. **Albumin in Sputum and Its Relation to Pulmonary Disease.**—The following technic is used by Callender after trials of all other recorded methods, and it is recommended for those who desire to continue work with this procedure. Twenty-four-hour amounts of sputum are collected and examined fresh. The material is placed in a glass-stoppered flask, and equal quantity of 3 per cent. acetic acid added, and the mass rendered homogeneous by shaking. Allow to stand for five minutes and filter. Add 1 drop of glacial acetic acid to the filtrate to be sure of complete precipitation of mucin and repeat filtration if necessary. Take a convenient quantity, as 4 c.c., and add an equal volume of supersaturated magnesium sulphate solution, about 80 per cent. (This solution may be used at 60 C. and kept in the 37.5 C. incubator). This precipitates globulin. To another similar portion add 5 drops of 10 per cent. potassium ferrocyanid to precipitate albumin. If much globulin is found to be present by the first determination it will be necessary to filter it out before proceeding with the test as the ferrocyanid precipitates both. Except in work involving an estimation of the prognosis and cases in which globulin is more than an opalescence, this is rarely necessary. In the case of globulin precipitates form slowly and tend to remain in suspension. It was found that the heavy clouds formed in the reaction will form precipitates if given a little time. The negatives then are reactions showing no change in the clarity of the material or an opalescence or cloudiness that does not settle as a precipitate and such as may be obtained from the sputum of persons with no respiratory disease.

One hundred and eight cases are reported. Incipient active cases all showed a positive reaction. Of the moderately advanced cases 40, or 80 per cent., were positive and of the far advanced 90.3 per cent. contained albumin. One of the negative cases in the far advanced series was clinically in extremis, but repeated trials failed to show the reaction. Of fibrous cases 10 cases were examined in a separate group. Of these, 2, or 20 per cent., were positive for both albumin and globulin; the rest being negative for both. Both of the positive cases showed periodically tubercle bacilli in the sputum. A cardiac case, showed during partial compensation a plus reaction Two months later, when compensation was complete, though raising some sputum, the reaction was negative. Two cases of bronchial asthma were repeatedly negative. A case of pulmonary syphilis showed abundant precipitates of both albumin and globulin. A case of fibrinous bronchitis, showed at all times a small amount of albumin not estimable quantitatively. A case of subacute bronchitis and a case of bronchiectasis, similarly showed small amounts of albumin. Two cases of subacute rhinitis and nasopharyngitis showed constantly in the purulent sputum a small amount of serum albumin.

Three cases in which artificial pneumothorax had been produced showed on first examination a trace of globulin and a heavy albumin precipitate. Two months later all three cases clinically showed a marked improvement and in all three the globulin had increased to a double plus reaction while the albumin was present only in traces. Callender concludes that albumin is not present in the sputum from all cases of active pulmonary tuberculosis. An increase in globulin, accompanied by a decrease in albumin, is a favorable prognostic sign. Albumin is present in the sputum from cases of pulmonary syphilis and is therefore not a means of differential diagnosis between that disease and phthisis. As a general rule, though there are exceptions, the albumin content corresponds to the amount of activity. Fibrous cases with moisture but no active tuberculosis in the lungs do not show appreciable amounts of albumin in the sputum.

### Military Surgeon, Chicago

*November, XXXV, No. 5, pp. 411-510*

98 Preparedness. C. Adams, Illinois N. G.
99 Personal Experience and Professional Observations of So-Called Annual "Physical Test" (1910). H. G. Beyer, U. S. Navy.
100 Progress in War Transportation: Motor Ambulance, Motor Hospital and Motor Surgery. F. W. Foxworthy, U. S. Army.

### New York Medical Journal

*November 7, C, No. 19, pp. 901-948*

101 *General Anesthesia, with Special Reference to Surgery of Genito-Urinary Tract. J. T. Gwathmey, New York.
102 Local Anesthesia in Relation to Surgery of Genito-Urinary Tract. J. F. Mitchell, Washington, D. C.
103 Is Modern Antituberculosis Crusade Really a Failure? S. A. Knopf, New York.
104 Operative Treatment of Cancer from Standpoint of Internal Medicine. A. L. Benedict, Buffalo.
105 Implantation of Generative Glands and Its Therapeutic Possibilities. G. F. Lydston, Chicago.
106 Pilocarpin in High Blood-Pressure. W. D. Robinson, Philadelphia.
107 Relief of Gas Pains after Appendicectomy. T. A. Kenefik, New York.
108 Some Essential Points in Infant Feeding. E. S. Rimer, New York.
109 Hodgkin's Disease. A. K. Yoosuf, Worcester, Mass.

101. **General Anesthesia with Reference to Surgery of Genito-Urinary Tract.**—Most patients to be anesthetized, either locally or generally, Gwathmey urges, should have the benefit of physiologic doses of morphin before anesthesia, and also of an alkali, and carbohydrate treatment both before and after operation. For very weak and feeble patients, for those in the extremes of life, or where exhaustion with acidosis is present; also where the patient is in a state of coma or has acute or subacute nephritis, or any respiratory affection, the morphin should be omitted and bromids, or paraldehyd and olive oil, per rectum, should be substituted. The essence of orange-chloroform-ether sequence, or the nitrous oxid-oxygen-ether sequence should be used instead of ether by the drop method or the "gas-ether" sequence. Chloroform throughout is the anesthetic of choice for chronic alcoholics in fair condition. Oil-ether colonic anesthesia is indicated for the very obese. For office work and short operations, it is both safe and satisfactory to use only nitrous oxid and oxygen, without any preliminary medication or the addition of ether. For major operations in genito-urinary surgery, patients can be narcotized with nitrous oxid and oxygen alone, if proper preliminary medication is given, and this combination should be more frequently employed.

### Ophthalmology, Seattle, Wash.

*October, XI, No. 1, pp. 1-236*

110 Contribution to Experimental Study of Ocular Anaphylaxis. M. J. Schoenberg, New York.

111 Modern Therapy of Pneumococcic Infections of Eye. H. S. Gradle, Chicago.
112 Trachoma on Blackfeet Reservation. O. S. Phillips, Lapwai, Ida.
113 Contagious and Infectious Diseases Among Indians. B. J. Lloyd, Seattle.
114 Trachoma Among Indians of United States. W. H. Harrison, Missoula, Mont.
115 Ectropion of Eyelids Corrected by Skin-Grafts. L. F. Appleman, Philadelphia.
116 Prognosis in Eye Injuries. R. J. Tivnen, Chicago.
117 Fusion Faculty as Type of Faculty. M. Albro, Chicago.
118 Keratoconus. E. E. Gibbons, Baltimore.
119 Color Testing with Special Reference to Stilling's Plates. G. H. Taylor, New South Wales.

### Surgery, Gynecology and Obstetrics, Chicago

*November, XIX, No. 5, pp. 555-682*

120 *Choice of Method of Operation in Treatment of Gastric and Duodenal Ulcer. F. A. von Eiselsberg, Vienna.
121 Choice of Operation in Chronic Gastric and Duodenal Ulcers. J. Sherren, London.
122 Ankylosis: An Experimental Study. N. Allison and B. Brooks, St. Louis.
123 *Is Thrombo-Angeitis Obliterans an Infectious Disease? L. Buerger, New York.
124 *Forward Fixation of Cervix as Predisposing Cause of Some Retrodeviations of Uterus; Operation for Its Release. E. Reynolds, Boston.
125 Intestinal Stasis: Causes of Ileal Stasis. J. T. Case, Battle Creek, Mich.
126 Diagnosis of Particular Form of Hydronephrosis Due to Movable Kidney. H. A. Kelly and R. M. Lewis, Baltimore.
127 *Regeneration of Cartilage and Bone with Special Study of These Processes as They Occur at Chondrocostal Junction. S. L. Haas, San Francisco.
128 *Clinical Manifestations of Disease of Glands of Internal Secretion in Gynecologic and Obstetric Patients. R. T. Frank, New York.
129 Volvulus: Torsion of Whole Mesentery. R. E. Weible, Fargo, N. Dakota.
130 Causal Factors in Disposition to Cancer in Old Age. A. Theilhaber, Munich, Germany.
131 Sinclair's Method for Operating on Impassable Urethral Stricture. C. H. Chetwood, New York.
132 Study of Chronic Intestinal Stasis by Means of Roentgen Rays. G. E. Pfahler, Philadelphia.
133 *Bone Transplantation as Treatment of Fracture and Fracture-Dislocation of Spine. E. P. Palmer, Phoenix, Ariz.
134 Decortication of Lung. R. S. Fowler, Brooklyn.
135 Traumatic Aphasia. Report of Case. H. A. Haubold, New York.
136 Tracheotomy: New Retractor and Tube Pilot for Emergency Operation. F. L. Hupp, Wheeling, W. Va.
137 Unusual Laceration of Female Urethra. A. Figueroa. Merida, Mexico.
138 Splenectomy for Primary Pernicious Anemia. W. W. Roblee, Riverside, Cal.
139 *Pneumatic Bag Pressure for Controlling Hemorrhage Following Suprapubic Prostatectomy. F. R. Hagner, Washington, D. C.
140 *Modification of Technic in Operation for Suppurative Appendicitis, Based on Postoperative Hemorrhage. C. S. White, Washington, D. C.
141 Results of Operation (Laryngofissure) for Intrinsic Cancer of Larynx. St. C. Thomson, London.

120. **Surgery of Gastric and Duodenal Ulcer.**—Out of a total of 334 gastro-enterostomies for gastric ulcer done by von Eiselsberg, seventeen patients died after the operation. In twelve of these the ulcer was recent. Eight died from causes referable to the ulcer itself; for instance, hemorrhage from the ulcer, due to a continuing progressive ulceration. There were 317 recoveries with 134 cures. In eight of thirty-one unrelieved cases, the ulcer was situated at the pylorus. In eleven cases the ulcer was situated at a distance from the pylorus. Eight cases were duodenal ulcers. In four cases the ulcer was not located; there were adhesions and probably the ulcers were duodenal. The interesting point demonstrated by these thirty-one cases is that ulcers situated at a distance from the pylorus are not so greatly influenced by gastro-enterostomy as those situated at the pylorus. First among the causes which are responsible for failure to cure by operation is the development of a postoperative peptic ulcer of the jejunum This occurred seven times in 334 gastro-enterostomies.

Thirteen patients, or about 10 per cent., died of cancer of the stomach. In six the continuance of the growth and the development of the ulcer after the operation were the causes of death. In one of these six cases, the patient developed morphin habit through the pain he suffered, and died; another died from hemorrhage; another died following perforation of the ulcer; another had very severe pain and hemorrhage; jejunostomy was performed, but the patient committed suicide; and finally in one case the pains continued, but further details are unknown. Three patients died of tuberculosis of the lungs. One patient died of tumor of the suprarenal body. The cause of death in the remainder is unknown.

In thirty-six cases of ulcerative processes in the stomach and duodenum, unilateral pyloric exclusion was performed. Eleven patients made a complete recovery after the operation. Of four cases unrelieved, in one the whole ulcer was extirpated to relieve the continued pain, and cure followed; one patient still suffers from attacks of hemorrhage; and two patients developed symptoms of peptic ulcers. Of three who died at a later date, one developed cancer of the stomach and two patients developed peptic ulcers.

Von Eiselsberg observed the formation of peptic ulcers seven times in gastro-enterostomies. In addition to this he has found peptic ulcers in five patients on whom gastro-enterostomies had been done by other surgeons and in one of whom he did relaparotomies. Four patients developed symptoms of peptic ulcer following unilateral pyloric exclusion. In the seventeen cases the chief symptom was the development of a very painful induration in the neighborhood of the gastro-enterostomy fistula, the discomfort and pain becoming so great that one could scarcely touch the spot. Von Eiselsberg emphasizes that whenever possible the peptic ulcer should be excised.

123. **Is Thrombo-Angeitis Obliterans an Infectious Disease?**—This question is answered by Buerger in the affirmative. He says that thrombo-angeitis obliterans is a disease in which an acute inflammatory lesion and occlusive thrombosis of arteries and veins are the characteristic lesions. From the mechanical point of view and from the point of view of symptomatology, the thrombotic occlusion is the most important phenomenon. The thrombosis is probably preceded, and certainly accompanied, by an acute inflammatory or exudative stage. The lesion involves deep veins in about 40 per cent. and the superficial veins of the upper and lower extremity in 20 per cent. of the cases. Recent investigations of the veins show that the acute lesions in the superficial vessels and the deep vessels are identical. The histologic changes in the veins point to the existence of an infectious process. Buerger believes that future studies should be directed toward the discovery of the causative agent in specimens cut out from the superficial veins when they are the seat of the acute thrombophlebitis. In this way it is hoped that the etiology of the disease may soon become revealed.

124. Abstracted in The Journal, June 20, p. 1987.

127. **Regeneration of Cartilage and Bone.**—It is Haas' opinion that the periosteum is directly and actively concerned in the regeneration of bone. In the early stages the periosteum proliferates to form a cartilaginous tissue, which is later transformed into bone. The exact method of the changes from cartilage to bone cannot be determined. There is considerable evidence in favor of the direct change of the cartilage-cell into the bone-cell. There is at times the appearance of the osteoblast forming bone and substituting the cartilage. Therefore it seems to Haas that both processes can take place at the same time. The regeneration of bone also takes place from the marrow and cortical bone, but in a more limited degree and at a later period than that from the periosteum. The regeneration of cartilage takes place almost entirely from the perichondrium. It proceeds by a direct proliferation of all the layers of the perichondrium beneath the outer fibrous tissue. There is some evidence in favor of the view that the connective tissue is also transformed into cartilage under the stimulation of the neighboring cartilage or perichondrium. There is a slight amount of regeneration of cartilage from the original cartilage near the perichondrium, but the remainder of the cut end tends to undergo degenerative changes. The extent of the removed cartilage exerts no influence on the regeneration.

128. **Disease of Glands of Internal Secretion in Gynecologic Patients.**—The following facts are emphasized by Frank. The glands of internal secretion control and regulate many

vital processes, including development, growth, nervous impulses, psychic manifestation, metabolism and reproduction. Each gland, regarded individually, exerts a predominant influence on one or more of these functions. In order to produce a perfect individual and maintain perfect health, the interaction of these glands must be normal. Disturbance of this perfect interrelation reacts on the genital sphere in only one of two ways—in an increase or a decrease of function. The gonads, in turn, may react on one or more of the other ductless glands, causing a multitude of variations. The ovary, through which all impulses to the genital tract are transmitted, or in which they originate, is a compound organ (like the hypophysis or adrenal) made up of at least two (follicle apparatus, corpus luteum) or perhaps three (interstitial gland) components. Of these components, the follicle apparatus (and perhaps the interstitial gland) controls the growth and nutrition of the genitals, the corpus luteum controlling the periodicity and production of the cyclical changes. The local pregnancy changes are probably accounted for by the persistence of the corpus luteum, but that the products of conception, which surely cause the persistence of the yellow body, may share in causing both the local and systemic phenomena accompanying pregnancy.

Genital hypofunction manifests itself clinically chiefly as follows: a. Anatomically; locally, by aplasia of the genitals, systemically by the signs of infantilism, eunuchoidism, and other variations depending on the time of onset and the other ductless glands most affected. b. Symptomatically; by scant or infrequent menstruation, amenorrhea, dysmenorrhea and sterility. The genital hyperfunction manifests itself clinically chiefly as follows: a. Anatomically; locally, no change, "metritic type," fibroids (?); systemically, often no change. b. Symptomatically, by too profuse, too prolonged, or too frequent menstruation; occasionally, by overfertility.

133. **Bone Transplantation in Fractures of Spine.**—As the result of a trauma Palmer's patient sustained a laceration of the supra- and infraspinous ligaments between the eleventh and twelfth dorsal and first and second lumbar vertebra. Both lamina of the twelfth dorsal were completely fractured and displaced inward, pressing on the cord, so all that was necessary to expose the cord was to dissect the soft tissues from the spinous process and lift the bony fragment from its bed. The right lamina of the first lumbar vertebra was fractured. Removal of the bony fragment of the twelfth dorsal revealed a cord compressed by angulation of the spinal canal at the junction of the twelfth dorsal and first lumbar vertebra. The cord compression was relieved by a laminectomy on the first lumbar. The cord soon regained its normal fullness and appeared uninjured.

Three weeks after the laminectomy two spinous processes above the injured vertebra and two below were exposed. The supraspinous and infraspinous ligaments over and between the two processes above, and then those of the two processes below, were cut through and separated from the tips of the spines. The supraspinous ligament over the injured vertebra was cut through and the muscle separated to make a bed for the transplant. Six and one-half inches by 1 inch by ¾ inch, with periosteum and marrow-substance removed from the crest of the right tibia. Recovery was uneventful. The patient left the hospital twelve weeks after the injury, able to stand alone and walk with assistance. Since the fifteenth week she has walked freely without assistance and has improved steadily.

139. **Controlling Hemorrhage Following Suprapubic Prostatectomy.**—The following is Hagner's method of application: A specially constructed sound with beveled end is passed into the urethra and out through the suprapubic wound; the tube attached to the bag is threaded over the beveled end and the sound withdrawn through the urethra, the tubing being pulled through and the bag pulled into place by traction on the tube. The bag is then distended with air by Janet's syringe, the pressure within the bag being readily discernible by the back pressure on the syringe. To help hold the bag in place, Hagner has wrapped gauze around the tube in cases in which it comes in contact with the end of the penis; however, the cut-off muscle tends to shut down on the tube and hold the bag in position.

140. **Operation for Suppurative Appendicitis.**—White believes that the routine ligation of the deep epigastric in drainage cases when the incision approaches the vessel will reduce the morbidity and mortality of the surgical treatment of appendicitis.

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## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### Archives of Roentgen Ray, London

*October, XIX, No. 5, pp. 159-198*

1 Cerebral Electrization. S. Ledue.
2 Cinematography of Antrum Pylori, and First Part of Duodenum. A. H. Pirie.
3 Gastric Borborygmi. A. E. Barclay.
4 Comparative Value of Roentgen Rays and Radium in Treatment of Malignant Growths. F. Hernaman-Johnson.
5 *Plastic Roentgen Ray Proof Preparation of Use in Roentgen Therapy. E. P. Cumberbatch.

5. **Plastic Roentgen-Ray Preparation of Use in Roentgen Therapy.**—The following formula, Cumberbatch says, is opaque to the Roentgen rays, it can be easily moulded, and it does not adhere to the patient's skin. A sample which was made twenty-two months ago has retained its plasticity to the present day. The preparation is composed of:

| | | |
|---|---|---|
| Bees' wax | 1 | parts by weight |
| Vaseline | 1 | |
| Resin (finely powdered) | ¼ | |
| Lanolin (hydrous) | ½ | |
| Lead oxid (litharge), finely powdered | 6 | |

The first four ingredients must be melted on a boiling water-bath, in the order given, and each must be completely melted before the next is added. Then the finely powdered litharge is added, little by little, stirring all the time. When all is added, the vessel is removed from the water-bath and allowed to cool. Stirring must be continued till the mixture become viscid, otherwise the heavy litharge will sink to the bottom of the vessel and the preparation will have an uneven consistency. Immediately after it has solidified it tends to adhere to the skin of the operator when it is moulded, but the preparation improves greatly after a few days, especially if it is occasionally moulded. A layer about 1 millimeter thick appears to be perfectly opaque to the Roentgen rays when placed under a screen between it and the source of the rays, and the outlines of a piece of lead ⅛ inch thick are not discernible. Cumberbatch has found the preparation useful in the Roentgen-ray treatment of rodent ulcers of the lower lid, and for a case of keloid of curious shape situated over the side of the face.

### British Medical Journal, London

*October 24, II, No. 2808, pp. 697-740*

6 Influence of Enforced Dogmatism in Medicine. F. Treves.
7 Use of "Dum-Dum" and Explosive Bullets in War. W. F. Stevenson.
8 Soldiers' Feet and Footgear. (To be continued.) C. Webb-Johnson.
9 Insects and War: Flies. A. E. Shipley.
10 Action of Radiations on Cells and Fluids. W. S. Lazarus-Barlow.
11 Variability Among Bacteria and Its Bearing on Diagnosis. W. J. Penfold.
12 *Presence and Significance of Nitrites in Urine. J. Cruickshank and J. M. Moyes.
13 *Recognition of Hemic Infections of Urine: Its Clinical and Experimental Value. E. C. Hort.
14 Aneurysm of Aorta Due to Bacterial Infection. J. M. Morgan and J. H. Teacher.

12. **Presence and Significance of Nitrites in Urine.**—Cruickshank and Moyes are of opinion that the most common cause of nitrituria is an associated urinary infection, and that the presence of bacilluria should be sought for in all cases. The organisms generally belong to the *B. coli* group and possess in marked degree the power to split the nitrate of urine into nitrite. The test for nitrite in the urine affords a simple and fairly reliable method of detecting cases of urinary infection without the use of microscope, provided that

the infection is not of such degree as to render the urine markedly alkaline.

13. **Hemic Infections of Urine.**—In fifteen recent cases of typhus occurring in Ireland, Hort made films from the fresh blood, and obtained cultures from which he was able to identify the large so-called diplococcal and diplobacillary organisms which various observers have regarded as the causal agents of the disease. He has found that injections of the cultures of these organisms in citrated human blood, in which growth is easily obtained, has in no case produced any observable pathogenic effects in bonnet monkeys. He concludes, therefore, that these large organisms are not themselves responsible for the production of the disease.

In thirty cases of typhus Hort examined the urine by immediate examination of fresh specimens and by cultivation. In the great majority the fresh urine during the period of fever was turbid from the presence of micro-organisms. Both in catheter specimens in the two sexes and in non-catheter specimens the bacteriologic findings in films made from the fresh centrifuged urine were strikingly similar. In all the urines examined before the crisis great numbers of large coccal and bacillary organisms, morphologically similar to those found in the blood, were observed, and their identity was later established in the ordinary way. In each case there were also present in the deposits of the fresh urine minute organisms which occurred singly, or in pairs or in clusters. When in clusters, as well as when occurring free, they were sometimes coccal in form, sometimes bacillary, and often it was impossible to determine whether they were the one or the other. They were both Gram-positive and Gram-negative in the same clusters, they had no apparent capsules, and they were non-motile. They varied in size from about 0.1 or 0.2 micron to about 0.5 micron in their greatest diameters when in pairs, and when single their greatest diameter was proportionately smaller. They rapidly disappeared from the urine when this was incubated, and after a few hours the larger coccobacillary forms only could be found, and these readily multiplied both in urine and in, or on, the ordinary laboratory mediums. Injection of these cultures into bonnet monkeys produced no apparent pathologic effect.

After filtration of the urine through tested Berkefeld candles Hort was able in many cases to show, by immediate examination of the filtrate, the small coccobacillary forms freed from admixture with the larger non-pathogenic organisms. When, however, the filtrate was incubated, they quickly disappeared, their place being taken by the large coccal and bacillary organisms, which also proved on injection into bonnet monkeys, to be non-pathogenic. The fresh urine of bonnet monkeys successfully inoculated with human typhus blood contained, during the period of fever, great numbers of the small and large coccobacillary forms, and the filtrate of this urine, when fresh, also contained the smaller forms alone. If, however, incubation were allowed for a few hours, they could no longer be found, their place being again taken by the large non-pathogenic forms.

By inoculation of human blood-agar with the fresh filtrate of fresh human typhus urine Hort has been able to obtain cultures of the small coccobacillus in which the small size is retained. On subculture, however, it tends to become mixed with larger forms. Injections of the first culture on human blood-agar into two bonnet monkeys gave rise to a high continued fever after the lapse of a definite incubation period of a few days. From fresh human typhus blood, and from fresh cerebrospinal fluid, Hort has been able to cultivate the small coccobacillus on human blood-agar, as in the case of fresh urine. On injection of the blood and cerebrospinal cultures on blood-agar the procedure has, in bonnet monkeys, been followed by high fever after a well-marked latent period.

### Journal of Obstetrics and Gynecology of British Empire, London

*July, XXVI, No. 1, pp. 1-72*

15 *Etiology of Eclampsia and Albuminuria and Their Relation to Accidental Hemorrhage. J. Young.
16 *Further Modification of Anterior Colporrhaphy Combined with Amputation of Cervix. W. E. Fothergill.
17 Aneurysm of Internal Iliac Artery. W. E. Fothergill.
18 Post Mortem Specimen of Ruptured Tubal Pregnancy; Symptoms Suggesting Irritant Poisoning. W. A. Mackay.
19 Ovariotomy Followed by Ectopic Pregnancy in Stump. H. Clifford.
20 Three Cases in Which an Early Twin Ovum Was Delivered Together with Full-Term Child. W. W. King.
21 Case of Allantoido-Angiopagous Twins. D. Dougal.
22 Case of Double Ovarian Cyst. M. H. Phillips.
23 Contraction Ring as Cause of Dystocia. V. B. G. Armytage.
24 Mammary Murmurs of Lactation. E. M. Cowell.

15. **Etiology of Eclampsia and Albuminuria.**—That eclampsia and the albuminuria of pregnancy are due to the liberation of the products of early autolysis of the placenta, Young says, has been established by the following considerations: (1) The toxemias are especially associated with recent infarction of the placenta. (2) Placental infarction is due to an interference with the maternal blood supply of the part. (3) The interference with the blood supply, which is responsible for the infarction, is not dependent on a toxic state and in point of fact may occur in the most extreme form, in which there is no evidence of a toxemia, namely, accidental hemorrhage. (4) The placenta is so constructed that, if a part of it dies, the products liberated from the dying patch can pass directly into the blood-stream. (5) In cases in which the placental disease is gradual in its onset there is more chance of the evolution of the infarcted patches. This explains why, in long-standing albuminuria, there may be more visible placental disease than in an acute eclampsia. It is just the gradual development of the toxemia that allows of the pregnancy continuing. (6) These facts all suggest that the toxemias are due to the autolytic products liberated in the early stages of the placental death.

By imitating the process, which occurs *in utero*, it has been possible to isolate from the healthy placenta a material or materials of a soluble kind which reproduce the clinical features and morbid changes, which all agree are especially characteristic of eclampsia. These are (a) convulsions; (b) peripheral focal necrosis in the liver, and (c) degenerative lesions in the kidney, especially located in the convoluted tubules. Young urges making a thorough exploration of the uterus in all cases of post partum eclampsia for a small piece of retained placenta, for a comparatively small piece may suffice to liberate fatal poisons.

16. **Anterior Colporrhaphy.**—The steps of the Fothergill operation by the new method are as follows: 1. Dilate the cervix. 2. Pick up four points, one just behind the urethral orifice, one at the junction of the cervix and the posterior vaginal wall, and one on either side of the cervix, about an inch to right and to left of the cervicovaginal junction. 3. Connect the four points by an incision through the vaginal wall. 4. Begin at the urethral angle of the incision and separate the area of vaginal wall enclosed by the incision from the bladder and the other adjacent structures until it remains attached only to the cervix. 5. Snip round and round the cervix until a sufficient portion of the latter is exposed. 6. Cut through the cervix without splitting it. 7. Stitch the stump of the cervix into the posterior angle of the wound, working from behind forward, and placing the sutures so that they radiate round the new os uteri. 8. Close the remainder of the incision from side to side.

### Journal of Tropical Medicine and Hygiene, London

*September 15, XVII, No. 18, pp. 273-288*

25 Trypanosomiasis in Lado of Anglo-Egyptian Sudan. A. J. Chalmers and W. R. O'Farrell.

*October 15, No. 20, pp. 305-320*

26 Hyphomycetes Found in Sprue: Classification of Fungi of the Genus "Monilia Gmelin 1791." A. Castellani.
27 Beriberi in Papua. W. M. Strong.

### Lancet, London

*October 24, II, No. 4756, pp. 979-1030*

28 Advances in Knowledge Regarding Circulation and Attributes of Blood Since Harvey's Time. R. D. Powell.
29 Shell Wounds in Modern Naval Warfare. B. Pick, R. A. Rankine and J. Lambert.
30 Pyloric Obstruction in Infants. C. H. Miller.
31 Prognosis in Cancer of Tongue. W. Trotter.
32 Case of Malignant Disease of Lung. H. N. Taylor.
33 Limitation of After-Pain of Quinin Injections. A. G. Peter.

### Practitioner, London

*October, XCIII, No. 4, pp. 445-588*

34 *Study of Rheumatic Infcetion. F. J. Poynton, C. D. S. Agassiz and J. Taylor.
35 *Carcinoma of Stomach, with Reference to Treatment. J. Sherren.
36 Surgical Treatment of Hydrocele. J. S. McArdle.
37 Value of Large Doses of Tuberculin. W. C. Wilkinson.
38 Points in Examination of Nose and Treatment of Its Common Disorders. M. Yearsley.
39 Operative Treatment of Exophthalmic Goiter. Report of Fourteen Cases. A. J. Walton.
40 Value of Rectal Examination in Diseases Other than Those of Reetum. H. G. Anderson.
41 Hemorrhoids. I. Back.
42 Intubation Instruments. E. W. Goodall.
43 Law and Medicine, 1913-1914. W. A. Brend.
44 Dangers of Double Meaning Suggestion. A. Douglas.

34. **Rheumatic Infection.**—The author's analysis is based on 350 fatal cases of rheumatism. There were 195 females and 155 males in this series. In 100 consecutive cases there was a strong family history in 26. In 250 cases under 12, 59 died in what were apparently first attacks, and four more were doubtful. In 100 cases over 12, only 3 deaths were recorded in a first attack, and 2 of these were practically children, being both 13 years of age. One case, a young woman of 21, died in a first attack of acute carditis. With few exceptions, the fatal issue was the result of cardiac disease and its complications. In 250 cases under 12 the pericardium was affected in 215. In 250 cases the mitral valve was only reported undamaged in 3; the aortic valve in 102 cases; the tricuspid in 78 cases; the pulmonary valve in 6 cases. In this series, there were 102 examples of combined aortic and mitral lesion. An analysis of the cardiac lesions in patients over 12 years showed that 22 died of malignant endocarditis; 29 died of mitral stenosis; 20 died of mitral and aortic disease of the simple form; 15 died of double mitral disease; 9 died of acute carditis—characteristic of childhood; 1 died, without a valvular lesion, from a dilated heart and external pericardial adhesions at the age of 16.

There were 30 cases of malignant endocarditis. In 14 of the 30 cases there seemed to be a decided relation between the rheumatism and malignant endocarditis. From a study of this series it was apparent that arthritis, pericarditis, nodules and other manifestations of a rheumatic type, may occur during the final illness, and may actually be recovered from. In only 3 of the 350 cases was there no valvular lesions and death from myocardial failure. One was acute, the other 2 were chronic. Pleurisy and mediastinitis in a series of 100 cases were present in 50 per cent. Two cases demanded paracentesis. Congestion and basal edema, with brown induration in some cases was present in at least 38 out of 100 cases. There were two examples of acute edema of the lungs in 100 cases. Bronchopneumonia occurred in 12 per cent. of these cases. Infarctions were present in 11 per cent.; peritonitis in 5 cases; ascites occurred in 10. Thrombosis of branches of the portal vein occurred in one instance, and hemorrhages into the mucous membrane of the stomach also in one instance. Thrombosis of one or more of the large veins in the neck occurred in three cases.

35. **Carcinoma of Stomach.**—Sherren urges that every suspicious case should be considered surgically, and that cases of chronic gastric ulcer should be submitted to surgical treatment early. In this way the percentage of "cures" will be much improved and the incidence of the disease greatly lessened.

### Bulletin de l'Académie de Médecine, Paris

*October 13, LXXVIII, No. 31, pp. 147-162*

45 *Surgery in the Field. (Chirurgie de guerre.) T. Tuffier.
46 *Conservative Surgery in the Field. (Conservation des membres dans les plaies des parties molles et les fractures diaphysaires.) L. Picqué.

45-46. Both these articles were summarized in the Paris Letter in The Journal, November 7, p. 1684.

### Centralblatt für die Grenzgebiete der Med. und Chir., Jena

*September, XVIII, No. 5, pp. 391-506. Last indexed Aug. 22, p. 712*

47 *Diagnosis of Disease of the Kidney by the Roentgen Method. (Röntgendiagnostik der Nierenerkrankungen.) W. Altschul.
48 *Gonorrheal Arthritis. O. M. Chiari.
49 Etiology of Gastric Ulcer. R. Vogel.

47. **The Roentgen Method of Examining the Kidneys.**—Altschul gives an alphabetical list of 604 articles on this subject and compares the views of the different authors. He expatiates on the extreme importance of the Roentgen findings not only with calculi and displacement of the kidney but in hydronephrosis and pyonephrosis. The Roentgen method with a tumor or tuberculous process in the kidney is less instructive than other methods of clinical examination, as a rule. "A reliable Ronetgen picture of the kidney should show the edge of the psoas, the transverse processes of the vertebrae and the last rib. The edge of the psoas does not encroach on the kidney shadow in normal condition. Kidney calculi cast a shadow so that negative findings exclude a concrement with 97 per cent. certainty." Even in the apparently negative cases the concrement may show up if a silver salt is injected into the pelvis and then withdrawn. Enough of the silver salt clings to the concrement to render it visible then.

In case of positive findings the various sources of error must be excluded. He lists forty-eight possible sources of error, including fruit stones, gall-stones and concrements in the bowel or prostate, cheesy or calcareous processes, scars in the kidney, relics of bismuth in the bowel or of iodipin possibly decades after intramuscular injection, warts on the back, undissolved pills, salol, fragment of broken spinous process, calcified parasites in muscle tissue, hypernephroma, deposits of sulphur, etc.—he cites one or more clinical instances of each. Even the most expert are liable to draw mistaken conclusions at times, as when the opaque catheter passed smoothly along past a suspicious shadow in the ureter, and it proved to be a ureter stone lodged in a diverticulum. The diagnosis of kidney stones used to be made too lightly and too frequently.

48. **Gonorrheal Arthritis.**—Chiari reviews 470 articles published on this subject in the last ten years. Gonococci are seldom found in the effusion in the joint after the acute stage is past, except in the more malignant types with involvement of the myocardium. He tabulates 443 cases in which vaccine therapy was applied with autogenous or commercial vaccine. Only forty-two cases were uninfluenced; thirty-two patients were improved and 367 cured. In 16 cases antimeningococcus serum was used instead of a vaccine, and 13 of the patients were cured. Ramond reported in 1911 successful autoserotherapy in 5 severe suppurating cases; he injected several times from 1 to 5 c.c. of the fluid obtained by puncturing the joint. The injection was made subcutaneously near the joint in question. Maillet has reported similar experiences, as also Constantinescu with hydrarthrosis. The progress in the last decade has been such that we can count now on curing the arthritis with vaccine therapy and physical measures, especially stasis hyperemia and superheated air, or at least inducing marked improvement even in apparently desperate cases.

### Deutsche medizinische Wochenschrift, Berlin

*October 8, XL, No. 41, pp. 1833-1856*

50 *Prevention and Treatment of Tetanus. (Indikationen für die serumtherapeutische Tetanusbekämpfung.) E. von Behring.
51 Experimental Syphilis of Rabbit Eye. (Primäraffekt und Keratitis parenchymatosa beim Kaninchen, bewirkt durch Reinkulturen von Syphilisspirochäten.) J. Schereschewsky.
52 Protective Ferments Not Found Specific. (Erfahrungen mit dem Abderhaldenschen Dialysierverfahren.) R. Otto and G. Blumenthal.
53 Negative Abderhalden Reaction Probably Excludes Pregnancy. (Die Abderhaldensche Schwangerschaftsreaktion.) A. Eder.
54 Vital Staining with Acid Stains. (Vitalfärbung mit sauren Farbstoffen und ihre Abhängigkeit vom Lösungszustand der Farbstoffe.) W. von Möllendorff.
55 Injury and Disease of the Eyes in the Field. (Augenerkrankungen im Kriege.) A. Groenouw.
56 *Work of the Dentist in the Field. (Aufgaben des Zahnarztes im Kriege.) W. Dieck.

*October 15, No. 42, pp. 1857-1880*

57 *Experimental Analysis and Theory of Anaphylactic and Apotoxic Intoxication. (Anaphylaktische und apotoxische Vergiftung.) E. von Behring.
58 Clinical Anthrax. (Zur Pathologie und Klinik des menschlichen Milzbrandes.) Mathias and Blohmke.
59 Actinomycosis. E. G. Dresel.
60 Hospital Trains. (Organisation der Lazarettzuge.) M. Christian.
61 Transportation and Care of the Wounded. (Versorgung unserer Verwundeten.) V. Czerny.

50. **Serotherapy of Tetanus.**—Behring calls attention to the fact that the symptoms of tetanus are the result of the action of the tetanus toxin on the central nervous system and especially on the motor ganglion cells. The tetanus toxin reaches the spinal cord only by way of the nerves, on account of its special affinity for nerve tissue. Research has demonstrated further that the toxin makes its way up the nerve tissue quite slowly. One consequence of this is that the longer the nerve tract, the longer the period before the characteristic symptoms develop. It takes five days in the horse, one or two days in the dog, thirteen to eighteen hours in guinea-pigs; and only eight to twelve hours in mice. The local focus should be excised and antitetanus serum be given to neutralize the still free toxin, and the passage of the toxin up through the nerve tissue interrupted by resection of the nerve. It is useless, he says, to amputate the whole limb when all that is needed is to make a gap in the nerve running to the focus of infection. His collaborator for twenty-five years, "H. S.," has on three occasions accidentally infected himself with tetanus by the breaking of a glass vessel. The third time (1902) the cramps of the shoulder, chin and eyelids and bad general symptoms following the breaking of a tetanus culture tube in his hand all subsided after the trunk nerves were exposed in the axilla and an injection of the strongest antitetanus toxin made into each. The tetanus was arrested and gradually retrogressed to complete recovery. The use of the arm was restricted for a time but was finally regained in full. In prophylaxis, Behring thinks that wounds with bad smelling secretions had better be treated with iodoform in coarse crystals while those of benign aspect should be irrigated with a 0.1 or 0.5 per cent. solution of iodin trichlorid. Preventive antitetanus serum may merely postpone the tetanus which may develop as soon as the effect of the serum has worn off. Consequently it may be well to make a second injection with an antitetanus serum designed to avoid danger of anaphylaxis.

56. **Dental Protheses for the Wounded.**—Dieck insists that the teeth of the soldiers should be put in good condition before they are sent to the front. All broken-off roots should be pulled even if they are not causing disturbance. The tissues around are seldom quite normal and although there is no trouble under ordinary conditions, chilling, wetting and trauma are liable to set up mischief in the old prongs at any moment. In fact he goes back of the reservist to the children, and emphasizes the necessity of systematic training and dentistry of the children in school as a vital factor in building up the health of the rising generation and reducing dental trouble in the land and sea forces. Dental protheses are of the greatest importance in case of wounds of the jaw, as fracture of the jaw is of more vital consequence, he declares, than fracture of any other bone, perhaps. The Japanese army was supplied with ready-made adjustable splints for fractured jaws, and they restored the functional use of the jaw.

57. **Blood Platelets Responsible for Anaphylactic Intoxication.**—Behring reviews here the intensive research in regard to anaphylaxis which has been conducted during the last four years at the institute at Marburg in his charge. The results confirm the assumption that the blood platelets are responsible for anaphylactic shock. Some disturbance in the medium or in themselves causes them to clump, and the consequence is obstruction of the smallest blood vessels with the clumped platelets. This in the brain brings on anaphylactic shock. It is more than a mere coincidence that all substances which induce anaphylactic shock in normal, nonsensitized guinea-pigs have a destructive action on the blood platelets, both in the test-tube and in the living body. The history of this view and the various data which have led up to it are analyzed and the practical result stated that he has succeeded in making an extremely powerful agglutinating substance out of the blood platelets; it is capable of coagulating a mixture of fibrinogen, etc., with one part to forty million parts of the mixture. He suggests that the platelets should more properly be called "thrombocytes."

### Münchener medizinische Wochenschrift, Berlin

*October 13, LXI, No. 41, pp. 2057-2088*

62 Tachysystoly of the Auricle and Irregular Pulse. (Rhythmische Vorhoftachysystolie und Pulsus irregularis perpetuus.) H. E. Hering. Concluded in No. 42.
63 *Secondary Changes after Fracture of Semilunar and Scaphoid Bones. (Traumatische Malazie nach Frakturen des Os lunatum und Os naviculare carpi.) v. Gaza.
64 Successful Abortive Treatment of Syphilis Twice in Two Years. (Zweimalige Abortivheilung der Syphilis bei Reinfektion nach 2 Jahren.) E. Hoffmann.
65 Heart Block from Gunshot Wound of the Heart. (Herzblock und Herzschuss.) Koetzle.
66 *Prophylaxis of Epidemic Disease in the Field. (Bekämpfung der Kriegsseuchen im Felde.) Nocht. Concluded in No. 42.
67 *Prophylaxis of Tetanus in the Army. (Zur Vorbeugung des Starrkrampfes im Heere.) E. Jakobsthal.
68 Impressions of a Physician at the Front. (Kriegsbriefe aus der Kriegslazarettabteilung I. Bayr. Armeekorps.) Schloesser.
69 Setting Up a Field Hospital for the First Time. (Die erstmalige Einrichtung unseres Feldlazarettes.) H. Albrecht.
70 Bursting in Tissues of Regulation Bullet. (Explosiv-Geschoss ähnliche Wirkung der deutschen Infanterie-S-Munition bei Nahschuss.) M. Nippe.
71 Dental Protheses for Wounds of the Jaws. (Die zahnärztliche Therapie der Schussverletzungen der Kiefer.) C. Greve.

63. **Traumatic Softening After Fracture of the Semilunar Bone.**—Gaza has recently encountered two cases of this rare affection of the semilunar bone of the hand. In both the Roentgen rays threw the first light on the clinical picture. Comparison with similar cases on record shows that the so-called traumatic softening is in reality a fracture, generally in the middle of the crescent and it is shown up instructively by the Roentgen rays only when they are applied in the radio-ulnar direction. Patches of lighter shadows are seen as the result of destruction at the time of the fracture or of absorption or abnormal deposits of lime. Later the bone may develop serious secondary changes such as occur in spongy bones elsewhere, the tardy result of injury, as, for example, in traumatic coxa vara, in Kümmell's kyphosis of the spine, after fracture of the heel, and possibly after Köhler's affection of the scaphoid bone of the foot. There may be a latent period of months or years after this semilunar bone fracture, and then the joint may develop a severe secondary arthritis and the only means of relief be removal of bones in the wrist with eventual interposition of a flap of fat in the gap left in the set of carpal bones.

66. **Prophylaxis of Epidemic Disease.**—In the course of these general remarks Nocht emphasizes the danger of transmission of disease by flies, saying that typhoid and dysentery seem to have a special attraction for flies. The English noted in their southern Africa campaign that when men with typhoid and with other affections lay in the tents, the flies collected on the typhoid cases and left the others in peace. He tells the story of a guest at a North Sea health resort who complained to the hotel proprietor of the hosts of flies in the privies, and was told, "You had better plan to go to the privy during meal-hours as the flies are all in the dining-room then." Nocht states that lime has not proved effectual for sterilizing manure, and a 25 per cent. solution of commercial ferrous sulphate seems the best disinfectant for this purpose.

67. **Tetanus.**—Jackobsthal remarks that the greater prevalence of tetanus among the wounded now in comparison to previous compaigns may be due to the more conservative treatment and to the digging of and fighting from trenches. The tetanus does not attack always the most severely wounded but only those with ugly, jagged wounds. He urges prophylactic injection of antitetanus serum on the firing line in cases of such wounds or all wounds soiled with dirt. The supply of antitetanus serum in Germany will not permit this at present, and he insists that more should be made at as many points as possible. "Even small private laboratories can make a satisfactory antitetanus serum that will answer for prompt prophylaxis, and horses should be supplied them for the purpose." He adds that he found tetanus germs in three out of seven specimens of the Indian fibers, *pengawar djambi*, which are sometimes used for dressing wounds. He examined this substance bacteriologically after knowing of

two cases of tetanus that had developed in patients whose deep wounds had been staunched with these fibers.

### Therapie der Gegenwart, Berlin

*October, LV, No. 10, pp. 409-428*

72 *Epidemic Diseases during Wartime. (Kriegsseuchen.) L. Dunner.
73 *Synthesis of a Nucleic Acid. (Emil Fischers Synthese einer Nucleinsäure.) G. Klemperer.

72. **War and Pestilence.**—This article is a summary of a series of five postgraduate lectures on the diseases liable to become epidemic during the war. Kirchner emphasized the danger now from the lack of the previously enforced international exchange of information as to appearance and spread of epidemic diseases in other countries. Now we have merely rumors instead of accurate information as to the points in which the danger threatens. While the wounded are sent back to the home zone as rapidly as transportation can be secured, soldiers with an epidemic disease should be kept on the spot and not be despatched to the rear or the home zone. Isolation shelters can be erected almost anywhere, and provision made nearby for a sterilizing plant. The disposal of the dead and of dead horses is a problem that has not yet been satisfactorily solved. He advises to wait before vaccinating against cholera until cases of the disease actually occur as the immunity conferred is of brief duration. "The production of antiplague serum is a difficult and dangerous matter as the horses have to be inoculated with living cultures, and several of the workers in this line at Petrograd have lost their lives at the work." He adds that antidysentery serum is ineffectual in certain forms of the disease.

73. **E. Fischer's Synthesis of a Nucleic Acid.**—Klemperer states that the year 1914 will be memorable in science on account of the announcement of E. Fischer at the July meeting of the Prussian Academy of Sciences that he had succeeded in synthetically producing cell-nucleus substance. It is in the form of a theophyllin-glucosid phosphoric acid which crystallizes readily and is apparently a uniform chemical entity. The process is extremely simple, namely, by the use of dry pyridin and phosphorus oxychlorid, as is described in detail, as also the various properties of the synthetic nuclein. Fisher remarked, "The successful research in this line opens the way for synthetic production of many substances more or less closely analogous to the natural nucleic acids. How will they act on the living organism? Will they be directly assimilated and used in building up the cell nucleus or will the living organism reject them or break them down before assimilating them? Experimental research alone can answer these questions. I am audacious enough to hope that under especially favorable circumstances the assimilation of artificial nucleic acids can proceed without the splitting of the molecule. This, however, must lead to profound changes in the organism, changes which possibly may resemble those permanent ones observed in natural conditions, which we designate as mutations." Klemperer remarks in conclusion that the cooperation of synthetic chemistry with experimental biology may lead to new therapeutic achievements, especially in the treatment of gout, just as the treatment of diabetes was placed on a sounder basis by the discoveries which resulted in the synthesis of carbohydrates.

### Wiener klinische Wochenschrift, Vienna

*October 8, XXVII, No. 41, pp. 1343-1362*

74 Diathermia in Gynecologic Disease. J. Kowarschik and H. Keitler.
75 *Parotitis in Barracks. (Mumpsepidemie 1913-1914 in der Garnison Graz.) W. Kulka and A. Neumann.
76 Notifiable Diseases in Vienna. (Die anzeigepflichtigen Infektionkrankheiten Wiens in den Jahren 1901-1910.) S. Rosenfeld.

75. **Mumps in a Garrison.**—Kulka and Neumann state that 293 of the 317 cases last year in the barracks at Graz were in one regiment while only a few scattered cases developed among the other troops although in close contact with them. Droplet infection is incriminated and convincing instances are related to prove this and also that direct transmission and the entire period of incubation can be comprised in twenty-four hours. In several cases, after an interval of from fifteen to seventy-five days, there was a new attack of the mumps or relapse. Orchitis developed in only 13 per cent.

### Zentralblatt für Chirurgie, Leipsic

*October 3, XLI, No. 40, pp. 1537-1560*

77 *Pain on Pulling Right Spermatic Cord as Sign of Appendicitis. C. ten Horn.
78 *Resection of Stomach. F. Neugebauer.

*October 10, No. 41, pp. 1561-1584*

79 *Presternal Dislocation of the Clavicle. W. Danielsen.
80 Amputation of the Foot in the Field. (Ausführung der osteoplastischen Amputatio supramalleolaris im Kriege.) W. Levy.

*October 17, No. 42, pp. 1585-1608*

81 *Symptoms and Treatment of Fractured Patella. Haeberlin.

77. **Diagnosis of Appendicitis.**—Ten Horn found in twelve of the fifteen cases of appendicitis that traction on the right spermatic cord, seized just above the testicle, caused sharp pain. Pulling on the cord evidently drags on the parietal peritoneum at the internal inguinal ring and if there is inflammation this causes pain. The cremaster reflex is not to be relied on as a sign of appendicitis.

78. **Resection of the Stomach.**—Neugebauer expatiates on the advantages of Reichel's method of suturing the stomach directly to the jejunum after circular resection. He has applied the method in twenty cases with constant satisfaction, but instead of trying to join the entire cut surface of the stomach to the jejunum he sutures the upper two-thirds to close the stomach like a bag, and joins merely the lower third of the stomach stump to the jejunum. The stomach thus forms a wide bag tapering toward the wide opening in the bottom directly into the jejunum. By this method it is possible to resect even quite high ulcers on the lesser curvature, and yet have a broad enough base to the bag to join to the jejunum with an ample outlet for the stomach, as he shows in an illustration.

79. **Permanent Cure of Presternal Dislocation of the Clavicle.**—Danielsen quotes authorities to confirm his own experience that this form of luxation is easily diagnosed and reduced but that it is extremely difficult to keep it reduced, and pain and disturbed function inevitably follow. He declares that the principle of the usual method of correction by drawing back the shoulder is wrong. The shoulder should be drawn forward, not back. He applied this principle in a recent case with prompt and permanent cure of the trouble. To hold the shoulder in this forward position he lifted the arm and bandaged it so that the upper arm lay against the cheek, the forearm on top of the head.

81. **Diagnosis and Treatment of Fracture of the Patella.**—Haeberlin's experience in a recent case confirms in every respect the importance of Dreyer's sign of intact muscle apparatus with fracture of the patella. (It was described in The Journal, July 11, 1914, p. 206.) By excluding the action of the quadriceps by applying extension to the thigh, we can see at once whether the muscle is lacerated along with the patella. In the case reported the patella was fractured in falling from a wagon and the gap was almost one and a half fingerbreadths. The man was unable to extend his leg or raise it when passively stretched, even after an extension bandage had been applied to the thigh, thus confirming the assumption that the muscular apparatus had been torn across also. The operation revealed that this was the case in fact, but rapid recovery followed under extension and Kausch suspension.

### Zentralblatt für Gynäkologie, Leipsic

*October 3, XXXVIII, No. 40, pp. 1281-1304*

82 *Gynecology and Obstetrics in Tropical Africa. (Frauenarztliches aus Deutsch-Ostafrika.) L. Deppe.

*October 10, No. 41, pp. 1305-1320*

83 Tent Dilatation. (Zur Anwendung und Erleichterung der Lamnariadilatation.) A. Calmann.
84 *Asthenia-Enteroptosis. K. F. L. Kaiser.

*October 17, No. 42, pp. 1321-1344*

85 Anatomy and Pathology of the Menstruation Cycle. R. Schroder.
86 The Stem Pessary. (Zur Frage der Intrauterinstifte.) A. Goenner.

82. **Gynecology and Obstetrics in Tropical Africa.**—Deppe's district has the reputation of being one of the unhealthiest on the east coast; he found malaria parasites in the blood in 44.2 per cent. of 988 healthy natives examined last February. The total mortality among the 19,629 whites for this period was 2.4 per cent., namely, men, 2.8; women, 1.6, and children, 2.6 per cent. Of this total mortality 50.2 per cent. was due to tropical diseases. He comments on the importance of capable, healthy white women for the welfare of a tropical colony, as on them usually depends the efficiency of measures to protect against infected mosquitoes, contaminated drinking water and improper food and clothing. Sex does not seem to affect the liability to malaria, and evidence is accumulating that this applies also to climatic influences. Pregnancy seems to be carried a little past term, as a rule; labor is short and delivery easy, but Deppe's experience has been that an obstetric case requires closer supervision in the tropics than elsewhere. The fetal membranes rupture early and the unfavorable conditions in the tropics in regard to radiation of heat are liable to render the nervous system unstable. The physical cause should be sought; this may be the hyperemia of the abdominal organs, which is physiologic for the tropics. In conclusion he reiterates the importance of regular exercise for both men and women as this alone keeps the body at par in the tropics as well as elsewhere.

84. **Asthenia-Enteroptosis.**—Kaiser gives a historical review of the varying conceptions in regard to whether the viscera are suspended by their supports, "like clothes in a wardrobe," or whether "the ligaments merely determine their relative position while the abdominal pressure bears their weight" or whether they rest on organs and tissues below as on a cushion and would stay in place even if all their ligaments were severed. The surgeons and internists are still disputing on the subject, Rovsing pointing to his successful operations to suspend the organs better, while Faber claims that asthenia-enteroptosis should be combated by general internal medicine. Kaiser's view is that the internal conception is nearer the truth, but as it so seldom is systematically applied to bear fruit, surgical measures are more practical and are usually successful. In some cases there is undoubtedly a disproportion between an unusually large abdominal cavity and unusually small viscera. The heaviest viscera sink down the lowest, he adds, citing Mann's case in which the liver contained an abnormally high proportion of iron, and had sagged exceptionally low.

### Zentralblatt für innere Medizin, Leipsic

*October 17, XXXV, No. 42, pp. 937-952*

87 War and Pestilence. (Verhütung und Bekämpfung von Kriegsseuchen.) P. Schmidt.

### Gazzetta degli Ospedali e delle Cliniche, Milan

*October 1, XXXV, No. 113, pp. 1233-1248*

88 The Lipoid Substances of the Leukocyte Granules Seem to Be Phosphacids and Ethers. (Ricerche istochimiche sulle sostanze lipoidi degli elementi morfologici del sangue.) B. Nicola.

*October 8, No. 115, pp. 1265-1280*

89 Chronic Disease of Lymph Glands in the Neck. (Sul trattamento delle adeniti croniche cervicali.) A. de Castro.

*October 11, No. 116, pp. 1281-1296*

90 Sclerosis of Corpus Callosum of Gonorrheal Origin. C. Ortali.

### Pediatria, Naples

*October, XXII, No. 10, pp. 721-800*

91 *Chloroma in Girl of Six. (Contributo clinico ed anatomo-patologico allo studio del cloroma.) G. di Cristina.
92 *Connection of Chronic Hydrocephalus with Inherited Syphilis. S. Cannata.
93 Lactose Content of Human Milk. (Concentrazione del lattosio nel latte di donna.) E. Palmegiani.
94 *Splenic Anemia in Children. (Etiologia e patogenesi dell'anemia splenica nell'infanzia.) G. Caronia.

91. **Chloroma in a Child.**—Di Cristina's little patient died the fifth month after the first sign of trouble, a tumor in the right orbit. Severe pains in the bones soon followed and necropsy showed that all the blood-producing organs had been involved in the pathologic process. The mother was tuberculous and the child gave a positive Wassermann reaction but there was no response to tentative specific treatment and there was nothing else to suggest syphilis in the child or family so that the reaction was most probably non-specific in this case. The blood findings resembled those of acute leukemia.

92. **Chronic Hydrocephalus and Inherited Syphilis.**—Cannata obtained a positive Wassermann reaction in only 10 of the 19 infants with chronic hydrocephalus he encountered last year, but application of the test to the parents gave positive results in 16 of the mothers and in 4 of the 10 fathers tested. One child and its mother gave a negative reaction but the father responded positively. In an additional group of 3 cases of chronic hydrocephalus the test was not applied as the parents were unmistakably syphilitic. These findings justify prompt treatment for inherited syphilis in every case of chronic hydrocephalus without waiting for the assumption of syphilis to be confirmed.

94. **Splenic Anemia in Children.**—Caronia has applied the Wassermann test systematically to the parents of the 30 children with splenic anemia in his service during the last twelve months. He obtained a positive response in 19 cases. The syphilis in the family was accompanied by tuberculosis in 9 cases; in 2 there was tuberculosis in the family without detectable syphilis. His experience confirms the assumption that still other causes may bring on splenic anemia in children. Chief among these probably is sepsis with a chronic course.

### Policlinico, Rome

*August 30, XXI, No. 35, pp. 1249-1280*

95 *Restoration of Earning Capacity after Crippling Injuries. (Adattamento funzionale degli arti traumatizzati e loro valutazione.) S. Diez. Commenced in No. 33.

*September 6, No. 36, pp. 1281-1312*

96 Mental Disturbances after Injury of Frontal Lobes. G. Borsari.

*September 13, No. 37, pp. 1313-1344*

97 Diagnosis of Tumors in Corpora Quadrigemina. V. Bianchi.
98 Phlebitis in Undulant Fever. (Flebite nella febbre mediterranea.) P. N. Martelli.

*September 20, No. 38, pp. 1345-1376*

99 Diathermia. G. Pampiglione.
100 *Dilatation of Uterine Cervix in Treatment of Dysmenorrhea and Sterility. (Valore dell'operazione Bossi.) A. Zekete.
101 Necessity for Municipal Institutions for Treating Industrial Diseases and Injuries. A. Ranelletti.

*September 27, No. 39, pp. 1377-1408*

102 *Foci of Inherited Syphilis in the Province of Rome. R. Campana.
103 Salvarsan in Malignant Syphilis. R. Sacco.

*October 4, No. 40, pp. 1409-1440*

104 Nerve Grafting for Paralysis of the Larynx. (Trapianti nervosi nella paralisi dei nervi del laringe.) G. Serafini and O. Uffreduzzi.
105 Meat Poisoning and Paratyphoid. (Di alcune infezion alimentari specifiche.) T. Pontano.
106 Prophylaxis of Transmissible Diseases. (Profilassi delle malattie infettive.) U. Mariotti. Commenced in No. 18.

*October 11, No. 41, pp. 1441-1472*

107 Intermittent Cerebral Claudication. (Una varieta di claudicazione intermittente cerebrale.) G. Bianchi.
108 Abscesses in the Neck of Otitic Origin. G. Bilancioni.

*October 18, No. 42, pp. 1473-1504*

109 Behavior of Cerebrospinal Fluid in Acute Nephritis in Children. L. M. Spolverini.

95. **Workmen's Compensation.**—Diez is medical inspector of all the Italian railroads and has extensive experience with accidents among the employees and determining the pensions for disability. He reviews the various systems in vogue for this in different countries and discusses in particular the best means for stimulating a crippled workman to make the most of what functional capacity he has left. When he is assured of an indemnity proportional to the injury, he is interested in exaggerating his crippled condition instead of trying to overcome it. Diez expatiates on the necessity for institutions to train the crippled to overcome their handicap. Resumption of work is in itself, he says, a powerful aid in the cure for the majority of industrial accidents while loafing aggravates the functional weakness and increases the psychic incapacity

for work. He thinks the best plan is an indemnity for two or three years on a declining scale, to be forfeited unless the workman makes every effort to improve his functional capacity under proper training. The man knows that at the end of this period he will be left without income from this source, and hence he will have every inducement to become self-supporting in the interim. Unforeseen complications or errors in diagnosis may call for revision, but otherwise this plan—which is already working well in Switzerland for traumatic neuroses—seems very promising, he thinks.

100. **Dilatation of Uterine Cervix for Dysmenorrhea and Sterility.**—Zekete writes from Budapest to laud the fine results to be obtained by systematic mechanical dilatation in cases of stenosis, deformity or obstruction from any cause of the lumen of the uterine cervix. In eighteen cases the women had never conceived and menstruation was more or less painful. In six of the cases the mucosa showed signs of chronic inflammation or hypertrophy. The mucosa was curetted and touched with tincture of iodin and the intracervical stem pessary introduced and held in place by packing with gauze which was changed each day, inspecting each time to see that the instrument was in place. The patient stays in bed for eight days and continues to wear the endouterine pessary for twenty days in all. It was removed and cleansed two or three times and never caused the least disturbance of any kind. In the 20 cases treated for dysmenorrhea, complete success was realized in 16, the cervix becoming of normal size and shape and no longer opposing any obstacle to the menstrual flow, and in the others the former extremely severe dysmenorrhea has been very much improved. This systematic method of treatment corrects infantile conditions and anteflexion or both. In some cases the dysmenorrhea did not develop until after marriage.

102. **Foci of Inherited Syphilis in Rome Province.**—Campana states that in his expeditions into the rural districts to help in rooting out malaria he has frequently had groups of children brought to him for treatment of malaria who showed unmistakable signs of inherited syphilis. The promiscuous family habits and the custom of hiring out as wet-nurses have contributed to the spread of syphilis in the province. He cites a number of typical cases to emphasize the differential points and urges the necessity for specific treatment in addition to the treatment for malaria. He found signs of incipient myocarditis quite pronounced in a number, and the teeth were exceptionally fragile and malshaped even when they were not of the typical Hutchinson shape.

### Tumori, Rome

*July-August, IV, No. 1, pp. 1-128*

110 *Etiology of Goiter, Cretinism and Deafmutism. (Gozzismo.) B. Grassi.
111 Tumors in Fish. (I tumori nei pesci.) V. Ronca.
112 Chronic Inflammation and Non-Malignant Tumors of the Breast. (Flogosi croniche e tumori benigni della mammella.) A. Cimorono. Continued.

110. **Endemic Goiterism.**—This is a free translation of Grassi's term *gozzismo* by which he designates the syndrome affecting persons in certain districts, the chief seat of the trouble being apparently in the thyroid gland, and the manifestations running a wide range of morbid conditions, chief among which are goiter, cretinism and deafmutism. He reviews the various theories in regard to the etiology, summing up his own view in the statement that there is no conclusive evidence to date that incriminates infection, contagion nor the drinking water. There may be multiple causes at work, he thinks, inadequate nourishment and ventilation, much contaminated waters and damp and dark houses. He lists the literature on the subject that has appeared in the last ten years.

### Brazil-Medico, Rio de Janeiro

*September 15, XXVIII, No. 35, pp. 333-340*

113 Triatoma Transmitting Chagas' Disease. (Presença em uma localidade do Estado do Rio de um novo transmissor da molestia de Chagas encontrado infectado em condiçoes naturaes.) A. Neiva.

*September 22, No. 36, pp. 341-348*

114 Mycosis of the Lungs. (Oidium pulmoneum, n. sp.) O. Magalhães.
115 Abnormal Number of Aortic Valves. (Caso de anomalia numerica das valvulas sigmoideas da aorta.) O. Freire.

### Russky Vrach, Petrograd

*May 30, XIII, No. 20, pp. 705-740*

116 *Phonoauscultation. D. D. Pletneff.
117 *Elimination of Iodin by Healthy and Diseased Kidneys. A. K. Sivert and S. Kaminsky.
118 Influence of Cholesterin on the Resisting Power of the Red Blood-Corpuscles. A. Z. Bilina and G. P. Chosroieff. Commenced in No. 19.

*June 6, No. 21, pp. 741-772*

119 *Preliminary Ligation of the Inferior Thyroid Artery for Strumectomy. N. N. Petroff.
120 The Pathology of the Will. S. A. Sukhanoff.
121 Present Status of Treatment of Tuberculosis. M. S. Kamneff.
122 *Tubercle Bacilli in the Blood in the Initial Stage of Tuberculosis and in the Healthy. I. N. Lopatin.
123 *Salvarsan in Treatment of Surgical Syphilis. G. A. Ivashenzoff and V. A. Lange. Commenced in No. 20.

116. **Phonoauscultation.**—Pletneff applies this term to auscultation with a tuning-fork and stethoscope or phonendoscope. The tuning-fork is placed over the organ to be examined, and its vibrations are listened to through a stethoscope or phonendoscope placed on the same organ. The tuning-fork is gradually moved along from the neighboring organs to the one to be examined, and when it reaches the latter an increased and louder resonance is perceived. With this method the stomach boundaries can be easily differentiated from those of the intestines, the boundaries of the lungs can easily be determined, also foci of infiltration in the lungs. Pleuritic effusions, etc., change the resonance. It can be used not only to outline different organs but also to distinguish diseased conditions in them.

117. **Elimination of Iodin by Healthy and Diseased Kidneys.**—Sivert and Kaminsky report that six healthy persons were examined and it was found that healthy people rapidly eliminate iodin, the average proportion being 77.9 per cent. of the total amount during the first twenty-four hours. During the second twenty-four hours the amount of iodin eliminated is from 15.5 to 19.6 per cent. of the dose taken, while during the next twenty-four hours the elimination of iodin stops altogether. Only about 5 or 6 per cent. of iodin remains in the body, or is eliminated by other organs. The elimination does not seem to depend on the amount of urine voided. In the patients with pathologic kidneys examined there were 5 with acute and 2 with chronic parenchymatous nephritis, and 4 with chronic interstitial nephritis. In parenchymatous nephritis the elimination of iodin by the kidneys is rapid and complete, the average proportion being 81.9 per cent. of the amount taken. Of this amount 70 per cent. is eliminated during the first twenty-four hours. No difference was noted in this respect between acute and chronic parenchymatous nephritis which thus resemble healthy kidneys in regard to the amount of iodin eliminated. In 4 cases of chronic interstitial nephritis the amount of eliminated iodin is markedly decreased, being 17 per cent. instead of the normal 70 or 80 per cent. The duration of the iodin elimination is considerably prolonged, sometimes for five or six days. The test dose was in all cases 1 gm. of potassium iodid given after a meal. The authors think that the nature of the renal trouble can thus be determined from the proportion of iodin eliminated. If this is below 70 per cent. it indicates an interstitial process.

119. **Ligation of the Inferior Thyroid Artery for Strumectomy.**—Petroff warmly recommends De Quervain's method of ligating the inferior thyroid artery before operating on the thyroid gland. This renders the subsequent course of the operation comparatively bloodless. Petroff used this method on fourteen patients in one year—all under local anesthesia plus epinephrin. Ten minutes was sufficient to find and ligate the inferior thyroid artery. Once he was unable to locate it. The strumectomy was done when the upper thyroid was also ligated. The inferior artery is ligated only on one side, as bilateral ligation might endanger the nutrition of the parathyroids. Complete recovery was the rule in from six to thirteen days.

122. **Tubercle Bacilli in the Blood in Incipient Tuberculosis.**—Lopatin found tubercle bacilli in the blood of only 6 of 26 patients in the initial stage of tuberculosis or only suspected of this, but there were numerous acid-proof bacilliform formations that could be easily mistaken for real tubercle bacilli. Positive results from inoculation of guinea-pigs were obtained in 9 cases out of 16 that showed signs of initial tuberculosis. Of 10 patients that did not show clinical signs of tuberculosis, only in 2 cases could tuberculosis be demonstrated in the guinea-pigs. This method is reliable provided the tissues of the animals show characteristic changes. Bacillemia thus occurs in about 60 per cent. of patients in the initial stage of tuberculosis.

123. **Salvarsan in Surgical Syphilitic Lesions.**—Ivashenzoff and Lange treated with salvarsan and neosalvarsan sixty patients with gummatous syphilis of nose, throat, pharynx, larynx, skull (2 cases), tibia, penis, sternum, joints (tabes), syphilitic osteomyelitis or periostitis. The doses for salvarsan were 0.5 to 0.6 gm. for weekly intravenous injections, followed sometimes the next day by an intramuscular injection of 0.4 to 0.5 gm. The dose for neosalvarsan was 0.75 to 0.9 gm. Sometimes the patients felt much improved from one to two injections, especially with lesions of the nasopharynx or larynx. The voice that for years had been lost would clear up, and the breathing become free, rendering the use of the tracheotomy tube superfluous. The success in the treatment of nasal lesions was so striking in some cases that rhinoplastic operations could be postponed and rendered more efficacious as the tissues became stronger and more vital. The same excellent results were obtained in the rest of the above mentioned lesions. Complications are liable but with the proper technic and dosage they are comparatively rare.

### Hospitalstidende, Copenhagen

*October 7, LVII, No. 40, pp. 1225-1248*

124 *Operative Treatment from Without of Intralaryngeal Cancer; Thirty-Three Cases. (Resultaterne af den operative Behandling—Laryngofissur—af den intralaryngeale Cancer.) E. Schmiegelow.

125 *Operative Treatment of Diffuse Lipomas of the Neck. (Et opereret Tilfælde af Madelungs Fedthals.) E. Gjessing.

124. **Intralaryngeal Cancer.**—Schmiegelow's report on sixty-six operative cases of cancer of the larynx was presented at the Clinical Congress of Surgeons held at London last July. He emphasizes that in by far the largest proportion of cases the cancer started in the vocal cords, and that cancer of this origin is more readily and completely eradicated while it induces hoarseness almost from the start and is thus detected early. The growth besides is unusually slow. An exception to the grave prognosis with other forms of cancer of the larynx is the pedunculated adenocarcinoma growing from the superior aditus laryngis. In his total 66 laryngeal cancer cases, 5 were removed through the mouth but 4 succumbed to recurrence, 10 died from recurrence without an attempt at operation, and 8 died in the 8 cases treated by means of tracheotomy and also in the 1 case treated by subhyoid pharyngotomy, 4 by partial resection and in all but 1 of the 9 treated by total resection. In the 33 cases in which the cancer was removed by thyrotomy, 18 of the patients were cured: 5 succumbed to pneumonia and 10 to recurrence. The interval after the operation has been from ten to eighteen years in 4 cases; from three to nine years in 9 cases and two years in the others. Two of the patients died from a cancer in rectum or stomach eight and eighteen years after the operation and at the necropsy the larynx was found clinically normal. He compares these results with those reported by Semon (24 cases), Chiari (29) and Thomsen (10)—a total of 96 cases of thyrotomy technic applied to laryngeal cancer, with 61 surviving for more than a year, that is, over 63 per cent.; 9 did not long survive the operation and 25 succumbed to recurrence.

125. **Operative Treatment of Symmetrical Lipomas of the Neck.**—Gjessing's patient was a man of 50, healthy until he became addicted to liquor a few years ago. Treatment for a gastric ulcer has been required recently. The lipomatosis had been developing for sixteen years. The huge lipoma encircling the entire neck was excised at two sittings, with an eighteen-day interval, and although there was some suppuration from the wound at first the results were excellent. Removal of the lipomas is a comparatively tedious procedure but the mortality is zero. In some cases on record the cure was permanent; in others there was great relief for a long time although there was recurrence later.

### Hygiea, Stockholm

*LXXVI, No. 18, pp. 1009-1072*

126 *Treatment of Exophthalmic Goiter. (Till frågen om behandlingen av morbus Basedow och särskilt om indikationerna för operationer å glandula thyreoidea vid denna sjukdom.) K. Petren.

127 Measles in Infants; Thirty-Three Cases. (Mässling hos späda barn.) A. Lichtenstein.

128 Muscular Work from Heat and Energy Standpoint. (Om muskelarbetet från termodynamisk synpunkt.) O. Ottosson.

126. **Treatment of Exophthalmic Goiter.**—Petren discusses in particular what indications in exophthalmic goiter call for surgical treatment and comes to the conclusion that the cardiac symptoms are the criterion for this. None of the other cardinal symptoms is constant enough to base the indications on it. But the almost delirious heart action is a futile waste of energy and a source of permanent injury. The palpitation and the rest of the excessive action of the heart lead to a compensating hypertrophy and dilatation, and may finally wear out the heart from the overstimulation of the sympathetic from the hyperthyroidism. As this is the most serious element of the Basedow clinical picture, in his opinion, he bases on it the decision whether to operate or not. When the heart is already enlarged and does not subside under medical treatment or the heart symptoms show no marked improvement, an operation should be undertaken. It may also be indicated if the mental or moral nature is changed. In the majority of cases the disease is mild and subsides more or less completely under medical measures. The patient should be kept systematically in bed. The latest reports on serum treatment, especially with milk from thyroidectomized goats, have not been encouraging, but Petren himself has had occasional good results from it. He has also obtained good results from carbonated baths and electricity to the nerves in the neck. The carbonated baths had an unmistakable soothing effect on the rapid heart action. Hot and cold baths might aggravate conditions.

### Ugeskrift for Læger, Copenhagen

*October 1, LXXVI, No. 40, pp. 1721-1766*

129 *Potassium Iodid Test for Carbon Monoxid in the Blood. (Metode til Paavisning af Kulilte i Bloder.) K. Sand.

130 Average Food Ration in Denmark. (Danske Familiers Forbrug af de enkelte Födemidler.) M. V. Bjorum and P. Heiberg.

129. **Detection of Carbon Monoxid in the Blood.**—Sand states that when halogens are added to blood the oxyhemoglobin is transformed instantaneously into methemoglobin, and the color changes with this from red to brown. When the blood is under the influence of carbon monoxid, the hemoglobin resists the halogen and there is no change in tint. His various experiments have shown that in the form of a solution of 1 part iodin and 2 parts potassium iodid to 300 parts distilled water this inhibiting phenomenon occurs with special force. He utilizes this to detect and estimate any proportion of carbon monoxid in the blood. The iodid solution is added to a set of test-tubes containing each 10 c.c. of normal or the suspected blood, until in the control tubes all the oxyhemoglobin has been completely transformed into methemoglobin, as evidenced both by the tint and spectroscope. The same number of drops is then added to the corresponding tubes of the suspected blood. The reaction occurs down to a content of 0.25 per cent. carbon monoxid and below; 0.125 per cent. seems to be the limit. The best results were obtained with the blood diluted to 2 or 3 per cent. He says that the color reaction occurs earlier and is more distinct than with other technics, and it is four times as sensitive, revealing as little as 5 per cent. carbon monoxid content. When the blood is at a temperature of 20 C. the reaction occurs instantaneously. This technic permits also spectroscopic control with the same specimen of blood.

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## SERVICES TO BE EXPECTED FROM THE PSYCHANALYTIC MOVEMENT IN THE PREVENTION OF INSANITY *

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BOSTON

I understand that the problem before us for discussion is, How can we best help people to preserve their mental health? and that my part in it is to answer the particular question, What contribution can psychanalysis make toward this end?

I shall confine my remarks almost exclusively to this one point of prevention, resisting the temptation to wander at length over the wider field of the mental treatment of patients who have actually shown distinct symptoms of one or another form of the psychoses.

It is, however, germane to say that inasmuch as psychanalysis is best definable, from the therapeutic point of view, as an educational method of high value, and since, under all circumstances, it exerts its usefulness largely through helping the patient to become a more thoughtful, more rational, and more mature person, the aims of prevention and the aims of treatment are to a great extent the same.

It is also proper to point out that the psychanalytic literature contains very encouraging reports, indicating not only that the temperamental tendency to depressive states, but even the tendency to recurrent manic-depressive outbreaks, can sometimes be affected favorably by this treatment; and that there is some evidence that patients with dementia praecox in its initial stage can occasionally be benefited in the same manner.

It is my confident belief that the contribution of the psychanalytic movement to prevention is to become an important one, but that it will make itself felt not so much directly, through the treatment of individual patients, as indirectly and gradually through the stimulus which these searching studies into the nature and history of human motives must exert on parents and educators, in proportion as the principles discovered or emphasized by them become an integral part of psychologic doctrine.

To assert that it is possible to prevent or cure a psychosis by mental influence is equivalent to asserting the psychogenic origin of these diseases. To maintain this is not to deny that special toxic influences, general disorders of metabolism, or abnormalities of cerebral structure or development may play an important part as predisposing causes, or even that the influence which these causes exert in one or another case may have been the controlling influence, *sine qua non.*

It is, however, certain that even where this is so, the mechanism of the psychosis, as a mental phenomenon and as the sign of the occurrence of a mental process having a more or less clearly definable aim and meaning, ought to be specifically studied, and that in order to do this thoroughly the physician should have made himself aware of the patient's inner life, both as an individual and as a member and representative of a social group or social groups.

The psychoses and psychoneuroses are not to be regarded (psychologically) as mere misfortunes or mere accidents, but as phenomena that represent definite, instinctive attempts at readjustment and the securing of some workable equilibrium, on the part of persons whose actual adaptation to their environmental conditions had proved unsatisfactory in the face of this or that special strain, and whose powers of readjustment had shown themselves inadequate to the task of restoring the disturbed balance in any better fashion. This view is in harmony with that of Meyer, Hoch, Bleuler and others who have stood for a partially psychogenic origin of the psychoses, and have recognized that the constitutional and temperamental make-up of each patient's personality is partially responsible for his illness, or, as I should say, for the method which he instinctively adopts to reassert himself. The psychoses form, in short, one more illustration of the general principle that illness may be classified as the manifestation of efforts toward a certain sort of health.

It is no valid argument against this view to say that the outcome of these efforts, from the clinical and social standpoint, seems anything but desirable. The "desirability" depends, as a rule, only on the satisfaction of the patient's unconscious cravings; but in this sense his illness may secure him something which, with one portion of his nature, he may be said to wish for.

There are times when, from this point of view, a fit of anger fills, psychologically, a useful purpose—then, namely, when it makes the rational thinking which the angry person does not wish to use, or cannot use, seem so impossible that no one asks him to attempt it. Similarly, when a wife's hysteria gains her the attentions of her otherwise inattentive husband, it fills, from the standpoint of her deeper longings, an important place. And the process is, for her, all the more "desirable" if it works without any conscious acquiescence on her part.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

It is believed by those who accept the explanation offered by psychanalysts[1] that the difference in mechanism between the psychoses and the psychoneuroses is one (from the psychologic standpoint) mainly of degree. Leaving wholly aside the problem of physical or chemical influences (not by any means as unimportant, but as not germane to this particular discussion) it may be said that in the case of the psychoses the patient's emotional interest and attention is engrossed in his complexes to such an extent that he becomes submerged in them. The "gain" to him through this process is to be reckoned, as already stated, in terms of the fulfilment of an instinctive but unacknowledged attempt to escape from an intolerable emotional situation, or else to satisfy an unconscious craving.[2]

It is of no importance, as a counter argument, to say that this complex process of readjustment (the details of which I do not attempt to indicate here) would never have taken place but for the presence of a physical "disease-process" in his brain or elsewhere.

Let this be proved by all means if it be possible; or let us admit, as with Hoch, that the brain-cells may be undeveloped. We are not questioning or studying these facts, but are studying only the mechanism of the patient's attempts to find an equilibrium of a new sort.

This principle that the psychoses and neuropsychoses come into existence because they serve a purpose, has been discussed so often that I ought perhaps to assume it as granted, and pass on; but its recognition is so important for the prevention of the psychoses, that a few words of further explanation may not be out of place, the more so that the doctrine here at stake is distinctly an outcome of the psychanalytic movement.

It seems at first sight almost impossible to get away from the patient's conscious point of view, and to deplore with him and his friends, as if for a misfortune without mitigation, the signs of an oncoming mania or depression or paranoia or dementia praecox. But if, through the aid of knowledge and insight, one can succeed in placing oneself in the depths of the patient's mind, at the center of his vain struggles to make the conditions around him square with his desires, even though these be immature and narrow, it becomes possible to see that his illness may have furnished him a real way out of his perplexity, even if not the one that we, looking on, or he, if possessed of full conscious insight, might have wished to see adopted. The justice of this conception becomes clearer if one scrutinizes, to begin with, the psychologic significance of one's own fits of temporary depression, of the "blues." Whatever else the "blues" accomplish, they certainly afford us the chance to bury ourselves in an ocean of self-engrossment, self-pity or self-commendation in which we may become for the time being almost as thoroughly immersed as a dementia praecox patient in his delusions. The difference lies in the power of emergence and its special causes.

I have recently followed with great interest the gradual transition of a reactive outbreak of depressive self-pity, excited by a misfortune in business, into as severe and prolonged and typical a melancholia as one could wish to see.[3]

It occasionally happens that a patient with obsessive fears is intelligent enough (after a certain amount of treatment) and frank enough to see and say that in some respects he feels better satisfied with the prospects offered by his dissociation than by those offered by health; then, namely, when to be well means the facing of situations and renunciations that he is unwilling to contemplate. The only alternative recourse seems to be suicide. As a rule, of course, the logic of the process is concealed from his conscious view. Such persons are somewhat like children, who learn to create, in fancy, a separate realm of feeling and fancy, to which they may retreat[4] for the private enjoyment of emotions in which the other elements of their nature do not permit them openly to indulge. In this realm of fancy the child may become for the time a king, or a being to whom all sorts of excesses of imagination are permissible. If, however, he stays in this realm too long, the return into a life of relative reality[5] and social responsibility may be attended with difficulty. The justification of this comparison only becomes clear when (as sometimes in dementia praecox or paranoia) it is possible to get at the patient's delusions from their deeper and, to him, better side.

What such a child does for a brief space, when he withdraws into this delightful world of fancy, peopled, it may be, by beings from some other sphere,[6] the paraphrenic (i. e., "dissociated" or schizophrenic) patient may — in the terms of this important theory — be said permanently to do. And, *mutatis mutandis,* similar statements may be made for manic-depressive and for paranoid patients. Such persons may, namely, become in different degrees and ways, so preoccupied with the details of their "autistic" life, even when, to the untrained eye, this does not appear to be the case; they may get so immersed in their fantasies and daydreams that they lose touch, to a greater or less extent, with the life of relative reality. During a period of many years I have had the chance to watch a young girl[7] who, although still able and even brilliant in certain intellectual lines, has been gradually sinking into such a life of fantasy, in which secret marriages, pregnancies and miscarriages play prominent parts.

We are too apt to define each other's tendencies in terms of misfortune, weakness, deficiency and lack. This procedure is misleading. There is really nothing negative in nature. If a plot of ground does not grow grass, it runs to weeds, but the weeds are as positive in their nature as the grass and often more resistive to destruction.

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[1] See especially, as making clear the grounds for this mode of reasoning, Jung's now classical study of dementia praecox (published in English as one of the monographs of the Jour. of Nerv. and Ment. Dis.). Freud's investigation of the Schreber case of paranoia (Jahrbuch für Psychoanalytische u. Psychopathologische Forschungen, iii, 9), Abraham's study of manic-depressive insanity (Zentralblatt für Psychoanalyse, ii, 302. See also the brief but excellent study of the psychoses by Bernard Hart entitled "The Psychology of Insanity").

[2] The term "unconscious," as here used, indicates the absence of selfconscious awareness only.

[3] No psychanalytic treatment was attempted or would have been practicable. After the attack is fairly over it should be used for the prevention of a second attack.

[4] Compare Bleuler's Das Autistische Denken, Jahrb. für Psychoanalytische und Pathologische Forschungen, iv, 1.

[5] I say "relative reality," because even the most conventional and usual sort of life gets its form and color from the imagination of each individual. Each person's world is, in part, his personal world alone.

[6] I have a patient at present in mind, of good intelligence, but small in stature and timid in temperament, who suffers both from depression and from compensatory ideas of courage. All his life long he has gained great satisfaction from day-dreams of power and prominence. Even at the present time, when he is about 22 years old, he occasionally imagines himself to be a supernatural being, wandering through space in the skies or "talking with God," and dreams of driving a four-horse sleigh or piloting a swift boat into that unknown world from which, in reality, he shrinks.

[7] She entirely refused treatment.

Life may often be said to consist in the gradual (at times apparently sudden) abandonment of equilibriums which had sufficed well enough up to a certain point, in favor of new and more insistent equilibriums that loom up as representing, as the case may be, a more advanced (sublimated) or a more regressive (infantile) but seemingly more stable stage of evolution or of evolutionary tendency.

It is in the terms of this process that the history of the psychoses should be written.

It is important to recognize that this substitution of new equilibriums for old ones often concerns, at least in the first instance, not the whole personality, but only a part of it, and that in proportion as this happens the individual loses his unity and becomes relatively dissociated.

Also, and by the same token, the process may go on to a great extent without the active or even passive intervention of the consciousness and the constructive imagination, although these powers might, if properly trained to the work, be counted on to lend powerful assistance to the maintenance of the mental unity and to the binding of the forces of the past (which in a certain sense still lives) into one coherent whole with those of the self-foreshadowing future.

These two facts — that the mentally unbalanced person[8] is "dissociated," i. e., subject to two or more sets of strongly conflicting motives, and that this happens without the intervention of consciousness — which, however, might intervene with profit, at least in a certain proportion of the cases — are to be considered as of fundamental significance.

It is the function of psychanalysis to see that consciousness comes to its rights and is given its due share in the determination of the result.

I have, however, been led by my experience to believe that patients with oncoming psychoses, several of whom I have watched with interest throughout the gradual development of their illnesses, are very tender plants and need to be handled by psychanalysts (as by therapeutists of all sorts) with extreme care.

I also sympathize heartily with the view expressed by several experienced observers,[9] that similar care, as well as great patience and friendliness, are essential, if one wishes to do good and avoid harm in dealing with neurotic children by the trenchant weapon of psychanalysis.

But to say this is to broach the subject of prevention; and before speaking on that point I wish to discuss a little further the general claims of mental influences to be considered as both causative and curative, in theory at least.

It is obvious that the questions which are before us for consideration would never have been asked unless the belief was somewhat prevalent that the degree of liability of any given person to fall a prey to mental disorders of one or another sort was in a measure dependent on the mental influences to which he had been previously subjected. As a matter of fact, I suppose that all physicians tacitly assume this proposition to be proved, if not, indeed, self-evident — even those who would think that we ought to look for the final causes of the psychoses in brain-changes, of toxic or degenerative or hereditary origin, and who would reject the formal assertion that a purely psychogenic basis for these disorders was conceivable.

But if it makes even some difference as regards his liability to insanity, as to what mental environment a person has been subjected to, then several important inferences follow:

In the first place, if the psychoses are even partially of mental origin — i. e., "psychogenic"— who can say how far this may or might be true?

An adequate explanation, satisfactory to all disputants, of the exact etiology and nature of these serious mental disorders will, to be sure, never be furnished until the time arrives when the nature of the relationship between the body and the mind is expressible in clear and comprehensive terms.

This is largely a philosophical problem,[10] and as such cannot be discussed here. I venture nevertheless, to assert that but few students of philosophy would to-day get warm over the particular difficulty that confronts us and that forms a real stumbling block to a certain proportion of physicians. Most such students would surely encourage us to believe that a psychogenic etiology is, theoretically, just as admissible as a physical or an hereditary or a chemical etiology.[11] But when one says "psychogenic etiology," one should be understood as including all that that term implies to the man who uses it. If he believes that all mental phenomena have their physical aspect or that they are hereditary, then "psychogenic" means for him, in so far, "physical," etc. If he does not believe this, then "psychogenic" means for him purely mental.

Both practical and scientific considerations justify us in accepting as genuine any causes which *seem* to lead to these disorders, provided only that they are not reducible to simpler, more manageable terms.

One thing seems to me certain: While it is true that those who study the psychoses as diseases of the brain can count on the powerful aid of chemical and histologic tests, it is equally true that those who, on the other hand, prefer to emphasize the psychogenic aspect of this etiologic problem have the great advantage of placing themselves squarely in the position of the patient who is striving to find himself and to realize his destiny on the battle-ground of social life.

But I pass, now, from the consideration of the mechanism of the psychoses and the needs of the distinctly neurotic child to the subject of preventive education in the stricter sense, as applicable to children at large, whether at home or at school and whether sick or well; and I attempt again to answer the question, What contribution has psychanalysis to offer.

As I have already indicated, this contribution will perhaps always be mainly an indirect one. I propose nothing so insensate as that parents, or even teachers, should practice psychanalysis; but I maintain that this branch of medicine has something to offer to parents, more to teachers, and a good deal to the family physician. All these classes of persons need to have their own points of view reformed before they attempt to form the character of the child. They need a wider comprehension than that which has been current hitherto, as to what the psychologic nature of the child is, and what his purposes and his dangers are, as expressed in terms of his conflicts, his concealed and repressed thoughts, feelings and desires, and his so often misused imagination; and they need to have this knowledge on the basis of a thorough acquaintance with the psychology of human nature in general, as gained through clinical research.

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[8] Provided that his disorder is of one of the types here in question.

[9] Compare Internationale Ztschr. f. Aerzt. Psychoanal.

[10] For the most recent discussion of this problem, from the points of view of philosophy and physical science, see the Concept of Consciousness, by Prof. Edwin Holt, Harvard University.

[11] This applies even to the psychoses of periodical recurrence and relatively long duration. It is hard to explain these periodic recurrences on any hypothesis. But it is hard also to explain the recurrences of the seventeen-year locust pests.

Needless to say I do not claim that psychanalysts have, at present, surpassing claims to recognition as physicians, educators or parents. The qualities required for serving in these capacities are numerous, and those which nature and instinct provide may, at their best, be more valuable than those gained through any kind of training whatsoever. No innate capacities are, however, so good but that they can be made still better by study and by knowledge.

In the first place, I think our current standards of conduct, and of thought as related to conduct, inadequately reflect the best conceptions of the ultimate goal of education and of life. Of course there are vast numbers of persons to whom this proposition is not applicable to any practical extent, and the proportion of these to whom it does not apply is doubtless particularly large among educators.

I presume it will hardly be disputed that the kind of person who most completely fulfils his destiny is he who looks on himself not only as a private and independent individual, but also as at once a member and a representative of the community in which he lives, then of a widening series of communities, and eventually of an ideal and all-comprehensive community. This proposition was long ago made the basis of the educational system of Froebel[12] which should be accepted as offering the best prophylactic method at our command, applicable to all children, though its influence might easily go for nothing unless reinforced by that of the child's environment and home.

But although definitions of this sort are generally accepted as indicating theoretically a suitable scheme of human opportunity and obligation, yet the observation of human conduct leads to the conclusion that the sentiments corresponding to them do not exert the thoroughgoing influence that one might look for. Obviously, these sentiments are but imperfectly accepted by some portion of the minds of most men. The very prevalence of the psychoneurotic illnesses and of the corresponding defects of character and temperament from which all men suffer in some measure, indicates that this is true. For many of these forms of illness, as well as many of the defects of character, are largely based on the self-assertion of the individual in the narrower sense, with his demand for personal "rights," and his (largely infantile, and thus selfish) longings and cravings, as against the assertion of his broader, his ideal self, recognizant rather of obligations to the community and of capabilities for usefulness than of rights.

I blame no one for this situation, and least of all do I bring an indictment against nervous invalids as a class, most of whom are handicapped and narrowed only by virtue of a necessity of development or evolution, against which they may have contended with all the force and light at their command. But the facts are so; and if it be asked what classes of persons it is that most often, even under conditions of the severest strain, escape the toils of invalidism, and of the sense of isolation that goes with it, it may fairly be said that they comprise, first, the persons of high grade such as I have just described,[13] who are able thoroughly to learn the lesson of "sublimation," perhaps because they were so "set" by nature and so favored by their environment that they could learn it easily; next, those who are so constituted—whether by inheritance or by training—that they fit adequately into the conditions by which they find themselves encompassed, and are not hampered by the visions of unattainable ideals.

It will be understood, of course, that I would classify as high-grade not only those persons whose native powers of reason and intuition, unhampered by serious defects, have been such as to enable them to grasp and define the doctrine of loyalty in its most highly developed and rational form, but all persons who are genuinely loyal to such ideals as they see. It is, in fact, this quality of genuineness that is controlling and indispensable as a factor in education and in life.

It may be urged that psychanalysis does not take the cultivation of social ideals as an end for which it should directly strive. Technically, this is true. But psychanalysts know well the evils that attend the overassertion of personal desires, cultivated too exclusively in and for themselves, and the importance of the opposite course follows by inference. The primary task of the psychanalyst is to remove handicaps to progress, but only in so far as these give rise to painful conflicts in the mind. They can, however, see and should endorse the schemes of education by which these handicaps are best avoided.

Doctrines of this sort cannot, obviously, be preached to young children, either at home or school, with any prospect of considerable benefit. If too strongly reminded, even of their social obligations and opportunities, children are likely either to react by a revolt, or to develop a hypocritical tendency, both of which results indicate the activity of that very repressive and dissociative tendency which is so objectionable.

On the other hand, teachers, parents and physicians can appreciate these principles, testing the genuineness of their beliefs, if necessary, by psychanalytic methods, and through them strong influences of the best sort can be brought to bear on the children under their charge. The best teachers do this already, but the background of intelligent cooperation should become more effective.

The steady progress toward sublimation of those individuals whose developmental tendencies are of the best sort, seems to indicate that they instinctively cultivate (in modes conforming to their age), even from the moment of their birth, the powers and pleasures which seem most personal and private, with reference to a social outcome which is soon seen to imply a loyalty to communities or social groups that exist for them only in an ideal sense;[14] while those who fail to instinctively seek this outcome are apt to exhibit, in a negative sense, a dim recognition of the binding force of these social obligations, by developing tendencies which are positively asocial or antisocial in their significance.

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[12] Froebel: The Education of Man; see also Report on the Kindergarten by Susan E. Blow and others.

[13] This statement might be considered as misleading, but it is difficult to cover every contingency in a brief space. I do not, of course, mean to deny that nervous invalidism is to be found, perhaps to a considerable extent, among persons devoting themselves unselfishly to the public welfare. Of course, among persons of this class, as among others, innate differences of endurance are found, and specific tendencies of a neurotic sort may happen to develop. What I mean to say is that in so far as the ability to lose oneself in one's job, whatever this may be, acts as a steadying and wholesome influence, this influence is likely to be more far reaching in proportion as the job in question enlists tendencies of genuine disinterestedness, and makes it possible to put aside considerations of purely personal, as contrasted with social, interest.

[14] Compare Royce's Philosophy of Loyalty, and numerous other publications by the same writer.

Even the study of the sex life finds its most important bearing in its accentuation of the fact that man belongs to society in a sense deeper than commonly appears; that the family and, in general terms, the group should be considered as the unit, rather than the individual.

We ought to work for the maintenance of those educational systems and principles that help children first to feel and then to see that every man is most truly himself as an independent agent when he feels himself bound to merge his private interests in the interests of persons and causes outside of himself. But this tendency should go, in word and conduct, no further than it is expressive of a genuine sentiment.

Social sentiments of this better sort and the conduct based on them should not be regarded as implying standards seldom to be reached, but rather standards to which many persons might measurably attain. Children, especially, are natural idealists and respond to appeals which adults often dismiss as idle.

As illustrative of the kind of service that education can sometimes render, even to very young children, through planting the seeds of the broader sense of social obligations which is so favorable to mental solidarity and health and so hostile to the dissociation that is brought about by repression I will mention an observation, superficially trivial, but suggestively important.

A small child, who had fallen into habits of theft, became strongly captivated by the idea, which was carefully presented to him, that he could take "with his eyes," instead of with his hands, the things that he longed to appropriate, and thus gain, ideally, the satisfaction of possession, reinforced by the gratification of satisfying a dim social ideal, although obliged to renounce the pleasure of exclusive ownership,[15] with its denial of the social principle. Subsequent developments indicated that this discovery, which appealed, perhaps, primarily, to his imagination only, helped to effect a real change of temperament.

The educational system that has elaborated most thoroughly the methods of inducing or emphasizing this community sentiment as a goal of progress and has placed them on a practical footing for children between 4 and 6 years old, is undoubtedly the kindergarten system of the great thinker and educator Friedrich Froebel. Kindergartens do not by any means always come up to his ideals, but one cause of this lies in the failure of parents and their advisers to recognize the part which this system aims theoretically to play, and in their failure to give an adequate support to those who are working toward this end.

It is, however, not enough to admit the importance of a general preparatory training of this sort, even if it could be supposed that its principles were to be emphasized through the discipline of the home.

Each child has his own special needs, to be met by appreciative sympathy, direction and correction, and these needs are to be best understood when they are studied in the light of a knowledge of those to whom the tendencies to repression, dissociation and ambivalence have gone on to a more or less excessive degree.

A certain amount of repression, dissociation and ambivalence seems to be an inevitable attendant of competitive existence; but it has not been appreciated until recently at what an early stage in the child's life these tendencies may appear. It is true that, with the majority of children, neither repression nor dissociation, nor the tendency to primary or reactive emotional excess that leads to these results, is developed to any very objectionable extent. Children of the best sort, no matter how childlike and, for a time, immature their traits may be, appear to be marked by a characteristic quality that stamps every act as belonging in part to a maturer future of which it may be said to be prophetic, while, perhaps on that very account, it appears also to belong peculiarly to the present moment.

Nevertheless, the pitfalls into which so many children actually stumble (not so much because they are degenerate in the sense of having progressive brain defects, as because their power of adaptation is insufficient for the requirements of life in a given environment) should be recognized as standing open for even the most broadly adaptable child. The earliest years of all children are years of self-engrossment, the finding of themselves in the sensations that attend their reflex acts, their impulses, the recognition of their powers, desires and fears, and as reflected in the attention of their parents. And this period is beset from the outset with the danger that these new-found gratifications and excitements will be taken too exclusively in and for themselves.

The engrossment of these primary, primitive and elemental pleasures — which soon become modified by the comparisons which children institute between themselves and others, and the instructive discovery of their capacity for compensations and over-compensations — is then more or less superseded by the engrossments of their powers of fantasy, through which the unpleasant realities of the social life, for which they are still unprepared, can be shoved off for a time, in the interest of a more unified life of imagination.

Hand in hand with this tendency comes the recognition of the possibility of repressing what is too distressing, coupled with that of preserving the pleasurable aroma even of excitements that might be reckoned painful.

And here begins the double life of which every child lover should be able to see the traces and the dangers, and also, it should be said, the possibilities of added usefulness.

Children outgrow, it is true, vast numbers of habits which they are tempted to adopt in these earlier years, and it is as objectionable to see signs of permanent mischief in incidental tendencies as it is to overlook their psychologic significance. One may be trustful, but should none the less be watchful.

The principal dangers to which parents are exposed are of a twofold sort. First, they may fail to get any adequate idea of the process which is going on in the child's mind. Next, they may fail to recognize that each child, at each stage of his existence, is instinctively trying to construct a species of unified world, and is using therefor a set of symbolisms which must, perforce, be based on the sensations which he gets from his own efforts and functions, however foreign and trivial, or even revolting, the language of these symbolisms may seem to the adult.

Finally, they may let the desire to seek their own gratification (even though unconsciously) stand in the way of the best interests of the child.

This latter danger is important and familiar and although not difficult to understand is very difficult to avoid. The love of the parent for the child usually means great devotion; but this is too often given for the sake of a return in kind, and it then partakes of the character of self-love, or mirror love. This sort of devotion fetters the child instead of making him more free, whereas really disinterested love increases the child's independence by arousing in him a corresponding disinterestedness on his part, in a form suitable to his age.

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[15] I am not attempting here a complete explanation of theft-habits, certain roots of which have been shown by psychanalysis to be very deeply rooted in infantile instincts.

The parent should be a bridge over which the child may pass to a social existence of a wider sort, carrying habits and tendencies of loyalty and service, and feeling within himself a foreshadowing sense of the larger community of which he is to become a part. But, instead, it too often happens that the father or the mother, by dint of the very exclusiveness and intensity of their own affection and the fascination of its exhibition, creates or intensifies a similar exclusiveness in the child's mind, and thus chains him to a set of private gratifications which become sensuous and exacting in proportion as they are asocial. The "father-complex" and "mother-complex" have played with good reason a large part in psychanalytic writing, as in life.[16] Repeatedly have I seen lives that should have been eminently happy, threatened with unhappiness through influences like those which I have outlined.

Another important principle which every one should know is that the fantasies and desires of children, even when their object is something which to the adult seems insignificant or unworthy, have meanings which *come near* to being good and useful meanings, and may by chance be transformed by good management into something useful and creative.

If the old saying is true, that the highwayman makes often a good turnkey, then there must have been a time when a dose of prevention would have been in place for him. And the same is the case with children. The slightly neurotic or imaginative child who is bound, at each phase of his life, to try his hand at building an imaginary world of interest, of beauty, and, above all, of power, will do this or symbolize his attempts to do so, by every means that lie at hand.

The intelligent parent will seek to see through the act or the symbol, and to appreciate the child's meanings. These meanings should be divined through real sympathy, based on close but intelligent intimacy, and should be taken at their best value.[17] For it may depend on the turn of this straw whether a desirable outcome finally emerges or whether the act or interest that might have served a good turn as a symbol and then have been replaced, becomes, through repression, the center of a hampering craving. The tendency to relive, in later years, the fantasy-life of self-indulgent childhood may arise from either of two sorts of causes; an excessive preference for the self-indulgent pleasures first exhibited at an early period when another and better choice might perhaps have been made with almost equal willingness; and a tendency to regression toward these renounced but simpler pleasures, showing itself under conditions of fatigue and strain from which every person seeks instinctively to escape. The child should be protected so far as practicable from both of these dangers, first through having ample inducements offered him for making the best choice, and, next, through being taught to do well and easily the tasks that he is to be called on to do.

In other words, his incitements to the best choice (as, especially, through the imitation of living and historic characters, and through examples afforded by literature), his adaptations and his adaptability should all be held in mind, and with special reference to the specific sorts of dangers that he must encounter.

The imagination of the young child is a weapon of immense power for evil or for good. It can be turned to the support of the reason or to the intensification of sense cravings. But on this great subject I cannot enter here.

The supplementary addition which I propose to this educational scheme is one that in a certain sense restores the ambivalent principle, as one that when rightly understood is broader than even the principle of independence and power, as commonly conceived. The best man—or child—is not alone a single individual; he is likewise a member of a community, or series of communities, eventually of an ideal community of some sort to which he feels that his loyalty is due and to which he becomes rebound. Similarly, just in proportion to the degree that a man makes himself independent of narrowing ties such as imply slavish dependence, whether based on fear or favor, or longing for approbation and attention, or jealousy or envy, and becomes in that sense independent, he becomes once more dependent on the obligations imposed by his own good qualities and powers, according to the principle hinted at by the term *"noblesse oblige."*

If such a person frees himself from the objectionable and hampering features of his childhood, he should retain, nevertheless, and all the more, the best that his childhood stands for, thus expressing, in his life, all that "religion" literally taken, indicates, namely, a rebinding accompanied by a setting-free. Nothing less than this sort of ambivalence should be, I think, the goal of education for the normal and the neurotically disposed child. This sort of rebinding which should show itself able to meet, at least fairly well, any ordinary test of genuineness is also a goal aimed at theoretically by the educational system of Froebel. It is, of course, not to be supposed that a couple of years even in the best kindergartens, much less in any given school which bears that name, is to be reckoned as a sure prevention against subsequent psychoses, any more than it is to be supposed that every person of the type to which I have above alluded as the best in kind, is to be considered as, *ipso facto,* beyond the reach of these dangers. The causative factors ordinarily involved are far too numerous for that, but one reason that I rate so high the possibilities of this system is that while it aims to use all obvious means for the development of character without needlessly calling the conscious attention of the child to this aim, it recognizes also the importance of taking some measures to prepare the child, through very simple investigations into the results of his own acts,[18] for making later, even if still only in a simple form, that kind of rational self-scrutiny which psychanalysts have learned to look on as of so much value.

One of the most obvious fruits of this rational self-scrutiny is that — contrary to the usual belief — it is destructive of that morbid, emotional self-scrutiny that goes by the name of introspection and that shows itself so often as a sign and a promoter of the neurotic disposition. I am not wedded to any one plan of education, however, and should welcome any scheme that could show evidences of its capacity to develop character, self-reliance and the recognition of community obligations.

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[16] Compare papers by Abraham and by Jung in the Jahrb. f. Psychoanal. u. Psychopathol. Forsch., i, 110, 155.

[17] Compare R. L. Stevenson's Lantern Bearers.

[18] Compare The Kindergarten: A Report by Susan E. Blow and others, 1913.

Let it not be supposed, however, that this claim can, without further inquiry, be made for any and every system that makes a great point, with quasi-military vigor, on the overcoming of difficulties just for their own sake. This has its value, but it is a value that can easily be estimated too highly. After all, it is the personality and previous training of the teacher that are the elements of chief importance. But every such teacher should have been taught to accept a hint from the experience of the psychanalyst, and to use, not only general but specific means to make his personality eventually unnecessary to his pupils. The importance of following this rule was pointed out by the able Mme. de Stäel, as a consideration worthy the attention of every legislator.

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# GENETIC FACTORS IN ONE HUNDRED CASES OF PSYCHONEUROSIS*

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The object of this paper is not to present any new genetic or etiologic factors for the psychoneuroses, or to claim any one genetic factor as the origin of these nervous conditions. It is merely to present an analysis of 100 cases which have been studied to see what genetic factors have been found to occur. Theories can be met and controverted, or strengthened and established, only with the help of statistical studies. What are needed to-day are statistics of cases by hundreds and thousands. This is my excuse for presenting the following study:

The cases were gathered from the records of the out-patient department of the Boston Psychopathic Hospital. Here the clinic has been a steadily increasing one since its opening nearly two years ago, until it now numbers over 100 new cases and over 400 old cases a month. The cases are of three classes: patients discharged from the hospital that are subsequently followed up in the out-patient department; patients brought to clinic by various organizations; by court order; by charity agencies, etc., and cases of patients coming of their own initiative, alone or with friends. Over 1,500 new cases have been seen, and of these over 100, or about 7 per cent. of them, have been diagnosed as psychoneuroses and include cases of hysteria, psychasthenia, neurasthenia, etc.

## METHOD

First, the statistics dealing with 100 cases as a whole will be presented, next, an analysis of various groups will be considered, and, lastly, conclusions will be drawn.

In the 100 cases studied, 57 patients were males and 43 females. The patients varied in age from 14 to 58 years. The average age was 34+. By decades the patients were distributed as follows: in the first decade, none; in the second decade, 10; in the third decade, 28; in the fourth decade, 36; in the fifth decade, 17; and in the sixth decade, 9 cases. Thus, two-thirds of the patients were from 21 to 40 years of age. Thirty-five patients were of native stock and 60 were foreign-born, or of foreign parentage. In 5 cases the stock was undetermined.

Ten years ago, Dubois wrote: "Nervousness arises from two factors: the one, essential and variable, viz.: natural psychopathic tendencies (hereditary or acquired in fetal life); the other, contingent and polymorphic—viz.: provocative agents."

An analysis of the cases for possible genetic factors showed that in fifty-six cases congenital causes seemingly existed, for the psychoneurosis subsequently developed; that is, psychopathic tendencies of an hereditary nature, or acquired in fetal life. In 44 per cent. of the cases, no such congenital causes were found. This absence of evidence of psychopathic tendency in these forty-four cases is probably explained by one or more of the following reasons: first, the large number of these patients (70 per cent.) that were of foreign stock, which means, in a majority of instances, inability to give intelligent and inclusive family histories, or histories of early life; second, the natural tendency of individuals to hide evidence of any trace of familial inferiority or deterioration; third, the impossibility in a large clinic of taking a detailed and thorough history in all cases.

The fifty-six cases considered to have probable congenital psychopathic tendencies, were grouped as follows:

1. Luetic stock: those showing evidence of congenital syphilis.
2. Insane stock: those giving a history of insanity in their families.
3. Alcoholic stock: those having alcoholic forebears.
4. Neurotic stock: those having "nervous" forebears, some of whom possibly were insane.
5. Tuberculous stock.
6. Miscellaneous stock: those having a history of cancer, asthma, etc., among their ancestors. Statistics of these groups are shown in Table 1.

TABLE 1.—FIFTY-SIX CASES OF PSYCHONEUROSIS GROUPED ACCORDING TO CHARACTER OF ANCESTRY

| | No. of Cases | Sex, | | Foreign Stock, Per Cent. | Age, Yrs. | Symptom Age | Duration of Symptoms |
|---|---|---|---|---|---|---|---|
| | | F. | M. | | | | |
| Luetic ........ | 3 | 0 | 3 | 33 | 19.7 | 12.7 | 7. |
| Insane ........ | 14 | 7 | 7 | 35 | 35.7 | 27.2 | 8.5 |
| Alcoholic ..... | 4 | 1 | 3 | 50 | 30.5 | 30. | .5 |
| Neurotic ...... | 24 | 18 | 6 | 50 | 38.4 | 28.9 | 9.45 |
| Tuberculous ... | 5 | 3 | 2 | 60 | 40.8 | 36.2 | 4.6 |
| Miscellaneous .. | 6 | 4 | 2 | 100 | 39.6 | 32.5 | 7.1 |
| Av. or total.... | 56 | 33 | 23 | 51 | 34.1 | 28.4 | 6.1 |

In this table, the most interesting point shown is the variation in age at which symptoms occurred in the different groups. It seems logical to assume that the more potent the congenital factor, the earlier symptoms may be expected to appear, or inversely, that the earlier symptoms appear, the more potent the congenital factor involved. Assuming that the symptom age bears some relation to the potency of the genetic factors involved in the production of the psychoneuroses, among the congenital factors luetic, insane, neurotic, and alcoholic defects of forebears are potent in the order named.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

In addition to the congenital or essential factors already considered, the relative importance of provocative factors such as environmental or somatic difficulties was studied. The distribution of these cases and their symptom age is shown in Table 2.

TABLE 2.—PROVOCATIVE FACTORS IN FIFTY-SIX CASES OF PSYCHONEUROSIS

| Provocative Factors<br>Stock | Environmental<br>No. Cases | Environmental<br>Symptom Age | Somatic<br>No. Cases | Somatic<br>Symptom Age |
|---|---|---|---|---|
| Luctic | 2 | 14.5 | 1 | 7. |
| Insane | 5 | 38. | 9 | 25.6 |
| Alcoholic | 3 | 29. | 1 | 33. |
| Neurotic | 15 | 32.6 | 9 | 23.3 |
| Tuberculous | 4 | 40.2 | 1 | 20. |
| Miscellaneous | 4 | 33.3 | 2 | 31. |
| Av. or totals | 33 | 33. | 23 | 24.4 |

From these data, it seems that, given a psychopathic inheritance, an individual is likely to show symptoms of a psychoneurosis sooner when harassed by somatic than by environmental difficulties.

The cases were found to present various symptoms which were grouped under several heads: somatic, social, psychic, sexual, and religious. The frequency with which symptoms occurred in these various groups is shown by the following figures in 100 cases: somatic symptoms in 92 cases; social, in 50; psychic, in 19; sexual, in 32; religious, in 6; total, 199; average 1.9+. These figures show that the most common symptoms are of somatic nature.

TABLE 3.—ELABORATION OF SYMPTOMS

| Group | No. of Cases | Duration of Symptoms |
|---|---|---|
| A | 32 | 4. |
| A + B | 39 | 6.7 |
| A + B + C | 29 | 7. |

In Table 3 is shown the elaboration of symptoms.

Cases with one group of symptoms averaged 4 years in duration; cases with symptoms of two groups averaged 6.7 years, and cases of three or more groups averaged 7 years. In other words, the longer the psychoneurosis existed, the more complex and numerous became the symptoms.

In diagnosis, symptoms may suffice; in treatment, knowledge of the provocative agents and their removal may be essential, but in prophylaxis, the essential factors must be recognized. Within the last few years, so much stress has been laid on the provocative agents which have been brought into the limelight by psychanalysis, that the essential factors have failed to receive proper attention. No matter how early a psychoneurosis may be diagnosed; no matter how brilliantly an individual provocative agent may be pursued, captured, and dissipated by psychanalysis, psychopathic tendencies, hereditary or acquired in fetal life, will remain.

In preventive medicine, early diagnosis and successful treatment are both important, but prophylaxis is especially essential, and no successful prophylaxis can disregard or underestimate the importance of the essential factors in the production of a disease.

## CONCLUSIONS

The conclusions to be drawn from this analysis of 100 cases of psychoneurosis are as follows:

1. In the majority, if not in all cases of psychoneurosis, there exists an essential factor, namely, a natural psychopathic tendency, hereditary or acquired in fetal life.

2. If the age at which symptoms occur among psychoneurotic individuals may be considered an index of the potency of the essential factor at work, luetic, insane, neurotic, and alcoholic defects among forebears are of importance in the order named in the production of psychopathic tendencies.

3. Among psychoneurotic individuals, somatic difficulties tend to induce symptoms earlier than do difficulties of enviroment.

4. The longer a psychoneurosis exists, the more numerous will the symptoms probably be.

5. Prophylaxis against the psychoneuroses can be furthered by early diagnosis, and by the elimination of the provocative agents of somatic and enviromental difficulties with the aid of medical treatment, psychanalysis, and psychotherapy, but no prophylaxis can be effective that fails to consider the essential factors in the production of the psychoneuroses.

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# NOTES ON PUBLIC INSTITUTIONAL WORK IN MENTAL PROPHYLAXIS

## WITH PARTICULAR REFERENCE TO THE VOLUNTARY AND "TEMPORARY CARE" ADMISSIONS AND THE "NOT-INSANE" DISCHARGES AT THE PSYCHOPATHIC HOSPITAL, BOSTON, 1912-1913 *

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The technic of mental hygiene — how slender a prospectus is yet available! National and state societies, agitation for a government bureau, leaflet campaigns, after-care committees, programs of prophylaxis, all are signs of a developing propaganda. How often, as Mr. Beers of the National Committee has remarked, how often does this propaganda threaten to turn into a mere *letter-head!*

To be sure, a larger view reveals the fact that the entire movement is far more than a propaganda. A careful study of the increasing employment of the now classical plan of *voluntary admissions* to public institutions for the insane would reveal the large proportions of a deeper movement than what we now term mental hygiene. The law underlying voluntary admissions of the insane to institutions went into effect in Massachusetts, for example, in 1881. The opportunities afforded by the law were embraced by but a small number of patients, however, until the stimulation secured by a revision of the old law in 1905 (Chapter 432, Acts of 1905) permitting such voluntary patients to be supported like other patients from the public funds.

It is worth while to glance at a table illustrating the results of what was essentially a maneuver in mental hygiene. Table 1 illustrates conditions before and after the 1905 amendment to the voluntary admission law and the establishment of the Psychopathic Hospital.

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* Contributions from the State Board of Insanity, Massachusetts, No. 22 (1914.2). (Bibliographic Note.—The previous State Board of Insanity contribution was by E. E. Southard, entitled, "Eugenics versus Cacogenics: An Ethical Question," Jour. Heredity, September, 1914.)

* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City N. J.. June, 1914.

TABLE 1.—VOLUNTARY ADMISSIONS TO PUBLIC INSTITUTIONS* OF MASSACHUSETTS

| Year | No. of Admissions |
|---|---|
| 1895-1899 | 405 |
| 1900-1904 | 520 |
| 1905 | 84 |
| 1906 | 125 |
| 1907 | 156 |
| 1908 | 195 |
| 1909 | 185 |
| 1910 | 200 |
| 1911 | 237 |
| 1912 | 282 |
| 1913 | **636** |

* Including a large private institution, McLean Hospital.

Until 1905 the voluntary admissions had run along rather evenly at 100 a year more or less, showing a slight response to the increase in general population. The majority of these patients had been private patients. After 1905 the absolute and relative numbers of voluntary admissions slowly rose up to 1913, when there was a signal and rapid advance due largely to the establishment of the Psychopathic Hospital.

TABLE 2.—ADMISSIONS WITH GROSS AND PERCENTILE FREQUENCY, 1906-1913, TO MASSACHUSETTS INSTITUTIONS

| Year | Total | Voluntary | Per Cent. |
|---|---|---|---|
| 1906 | 2,670* | 125 | 5 |
| 1907 | 3,022 | 156 | 5 |
| 1908 | 3,195 | 195 | 6 |
| 1909 | 3,096 | 185 | 6 |
| 1910 | 3,254 | 200 | 6 |
| 1911 | 3,207 | 237 | 7 |
| 1912 | 3,350 | 282 | 8 |
| 1913 | 4,051 | 636 | **16** |

* These figures include so-called regular commitments, and both insane and sane voluntary admissions. They do not include the so-called "temporary care" group of admissions to Massachusetts institutions.

The leap from 8 to 16 per cent. voluntary admissions among the total admissions within one year is surprising. In point of fact, 440 of the 636 voluntary admissions of 1913 were admissions to the Psychopathic Hospital.

Enough to demonstrate how easy it is by setting a social mechanism in a suitable way to change the fate of various psychopaths. It is not my purpose here to investigate the value and results of the policy mentioned, although I believe it to be obvious that good must accrue. I think it worth while to print the text of the voluntary admission law of Massachusetts, hoping that some readers who live outside the boundaries of the sixteen states having such laws will be minded to push for the enactment of similar laws in states whose civilization has not reached that point. This reads as follows:

### VOLUNTARY PATIENTS. R. L. 87

Section 45. The superintendent or manager of any institution, public or private, to which an insane person may be committed, may receive and detain therein as a boarder and patient any person who is desirous of submitting himself to treatment, and who makes written application therefor and whose mental condition is such as to render him competent to make the application. Such person shall not be detained for more than three days after having given notice in writing of his intention or desire to leave the institution. The charges for the support of such person in a state institution shall be governed by the provisions of law applicable to the support of an insane person in such institution, provided the approval of the state board of insanity shall be obtained in writing.[1]

Nevertheless, although it is certainly but semicivilized for a state to remain without the mechanism for voluntary admission of insane persons to public institutions, I should hardly go so far as to advocate as yet for all communities laws like the *temporary care* laws of Massachusetts. Perhaps they require further testing before they can be regarded as perfect. I give the more important of these laws, that dealing with seven days' care without commitment, hoping that its humanity will appeal to those whose communities are prepared to favor the patient's cause *as patient* at an apparent slight risk to his rights as an individual:

### CHAPTER 395, ACTS OF 1911

### AN ACT RELATIVE TO THE RECEPTION AND TEMPORARY CARE IN CERTAIN INSTITUTIONS OF PERSONS SUFFERING FROM MENTAL DERANGEMENT

The superintendent or manager of any hospital for the insane, public or private, may, when requested by a physician, by a member of the board of health or a police officer of a city or town, by an agent of the institution's registration department of the city of Boston, or by a member of the district police, receive and care for in such hospital as a patient, for a period not exceeding seven days, any person who needs immediate care and treatment because of mental derangement other than delirium tremens or drunkenness. Such request for admission of a patient shall be put in writing and filed at the hospital at the time of his reception, or within twenty-four hours thereafter, together with a statement in a form prescribed or approved by the state board of insanity, giving such information as said board may deem appropriate. Such patient who is deemed by the superintendent or manager not suitable for such care shall, on the request of the superintendent or manager, be removed forthwith from the hospital by the person reqesting his reception, and, if he is not so removed, such person shall be liable for all reasonable expenses incurred under the provisions of this act on account of the patient which may be recovered by the hospital in an action of contract. The superintendent or manager shall cause every such patient either to be examined by two physicians, qualified as provided in section thirty-two of chapter five hundred and four of the acts of the year nineteen hundred and nine, who shall cause application to be made for his admission or commitment to such hospital or, provided he does not sign a request to remain under the provisions of section forty-five of said chapter five hundred and four, to be removed therefrom before the expiration of said period of seven days. Reasonable expenses incurred for the examination of the patient and his transportation to the hospital shall be allowed, certified and paid as provided by section forty-nine of said chapter five hundred and four, as amended by chapter four hundred and twenty of the acts of the year nineteen hundred and ten, for the allowance, certification and payment of the expenses of examination and commitment.

I do not here discuss the operation of this seven days' care law, but merely wish to call attention to the stimulation afforded by the establishment of the Psychopathic Hospital to the drawing from the community of many persons suspected of insanity under conditions relieving them of stigma and expense in case they are proved not to be insane.

By the courtesy of Dr. Menas S. Gregory of Bellevue Hospital, I also include the text of a law passed by New York State in 1912, dealing with an ambulance service for the insane. This law goes in some respects further than the Massachusetts law and is worth considering by all interested in improving the care of psychopathic patients.

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[1] It is the provision for *public support* of voluntary cases, herein provided, that turns the voluntary admission case into an important means of mental hygiene.

### AMBULANCE SERVICE FOR THE INSANE

One of the most important and far-reaching steps in divorcing the medieval legal interference in the care and handling of the mentally diseased has been the recent change in the insanity law expediting and facilitating the admission of the mentally sick to the psychopathic wards. Section two of chapter thirty-two of the Laws of 1909 was amended March 5, 1912, to provide as follows:

> It shall also be the duty of such trustees of Bellevue and Allied Hospitals . . . to see that proceedings are taken for the determination of the mental condition of any such person in the boroughs or county mentioned, who comes under their observation or is reported to them as apparently insane, and, when necessary, to see that proceedings are instituted for the commitment of such person to an institution for the care of the insane; provided that such report is made by any person with whom such alleged insane person may reside, or at whose house he may be, or by the father, mother, husband, wife, brother, sister, or child of any such person, or next of kin available, or by any duly licensed physician, or by any peace officer, or by a representative of an incorporated society doing charitable or philanthropic work. When the trustees of Bellevue and Allied Hospitals are thus informed of an apparently insane person, residing in the boroughs of Manhattan or the Bronx, it shall be the duty of these authorities . . . to send a nurse or a medical examiner in lunacy, attached to the psychopathic wards . . . or both, to the place where the alleged insane person resides or is to be found. If, in the judgment of the chief resident alienist of the . . . psychopathic wards, or of the medical examiner thus sent, the person is in immediate need of care and treatment or observation for the purpose of ascertaining his mental condition, he shall be removed to such psychopathic ward for a period not to exceed ten days, and the person or persons most nearly related to him, so far as the same can be readily ascertained by such trustees, . . . shall be notified of such removal.

TABLE 3.—ADMISSIONS UNDER THE SEVEN DAYS' TEMPORARY CARE LAW OF MASSACHUSETTS

| | |
|---|---|
| Admissions in 1911 (after June 4) | 92 |
| Admissions in 1912 (Psychopathic Hospital opened June 24) | 416 |
| Admissions in 1913 | 897 |

Of these 897, 590 were sent to the Psychopathic Hospital, the others to other institutions of the state.

These two examples — the increase in voluntary admissions and the increase in temporary care admissions — are enough to show what an engine of prophylaxis a psychopathic hospital, backed by proper laws, may become. Accordingly the Psychopathic Hospital deserves reckoning as one of the major departments of the prophylactic division of mental hygiene.

Every person admitted under the voluntary law is entitled to consider himself in one sense a free man, quasi-sane, or at least not antisocial, unless on his application to leave, steps are taken to commit him. Again, every patient temporarily cared for is entitled to consider himself as not yet *proved* insane, although he may be aware that alienists are examining him. Even if he is eventually to remain in an institution, he may well become such inmate voluntarily and, even if committed against his will, he has at all events the satisfaction of knowing that he was given a good chance of avoiding commitment by a period of hospital observation.

The proof of the pudding is the real object of my present communication. I have chosen to investigate the large "not insane" group of the Psychopathic Hospital's discharges to ascertain, if possible, just what benefit to the patient and to society has accrued from passing these persons through the psychiatric filter. How much a factor in *successful* prophylaxis are these "not insane" discharges?

For the moment, I do not deal at all with so-called "recovered" or "improved" cases that have been judicially recognized as insane. Of these recoveries there were in a period of about twenty-one months 195, and of "improved" cases, 177, or a total of 372 among 2,500 discharged from a hospital largely diagnostic in its functions, and with an average duration of hospital treatment not over three to four weeks.

I wish rather to consider among these first 2,500 discharges a group of 570 other cases regarded as not insane, and in fact as never yet insane. This group forms between a fifth and a quarter of our discharges (23 per cent.), calculating on a basis of our first 2,500 discharges. Of these 570 "not insane" discharges, 405 can be briefly disposed of from the diagnostic point of view as in Table 4.

TABLE 4.—"NOT INSANE" DISCHARGES WITH ASSIGNED DIAGNOSES

| | |
|---|---|
| Feeble-minded *et al* | 179 |
| Psychoneuroses *et al* | 100 |
| Alcoholism | 44 |
| Epilepsy | 39 |
| Somatic and non-mental diagnoses | 27 |
| Syphilis | 17 |
| Brain disease of various types | 10 |
| Chorea | 6 |
| Paralysis agitans | 2 |
| Acromegaly | 1 |
| Other diagnoses | 6 |
| | 431 |
| Diagnoses in more than one case | 26 |
| | 405 |

The significance of most of these figures is obvious. I will dismiss the feeble-minded group (179 cases), remarking that at least fifty-one of these may properly be regarded as belonging in the group of so-called "defective delinquents," using this term to include many who have never been considered by courts and who might better be termed potential delinquents. There promises to be a mine of criminal-anthropologic data among these cases, the more so in that alienists have not ever intensively studied large groups of these cases by the best methods in hospital wards. Reports should eventually become available of a large group of cases studied not merely with the Binet-Simon tests, but also from the point of view of the new "point scale" of estimate now about to be published by Robert M. Yerkes, psychologist to the Psychopathic Hospital. Meantime the value to the community of these examinations at a center having the stamp of authority is certainly large. Since a majority of these cases fall in the higher grades (by the Binet-Simon and other standards) it is possible that the amount of community prophylaxis thus afforded will eventually reach a high level, since the most difficult community problems in the field of feeble-mindedness are recognized on all hands to lie with the higher grades of feeble-mindedness.

I cannot forbear mentioning here, without developing the point, that a considerable advantage is accruing to the local social-service public from the making clear to them that the terms "feeble-minded" and "insane" (or, better, "psychopathic") are not terms equivalent to "should be sent to an institution!" With the organization of social service in various centers there has developed a certain tendency to bureaucracy, and to the conception that medical groups are institutional groups. Of course this runs counter to the underlying principles of social service, which, I take it, starts from a foundation of differentiated individual service. The basis of differentiation among psychopaths needing social service is very likely to be medical and not economic. Accordingly I feel that such an institution as the Psychopathic Hospital is likely to be salutary in any social service situation where bureaucracy tends to lift its head.

I will, secondly, dismiss the group of alcoholics (forty-four cases), remarking that they represent (*a*) certain cases of acute nature (considered *not* to be examples of delirium tremens or of the so-called pathologic intoxication or of any other form of mental disease, but) having a variety of mental symptoms demanding temporary care, and (*b*) certain cases of a chronic nature with acute exacerbations threatening to become antisocial. The advantage to the community of this service is obvious. The patients in question would formerly have gone to jail doubtless in most cases. The number of such cases does not represent the volume of the social problem they present. I will dismiss the topic, referring the interested reader to the conference on medical and social aspects of mental disease due to alcohol,[1] held at the Psychopathic Hospital before the legislative commission on drunkenness, Nov. 24, 1913. Article VI, from that conference report, by Dr. A. Warren Stearns and Miss Mary C. Jarrett, deals with the after-cure and moral suasion work of the Psychopathic Hospital. Although alcoholism forms only about one-ninth of the Psychopathic Hospital's problem, yet much attention has been given to the topic, and thirteen communications have been made to medical journals about it, twelve of which appear or are referred to in the report of the conference above mentioned and the thirteenth (on the treatment of deliria) has been published by Donald Gregg.[2]

Epilepsy (39 cases), syphilis (17 cases), various types of brain disease (10 cases), chorea (6 cases) and 9 miscellaneous cases need not be especially considered here, despite the attractive vistas which several of these fields bring up to the alienist, who is apt to feel that the mental complications *of the early phases* of various nervous and allied disorders have not been given adequate attention by neurologists untrained (at least in any modern sense) in psychiatric method.

Perhaps a group of 27 cases, tabulated as having "somatic and non-mental diagnoses," deserves more particular attention than I can at present give. I find 8 among these belonging to the in all ways difficult group of the morphinists, 5 to the group of dysthyroidism, 4 senile cases thought not to be psychopathic, 2 cases with some mental symptoms in advanced tuberculosis, 2 cases with mental symptoms in typhoid fever, etc.

I have reserved a group of 100 cases of psychoneurosis for consideration as a problem of great importance in any campaign of mental prophylaxis. The group was made up as follows: hysteria, 45; neurasthenia, 20; psychoneurosis not further specified, 20; psychasthenia, 10, and psychopathic personality, 5. I suppose the question uppermost in the alienist's mind as to this group is how far these cases are open to individualistic, and how far to specific or more general, lines of treatment. I take it that for the present it is well to give the patient the benefit of the doubt and individualize treatment as far as possible, although I hardly feel that the point has been proved. As between the therapeutic method that goes under the name "psychanalysis," the method called "rest treatment," the "work treatment," and what might be called calisthenic treatment, it is a question whether science can yet say that one treatment is always better than others, or that one treatment is good for Patient A and another for Patient B, or that no one of the methods is of avail in certain cases.

I know of no accurate estimates of the volume of such disease in the community. Here it seems as if about one-quarter of the not insane (but in some way psychopathic) cases resorting rather freely to the Psychopathic Hospital belong to the psychoneurotic group. It is natural to suppose that the severer examples of the group are the particular cases which reach the hospital. If the total 2,500 cases may be regarded as somewhat fairly representating the serious forms of mental disorder (all types) in the community, then one in twenty-five of these belong to the theoretically so interesting and practically so important group of the psychoneuroses.

Before the community plunges into the program of building public sanatoriums for this class, more figures should be available. Perhaps if we should combine certain convalescents from insanity with these psychoneurotics, we could justify on numerical grounds the establishment of such sanatoriums, having after-care and preventive functions. It seems doubtful whether the public funds will soon become available for this purpose, however worthy; but it would seem that private appeal could be very legitimately made for such institutions. It is a curious thing that some of the richest privately endowed institutions for the insane in this country have not seen their way to the establishment of such sanatoriums and preventoriums for the poor. Instead, we often find these endowed institutions successfully pushing claims for large private benefactions, but operating their wards on a system of high-priced treatments. Free beds for cases of this group are often hard to discover, at all events hard to find *empty!*

All that a psychopathic hospital, situated in the midst of a medical center (for the sound reason that otherwise not scientific men enough can be gathered for proper diagnostic work), can do with a problem like that of the psychoneurotics is to:

1. Effect certain cures of the magical order (though how permanent these are is a question, and how good for the patient's utlimate fate);
2. Apply "rest," "work," calisthenic and similar treatments (which unhappily can often not be carried on long enough for economic reasons);
3. Enlist private interest in individual cases requiring longer attention (methods of social service in discovering special private sources of aid);
4. Persuade suitable patients to submit to voluntary admission to state insane hospitals, there to stay for a time under rural conditions, enlisting the interest of resident physicians and overlooking the fact of association with the frankly insane (the cottage type of institution planning greatly helps here, because of the possible differentiation of cottages for psychoneurotics);
5. Endeavor to discover underlying causes.

If such a sanatorium for psychoneurotics were to be founded, it would be well not to divide it equally between the sexes. The psychoneurotic hospital should have more beds for women. Table 5 gives the incidence of 100 psychoneuroses according to sex in which twenty-nine patients were male and seventy-one female.

Tables 6 and 7 show that half of the psychoneurosis patients came to the hospital between the fifteenth and thirtieth years, and a little over one-half of the female cases (37:71) were between those ages.

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[1] Boston Med. and Surg. Jour., Dec. 25, 1913, p. 929.
[2] Gregg, Donald: Modern Hospital, 1914, ii, No. 5.

TABLE 5.—SEX DISTRIBUTION IN ONE HUNDRED PSYCHONEUROSES

| | Male | Female | Total |
|---|---|---|---|
| Hysteria | 6 | 39 | 45 |
| Psychoneurosis | 7 | 13 | 20 |
| Neurasthenia | 9 | 11 | 20 |
| Psychasthenia | 4 | 6 | 10 |
| Psychopathic personality | 3 | 2 | 5 |
| | 29 | 71 | 100 |

TABLE 6.—ATTACKS AT DIFFERENT AGES

| Ages | Hysteria | Psychoneurosis | Neurasthenia | Psychasthenia | Psychopathic Personality |
|---|---|---|---|---|---|
| 6-10 | 1 | 0 | 0 | 0 | 0 |
| 11-15 | 5(1♂) | 0 | 0 | 1 | 0 |
| 16-20 | 11(2♂) | 2 | 0 | 0 | 1 |
| 21-25 | 15(1♂) | 2(1♂) | 1♂ | 3(1♂) | 0 |
| 26-30 | 6(1♂) | 6(3♂) | 1♂ | 1♂ | 1♂ |
| 31-35 | 4(1♂) | 2(1♂) | 5(1♂) | 2(1♂) | 1♂ |
| 36-40 | 2 | 2 | 4(2♂) | 1 | 0 |
| 41-45 | 0 | 3(2♂) | 2(1♂) | 0 | 1 |
| 46-50 | 1 | 2 | 4(1♂) | 0 | 0 |
| 51-55 | 0 | 0 | 1♂ | 2(1♂) | 1♂ |
| 56-60 | 0 | 1 | 2(1♂) | 0 | 0 |
| | 45 | 20 | 20 | 10 | 5 |

TABLE 7.—AGE AND SEX-DISTRIBUTION OF PSYCHONEUROSES, ETC.

| Age | Males | Females | Total |
|---|---|---|---|
| 6-10 | 0 | 1 | 1 |
| 11-15 | 1 | 5 | 6 |
| 16-20 | 2 | 12 | 14 |
| 21-25 | 4 | 17 | 21 |
| 26-30 | 7 | 8 | 15 |
| 31-35 | 5 | 9 | 14 |
| 36-40 | 2 | 7 | 9 |
| 41-45 | 3 | 3 | 6 |
| 46-50 | 1 | 6 | 7 |
| 51-55 | 3 | 1 | 4 |
| 56-60 | 1 | 2 | 3 |
| | 29 | 71 | 100 |
| 16-30 | 13 | 37 | 50 |
| Under 16 | 1 | 6 | 7 |
| Over 30 | 15 | 28 | 43 |

Certain points about the syphilis index and the sex distribution at different ages have been placed in Paragraphs 11 and 12 of the summary.

## SUMMARY

1. In the prophylactic division of mental hygiene the matter of voluntary admissions to hospitals for the insane holds a primary place; their number is increased by the plan of supporting such at the public charge just as committed cases are supported, and is still further increased, and even doubled, by the provision of a modern psychopathic hospital (increase from 8 to 16 per cent. of the total of voluntary and committed cases, experience at Boston Psychopathic Hospital).

2. A second prophylactic measure is the provision of proper temporary care for persons suspected of mental disease, as according to a unique Massachusetts temporary care law (first operative in 1911; see text). This provision has been eagerly employed in Massachusetts, more than doubling the number each year since enactment. The Psychopathic Hospital is receiving about two-thirds of all those thus received in Massachusetts, 1913.

3. Many important prophylactic questions relate to those thought to be insane but not proved to be. In this psychiatric borderland also lie many questions between insanity and feeble-mindedness. A large "not insane" group, namely, 570 cases among the first 2,500 discharges from the Psychopathic Hospital, has been reviewed to discern the general features of this psychiatric borderland of diagnosis.

4. Consideration is omitted of 372 additional cases regarded as recovered or improved after attacks of mental disease, although in one sense these cases are open to prophylactic measures, since the occasional review of these cases by a follow-up system must tend to help society, and may help the individual.

5. Of the 570 not insane cases, 179 were cases of feeble-mindedness of various grades, largely of the higher grades and including a large number of the so-called defective delinquents (more than fifty). In this connection it often becomes necessary to fight a bureaucratic tendency among social workers who tend to proceed on the erroneous assumption that an insane or a feeble-minded person belongs by definition in some public or semipublic institution.

6. The numerically next largest group is that of psychoneurotics (100), who are largely female (71), especially the hysterics (39 female in 45). Consideration is given to the idea of a public sanatorium or preventorium for such persons with far larger provisions for females than for males. It is thought that these cases, forming at least a twenty-fifth (probably more) of all mental cases in the community and at least a fourth (perhaps somewhat more) of all not insane mental cases, might perhaps warrant, if combined with the convalescents, the establishment of a public sanatorium to be run on economical lines in the country.

7. It is largely the great expense (from $20 to $25 per week) of caring for these cases in a centrally placed psychopathic hospital or psychiatric clinic which determines the idea of a rural public sanatorium; for psychotherapy (in whatever form may be determined to be valuable), rest treatment, work treatment and calisthenics, to say nothing of dietary and other general measures, can be as well, though more expensively, carried out in the urban psychopathic hospital.

8. Of the 570 not insane discharges, 165 were not classified as showing any particular form of mental or other defect, although it must be emphasized that each of these came for psychodiagnostic reasons and was admitted under a special form of law. One even was a case regularly committed under judicial procedure but later determined to be not insane, and nine others came under judicial authority by virtue of certain other laws not commonly used.

9. Of these 165 not insane discharges, ninety had been admitted under the temporary care law, unique in Massachusetts, referred to in Paragraph 2 (except in fifteen instances in which a somewhat similar law, operating for the city of Boston alone, was employed). With respect to these persons it must be emphasized that their problems would not have been so easily solved under any other procedure. Examples of such problems are question of paraphrenia systematica, question of hysteria, question of defective delinquent, question of epilepsy, etc.

10. Of the 165 not insane discharges, sixty-five either resorted voluntarily to the hospital or were pursuaded to become voluntary patients. It is evident that, in an increasing number of instances, persons realize or can be made to realize the possible psychopathic nature of their difficulties and come almost eagerly even to a public institution.

11. About 13 per cent. (18 in 136) of these persons who were discharged as without active symptoms of mental or other disease yielded positive Wassermann reactions in their serums. The interpretation of this fact is doubtful. The percentage in the males was 10 (7 in 65), in females 16 (11 in 71).

12. Two-thirds of the patients aged 6 to 15 were boys (21 boys, 10 girls), but of those aged 16 to 25, there were more than four times as many women as

men (10 men, 45 women). From 26 to 40, the sexes are about evenly distributed (17 men, 19 women). Then males preponderate (28 men, 14 women). Thus, women may be thought to get into suspicious psychopathic circumstances which later resolve, much more often in the period of adolescence, males somewhat more often in late boyhood and in postadolescent years. Therein lodges a problem in prognosis which if settled would greatly aid the alienist, particularly, in making certain social decisions.

13. It is clear that the influences which are bringing the not insane to the Psychopathic Hospital in Boston are bringing them there at comparatively early ages, and often (especially the females) in adolescence. The community's interest in the question of feeble-mindedness and the social worker's often justifiable desire to institutionalize her wards are powerful factors in this resort for diagnosis to a state institution. The physicians in the community are almost to a man, I believe, pleased with the increasing facility with which, under the laws mentioned above, some of their most difficult problems are solved. Time was when almost the only recourse in determining absolutely whether a patient was insane was to adjudge him insane and release him afterward if a mistake had been made. To overcome this difficulty, various devices have been adopted in the more highly civilized of our states. The Massachusetts arrangements are of particular interest to those who may not have been able as yet to civilize their own states in these directions.

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## ABSTRACT OF DISCUSSION

### ON PAPERS BY DRS. PUTNAM, GREGG AND SOUTHARD

Dr. D. J. McCarthy, Philadelphia: I believe that the social service idea, which has been promulgated by Dr. Cabot, began as a medical idea and then switched over to special social service along modern lines. The difficulty lies in the idea of placing a non-medical person in a position of responsibility to determine what shall and shall not be done with certain individuals. Social service is a medical problem necessarily, and we must look to the future social service work for such careful investigation of families and houses as was done in the crusade against tuberculosis in Berlin. Medicosocial service by large corporations is becoming practical everywhere, as in large department stores where thousands of young women are employed. If all such could be prevailed on to adopt social service, and if we had such an institution as Dr. Southard suggests, which is not purely charity, where the individual could be treated for one dollar a day, where the young woman losing 15 or 16 pounds a month progressively and showing nervous symptoms, irritability, etc., could be taken before she breaks down and where there would be no stigma of insanity, but simply the recognition of a condition of overwork, such an institution would be of immense help in the prevention of psychoneuroses. If these patients are not seen early before the break, when the symptoms are developing and the individual is losing efficiency, the most important factor in the prevention of psychoneurosis will be lost. Frequently patients come to us after the break has occurred, impelled by social reasons, but even in a mild case of mental disease the patient is not well in six weeks, and danger lies in putting him back to work in three weeks. It is a matter of from six months to two years before the nervous system is sufficiently stabilized to put that person back where he can do good and efficient work.

Dr. M. A. Hallowell, Vineland, N. J.: I have been handicapped because certain fields that belong to physicians have been relegated by physicians, I am sure not wilfully, but by default, to others. Certain phases and factors, I feel, are extremely important. One is the field work. It is being done throughout the United States by non-trained workers. As neurologists do you not think that a psychopathic institution where medical men shall be specialized for this particular work and equipped to do the work properly, is much needed? At present the workers are absolutely untrained; they are people who are social workers with an absolute lack of knowledge of medical subjects; they do not know how to bring out the leading factors in the etiology of disease. It is most important that medical people should get together and make it possible to put trained medical workers in this field.

Another extremely important point is that, in the United States, juvenile courts, or the child-welfare bureaus in connection with juvenile courts, are making the tests as to the relative normality of the children. Is it physicians and psychiatrists who are committing these children to the institutions for the feeble-minded, or prescribing treatment when the children are placed on probation? It is not physicians, it is not people who are qualified to do this work. Physicians in general are accepting reports from these bureaus not presided over by physicians; they are taking these reports as definite and conclusive, whereas, patients are committed to my institution, as to others, who are absolutely normal, but whose accustomed environment has been taken away from them; they have hardly become adjusted to the new environment, and their reaction is not pathologic, but the pendulum is swinging too far. The lay people who make these tests, who are responsible for this work, and who are doing it to the best of their ability because physicians are not taking it up, are in many instances mistaking those children with antisocial instincts for feeble-minded. I hope that physicians in general, the American Medical Association, and the neurologists of the country, will try to see that the field workers who make these family histories and beautiful charts shall be people who are qualified; that when a type of the feeble-minded or epileptic or alcoholic, or whatever type may be charted, is presented, we may be perfectly sure that it is a true type. We are not perfectly sure, with the charts in existence at the present time, as to whether or not most of the records are true. I know the handicap that physicians and neurologists suffer because there are no trained physicians to do this work. It is a wonderful opportunity for young physicians, and for psychopathic institutions to train young physicians to take up this work.

Dr. Walter B. Swift, Boston: I am glad to see the weight of Dr. Putnam's paper placed on synthesis and sublimation. Up to the present the psychanalytic movement has been mostly description, analysis, interpretation, with very little said about what to do, how to synthesize, when to sublimate, and who should do all this. In the first part of his paper Dr. Putnam has now swung the emphasis over to this utilitarian side. And I trust that from this date the balance will stay thus tilted. A word, then, is apropos as to the source of synthetic methods. Dramatic art contains more synthetic methods, that is, in the norm, than any other field of study I know. I have a personal interest here. There is more good psychology remaining still scientifically uninvestigated in the field of dramatic art than anywhere else. Students of synthesis can learn much from that field. A good idea of the intricacies of syntheses there contained can be grasped by picturing in the imagination for a moment all the varieties of synthetic processes that are necessary for the personification of another's personality.

I differ with Dr. Putnam when he says that the symptoms of the psychosis and the psychoneuroses are the patient's efforts to recover. Granted that every organism has an innate tendency to right itself when diseased, these symptoms appear to be more than that—a sort of let-up of certain previously controlling inhibitory centers, more of an uncontrolled expression than a controlled expression aiming at recovery. It sometimes almost seems true that some of these disease forms may have an etiologic basis in the brain anatomy—in the inherited variation of size of cell nuclei—so that a small area getting easily tired or depleted, lets up its inhibitory control under stress of somatic disease or environmental pressure and away the combination flies. Why could there not be, then, between the psychanalytic interpretation and the neuropathologic interpretation also an anatomic that would satisfy both of the others' claims, at least in some measure?

Dr. Gregg's paper has given some new and valuable facts that may be utilized to advantage in prophylaxis, but why does he call certain factors essential, and just what does he mean by a fetal cause for the psychoses and psychoneuroses.

Dr. Southard's paper illustrates the creditable type of work that the psychopathic hospital is doing. A patient in the out-patient department is seen by from six to eight specialists and is then turned over to one of them for treatment. This is quite different from the usual out-patient department, where only one man, or perhaps two, see each patient. I concur with Dr. Hallowell in her statement. I work in a clinic in which histories are taken by a lay worker, and evidence shows that many of her terms are absolutely unreliable and need investigation before they can be used as the basis of any scientific research.

Dr. W. T. Councilman, Boston: One of the most striking things which has been accomplished in medicine in the last thirty-odd years is the breaking down of the fence which formerly surrounded those diseases the manifestations of which are psychic alterations. That is a very important thing for all of us. It has benefited pathology because in pathology we have suffered in the past from the fancy that these diseases were outside of our investigation, that they constituted a province by themselves, that they had their own methods of investigation, etc. The work in pathology is greatly benefited by the knowledge of the pathology of the brain in particular, because in the brain we are able to study perhaps better than in almost any other part of the body, and appearing under new forms, the resistance of the tissues, their compensation, their interrelations and pathology, and also, I am sure, physiology and therapeutics have gained correspondingly. One of the things which this Section has done seems to me to be of very great importance, and that is the asking that mental hygiene be considered as one of the subjects to be included in the work of the Council on Health and Public Instruction. This council is, I think, one of the most important of the councils of the association, and I hope to see mental hygiene form a prominent part of the work of this council.

Dr. Hugh T. Patrick, Chicago: I may have more or less of intellectual asynergy, and I strongly suspect I am a fine case of mental atony; but what rôle would Dr. Putnam assign to parents and teachers in the application of the discoveries or contributions of psychanalysis to child psychology, and to the proper bringing up and development of children. I did not understand it as clearly as I should like to, and I think it should be made particularly clear to others than myself. If I remember correctly, he spoke of "teachers and parents applying the principles of psychanalysis." If Dr. Putnam means that parents and teachers are to employ the methods of psycho-analysis in the bringing up of children who are more or less abnormal, I wish very decidedly to express a dissenting view. I believe that any discoveries which psychanalysts may make in the psychology of children, the laws of development of children, and the principles on which children should be brought up, should be utilized by the proper persons. Dr. Putnam should make this particularly clear because I believe that in talking about the value of psychanalysis in these matters we are liable to mislead some people and to commit a lot of injury rather than to contribute to our benefit and to the benefit of our children. I believe that parents and teachers should be told what they are to do, very much as we give a patient a prescription and tell him to take that three times a day, or as we would prescribe exercise or anything else for patients, particularly in questions relating to nervous or psychopathic patients (and I might say that, unfortunately, many psychopathic children have psychopathic parents), we must be cautious in admitting the patients to our own mental operations. These people are already too introspective, they are already too disturbed to employ what they call their reason and what they consider their knowledge in these matters, and I believe practically, as a matter of experience, that in dealing with these cases it is better on the whole to be rather dogmatic and tell them, This is what you shall do. I have no objection to giving a rational and mentally competent individual an insight into his own case. I think in some cases it is a wholesome and effective measure; but what I would decidedly oppose is any encouragement whatsoever for parents and teachers to indulge in the procedure of psychanalysis in the case of children or others. This is perhaps along the line of Dr. McCarthy's remarks, that social service had better be in the hands of experts than in those of well-meaning laymen and women. Some of us can remember when hypnotism was employed more or less by physicians with more or less good effect, and even yet we find parents trying to usurp the doctor's place, who try to employ hypnotism to control nocturnal enuresis, for bad habits, and for insomnia in their children. I believe that this rôle of the parent and teacher in the psychic development, or the neurologic or psychologic treatment of the child, should be done away with. The tendency of many persons is to take abnormally large and abnormally constituted doses of mental treatment. And I would no more put into their hands as powerful and complex a remedy as psychanalysis, than I would allow them to prescribe poisonous drugs or perform operations.

Dr. Frank P. Norbury, Springfield, Ill.: This symposium indicates the advance being made in mental hygiene, especially in the constructive policies of prevention, and emphasizes the importance of genetic psychology and the genetic theory of education as applied in preventive mental medicine. Psychanalysis, too, is important in child life. The child is the product mentally of three factors, namely, heredity, environment and education. We can reduce these to heredity and environment. Environment is not only what one sees and touches, but also what is absorbed into one's self—this we call education, but it really is a product of environment. Environment then is one of the primary factors in the study of the child. Holmes says that "a child cannot be kneaded like dough, nor hammered like iron, but can be trained like a vine on a trellis." Dr. Patrick is right; a neurotic child should not be trained in a neurotic environment. Such home influences are projected into the life of the child and into succeeding generations. I have followed many such individual problems. They are formidable, deep and far-reaching in character formation. These factors should give physicians more concern than they ordinarily do. They are to be studied in the home rather than in the consultation room. Dr. Putnam assigns equal importance to mental and physical factors. We should regard selection from the point of view of biology and sociology. Psychanalysis, too, should be given its full value. The critics who disregard it will find that it is not only a psychologic but also a biologic factor in preventive education and in the problems of selection. We cannot dominate selection even by peremptory laws. The child must be so educated that when the time comes that the question of marriage, etc., arises, the young people will have the knowledge which will enable them to help solve these very important questions of eugenics. The outpatient service as outlined by Dr. Gregg heralds the permanency of the mental first-aid service. It also shows how important it is to know the family and the individual outside of the hospital. We all know how inadequate is the knowlege concerning the patient, and that the real causes in mental disorder extend far beyond the assigned causes as given in hospital histories. The voluntary admission service in Boston is a movement which should extend to every state. Illinois has a voluntary admission provision, also a ten-day observation clause in its law. Voluntary admissions have not been sought as freely as they should be. We have more voluntary admissions in the rural districts, while in the metropolitan districts, especially in Cook County, the commitments are crude, superficial and far behind the service as found in many other counties in the state. I believe the time will come when we will have institutions for the state care and treatment of the psychoneuroses. This problem will be a financial one. The state care of the insane costs, in Illinois, about $175 a year per capita. This cost does not consider original investments or interest on the same; it is simply for maintenance. The cost for treatment and care of psychoneurotic cases will be more. I know from my own experience that such patients involve an expense of at least $18 per week for actual care.

Dr. A. C. Gillis, Baltimore: Both Dr. Southard and Dr. Gregg brought out very clearly the fact that in dealing generally with the great class of psychoneurotics there are many important etiologic factors to be studied. We should look on all those factors from the broadest possible point of view and not be led astray in our enthusiasm for some new theory. It is true, as Dr. Hallowell stated, that we rely to a great extent to-day on lay workers for much of the information relative to the study of etiologic factors in insanity. Cases are sometimes classified as imbeciles or degenerates because of incomplete tests by lay workers, when the individual may be a foreigner who has not become adjusted to his new surroundings in this country, or when the home surroundings of a child are such as to make it practically impossible for full mental development to take place, or again, when physical deformity or disease has prevented proper development. We should have physicians trained in the study of heredity and insanity. There is a tendency nowadays to have the psychologic worker one who has taken a Ph.D. degree, and who knows little or nothing of medicine. That may be well enough, when the worker is a member of the staff of a psychopathic institution where the patients he examines can be studied by competent physicians, but it is not advisable when cases are seen outside the clinic and are not properly supervised from the medical point of view.

Dr. James J. Putnam, Boston: Several of the speakers have referred to these psychopathic disorders as being hereditary, and we all know that, in the minds of many persons, to say this is the equivalent of saying that the patient is to be classed as a "degenerate." Of course it is true that these patients are "burdened," but it is still an open question in every case how far improvement may be secured through a psychanalytic treatment, and also, of course, how far it might have been secured in the case of the parents or other ancestors. This point is deserving of attention; for even at the best these patients have anxiety enough to carry, and if it can be made clear to them that their forbears might have been helped by a treatment similar to that which is capable of helping, even if not of curing, them, they should be given the benefit of this consideration. I cannot agree with Dr. McCarthy that the social-service work should be taken away from properly qualified women and given over to young physicians. In the first place I do not think much of $500 doctors, and do not think we could find many first-class men who would be willing and able to do first-class work of this character for such a sum. Furthermore, I think that the work itself is of a kind that women are in some respects better qualified for than men. On the other hand, it seems to me that it is the duty of those who have this sort of work in charge to see that the women workers are well trained and do their work properly. With regard to Dr. Swift's statements, I do not think that the ethical training of patients is strictly within the province of the psychanalyst. It is so difficult to use psychanalytic methods that they should be strictly adhered to for the present. On the other hand, it seems perfectly proper for psychanalysts to have the possibilities in the way of "sublimation" clearly before their minds. In answer to Dr. Patrick, I am not proposing anything so foolish as that parents or teachers should use psychanalytic methods, but only that they should gradually learn something, through their own physicians, of psychanalytic principles. Neither am I an advocate of systematic sex hygiene teaching in schools. Reforms in parental and school education are greatly needed, but come slowly. Parents should learn to be as broad-minded and as sympathetic as possible, and should become intimate with their children and learn to understand the meaning of and the tendencies underlying their acts. Take masturbation, for example. Parents will beat their brains in trying to stop this habit, but it rarely occurs to them to try to find out what masturbation really means in a broad sense, and to find the mental tendency which leads to it. Lying and stealing by children should not be simply punished, but the attempt should be made, in each case, to find out what they mean.

Dr. Donald Gregg, Brookline, Mass.: The discussion as to the excellence of the work of social workers brings up the same old problem that Dickens touched on regarding the excellence of veal pie: "It depends on the woman as made it." There are some social workers who can do excellent work, and others whose work is useless; but the amount of work that is to be done in a large clinic is so vast that I can see no possible harm in getting assistance from lay workers. They should work under proper supervision, but I can see no reason why the work of taking certain histories cannot be done as well by lay workers, if the physician follows it up closely, as by a medical student. If the worker seeks to bring out simply the facts, well and good; but she should not put down on the record her own personal deductions. As regards the work of Ph.D. men in psychanalysis, these men should also work in close conjunction with men who have had medical training and have a knowledge of somatic factors. Analyses made by a man who does not know the difference between normal and abnormal physical characteristics and symptoms are useless unless done in conjunction with a medical man. The services of such men are efficient in hospitals, but I cannot believe that they should carry on this work outside of hospitals except in conjunction with medical men.

Dr. E. E. Southard, Boston: I was glad to hear Dr. Norbury commend my remarks concerning public preventoriums for psychopathic cases. The erection of such preventoriums is doubtless a question of budget. Such institutions are being built in certain parts of the world; but it is a question how soon our own legislatures can be prevailed on to provide for them. The Section on Nervous and Mental Diseases should help the work. Certain innocent remarks of mine seem to have precipitated a discussion on social workers which is a little unfavorable to them. In my paper I did endeavor to reassert the right of the physician to control in medical questions, and I called attention to the overenthusiasm of certain social workers who incline to the belief that they know more than do the physicians about certain problems. Nevertheless, I have the greatest belief in social workers and admiration for their work. So far as I have been able, I have always advocated the employment of laymen and laywomen in many capacities, both as saving time and money and as an aid in the dissemination of medicosocial knowledge in such fields as that of charity and correction, of eugenics, of sex hygiene and the like. Of course, heredity charts obtained by lay-workers are subject to error, like the weather bureau reports, but it is a question whether they are more subject to error than medical histories collected by physicians. For example, we employ a clinical historian at the Psychopathic Hospital in Boston, through whom I am inclined to think we often obtain more effective, complete and unbiased accounts of certain cases than through the physician or intern who observes some special point early in taking the history and then pursues that point one-sidedly without reference to other important features. There are, indeed, sides of medical histories which the physician can best investigate, but the properly trained lay-worker can be taught to understand what points to leave to the physicians. Let me then hasten to correct any supposition that I underestimate the value of lay work in our field. We must extend lay work in medicine by way of extending the medical sensorium, but the motor or pragmatic decisions in these problems should be left to the physician. Naturally, the social worker tends to regard the physician as a specialist of service to her in her social decisions. The physician, on the other hand, tends to regard the social worker as a specialist to aid him in his decisions. As a matter of fact, the physician is or should be himself a social worker to start with, hence, his decision in a given case is not merely a medical decision, but, in the nature of things, a medicosocial decision.

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**Lupus Institute in Vienna.**—The name of the street in Vienna on which is located the new institute for the treatment of lupus has been changed to Finsen Street.

# EFFICIENCY OF SODIUM CHLORID IN THE THERAPEUTICS OF BRIGHT'S DISEASE

## A FURTHER CLINICAL STUDY[*]

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In September, 1912, in the Section on Medicine of the Medical Society of the State of Pennsylvania, which met at Scranton, I reported my experience with the use of sodium chlorid in the prevention and in the treatment of nephritis and edema. My conclusions as to the efficiency of this agent, employed as a normal solution by hypodermoclysis and by the drop method by rectum, were based on purely empyrical and clinical data. The latter included three cases of nephritis, two of typhoid fever, three of scarlet fever and one of infantile dysentery. I at that time observed that "the results in each instance were so strikingly uniform and identical that one cannot escape the conviction that they appear to be more than coincidental and to depend on definite biochemical phenomena which were determined by the physiologic activity of the therapeutic agent employed."[1] Then as now my results appear to me clinically to confirm the experimental observations of Martin H. Fischer[2] with reference to the nontoxicity of sodium chlorid in cases of nephritis with especial reference to its effect on water retention (edema) and on the kidney substance itself (albuminuria, cloudy swelling and cast formation). All cases in which this agent was employed, save one very severe instance which will again be mentioned, were relieved. It may not be out of place to remark that my original observations were made before I became acquainted with Fischer's work so that my results appear to me to be more valuable as confirmatory data.

I wish again to speak simply as a clinician, being without animal, experimental or other memoranda, and desire only to add to the number of cases previously submitted. My hope is that, perhaps in discussion, more convincing light may be thrown on the not yet settled questions as to whether sodium chlorid induces water retention, as to its influence on the actual kidney condition in nephritis, on the symptoms of the disease in general and as to the real nature of nephritis and edema.

In this connection it may be interesting to review briefly some of the theories as to the production of edema. The most noteworthy clinical contribution has been made perhaps by Widal and Javal.[3] Their work is well known and has been accepted by many clinicians as essential to the correct therapeusis of nephritis. My own experience, however, has not been in accord with their teaching, that an edema may, in a nephritic, be made to come and go by the administration or by the withdrawal of sodium chlorid. On the contrary, as a later reference to my cases will demonstrate, not only is this agent non-toxic to the nephritic or to the infant suffering from the so-called idiopathic edema of gastro-intestinal origin, but it is helpful and even curative. It has also been noted, personally and certainly by others as well, that the administration by hypodermoclysis of warm normal salt solution to marantic infants with subnormal temperatures or to wasted infants who have been dehydrated and demineralized as the result of a severe summer diarrhea (intoxication) has been followed by prompt absorption and elimination of the fluid and that edema has not ensued. Jacobi[4] has for years advocated the administration of additional sodium chlorid in the milk formula. I have uniformly followed his teaching and in no instance have I seen edema develop in either the sick or the well-feeding patient that could consistently be ascribed to this cause.

The studies of Cowie, on the other hand, would lead one to conclude that sodium chlorid retention is responsible for edema in wasted infants.[5] He believes that the action of the hydrochloric acid in the stomach on large doses of sodium bicarbonate increases the amount of sodium chlorid in the system and thereby induces water retention. I too have seen edema develop in cases of pyloric obstruction in which frequent washing of the stomach with a strong solution of sodium bicarbonate had been practiced. This need not necessarily be explained on the ground of salt retention as it occurs in some infants wasted from this disease and from others who have received neither sodium bicarbonate nor sodium chlorid.

Opposed to the activity of sodium chlorid as the sole etiologic factor in edema, although frequently quoted as supporting this view, are the conclusions of Stoltzner, Wagner, and Cohnheim. Each of these observers regarded the presence of some other substance as necessary. Cohnheim[6] could produce edema in wasted infants by the injection of salt only in conjunction with some local irritant as Spanish fly or the direct rays of the sun. Wagner[7] regarded the presence of a toxin of intestinal origin as a necessity. Stoltzner[8] believed that the edema resulted from the irritation of the blood-vessel walls by a toxin which likewise irritated the kidneys and resulted, as well, in albuminuria. The conclusions of these observers, especially those of Cohnheim and of Stoltzner, appear to forecast, as it were, and at the same time to lend support to the contentions of Fischer, that the edema and the albuminuria depend on general tissue acidosis, not excepting the kidneys. The effect of the acid in the latter instance is to cause the solution of the gelatinous colloidal substance of which the kidney is composed. This results in albuminuria.[2] His simple experiments as to the effect of non-acidulated and of acidulated solutions on the solution of fibrin and of gelatin and as to the restraining effect of the mere presence of neutral salts, notably sodium chlorid, on the dissolving action of the acid, appear to provide ample substantiation for his view that nephritis and its concomitant features, albuminuria, edema, etc., depend on the effect of acid on gelatinous colloidal tissue, and that this effect may be destroyed by sodium chlorid and alkalies. Fischer produced nephritis in rabbits by the injection of acid. He prevented the occurrence of nephritis by the simultaneous injection of acid and sodium chlorid. He cured nephritis in rabbits by the injection of sodium chlorid and sodium carbonate after producing it with acid. There is also sufficient evidence to support the view that a salt-free diet may actually lead to albuminuria and nephritis. Quoting from the works of G. Bunge, J. Forster and N. Lunin, Fischer explains this phenomenon as due to the low salt content of the body which occurs as the direct result of food without salt and the ingestion of large amounts of water poor in salts. The water washes out the natural salts already present. This salt starvation leads to systemic and renal acidosis and this to nephritis as represented by albuminuria, cloudy swelling, casts, and edema.[9] Sodium chlorid is a conspicuous example of a neutral salt of a monovalent ion. Up to a certain point of concentration this will inhibit the action of the acid and together with an alkali will entirely overcome the effects of the acidosis. To the bivalent and to the trivalent ion is ascribed even greater power of inhibition.[10]

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[*] Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

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2. Fischer, Martin H.: Nephritis, New York, 1912.
3. Widal and Javal: Internat. Clin., 1903; Javal: Ibid., 1905.
4. Jacobi, A.: Therapeutics of Infancy and Childhood.
5. Cowie, D. M.: The Significance of the Pyloric Reflex in True and Pseudopyloric Stenosis in Infants, Am. Jour. Dis. Child., March, 1913, p. 225.
6. Cohnheim and Lichthein: Arch. Path. Anat., 1887, lxix.
7. Wagner: Deutsch. Arch. f. klin. Med., 1887.
8. Stoltzner: Med. Klin., i; München med. Wchnschr., 1906, liii.

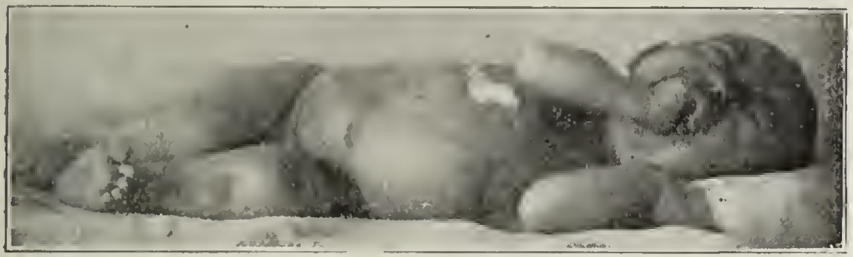

Fig. 1.—Idiopathic edema (Case 1). Pitting of leg and edema of face and skin of dependent portion of abdomen are shown.

With reference to the neutral salts, as represented by Ringer's solution (which contains chlorid of sodium, potassium and calcium) as being responsible for an increase in the flow of urine in experimental nephritis which Fischer produced in three ways (interference with respiration, intravenous injection of acids and clamping of the renal vessels), his statements are so startling that one is almost at first unable to realize their force in view of the universal acceptance of the teachings of Widal and Javal.[11] In whatever manner he produced nephritis he was able to overcome its effects by the use of this solution or by any neutral salt. Also by the use of sodium chlorid solution he enormously increased the urinary output and not only prevented edema but cured it as well.[12] This I have been able to confirm clinically with the use of sodium chlorid solution by hypodermoclysis.

The restraining effects of Ringer's solution and a sixth-normal solution of sodium chlorid on the occurrence of edema is seen in frogs in which nephritis has been produced by the injection of uranium nitrate.[13]

One can have no quarrel with those who differ with Fischer's views and attack his experimental data and conclusions.[14] One cannot, however, peruse his work without recognizing the fact that he has placed himself squarely on record as opposed to the application of the salt-free diet in the treatment of nephritis and to the idea that this and other neutral salts are toxic to the nephritic. He advocates their use as curative and preventive agents in conjunction with alkalies. My experience, as before stated, gained independently of a knowledge of his views, causes me to believe that his work has for some reason not attracted the attention which it merits.

My cases include one case of cardiorenal disease complicating exophthalmic goiter in an adult which I was permitted to observe through the courtesy of Dr. Helen Kirschbaum, three cases of non-renal and non-cardiac edema occurring in emaciated infants, the so-called idiopathic edema or edema of gastro-intestinal origin of infancy and four cases of actual nephritis.

In the cases of nephritis now reported and in those detailed in 1912 no attempt was made to classify them as tubular, vascular or azotemic according to the functional tests described by Schlayer. According to this author in the first variety salt and iodids are slowly eliminated while milk-sugar speedily passes out. In the second type the reverse occurs. In the last a 10-grain dose of urea is but slowly thrown off. In all instances the diagnosis simply of nephritis was made by the clinical symptoms and the urinary findings. Most of the cases followed some acute infection as tonsillitis, scarlet fever and adenitis. Clinically and pathologically also it is probably true that simple vascular (glomerular) and tubular nephritis rarely occur alone but that in every case a combination of pathologic changes exists. These observations are made because all patients practically received the same treatment and in all instances the effects, especially on the edema, were identical. All received large amounts of water orally and hypodermically and in no instance were symptoms intensified from this agent alone which, according to the teachings of von Noorden, provides additional irritation to the vascular system of the kidneys. All patients received as well enormous doses of sodium chlorid and in all instances save one (Case 8) the daily amount of urine was materially increased.

CASE 1.—Boy, aged 6 months, weight 10 pounds, admitted to my service at the Mount Sinai Hospital, May, 1913. Bottle-fed. Previous history has no bearing on present condition. Infant is edematous over its entire body (Fig. 1). Temperature subnormal. No cardiac, renal or hepatic disease discoverable. Treatment: Subcutaneous injection of the following solution under the skin below the nipples on alternate days: sodium carbonate, crystallized, 10 gm., sodium chlorid 14 gm., water 1,000 c.c. About 250 to 300 c.c. daily. Edema entirely absent on the eighth day of treatment. Infant now showed all the features of marasmus. Weight 8 pounds 3 ounces. Unfortunately no photograph was taken. There appeared under the right nipple an extensive slough which would not heal and which finally exposed the whole pectoral muscle. The infant died from inanition and exhaustion.

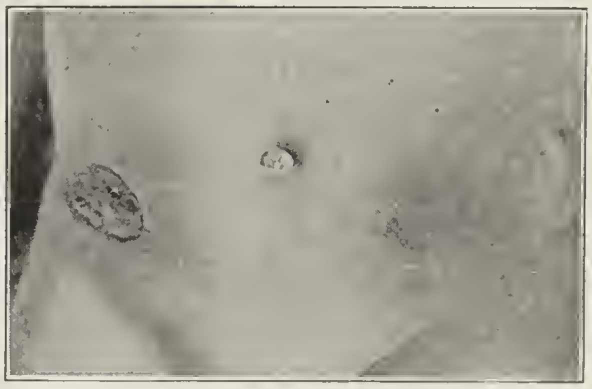

Fig. 2.—Sloughing areas from subcutaneous injection of alkali and salt solution (Case 5).

CASE 2.—Boy, aged 9 months, seen in the service of Dr. W. C. Hollopeter and myself at the Philadelphia General Hospital. Bottle-fed. Emaciated and edematous about the legs, feet, thighs, lower abdomen and face with slight involvement of the hands. No discoverable lesion to account for edema. Temperature subnormal. Received normal saline solution by hypodermoclysis on alternate days under skin of abdomen. This was continued about ten days. Edema was entirely relieved and the infant made an uneventful though protracted recovery.

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[9] Bunge, C.: Ztschr. f. Biol., 1874, x, xi. Forster, J.: Ibid., 1873, ix, 297, 369; Lunin, N.: Ztschr. f. physiol. Chem., 1881, v, 31.

[10] Fischer, Martin H.: Nephritis, p. 10.

[11] Fischer, Martin H.: Nephritis, p. 134 and following.

[12] Fischer, Martin H.: Nephritis, p. 148.

[13] Fischer, Martin H.: Nephritis, p. 188, etc.

[14] Moore, A. R.: Fischer's Theory of Edema and Nephritis, THE JOURNAL A. M. A., Aug. 10, 1912, p. 423; Edema and Nephritis, ibid., Feb. 1, 1913, p. 345.

[15] Fischer, Martin H.: Nephritis, p. 190.

Case 3.—Girl, aged 18 months, seen in consultation with Dr. J. S. Cohen. Her temperature was subnormal. Bottle-fed. Extremely weak and greatly emaciated. Voluntary movements slow and deliberate. Infant had received various food mixtures. None seemed to do good. Continuous gastro-intestinal disturbance. Bowel discharges were green and contained undigested curds. Child had been treated by several prominent pediatrists without effect. Condition becoming worse daily. Some vaginal discharge. Catheterized specimen of urine shows a trace of albumin and pus-cells. No casts. Urine high colored, scant and acid. Besides the marked emaciation the legs, thighs, lower abdomen and hands are edematous. Infant placed on Blockley buttermilk mixture with solid diet well salted and vegetable broth containing salt, olive-oil by mouth and cod-liver oil by inunction. Ordered to be taken out into the air and sun daily. It was given about 185 c.c. of warm sterile normal saline solution by hypodermoclysis every other day. The fluid was promptly absorbed. The urinary flow was greatly increased, the urine becoming practically colorless. The edema in the hands entirely disappeared as well as from the skin of the abdomen and thighs. The edema of the feet was not influenced to any great extent. A second examination of the urine revealed practically no abnormalities. It was impossible, however, to control the digestive disturbances. The number of bowel movements were increased and the child died suddenly from exhaustion about ten days from the beginning of treatment. This case, however, clearly demonstrated the non-toxic influence of sodium chlorid and large amounts of water in the presence of edema. The fatal ending of the case does not lessen the importance of this fact.

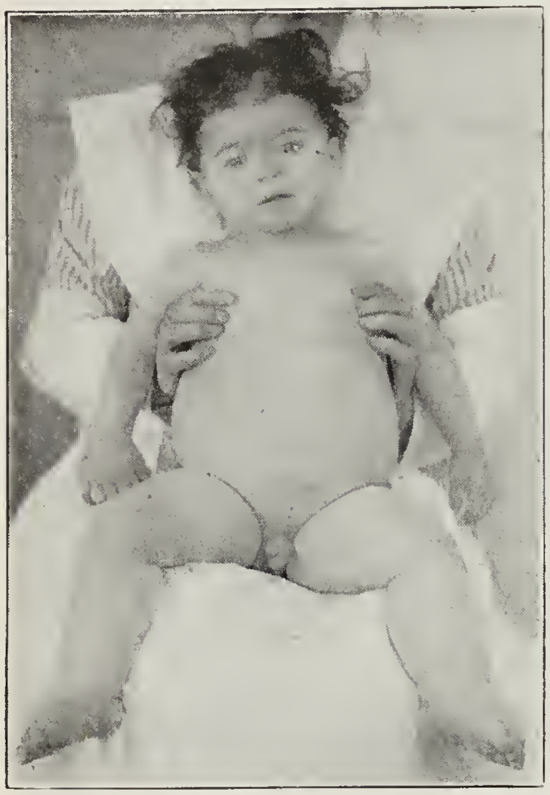

Fig. 3.—Acute nephritis. Marked edema of body (Case 8).

Case 4.—As in the previous case there was a fatal ending, but the symptom of edema as will be seen was materially lessened. The patient was Mrs. S. S., aged 52, a patient of Dr. Helen Kirschbaum who kindly permitted me to see her. This patient was desperately ill. She had exophthalmic goiter, with tachycardia, mitral regurgitation, cardiac dilatation, arteriosclerosis and nephritis with edema of the legs, thighs and face. She had been ill for one and a half years. Patient was very excited and her condition was regarded as hopeless. Examination of the urine revealed the presence of albumin and casts. It was decided to inject 500 c.c. of the sodium carbonate and salt solution intravenously in order to note its effect on the edema. Following the injection the symptom was remarkably lessened. The urinary flow increased and the albuminuria lessened. She died, however, from cardiac exhaustion. The effect on the blood-pressure was not appreciable.

Case 5.—J. R., boy, aged 8 years, admitted to my service at the Mount Sinai Hospital, May, 1913. Diagnosis, acute attack in a child with subacute nephritis. Illness is supposed to have started two years previously. Child ailing more or less during this time. Three weeks previous to admission mother noted puffiness of the eyelids and that the feet and legs were edematous. Appetite poor. Intense headache. Urinary flow said to be diminished. Urinalysis showed albumin and casts, red and white cells and intensely acid smoky urine with a specific gravity of 1.026. Treatment: The alkaline and salt solution were administered by the drop method by rectum. In addition this solution sterilized was given hypodermically under the skin of the abdomen. At the point of injection two severe sloughs later appeared. These took weeks to heal by slow granulation. Sloughing resulted in all probability from the action of the alkali, and I believe it unsafe to employ the solution in this manner. It should either be given intravenously or by rectum. Figure 2 shows the sloughing areas. Result: The edema, the albumin, casts and blood elements disappeared and the urinary flow was increased. The child left the hospital within two months perfectly well and was sent to the seashore to recuperate. There has been no recurrence. Final recovery was delayed on account of the sloughing sores.

Case 7.—G. L., aged 22 months, admitted to my service at the Mount Sinai Hospital, August, 1913, diagnosis nephritis. Infant markedly edematous about the body and face for the past two months. Vomiting and diarrhea. Urinalysis shows all the evidence of nephritis. Treatment: Sodium carbonate and sodium chlorid solution by drop method by rectum and normal saline solution by hypodermoclysis. Result: Discharged from the hospital, September, 1913, completely recovered.

Case 8.—H. C., aged 17 months, seen in consultation with Dr. Robin of Wilmington, Del., and later admitted to my service at the Mount Sinai Hospital. Diagnosis, severe nephritis. Breast-fed up to present time. About eleven weeks ago developed a rash which was diagnosed measles (probably was scarlet fever); several days later mother noticed that child passed no urine. The entire body, face, hands, arms, legs, feet, thighs, scrotum, abdomen and chest wall intensely edematous (Fig. 3). Examination showed some fluid in the abdominal cavity and thorax. The lungs showed some edema as well. Urine obtained by catheter became practically solid when boiled. Contained casts and blood elements and was intensely acid. Child received 200 c.c. of normal salt solution under the skin and enteroclysis by the sodium carbonate and sodium chlorid solution. Treatment was continued daily, the amount injected being from 150 to 250 c.c. The edema began to decrease rapidly, but the urinary flow was not increased and the amount of albumin remained the same (Fig. 4). The abdomen and scrotum became more distended and the child became weaker and died three weeks after admission. This child was actually water-logged. The kidneys were damaged beyond repair as judged by the tremendous amount of albumin. While the edema, especially that involving the face, legs and scrotum almost entirely disappeared, the urinary flow was not increased. Fischer's explanation as to why certain nephritics increase in weight after receiving salt in the food in all likelihood applied here. The giving of salt causes the edematous tissues to give up their water. This cannot escape via the kidney if it be too severely dam-

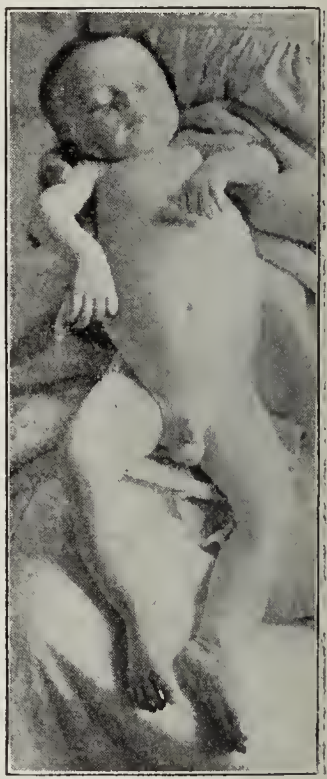

Fig. 4.—Edema of body much less (Case 8) after several injections of salt solution.

aged. Hence the fluid collects in the cavities, and being a solution of colloidal substance, it cannot be absorbed. Hence the increase in weight. This occurred in this case. This also explains why tapping must be done in this type of patient.

Case 9.—E. S., girl, Pole, aged 8 years, seen in consultation with Dr. J. J. Frankel. Following a frank attack of scarlet fever the child developed an intense nephritis and when first seen was unconscious, in convulsions and edematous. The urinalysis presented all the features of acute Bright's disease. The sodium chlorid and sodium carbonate solution were given by the drop method by rectum continuously for about ten days together with salt solution by hypodermoclysis. The child remained unconscious for three days and was fed through the nose. She finally made an uneventful recovery, all the symptoms of nephritis disappearing and to-day she is perfectly well.

## CONCLUSIONS

My experience with this method of treatment permits me to subscribe to the following:

1. Sodium chlorid neither produces nor increases water retention in either the nephritic or non-nephritic.
2. It is curative in cases of edema from any cause provided the kidneys are not too severely damaged.
3. It does not cause edema in marantic infants.
4. When combined with an alkali and plenty of water it exerts a benificent influence on all the symptoms of nephritis.
5. It is dangerous to administer a solution of an alkali under the skin as it is liable to produce sloughing.
6. The best means of administering the salt and alkali solution is either by rectum or intravenously.

1927 North Broad Street.

## ABSTRACT OF DISCUSSION

Dr. Thomas S. Southworth, New York: I cannot speak from the point of view of this disease in children, but since the use of sodium chlorid in children is contradictory to what has been impressed on us so strongly in late years concerning the elimination of salt from the diet of nephritic patients, I think it is wise to speak of the use of Fischer's solution in the case of a young adult with typhoid. She began with acute nephritis and delirium. There is no question of the fact that the nephritis rapidly cleared up coincidently with the instillation of Fischer's solution into the rectum, by the drop method. Whether it had any beneficial effect on the nephritis or not, it could not be said to have had any deleterious effect.

Dr. John Zahorsky, St. Louis: Will Dr. Lowenburg state what is the difference between giving from 10 to 15 gm. of potassium acetate or sodium chlorid by mouth every three hours, and then drinking a lot of distilled water or plain water, and using the solution hypodermically or by rectum? It is painful and often produces sloughing to introduce this material under the skin.

Dr. Percival Nicholson, Ardmore, Pa.: When I was a resident in the Municipal Hospital we treated a large number of patients with salt solution by bowel, and we found it markedly increased elimination, and lowered the mortality in toxic cases of diphtheria. We devised a method to run the salt solution in slowly and continuously, only intermitting two hours during the day. At the end of the first day the children hardly noticed it, and retained the solution well even though a number were under 2 years. Solution introduced by the bowel seems to act better than when introduced by mouth, for the reason that the stomach is not upset with large quantities of solution. With the proper apparatus it is easy to administer by rectum, without disturbing the patient.

Dr. Harry Lowenburg, Philadelphia: Dr. Zahorsky is right. Alkalies by mouth are just as good as salt administered by rectum. The paper emphasized the fact that salt did not increase the severity of nephritis, nor increase edema. I think salt administered directly would probably bring about as good results. Absorption may not be as quick.

# THE RÔLE OF FUNCTIONAL KIDNEY TESTS AND PREOPERATIVE AND POSTOPERATIVE TREATMENT IN THE REDUCTION OF PROSTATECTOMY MORTALITY *

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Conspicuous among the many notable urologic achievements characterizing the close of the nineteenth and the dawn of the twentieth centuries stands the establishment of prostatectomy—or more properly speaking prostatic adenomectomy—as a feasible, desirable and comparatively safe operative procedure. The surgical treatment of adenomatosis of the prostate, alias prostatic hypertrophy, has changed most remarkably since the days of Mercier's incisor and Leroy d'Etiolle's valvular section of the neck, to the modern conservative perineal operation of Proust-Young or the suprapubic transvesical prostatectomy of Fuller-Freyer.

Although it is generally conceded that the mortality due to danger of infection from catheter life in prostatism, in those cases in which that form of treatment is possible or justifiable, is to-day at least twice as great as from a skilfully performed prostatic adenomectomy, the fact exists that for more than a decade following the first so-called total prostatectomy in 1891 by Goodfellow, the death-rate incident to this operation was so high that the utility of the catheter continued to be an almost universal practice. During the past thirteen years mortality following prostatectomy has steadily decreased from 50 per cent. to from 5.5 to 3.77 per cent. in the experience of its worthiest and most expert exponents. In the light of these facts it is a source of much regret to genito-urinary surgeons that many practitioners on the one hand continue to advise and recommend, routinely, medical treatment and the time-worn catheter with its 100 per cent. mortality in a four-year prognosis, while on the other, many general surgeons doubt the veracity of statistics and point to a minimum mortality of from 10 to 20 per cent. for the operation of prostatectomy.

Satisfactory as the results have become with improvements in technic, there is to-day a definite and extensive effort on the part of urologists to shave the present low mortality by more careful discrimination in the selection of operative cases, by exact study of the general organic fitness of the candidate, especially his functional kidney sufficiency. Obviously the age of the patient cannot be entirely ignored, and weighed in conjunction with other features of the case, may preclude the advisability of operation, although *per se* advanced age is no contra-indication. Other factors of equal importance governing the operability of the case are best appreciated by recalling the stages of the living pathology of prostatism, namely (1) dysuric phenomena, (2) retention of urine with or without infection, (3) distention and dilatation of the bladder incident to urinary obstruction and (4) internal compression of the kidney with secondary cardiovascular changes and toxemia leading to uremia.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

Thus in addition to the offending prostate itself, with its secondary and remote organic and systemic effects, in the capacity of renal, cardiac, pulmonary, hepatic and even nervous and mental defects, infection is commonly present and must receive consideration in the prognosis and preliminary preparation of the patient. The increased mortality of prostatectomy in cases complicated by infection or calculi is well recognized.

As a result of the cardiorenal involvement, which is invariably present to a greater or lesser degree in cases of prostatic obstruction, I have come to attach much importance to the determination of blood-pressure and have made it a routine part of the preparatory study of all cases, placing its importance second only to the estimation of the renal function.

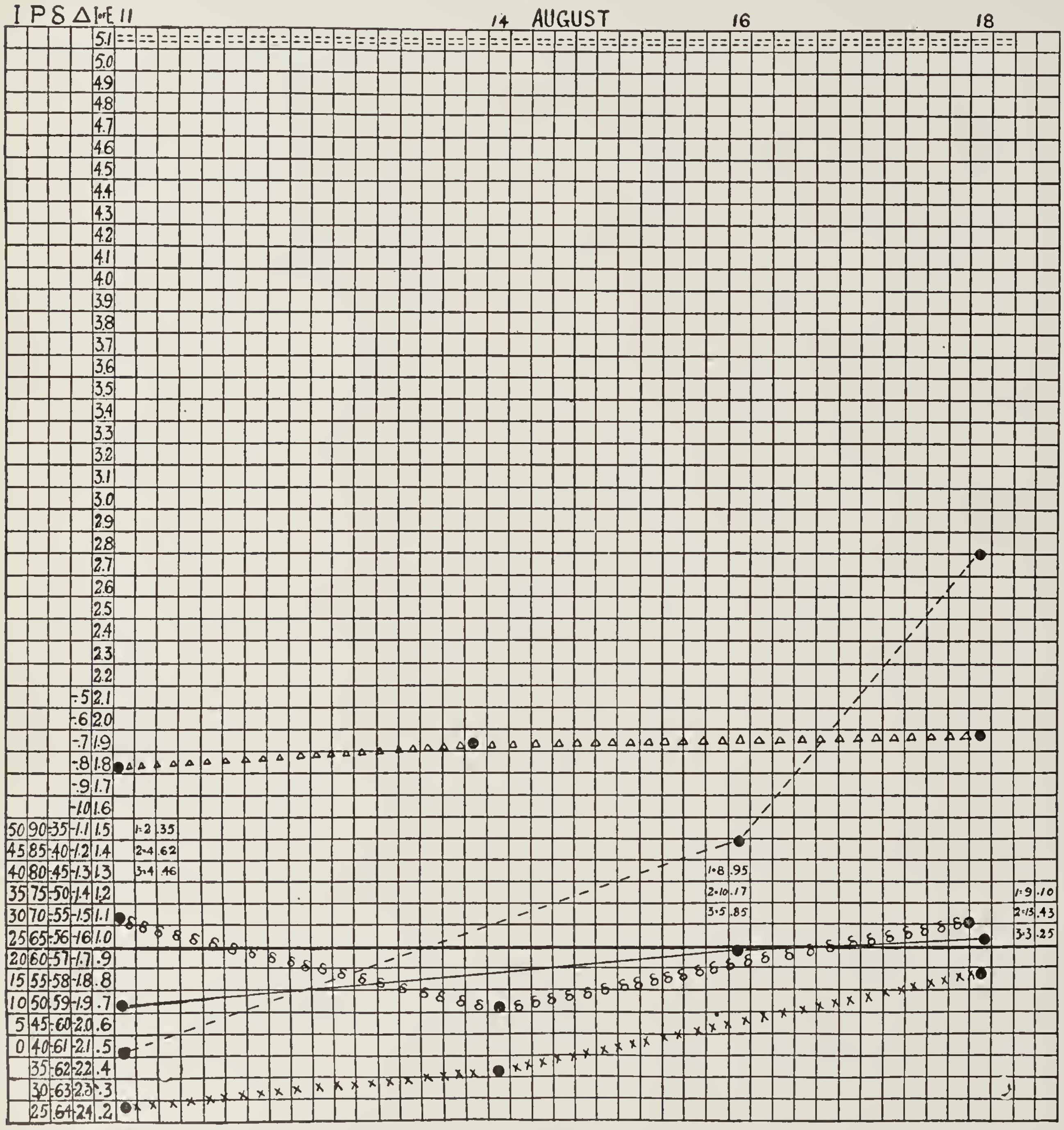

Fig. 1.—Illustration of progressive improvement in organic condition of patient (Samuel L.). Observe especially index of elimination of indigocarmin. Prostatic adenomectomy followed by uneventful recovery. = = = = == average normal index for indigo; — — — — = index of elimination of case (indigo); ——— = indigo percentage elimination; xxxx = phthalein percentage elimination; δδδδ = cryoscopy of blood; △△△△ = cryoscopy of urine.

In importance at least equal to the blood-pressure governing the operability of the case stands the myocardium associated or not with a cardiovascular sclerosis. Minor valvular lesions of the heart in themselves need not be considered as vital contra-indications. Operation has been denied to two patients because of cardiac lesions associated with high blood-pressure and general sclerosis, in spite of the fact that in both cases the renal function was ideal as determined by indigocarmin, phenolsulphonephthalein and cryoscopy.

It must be quite apparent, therefore, that the factors concerned in the operation of modern prostatectomy and responsible for making its mortality one of the mildest in urologic surgery are manifold. They may be grouped advantageously under three captions: first, the preoperative investigation and preparation of patients; second, improvement in technic, and third, the best postoperative treatment. It is my humble conviction that the first and third steps in the management of the case are vastly more important than the operation itself and certainly outweigh any decision as to the choice of the perineal or suprapubic route.

Before entering on any discussion of the operative technic, I wish to revert for a few moments to the preliminary investigation of the case. Rectal palpation is of as much importance in urology as is a vaginal examination in gynecology; therefore, this exploration becomes the first act with the patient presenting a prostatic history. The second act consists in the determination of the amount of residual urine. This is important prognostically, in view of the *vis a tergo* pressure on the kidneys incident to the urinary retention and especially in determining the degree of actual vesical distention, for when the amount of residual urine attains, and *a fortiori* when it exceeds 300 c.c. the musculature has become atonic and the bladder has been strained and permanently dilated. This is evidenced by the deplorable result of prostatectomy, however skilfully performed, when vesical contractility is abolished.

The evil effect of completely evacuating the bladder in cases of marked retention of urine are well recognized by urologists. Not only may congestion and hemorrhage from the bladder and kidneys occur following such a procedure, but shock and even sudden death may supervene, owing to the reflex nervous derangement of long tolerated intrarenal pressure and secondary cardiac involvement. An understanding of this pathologic mechanism readily explains certain phenomena of urinary secretion, particularly the results in functional kidney tests when the elimination preceding sudden evacuation of the bladder in cases of retention markedly exceeds at times that after vesical relief. To perform prostatectomy or any other major surgical operation at that time, when the patient is in the negative phase, as it were, is equivalent to signing his death certificate and has deterred the wise surgeon from removing the prostate at the time cystotomy became necessary for urinary drainage. This realization, the provocation of preliminary treatment by catheterization, is by all odds the most important factor in the reduction of prostatectomy mortality. The value of this step has prompted a few genito-urinary surgeons to recommend the two-stage operation in all cases. I feel that such a practice routinely is utterly unnecessary, although the exceptional case will demand the procedure. As a rule intermittent catheterization or the catheter *à demeure,* closed, but opened from time to time, or allowed to drain continuously, will suffice for drainage for vesical and renal *restitutio ad integrum.*

During the period of preoperative treatment, particularly if urinary infection is present, total irrigations with silver nitrate are imperative, attention to the gastro-intestinal tract is obligatory, copious drafts of water associated with urinary antiseptics in an attempt to increase the urinary output are of great value, and finally, many patients will be braced up and tided over the critical operative stage by the internal administration of such drugs as strychnin, digitalis, nitroglycerin, caffein, sodio-benzoate, spartein and acet-theocin sodium (theophyllin sodio-acetate).

Undoubtedly, the study of the renal function is of preeminent importance, since impairment of the kidneys, resulting in azotemia and uremia, kill more patients after operation than any other organic defect and is the *raison d'être* of many known and unknown subsequent pathologic conditions.

It is my practice to subject all candidates for prostatectomy to a rigid and extensive investigation of their kidney function. Frequently these examinations have to be repeated owing to the poor operative risk at the time of admission, so that the average patient is obliged to remain in the hospital for his preoperative treatment for a term of two or three days to as many weeks or months in exceptional cases.

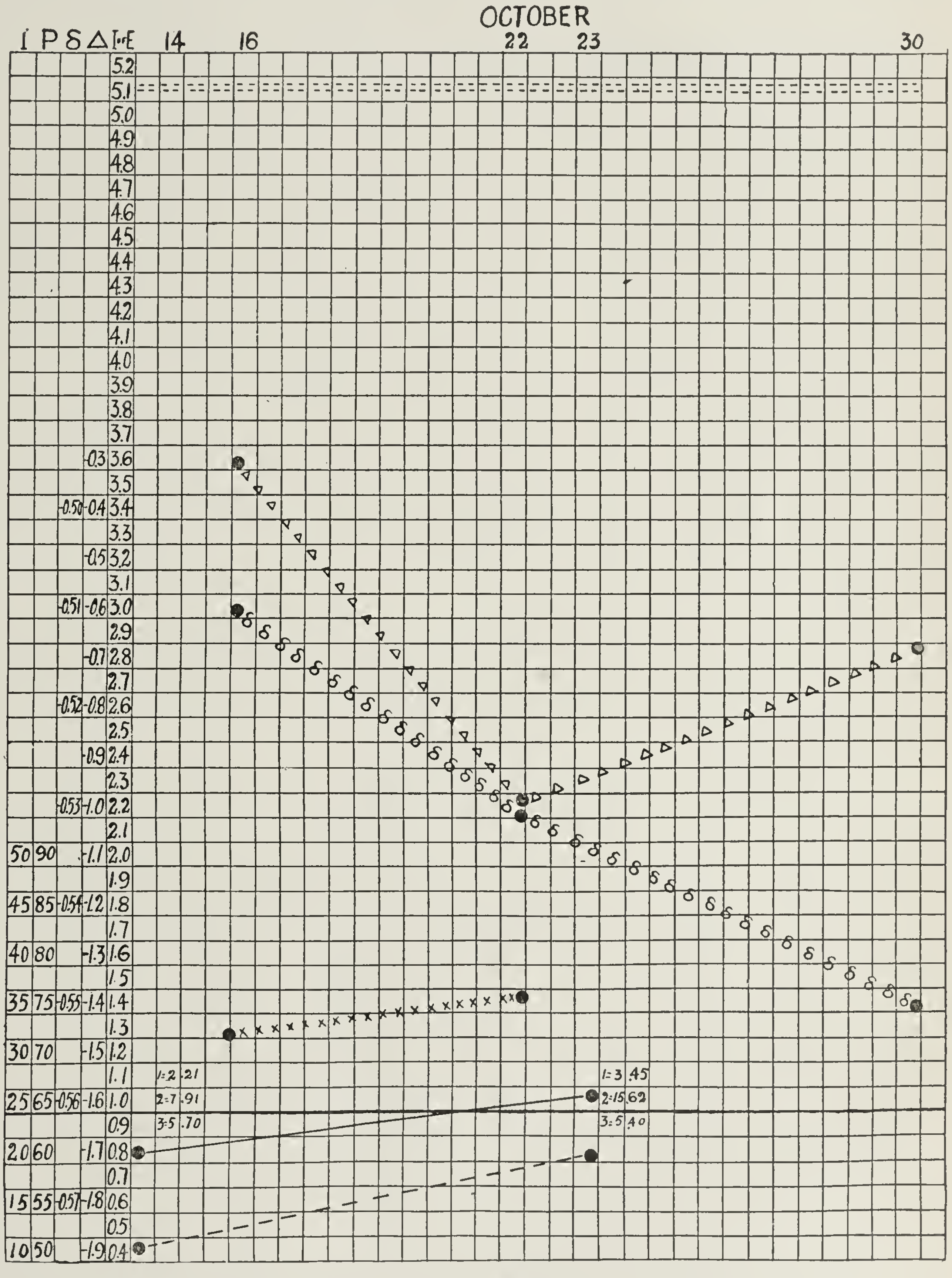

Fig. 2.—Case of inoperable prostatic adenomatosis (Michael T.). Inoperability due largely to marked cardiovascular lesions in addition to renal insufficiency. = = = = = average normal index for indigo; — — — — = index of elimination of case (indigo); ——— = indigo percentage elimination; xxxx = phthalein percentage elimination; δδδδ = cryoscopy of blood; △△△△ = cryoscopy of urine.

The functional kidney tests routinely employed are indigocarmin, phenolsulphonephthalein, cryoscopy of the blood and urine and the determination of urea. Of these an extended experience has taught that indigocarmin is the most practical and best and in no way superseded in value by any of the others. It matters little whether deductions are drawn from the onset of elimination or made from quantitative colorimetric determinations. The dye may be administered either intramuscularly or intravenously; if by the latter method, which may be the preferable procedure, there is no resultant soreness at the site of injection—an objection which was raised against the intramuscular method.

Valuable as I believe indigocarmin to be as a functional kidney test, judged from its onset of elimination and quantitative determination, I have been recently deeply interested in working out what I have styled its *index of elimination.* In the careful study of a series of cases, normal and pathologic, it is apparent to me both from the clinical point of view and operative results, that the *index of elimination* furnishes a truer guide as to the renal function than any other method that it has been my pleasure to utilize. The *index* is determined by dividing the quantity of indigocarmin eliminated during the first hour by the quantity excreted during the third hour after injection. Realizing that when the kidney parenchyma is diseased the onset of elimination is delayed and the amount of early elimination proportionately diminished, while the duration of excretion is prolonged, it has seemed to me for a number of years that the relative outputs for the first and third hours was of prime importance and probably of greater value than the mere quantitative output for the first two hours.

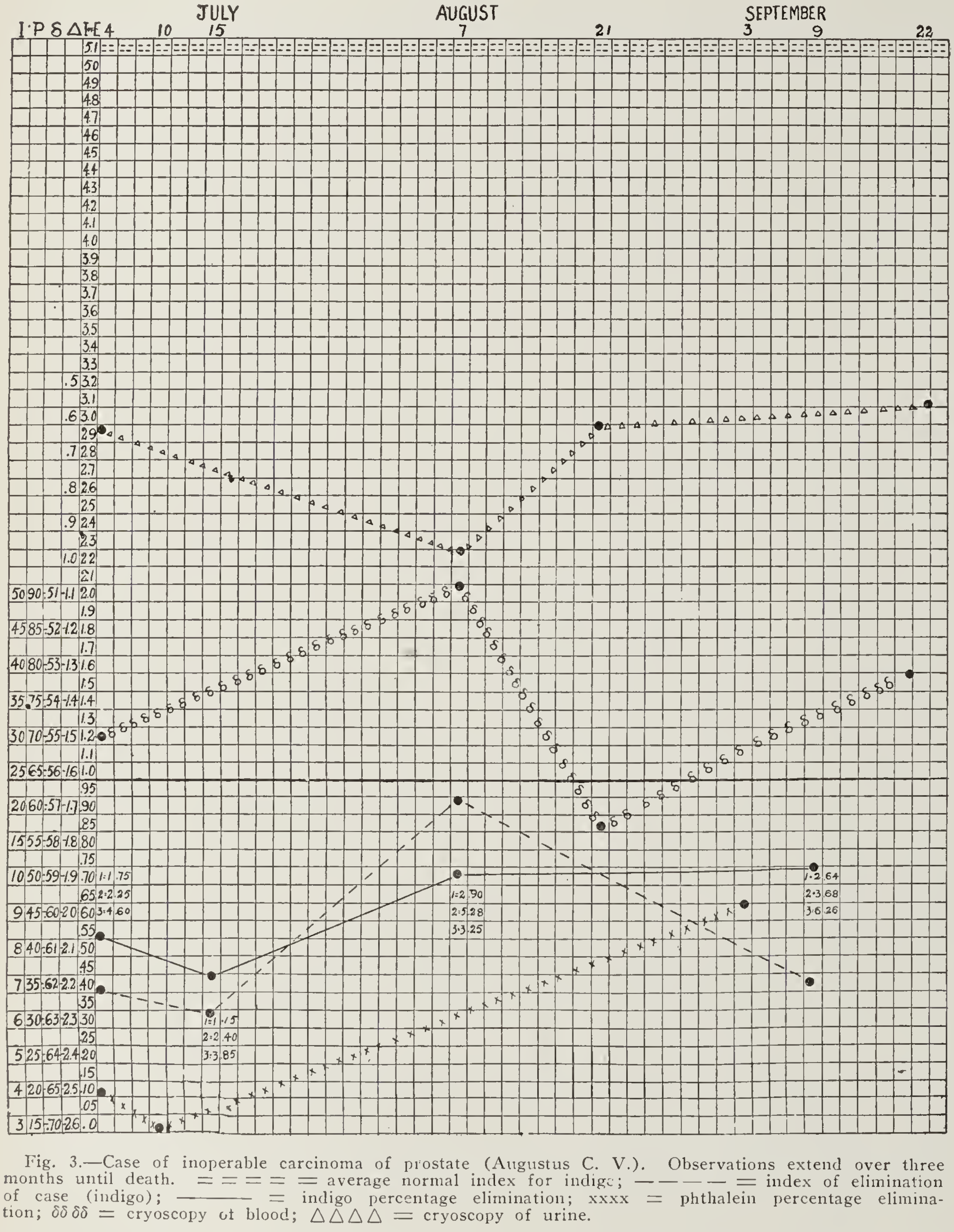

Fig. 3.—Case of inoperable carcinoma of prostate (Augustus C. V.). Observations extend over three months until death. = = = = = average normal index for indigo; — — — — = index of elimination of case (indigo); ——— = indigo percentage elimination; xxxx = phthalein percentage elimination; δδ δδ = cryoscopy of blood; △△△△ = cryoscopy of urine.

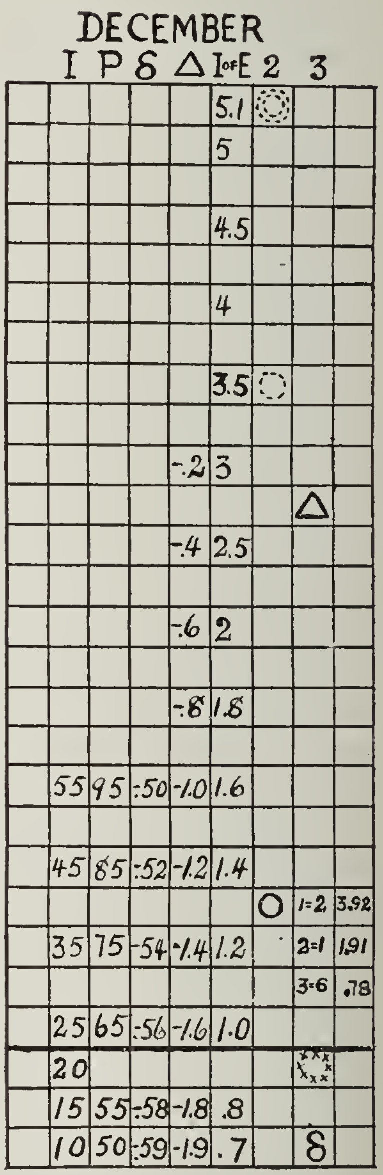

Fig. 4.—Index of elimination of indigocarmin high. Prostatic adenomectomy with recovery (Isaac F.). Circle of double broken lines = average normal index for indigo; circle of single broken lines = index of elimination in case (indigo); solid circle = indigo percentage elimination; circle of x's = phthalein percentage elimination; δ = cryoscopy of blood; △ = cryoscopy of urine.

In order to substantiate my claims and belief, I have introduced into this article a number of self-explanatory charts of prostatic cases, inoperable, operable and operated, illustrating the position and value of the *index of elimination* relative to the quantitative determination of indigocarmin as well as various other functional kidney tests (Figs. 1, 2, 3, 4, 5, 6, 7 and 8). I have determined that the *index of elimination* for normal individuals in a series of cases averaged 5.1, and have designated same by double broken lines. A study of the charts graphically impresses the fact that when the amount eliminated during the third hour equals or exceeds that excreted during the first hour, the patient's kidney function possibly contra-indicates serious operative intervention, namely, prostatectomy, unless the total amount eliminated in three hours exceeds 20 per cent., when operation may be considered even though the *index of elimination* be very low (Fig. 6).

The importance of thoroughly emptying the bladder by catheter at the end of each hour cannot be too strongly emphasized, otherwise erroneous results will occur.

Relative to operative technic or the choice of operation itself, time, space and inclination forbid that I shall say much. It is my belief that the prostatectomist who patronizes exclusively the perineal route is just as much in error as the surgeon who dogmatically attacks the prostate only suprapubically. Worst of all is the operator who chooses this or that route simply because he can do it better, regardless of a lower mortality by another method, of which he may be less familiar; such surgery may be the best for the operator but not necessarily for the rank and file of patients. The fundamental consideration in the choice of routes for prostatectomy should be the selection of that associated with the minimum mortality. Presumably this, as demonstrated by its ablest exponent, Hugh Young, is perineal prostatectomy, and it behooves each prostatectomist to familiarize himself with every minute detail of technic of the conservative perineal operation before casting his lot unalterably with the suprapubic route. The operative approach in each case should be governed more by the pathologic condition present than by the normal anatomic relationship of the prostate. To attempt the removal perineally of a prostate with preponderant enlargement of the median lobe, particularly if it be complicated by a large vesical calculus or possibly a neoplasm, is just as erroneous a procedure as the attempted enucleation suprapubically of a small fibrous, adherent gland,

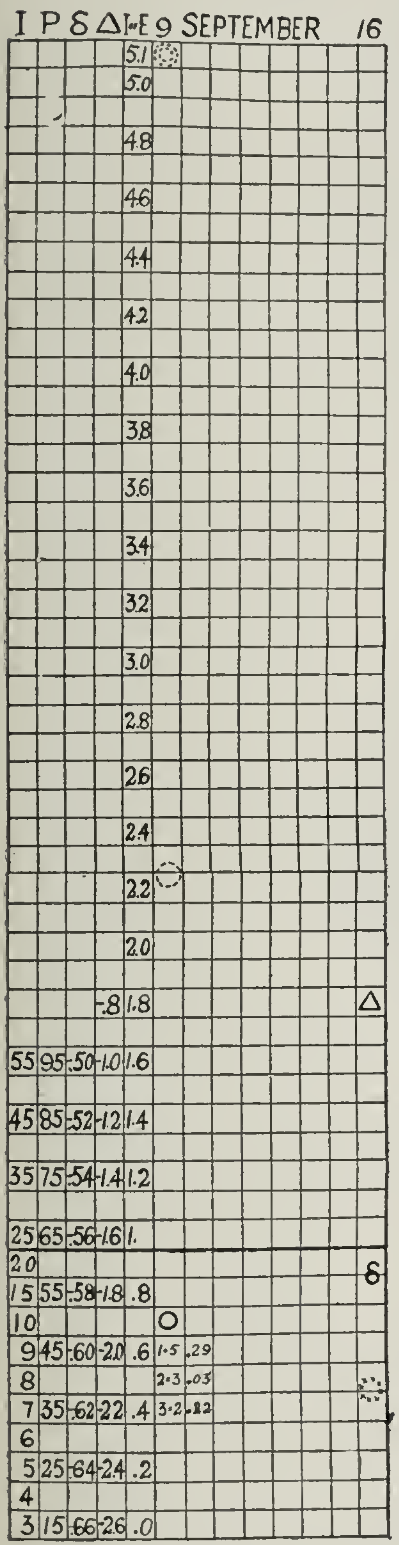

Fig. 5.—Index of elimination high, indicating operability of case. Prostatectomy followed by uneventful convalescence (Freeman S.). Circle of double broken lines = average normal index for indigo; circle of single broken lines = index of elimination in case (indigo); solid circle = indigo percentage elimination; circle of x's = phthalein percentage elimination; δ = cryoscopy of blood; △ = cryoscopy of urine.

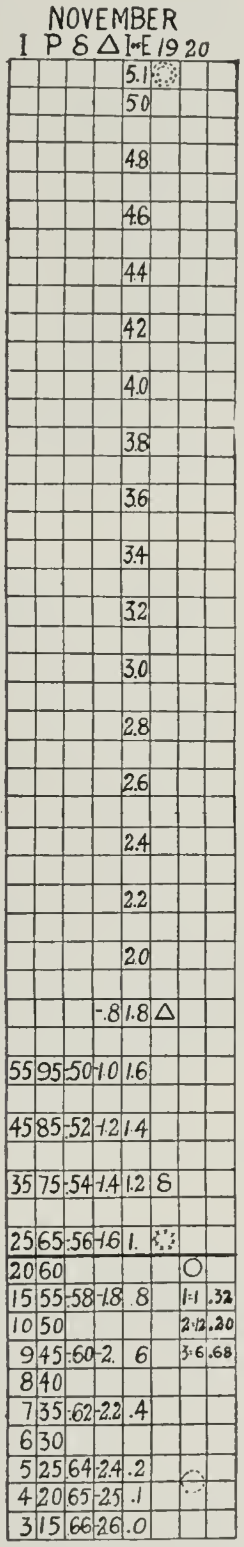

Fig. 6.—Index of elimination very low, but case pronounced operable since total output of indigocarmin for three hours exceeded 20 per cent. Prostatectomy and recovery (Albert M.). Circle of double broken lines = average normal index for indigo; circle of single broken lines = index of elimination in case (indigo); solid circle = indigo percentage elimination; circle of x's = phthalein percentage elimination; δ = cryoscopy of blood; △ = cryoscopy of urine.

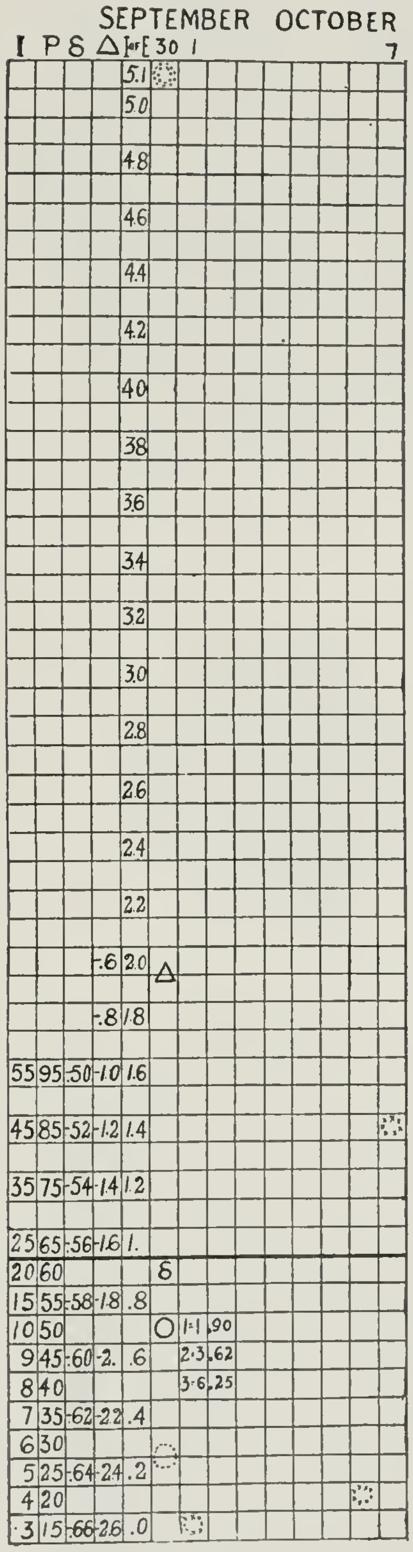

Fig. 7.—Index of elimination demonstrates insufficiency of kidneys and contra-indicates prostatectomy (Mr. A.). Circle of double broken lines = average normal index for indigo; circle of single broken lines = index of elimination in case (indigo); solid circle = indigo percentage elimination; circle of x's = phthalein percentage elimination; δ = cryoscopy of blood; △ = cryoscopy of urine.

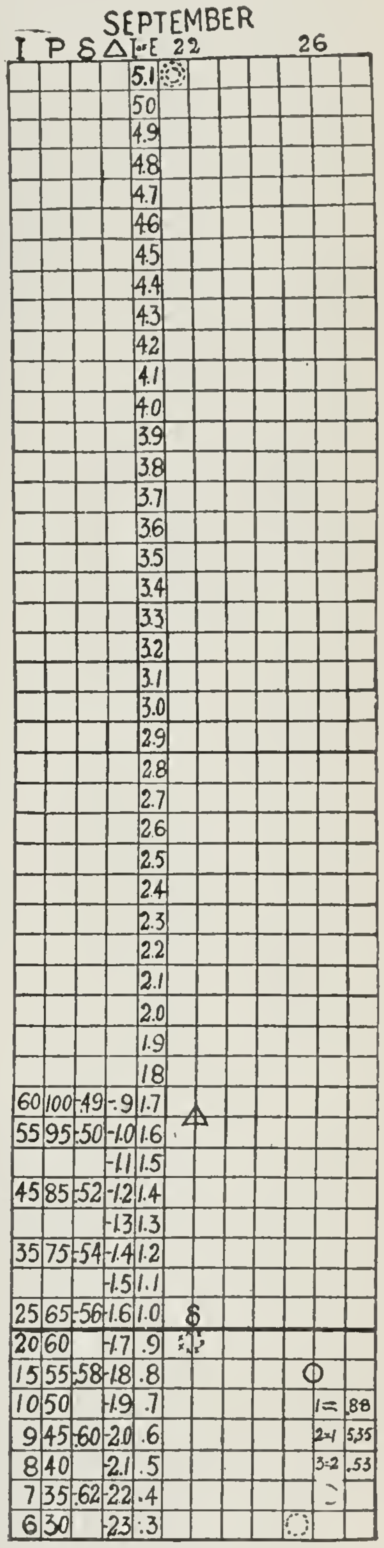

Fig. 8.—Illustrative of case of organic insufficiency in which index of elimination of indigocarmin contra-indicated prostatectomy (David S.). Death seventeen days after operation. Circle of double broken lines = average normal index for indigo; circle of single broken lines = index of elimination in case (indigo); solid circle = indigo percentage elimination; circle of x's = phthalein percentage elimination; δ = eryscopy of blood; △ = cryoscopy of urine.

ofttimes readily excised perineally. To me it has seemed and is the routine practice to decide each case for itself, whether the prostate is to be attacked perineally, suprapubically or perurethrally. A most important aid in determining this choice has been the cystoscope. By it the nature of the lobular hypertrophy, vesical complications as calculus, tumor, etc., and most important of all, the functional integrity of the kidneys are determined (Figs. 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20). As a result of this discrimination in a series of over thirty cases only 16.6 per cent. of the patients were operated on suprapubically. Four patients, as a result of careful organic investigation, particularly the renal function, were refused operation. Moreover, the series embraces three cases of carcinoma — one pronounced inoperable (Fig. 3), and the other two discovered during the histopathologic examination of the removed gland—and one case of sarcoma. A review of all operated cases, both perineally and suprapubically, excepting one patient who died of ether pneumonia on the ninth day after prostatectomy, shows a mortality of 3.3 per cent. I feel morally certain that the death-rate in this series would have reached at least 10 per cent. had not the four patients noted above been refused operation owing to their organic and renal insufficiency.

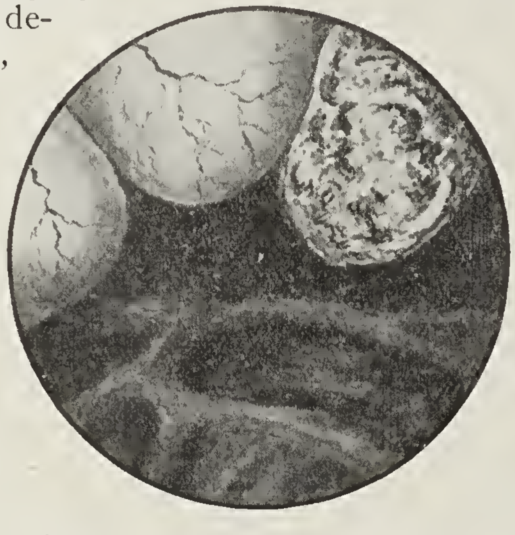
Fig. 9.—Ulcerative myxosarcoma of prostate.

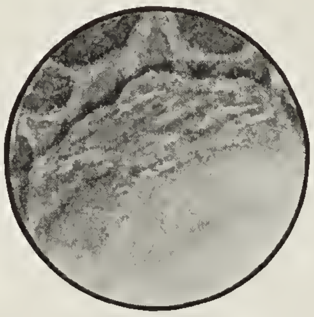
Fig. 10.—Hypertrophy of median lobe of prostate with beginning carcinomatous degeneration.

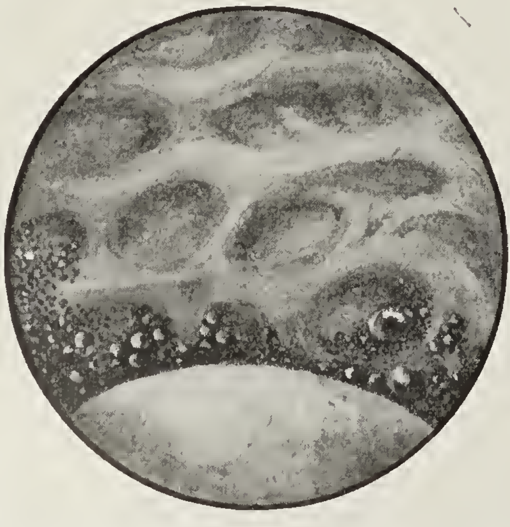
Fig. 11.—Prostatic enlargement complicated by vesical calculi.

It can be readily inferred from the statements above that, all things being equal, prostatectomy by the perineal route is the operation of preference. The technic employed follows as nearly as may be that advocated by Young, the essential difference being the incision as shown in Figure 21. In the employment of the suprapubic method, the technic of Freyer, with minor modifications, is utilized.

Although nitrous oxid is the preferable anesthetic in desperate cases, the gas-oxygen-ether sequence may be routinely and safely employed, particularly if due preliminary urinary drainage has been secured and properly maintained until the susceptibility of derangement of cardiovascular and nervous mechanisms incident to the *vis a tergo* intrarenal pressure has passed.

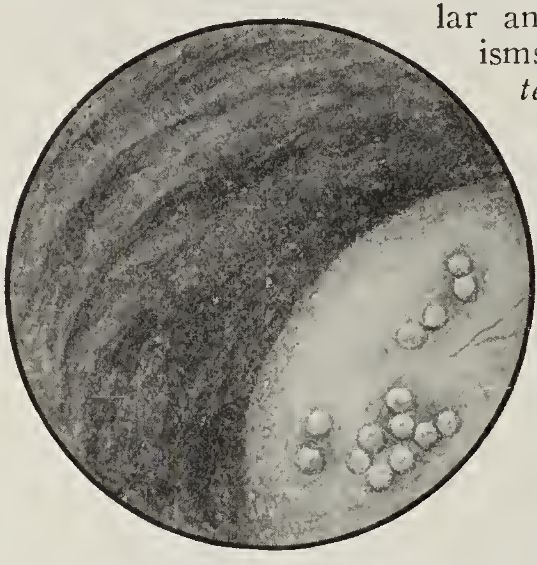
Fig. 12.—Hypertrophy of median lobe with cystitis cystica of overlying mucosa.

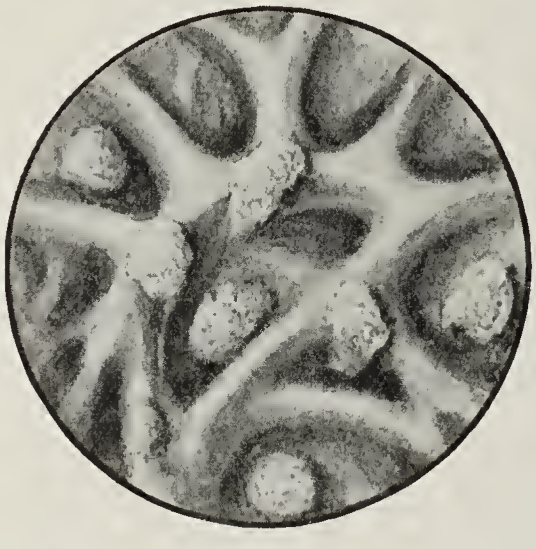
Fig. 13.—Trabecular hypertrophy of bladder and multiple papillomas complicating prostatic hypertrophy.

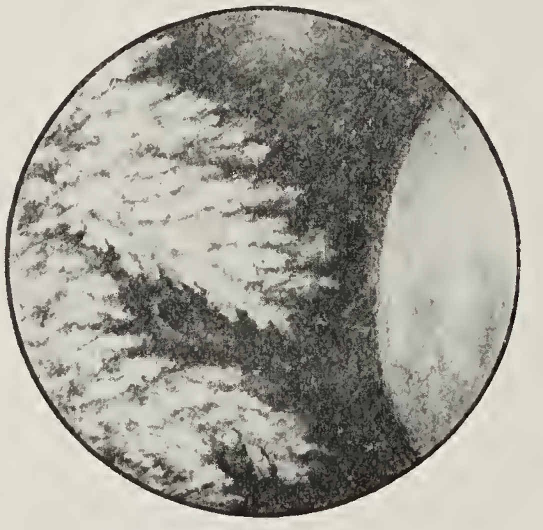
Fig. 14.—Papilloma of bladder complicating enlargement of the prostate.

The postoperative treatment of these old men is little less important than the preliminary preparation. The cardinal factors responsible for speedy convalescence and a minimum mortality-rate are, first, hydrotherapy (routine hypodermoclysis and continuous vesical irrigation), and second, position (sitting posture in and the next day out of bed at the earliest opportunity).

## CONCLUSIONS

1. The most appropriate method of prostatectomy in a given case depends on the pathologic condition present, rather than on the normal anatomic relationship of the prostate. This pathologic condition is of greater consideration than the statistical low mortality-rate of either the perineal or suprapubic method, and more discrimination in this respect offers a means of shaving even the present low percentage. The cystoscope is a most important aid in the determination of the avenue of approach in the particular case.

2. Although the renal function is the paramount consideration in determining the operability of a case, consideration of other organic conditions must never be slighted.

3. Indigocarmin is superseded by no other kidney test in the estimation of the renal function.

4. Apparently of more dependence than merely the onset and quantity of excretion of indigocarmin is the *index of elimination,* described by me.

5. A prostatectomy mortality of 3.3 per cent. is attributed largely to cystoscopic aid in determining the method of operation, and also to the *index of elimination* of indigocarmin in discrimination as to the operability of cases.

116 South Nineteenth Street.

## ABSTRACT OF DISCUSSION

Dr. Hugh H. Young, Baltimore: I have never tried this method that Dr. Thomas has brought forward. It is certainly ingenious. Will Dr. Thomas say whether there is a similar index in phthalein? Do they stand in about the same proportion? I think we are all rapidly coming to the view that there is no one method; we do not think that phthalein is the only thing to use. Certainly a study of the blood, in a good many ways, is important, and we also must back up our laboratory findings with the clinical. A certain percentage of output in the first or second hour is not dependable. In a great many cases a man will never reach the stage at which his functional output would be considered good. In those cases the important thing is whether the output is stable so that the patients will be in a condition to stand operation. There are patients who go through an operation although their output is poor. Perhaps Dr. Thomas' suggestion as to the index may be of value, and I would like to see it worked out for all the other functional tests. I want to congratulate him on his low mortality. There is no doubt that the functional tests and preliminary treatment are important factors in lowering mortality. I feel that it is unnecessary in the large majority of cases to use a suprapubic drain. I employ that very seldom. I almost always use either a retained catheter or intermittent catheterization.

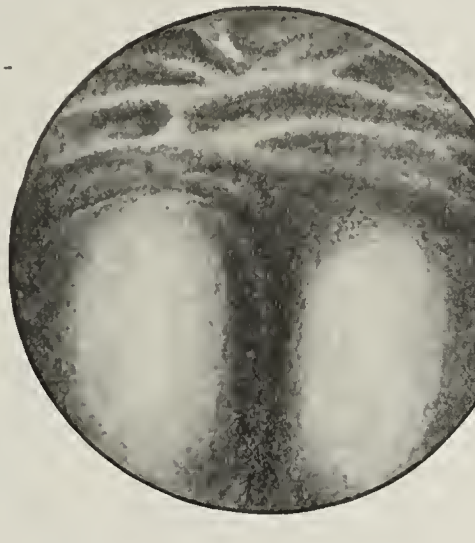
Fig. 15.—Preponderant hypertrophy of lateral lobes of prostate.

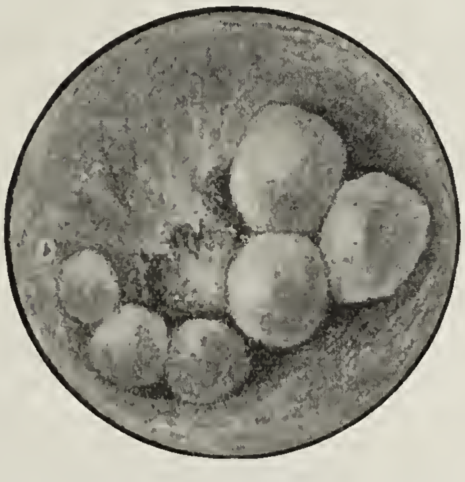
Fig. 16.—Vesical calculi and ulcerative cystitis complicating prostatic enlargement.

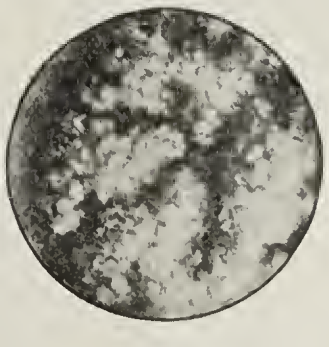
Fig. 17.—Carcinoma of bladder complicating prostatic hypertrophy.

Dr. Edward Martin, Philadelphia: I have seen Dr. Thomas' accurate work and I know its thoroughness. He is a lover of indigocarmin, is jealous of the claims of all other tests, and, as a result, applies his favorite test with more discriminating judgment than does any other man in this country. Certainly, in his hands, it is efficient and reliable. For the untrained the sulphonephthalein would seem more available.

Dr. Martin Krotoszyner, San Francisco: I am much interested in Dr. Thomas' statement as regards the choice between the suprapubic and the perineal route on the basis of cystoscopic findings, and I hope that Dr. Thomas will dilate on this point in closing the discussion.

Dr. Hugh Cabot, Boston: The longer I use tests of various kinds the more clear it becomes to me that dependence on one test is unsound. I have not come to the same conclusion as Dr. Thomas with regard to indigocarmin. I regard it as markedly inferior to phthalein. The essential thing is stability of kidney function, rather than a high or low function, which influences our opinion. We have all seen patients with extremely low function, tested in various ways, but without evidence of nitrogen retention, who stood operation well because the function was still stable. We have also seen patients with high function which, under various strains of exercise, changes of diet and alterations in the quantity of water, would vary markedly. Those patients we regard as extremely poor risks, and unless their kidney function can be made stable they are going to cause us to let the other fellow operate. I believe that some method of studying the nitrogen retention of the blood is essential to the most narrow decision in these cases. There are cases in which in no other way can one determine impending uremia. We have been depending largely on the Folin method of determining the nitrogen content of the blood. The French are using a pretty complicated method, but they all aim in the same direction—the evidence of the ability of the kidney to get rid of nitrogenous products. None, I think, of the color tests or the test with phloridzin attains that extremely important point. I am inclined to classify phloridzin, indigocarmin and phthalein in the same general category, regarding phthalein as the most efficient and the most easily managed, but all of them necessarily controlled by a study of nitrogen retention in the more difficult cases.

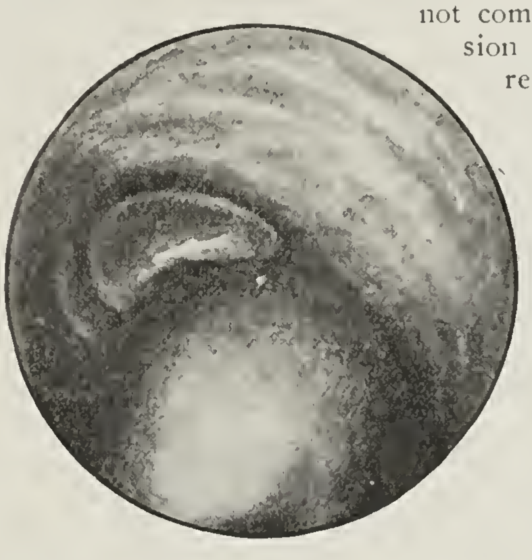
Fig. 18.—Vesical calculi and preponderant hypertrophy of median lobe of prostate.

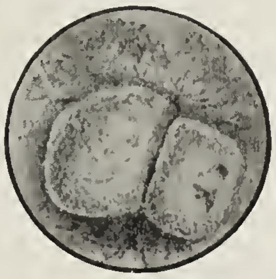
Fig. 19. — Vesical calculi complicating prostatic hypertrophy.

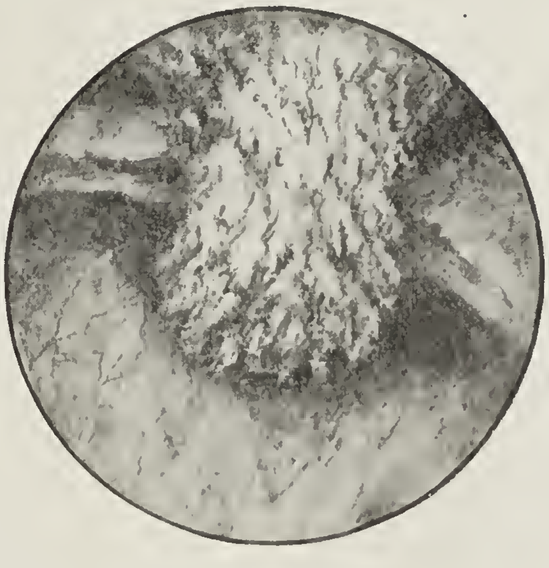
Fig. 20.—Papilloma of vesical neck complicating prostatic enlargement.

Dr. F. W. Braasch, Rochester, Minn.: I am not very familiar with the use of indigocarmin and therefore do not know its comparative value. I do not believe, however, that any functional test can give us data which will determine whether or not to operate. It has been my experience that subjective symptoms and clinical data following preliminary treatment are determining factors.

Dr. B. A. Thomas, Philadelphia: That it is not the large output that counts is exactly my contention. That is the very reason, as I said, that the total output for the first and second hours is not comparable in utility, from my experience in over three hundred cases, to the index of elimination or the ratio of the total output of the third and first hours. Concerning the index of elimination for phenolsulphonephthalein about which Dr. Young asked, there is no doubt but that the same method can be applied to any substance. It has, however, been my experience that the index thus determined has not been so reliable as when applied to indigocarmin. I have long thought that there may be the same objection to phthalein as to phloridzin, that is, the test may be too delicate; certainly the results in my experience are not so uniform and apparently not so reliable. Respecting the comparable value of indigo and phthalein, I would like to direct your attention to the chart of the patient with inoperable carcinoma of the prostate. You will see that phathalein indicated progressive improvement in the state of the patient's health. Indigocarmin total output showed that he was barely holding his own, while the index of elimination of indigo showed that the patient all the time was gradually sinking farther down into the negative phase. I could show you a number of other instances in which indigocarmin has apparently served as a much more reliable guide than phthalein. Brevity of time precluded the possibility of entering on the advantages of the cystoscope in determining the best operative procedure to be adopted in cases of prostatic hypertrophy. There are few patients who cannot be satisfactorily cystoscoped, and the revelations it gives are instructive and important. If you have a patient with a preponderance of the middle lobe, and particularly if associated with a large calculus or a vesical tumor, it is folly to attempt to remove that prostate perineally. On the other hand, if it is small and hard, with no relative preponderance of middle-lobe enlargement, it is perhaps wise, in view of the lesser mortality, to attack it perineally.

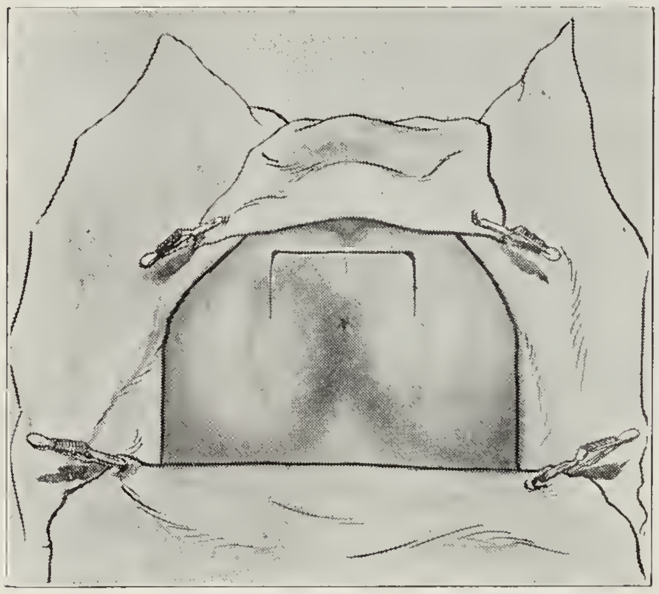

Fig. 21.—Author's incision.

Speaking of mortality, in explanation of the low mortality of 3.3 per cent. which I have had, I attribute this perhaps to good fortune, but also to certain other factors and precautions. For instance, in the last year I have refused to operate on four patients on account of the revelations by indigocarmin, and I am convinced that had I operated in those cases my mortality would have been 10 or 15 per cent. at least.

Finally, I believe that this index of elimination may give a better idea of the stability of the renal function than mere quantitative determination for the first two hours of indigocarmin or phenolsulphonephthalein, but in my experience it has been applied with the best results to indigocarmin.

# THE RELIEF OF STERILITY BY MEANS OF PERMANENT EPIDIDYMOSTOMY

## WITH THE FORMATION OF AN ARTIFICIAL SAC FOR THE STORAGE OF THE SPERM *

V. D. LESPINASSE, M.D.
CHICAGO

The types of sterility suitable for permanent epididymostomy are all cases of obstruction of the vas above the internal abdominal ring, and almost all cases of obstruction of the ejaculatory ducts. This work represents seventy-nine operations.

The relief of male sterility attracted little attention until 1901, 1902 and 1903, when Martin,[1] Scaduto[2] and Bogoljuboff[3] published their works on anastomosis of the vas to the epididymis, and the rete testis to the vas. These operations give excellent results in proper cases, but the statistical frequency of cases of sterility suitable for them is about one in three, or 33 per cent. They depend absolutely on the patency of the vas deferens. If the vas, or ejaculatory duct, is stenosed they fail.

To try to relieve the cases with a stenosed vas deferens, I conceived the following technic: A sac was made communicating with the epididymal tube lumen into which the sperm could be discharged and hence accumulate, so that the individual would always have from 2 to 10 c.c. of sperm available at all times. Two points came up: First, Where, or rather what portion of the epididymal tube is best suited to discharge into this sac? The head of the epididymis was selected as the most available portion as it is practically always open. It has the disadvantage, however, of having the smallest lumen of any portion of the epididymis. Second, How and of what shall the sac be composed? An ideal sac must possess the following characteristics: Material for its construction must always be available. It must be non-absorptive. It must not secrete any substance that is harmful to the sperm. As material for the sac, I have tried peritoneum, bladder mucosa, skin and rubber sheeting, and have under way experiments using vein silver foil and celloidin.

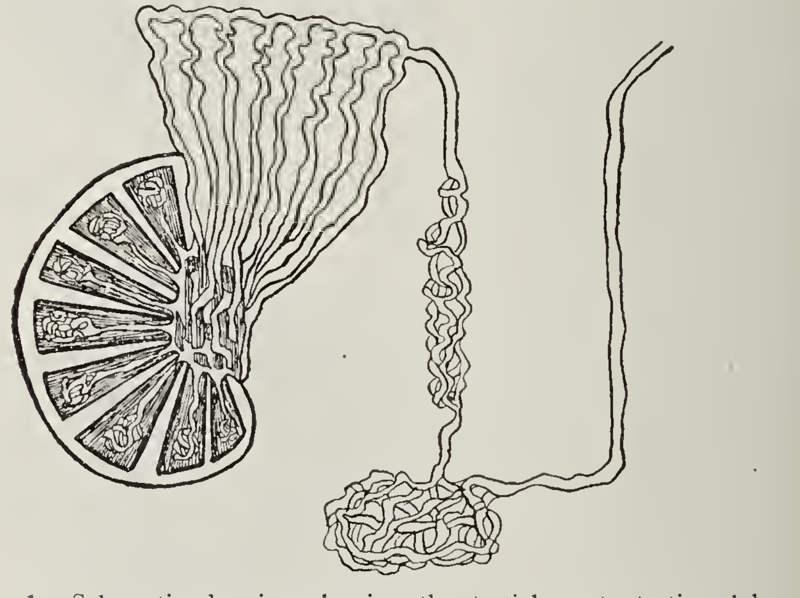

Fig. 1.—Schematic drawing showing the testicle, rete testis, globus major, body of the epididymis, globus minor and the vas deferens.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Martin: Univ. of Penn. Med. Bull., 1902, p. 388; ibid., 1903, xv, 2; Therap. Gaz., Dec. 15, 1909, p. 837.

[2] Scaduto: Ann. d. mal. d. org. génito-urin., 1901, xix, 257.

[3] Bogoljuboff: Arch. f. klin. Chir., 1903, lxx, 648.

When this work was first conceived, I considered that the technic would be very simple and could be carried out with great ease. The first difficulty encountered was the adherence of the parietal layer of the tunica vaginalis to the cut surface of the epididymis. I then considered all the methods of preventing peritoneal adhesions, but before these were carried out Post's[4] article on peritoneal adhesions came out, and he showed conclusively that all the so-called standard methods were practical failures. He advanced a new method, namely, the use of sodium citrate 2 per cent. in 3 per cent. salt solution. This was tried and failed. In the peritoneal cavity there is considerable movement between the visceral and parietal peritoneal surfaces. In this work on the epididymis there is practically no movement, which fact may explain our failures.

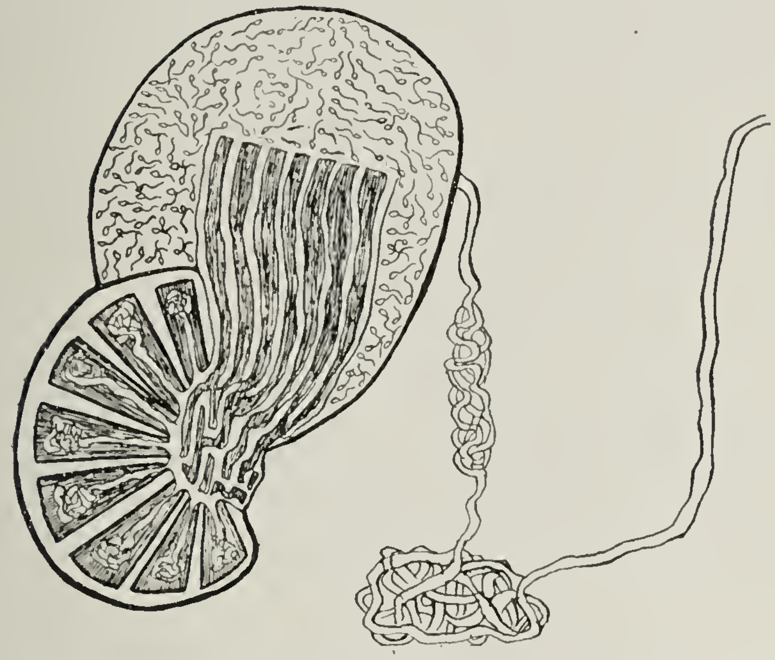

Fig. 2.—Schematic drawing, same as Figure 1, except that it shows the tubule of the globus major cut off and the sac made around them filled with spermatozoa.

I thought that these adhesions might be prevented by treating the tissues as we do the intima of blood-vessels, but these methods failed. The reason for this failure, in my opinion, is the slight hemorrhage that comes from the cut epididymal tubules and the absence of motion between the epididymis and the parietal layer of the sac. To check this hemorrhage, or at least minimize it as much as possible, I used epinephrin. Then it was thought that we might operate without producing any hemorrhage from the epididymis at all by the use of the following technic: A human hair threaded on a fine blood-vessel needle was passed into the lumen of the epididymal tubules; it was run along the lumen about a millimeter or so, then the wall of the tube was pierced by the needle and the hair brought outside the tubule; the two ends of the hair were then tied, so producing a slightly elastic band which would gradually cut through the tissues. On the side of the sac, to obviate adhesions to the cut surface of the epididymis, I desided to try some non-absorptive epithelial surface such as skin, bladder mucosa, or a piece of vein or artery. Only two of these tissues are available from a practical point of view, namely, skin and a section of vein. Skin was used with considerable success. Then, after becoming acquainted with the work of Delbet[5] on the use of rubber, it was thought that the sac might be made of rubber.

This was carried out in three ways:

First, making the sac of tunica vaginalis and then simply covering the cut surface of the epididymis and the continguous surfaces of the testicle and epididymis with a piece of thin rubber sheeting.

Second, by making the sac entirely of this sheet rubber and sewing it to the reflected capsule of the epididymis.

Third, by removing the tunica vaginalis completely and placing the entire testicle and epididymis in a rubber bag and sewing this bag to the spermatic cord.

### TECHNIC

The tunica vaginalis is exposed as for an ordinary operation for hydrocele. The parietal layer of the tunica vaginalis is then cut, thus exposing the testicle and the epididymis. Epinephrin is now injected beneath the capsule of the epididymis, commencing at the top of the globus major and continuing down to the junction of the globus major with the body of the epididymis. An incision is made in the center of the epididymis commencing at the top of the globus major and continuing down to the junction of the globus major with the body of the epididymis. The epididymal capsule is now dissected off, thus exposing the epididymal tubules. The tops of these tubules are now cut off or hair threaded through them. The sac is made as follows: The rubber sheeting or tunica vaginalis is sewed to the reflected capsule of the epididymis in such a manner as to form a closed sac. The testicle is now replaced in the scrotum and suitable dressings applied.

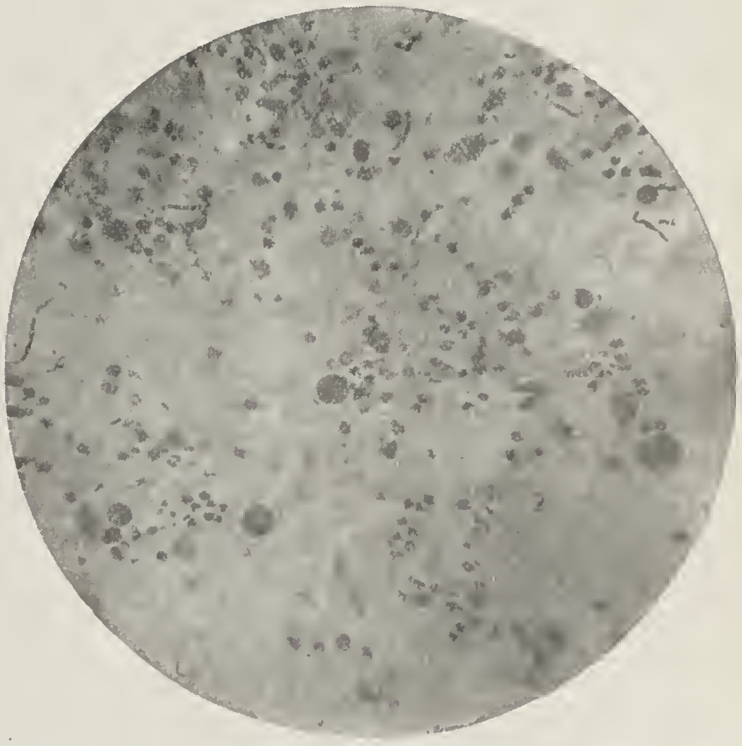

Fig. 3.—A photomicrograph of the fluid aspirated from the sac. This shows numerous spermatozoa.

### CONCLUSIONS

With the above-described technic we can produce a sac into which the sperm will discharge and continue to live. This sac can be tapped whenever sperm are desired for impregnating purposes. This operation will relieve all cases of male sterility in which there is a functionating testicle.

I am under obligation for assistance to Drs. B. Newton Novy, Eugene J. O'Neil, John A. Ritze and S. Eisenstaedt, of the Laboratory for Experimental Surgery of Northwestern University Medical School.

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[4] Post: Citrate Solution as a Preventive of Peritoneal Adhesions, Ann. Surg., January, 1914.

[5] Delbet, P.: Bull. de l'Acad. de méd., March 10, 1914, p. 380; Paris Letter, The Journal A. M. A., April 4, 1914, p. 1106.

7 West Madison Street.

## ABSTRACT OF DISCUSSION

**Dr. Henry L. Sanford**, Cleveland, Ohio: Has Dr. Lespinasse had any practical results? Has he cured any of these patients?

**Dr. W. M. Spitzer**, Denver: Dr. Lespinasse's attempt is something that ought to have been undertaken long ago. If Dr. Lespinasse has had results the experiment is going to be well worth trying. He says that the spermatozoa are motile. Are they motile after being mixed with prostatic fluid, or just at the time when he drew them from the sac? Has he attempted impregnation with this fluid, and what was the result?

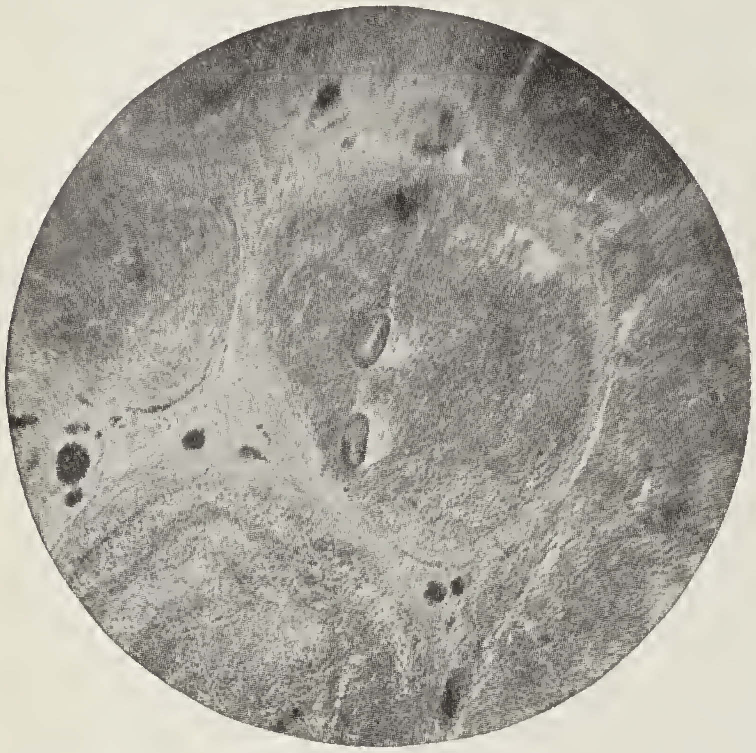

Fig. 4.—The hair in the epididymal tubule lumen. The two oval bodies are the cross-section of the hair.

**Dr. Herman L. Kretschmer**, Chicago: Will Dr. Lespinasse say what becomes of the rubber sac? Does it stay or slough out, or is it necessary to remove it?

**Dr. Edward Martin**, Philadelphia: These types of sterility come to us all, and we have not yet solved the question. I think everyone who has worked along this line has endeavored during operation to extract living spermatozoa, and usually the technic is their direct artificial injection into the uterus. There has as yet never been one single success. Lespinasse's suggestion seems a good one. In laboratory work we find that silver is tolerated better than rubber. A silver tube or capsule will remain and cause less irritation than rubber. It might be that a silver tube would be more likely to accomplish permanent drainage. This is suggested by the fact that in the operation of vaso-epididymostomy when we used silk on account of the frequency with which silver broke, our successful result fell at once, and when we went back to the silver we again got about 50 per cent. of successes. Within the last year I have reoperated in three cases, two of my own and one in another city. I used silver in these three cases. One is too recent to report on, but two of these patients reoperated on with silver have been successful, and in one case a pregnancy occurred afterward. The woman had a miscarriage, but the spermatozoa persisted in quantity.

**Dr. V. D. Lespinasse**, Chicago: There has been absolutely no practical application made of this procedure. I have been held up on it. When I first thought of this work, I thought it would be technically very easy to make this sac and to carry out the procedure. I found there were a good many points to be considered. This work represents seventy-two operations and twenty-three technics. The making of the sac is the hard part. I have three patients now who are waiting and anxious. One man calls me up once every month and wants to know how the dogs are. As soon as I get back home I am going to get some practical experience on him. It is an old idea that the spermatozoa from the epididymis are not motile. In my own experience they are practically all motile without admixture of prostatic fluid. If the operation is done aseptically, the rubber seems to heal in place nicely. If there is the slightest infection, the rubber will slough out. The results of artificial insemination have been excellent in the hands of such men as Bozzi and Iwanoff, who were willing to take the time and trouble to do this work in the proper manner. Bozzi obtained nine impregnations out of eleven attempts, the Iwanoff impregnated animals practically every time with sperms taken from the head of the epididymis.

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# THE DIRECT METHOD OF INTRALARYNGEAL OPERATION*

## CHEVALIER JACKSON, M.D.

PITTSBURGH

In presenting the subject of the direct method of intralaryngeal operation, I do not wish to be considered as championing any particular method. Every laryngologist should be familiar with every method and select for operation in the particular case the method which suits best his personal equation for that case.

The indirect, or mirror, method can be used only in adults. Its greatest disadvantage is that in the guidance of the forceps it requires a movement backward when the image shows that a movement is needed forward, and for a diagonal motion it is necessary to combine a reversed anteroposterior movement with a true lateral movement. In the direct method, all movements are under the control of the eye and are made directly. This does not mean, however, that practice is not required. Many difficulties are to be overcome by continual practice before safe and accu-

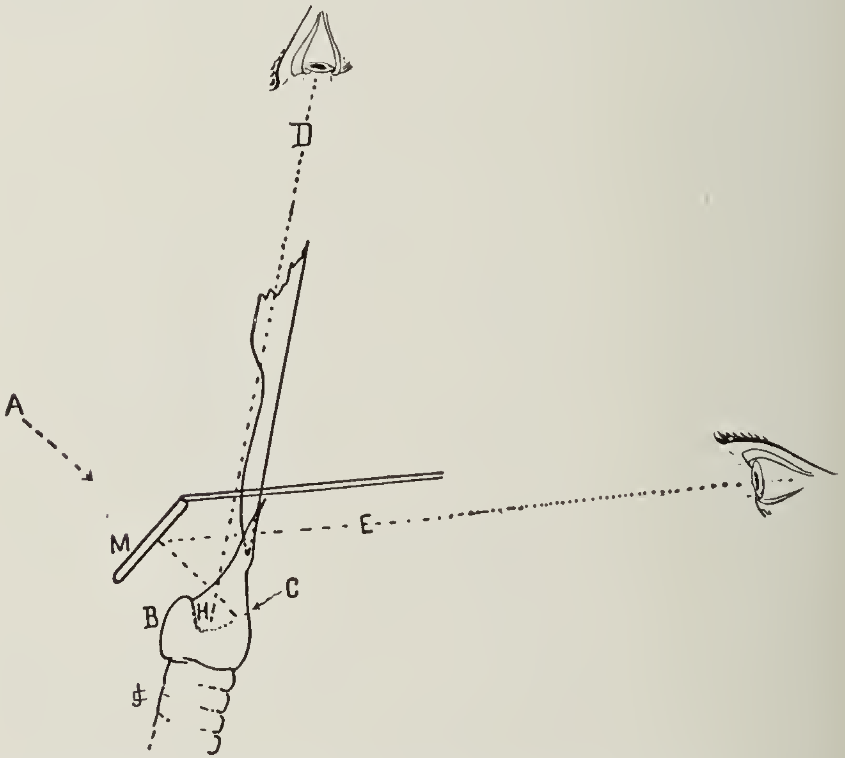

Fig. 1.—Schema illustrating the difference in the point of view by the direct and the indirect method. The observer's visual axis at *E*, looking into the mirror, *M*, gets an image as if he were looking from a point of the patient's head, *A*.

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

rate operation is possible. To begin with, the gaging of depth by one eye only presents much the same problem as in indirect operating. All general considerations and the control and cooperation of the patient, as considered by my associate, Dr. Curtis, are, of course, equally applicable to the direct method. One point that seems not to be so well understood as it should be is the fact that the direct method affords a different point of view from that obtainable by the indirect or mirror method, which will be readily understood by reference to the schema, Figure 1. Moreover, the larynx being more or less drawn on, the upper orifice is elongated, the aryepiglottic folds are rendered more prominent, the epiglottis is invisible, being hidden by the tube, and the larynx is seen at its true depth instead of foreshortened as with the mirror.

In operations for any form of stenosis of the larynx in children, such as papillomas, subglottic edema, post-tracheotomic and postintubational stenosis, etc., the safety, promptness and accuracy with which intralaryngeal operation can be performed places direct laryngoscopy on a plane of advantage equaled only by its usefulness for diagnosis in these conditions. Great care must be taken in all endolaryngeal operations, direct or indirect, to impair laryngeal motility as little as possible, because as I have demonstrated, it is the tugging of the arytenoid on the cicatricial tissue that is the most important factor in the development of an adventitious vocal band.

*Anesthesia.*—For adults, I prefer local anesthesia with an 8 per cent. cocain solution supplemented by a few touches with a minute quantity of 20 per cent. solution to the interior of the larynx. In a few cases, for operations of extreme nicety, such as the plastic formation of adventitious vocal cords, and for the removal of benign growths which are obliterated by the ischemia produced by cocain, a general anesthetic may be necessary in adults. In children, the use of a general anesthetic in any case of stenotic laryngeal disease is extremely dangerous, because respiratory arrest is practically certain to follow as soon as the patient is sufficiently under the anesthetic to lose the aid of the voluntary accessory muscles of respiration. Tracheotomy, or what is very much better, the prompt insertion of a bronchoscope with artificial respiration and bronchoscopic oxygen insufflation, will save the patient's life; but in view of the hazardous nature of general anesthesia in this particular class of cases, which is out of proportion to the dangers of general anesthesia in the usual run of cases, I have always urged strongly in favor of no anesthesia. Cocain is extremely dangerous in children and as I have abundantly demonstrated, endolaryngeal operation is not painful and is so quickly done that anesthesia seems a needless risk. Particularly dangerous is the combination of chloroform and morphin, which are synergistic in the paralysis of respiration.

*Position of the Patient.*—For adults, under local anesthesia, the sitting position is preferable. Both patient and operator sit on stools, the patient being slightly lower than the operator. Sitting behind the patient is an assistant who supports the head preventing its rotation and preventing the patient from throwing the head backward (Fig. 3). If left to himself, the patient will naturally throw his head backward into the position of a man about to be shaved in a barber chair, which makes exposure of the larynx extremely difficult. An extreme forward position of the head and neck without excessive extension is preferable. The recumbent position is preferable in children. In operating on children without anesthesia, I have one nurse hold the knees of the patient down on the table; another nurse holds down both wrists, and the first assistant holds the patient's head high in the Boyce position of moderate extension. The degree of extension is less important than the very high position of the head (Fig. 4).

*Instruments.*—The operator should try all the different forms of instruments and illumination in order that he may take advantage of the particular instrument that best suits him in the particular case. I prefer the distally illuminated laryngoscope. The choice of instrument, however, is of less importance than that the operator shall have had adequate practice with it. For general operative purposes, I have found nothing superior to the tissue forceps shown in Figure 2, which have the great advantage of biting into the lateral wall with much greater facility than any form of sliding-punch forceps; lateral pressure cannot be made on a punch forceps, whereas the jaw of the tissue forceps will drag it laterally into the bite. I use duplicate forceps so that a fresh pair is handed to me immediately without delay for disengaging the extracted growth from the "basket" of the first forceps used.

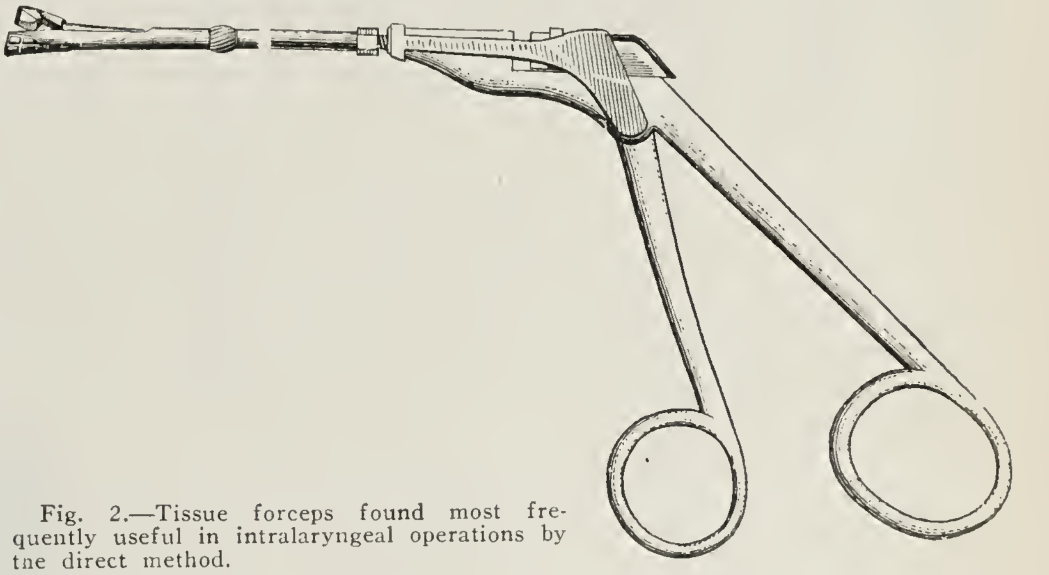

Fig. 2.—Tissue forceps found most frequently useful in intralaryngeal operations by the direct method.

*Asepsis.*—While we cannot sterilize the field, the patient's mouth should be thoroughly cleansed with a tooth-brush and rinsed with alcohol in 20 per cent. solution, which is the best non-toxic antiseptic. The patient's head is covered with a sterile cap having an opening opposite the mouth and the operator and all his assistants go through the regular operating room sterilizing technic. The operator should wear a mask for the protection of himself as well as the patient and should provide himself with protective glasses, or his regular glasses, in duplicate, to facilitate cleansing and replacement when spattered.

*Technic.*—To operate efficiently with forceps requires the coordinate movement of the left hand holding the laryngoscope, leaving the right hand free to use the forceps. In order to acquire this knack of coordination, it is necessary always to practice exposing the larynx, even when done only for diagnosis, with the left hand, never with the right. If this be done, not only is coordinate use of the laryngoscope and forceps in operating acquired, but the left hand develops the knack (rather than the strength) required for prolonged laryngeal exposure, should prolonged exposure ever be required.

*Fist Stage.*—The patient being in position shown in Figure 3, the operator, holding the laryngoscope in his left hand, while protecting the patient's lip by elevating it with his right index-finger, inserts the spatular extremity and depresses the tongue until the tip of the epiglottis comes into view (see schema, Fig. 5). Absolutely no effort should be made to see the larynx until the first stage of exposure and identification of the epiglottis is complete.

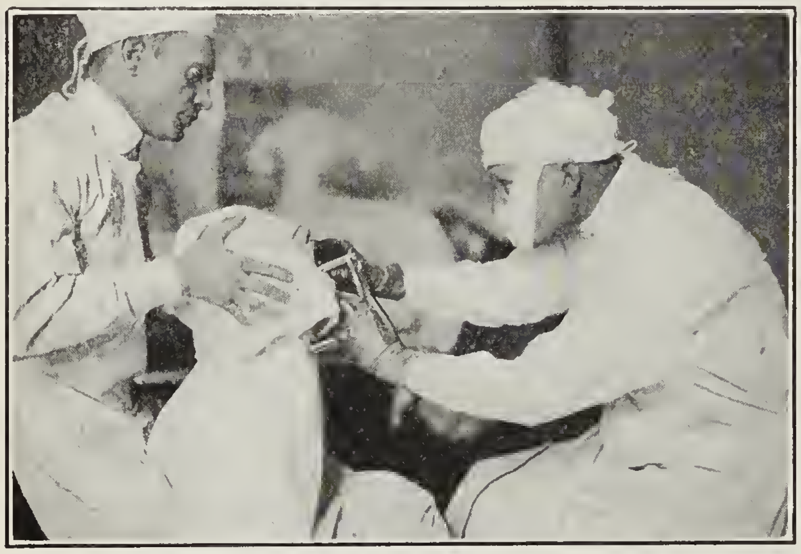

Fig. 3.—Position of adult patient and operator in intralaryngeal operation, first stage. After the epiglottis is exposed and passed, the patient's head is dragged downward and forward toward the operator.

*Second Stage.*—The spatular end is inserted slightly deeper, posterior to the epiglottis, being careful to keep the tube in the middle line, over the dorsum of the tongue. If the laryngoscope is inserted too deeply, the spatular end will get behind the arytenoid and the operator will be looking down toward the esophagus. In this event, it is necessary to start over again at the first stage.

*Third Stage.*—Exposure of the larynx consists in a downward and forward traction with the tip of the laryngoscope as shown by the dart in Figure 5. Under no circumstances should counterpressure be made on the upper teeth as a fulcrum. The patient's entire head must be pulled downward and forward with the laryngoscope.

*Direct Laryngoscopy by the Lateral Route.*—In the foregoing description, it is directed that the instrument be inserted over the dorsum of the tongue and kept in the middle line. This is essential until the operator has acquired the knack and is thoroughly familiar with all the landmarks. Considerable strength of wrist is necessary to cause displacement forward of the tissues attached to the hyoid bone, especially in stout and muscular subjects with short necks. In such patients it may not be possible to see the anterior commissure by that method. For all these reasons, I prefer the lateral route, passing the laryngoscope down at one or the other side of the tongue which rolls out to the opposite side and obviates the necessity of great displacement pressure. The side to be selected should be the one opposite to the involved laryngeal wall. By this lateral route, the anterior commissure can be exposed in any patient who can open his mouth, provided he be not allowed to throw his head backward, and provided the proper direction of traction downward and forward is maintained.

*Removal of Growths from the Ventricle.*—Growths whose origin is concealed in the ventricle are best exposed by the method which will be readily understood by reference to the schema, Figure 6.

*Extubal Method.*—For very large growths, the laryngoscope is used only to look through, the forceps being passed at the side of the laryngoscope and the closure of the jaws being under ocular control just beyond the tube mouth (Fig. 7).

*Malignant Growths.*—Following the initiative of Sir Felix Semon and Mr. Butlin, I have had such a high percentage of successes from thyrotomy in properly selected cases that I believe that to attempt endolaryngeal extirpation of a malignant growth would be a step backward. Therefore, endolaryngeal operation in malignancy is limited to the taking of a specimen for biopsy. For this purpose, the precision with which any desired portion of the neoplasm may be removed, along with sufficient normal tissue to give the histologist the best chance, has given to the laboratory report an approximate infallibility never before approached with the inadequate specimens usually obtained by indirect removal of a specimen.

*Benign Growths.*—In the removal of benign growths, the question arises whether it is better to slice the growth off even with the surface, or to bite into the apparently normal basal tissue. The first factor to be considered is the avoidance of any injury to the laryngeal motive mechanism. The arytenoids are particularly to be avoided and the muscular structures should be injured as little as possible. In case of growth involving the edge of the cord, it may be well to submit the matter to the patient for decision (Sanders), explaining to him that if the growths are sliced off even with the surface the chances of recurrence are greater than if removed more deeply, but deeper removal will temporarily impair the voice. Many patients will prefer a superficial removal, deferring more radical extirpation until recurrence takes place. This is especially true of professional voice users. Other patients dread the word operation and will choose radical removal as the best chance for avoiding a second operation.

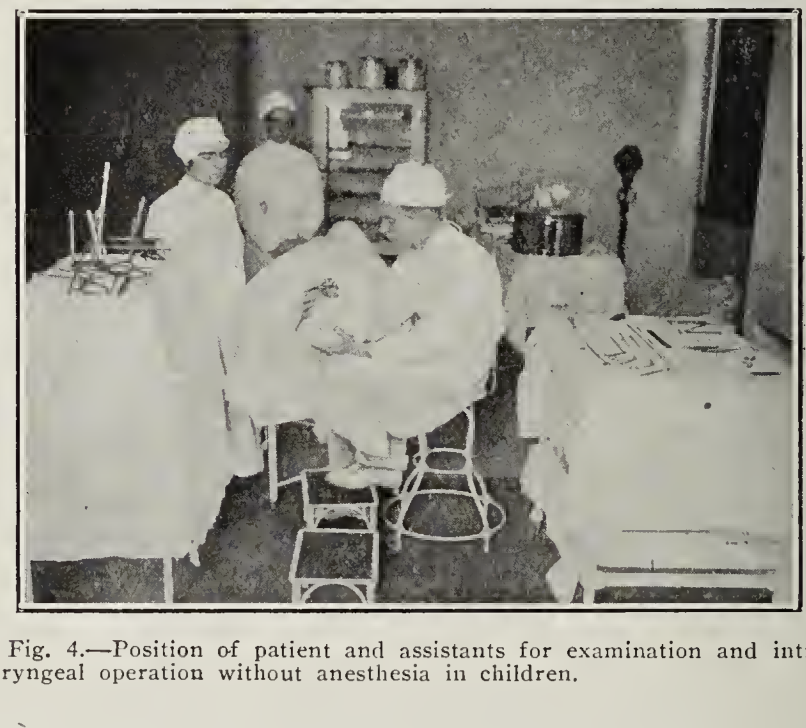

Fig. 4.—Position of patient and assistants for examination and intralaryngeal operation without anesthesia in children.

*Papillomas.*—Papillomas in children are by far the most common of all laryngeal growths. Thomas J. Harris[1] has had excellent results from the use of radium applied by the direct method.

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[1] Harris, Thomas J.: Proc. Internat. Med. Cong., Sect. 15, London. 1913.

Harmon Smith[2] has had excellent results from fulguration.

The method which has yielded the best results in my clinic is removal with the forceps through the direct laryngoscope, repeated as frequently as necessary to nip off all recurrences in the bud. A little of the basal, apparently normal, mucosa is removed along with the growth. The superficially cicatricial mucosa which eventually results is an exceedingly unfavorable soil for the growth of papillomas, and recurrences cease after a number of removals. Occasionally a single removal is successful, a number of cases being known to be free from recurrence at the end of from one to eight years. In the majority of cases, however, many removals are necessary; but as they are done without any anesthesia, general or local, frequent operation at close intervals is unobjectionable. After a few sittings, most of the children do not resist or even cry. In the interval between operations, the local application of alcohol, as recommended by Delavan many years ago, hastens the hardening process. An alcoholic solution of salicylic acid, used by E. L. Jones, is also an excellent application.

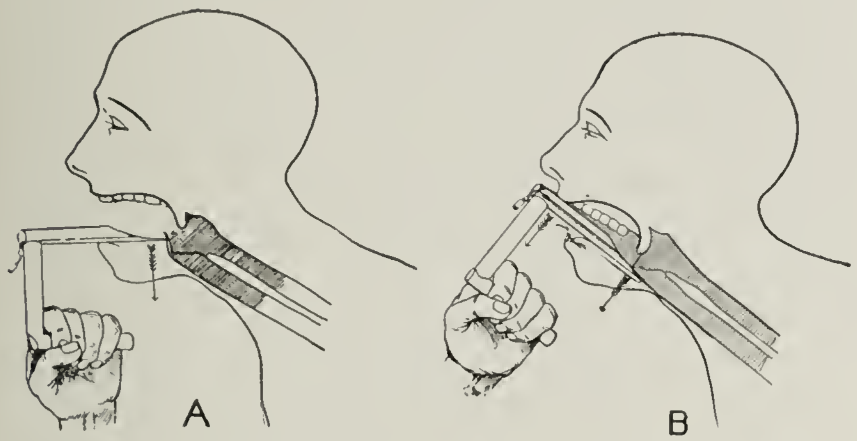

Fig. 5.—Schema showing the first and third stages of laryngeal exposure. At *A*, the tongue is seen depressed as indicated by the dart, causing the epiglottis to project into the line of vision. The second stage, not shown here, consists in a deeper insertion of the tube. At *B* is shown the third stage, the drawing forward of the epiglottis and all the tissues attached to the hyoid bone with the tip of the spatular end. The left hand is always used for holding the laryngoscope.

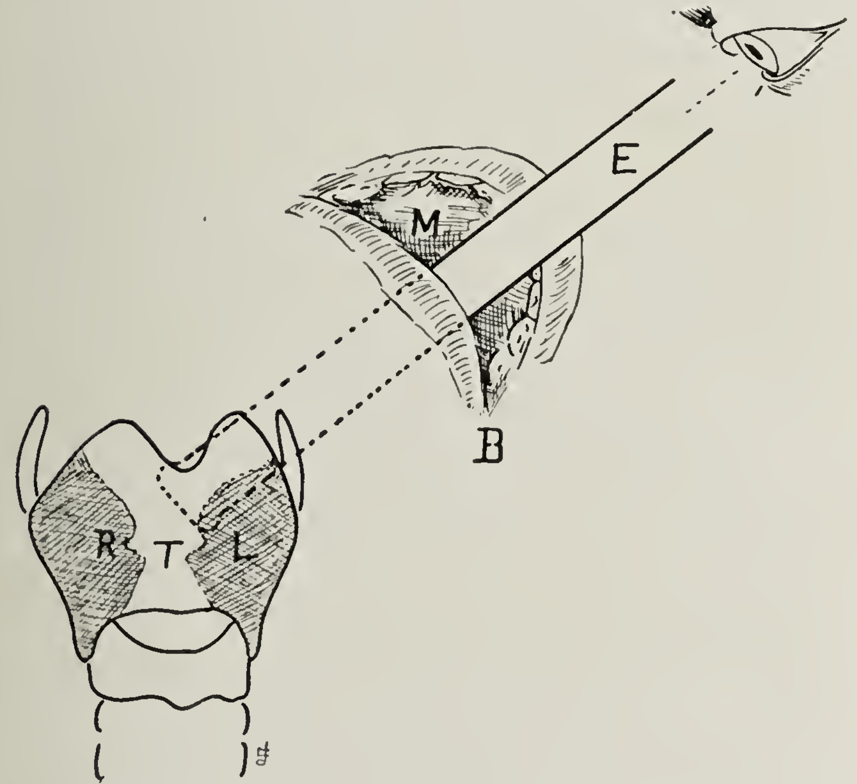

Fig. 6.—Schematic illustration of manner of exposing a tumor located in the laryngeal ventricle. The larynx is fixed by the hand of an assistant externally while the head of the patient is drawn down laterally to the side opposite the ventricle containing the tumor.

It is necessary to remember that there are two general classes of cases: In some instances a single removal is sufficient; in others a most stubborn tendency to recurrence is manifest, papillomas of children being more persistently recurrent than those of adults.

*Laryngeal Stenosis.*—Laryngeal stenosis, when hypertrophic in character, may be excised with the forceps when it overhangs the upper orifice of the larynx. Subglottic hypertrophic stenosis, as I have abundantly demonstrated, is readily amenable to galvanocautery treatment, the incisions being parallel to the long axis of the trachea and into the most prominent portion of the hypertrophy. Care should be taken not to cauterize deeply and not to touch the cords.

*Laryngeal Tuberculosis.*—Galvanocautery puncture for the treatment of laryngeal tuberculosis in all patients whose pulmonary condition is not too far advanced has yielded excellent results when indirectly applied by Heryng, Hajek, Mermod and Bar. Intralaryngeal applications as shown by Kahler can be made perpendicular to the surface by the direct method instead of the more or less linear application usually made with the mirror. This disadvantage of the indirect method can be overcome by using the right-angled point as advocated by Sir St. Clair Thomson.

*Cicatricial and Congenital Webs of the Larynx.*—Webs may be removed by the punch forceps provided there is a large redundancy of tissue. When the web is thin and tense, without redundancy, the incision with a view to the plastic formation of an adventitious vocal band, using the long straight direct laryngeal knife, will yield most excellent results as to the cure of the stenosis and restoration of the voice.

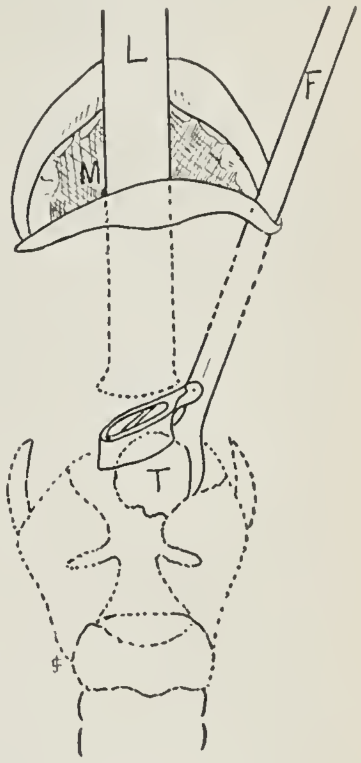

Fig. 7.—The author's "extubal" method for endoscopic removal of the epiglottis and growths originating in the upper orifice of the larynx. This method renders easy the removal of very large tumors that formerly required subhyoid pharyngotomy. It is not used for small growths. The forceps, *F*, seize the tumor, *T*, under guidance of the eye looking through the tube, *L*.

## CONCLUSIONS

1. The direct method is the only one by which the larynx in children can be operated on.

2. The indirect, or mirror, method is applicable only to adults. The reversal of the image sagittally, without reversal laterally, compels the operator to develop the ability to move his forceps backward when the image appears to require the forward direction; and, more difficult still, is the necessity to combine for diagonal movement a reversed anteroposterior with a true lateral movement.

3. The difficulties to be surmounted by the direct method of intralaryngeal operation require prolonged and constant practice, but not nearly to the same extent as required by the mirror method.

4. No anesthetic, general or local, is necessary for operations on the larynx in children. In them, cocain is dangerous in any case, and general anesthesia is absolutely contra-indicated in all cases with even the

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[2] Smith, Harmon: Laryngoscope, February, 1909.

slightest degree of laryngeal stenosis. Local anesthesia should be used in adults, general anesthesia, preferably with ether, being required only when cocain is contra-indicated or when the ischemia accompanying its use causes the growth to shrink to such an extent as to hinder accurate removal.

5. No one method can be said to be best for all cases and all operators. The laryngologist should try all methods and instruments so that he may decide for himself what best suits his personal equation and be prepared to use the method which, in his hands, is best adapted to the particular case.

6. Finally, any one who has the skill of Holbrook Curtis in the removal of benign growths by the indirect method, or of Thomas J. Harris in the indirect method of application of laryngeal galvanopuncture, will have no need of the direct method of intralaryngeal operation in adult patients.

Ninth and Penn Avenue.

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# INDIRECT INTRALARYNGEAL METHOD FOR REMOVAL OF BENIGN NEOPLASMS *

H. HOLBROOK CURTIS, M.D.
NEW YORK

In his book on diseases of the throat, Solis-Cohen[1] quotes two cases of removal of laryngeal growths through the mouth, one by Koderick of Brussels in 1750, the other by Green of New York in 1845. These were done in antelaryngoscopic days, but no details are given. In the literature, but seventy cases are mentioned before the invention of the laryngoscope. In Sir Morell Mackenzie's list of 100 cases of laryngeal tumors operated on by him, and reported in 1880, sixty-seven were said to have been papillomas. Of sixty-six consecutive cases operated on by Solis-Cohen, reported in 1871, forty-eight were assumed to be papillomatous in origin.

According to Cohen and Mackenzie, next in frequency occur the fibromas. Moritz Schmidt, however, quotes the frequency of fibromas to papillomas of the larynx in 32,997 clinical cases examined to be 256 to 46; they usually occur singly and are apt to be redder in color and are not usually pediculate. Myxomatous fibromas are usually larger, attaining the size of a Lima-bean or even greater. They are generally pediculate and paler in color; they may be globular or pyriform in shape, and occur on the epiglottis as well as on the cords. They are rarely encountered. True myxomas are also but seldom found. Sir Morell Mackenzie reports but one in his 100 consecutive cases of laryngeal growths. They are translucent semipink or reddish, and generally pediculate, varying much in size. Their most frequent seat is in the anterior commissure of the cord.

Angiomas are purple in color and occur on the ventricular bands and epiglottis, rarely on the cords.

Lipomas may occur on the arytenoids, epiglottis or ventricular bands. They are characteristic yellow tumors.

Cystomas may occur on the epiglottis or on the ventricular bands and more rarely on the cords. They are usually sessile, translucent and pale in color, and of semifluid contents.

Chondromas are made up of hyaline cells and are cartilaginous in origin, usually springing from the cricoid, thyroid, epiglottis or arytenoid cartilages.

Singers' nodules (chorditis nodosa) occur on the vocal cords at the junction of the anterior and middle third; they are usually bilateral and are composed of stratified epithelium.

Polypi present the appearance of the usual polyp.

Pachydermia are of epithelial origin and attain a much larger size than an epithelial nodule on the cord. They are found most frequently in the posterior portion of the cords, invading the respiratory tract. A peculiar characteristic seems to be that they are usually bilateral, and the conical apex of one fits into a depression in the other, or in case they are on one cord, the hard apex makes a corresponding depression in the other band.

Sarcomas present no especial feature to the unaided eye. Cohen states that removal of a benign growth through the mouth is much less apt to terminate fatally than through external openings and that recurrence is less likely to follow.

Sessile papillomas are apt to return after operative procedure, if the seat of the wound is not sufficiently cauterized after the removal of the growth. This may be accomplished by Tobold's concealed silver nitrate stick, or by chromic acid fused on a laryngeal probe.

The instruments used for removal of laryngeal growths by the indirect method have not been improved on very much since 1880. The methods of removal advocated by most writers include the forceps, cauterization by acids or silver nitrate, and by the galvanocautery. In the local treatment of papillomas, Dundas Grant has spoken well of the continued application of a 2 to 5 per cent. solution of salicylic acid in absolute alcohol, while Delavan has reported a case of multiple papilloma cured by a spray of absolute alcohol used six times daily.

In speaking of the growths which occur in the larynx, it is not my intention to advocate the indirect intralaryngeal method in their removal. I have been asked simply to demonstrate the possibilities achieved by deftness as a result of experience, and speak of the instruments which are generally employed.

Of the numerous instruments invented for the removal of laryngeal benign neoplasms, we must first mention the laryngeal snare of Carmalt Jones, and that of Gibb, and also the port-caustic of Jarvis, and that of Tobold, as well as the sponge probang first mentioned by Voltolini. Fauvel was the first operator to devise the laryngeal forceps, which were modified and improved by Sir Morell Mackenzie. These are described by Lennox Browne.[2] The guarded forceps of Dundas Grant is an instrument of special value in the removal of pediculate growths on the cords. The universal forceps of Watson Williams are in certain cases to be recommended. Sir Morell Mackenzie's cog-wheel ecraseur must not be overlooked nor the various snares of many other authors, described by Watson Williams.[3] Curets are of use in removing growths of a sessile variety, and those occurring beneath the anterior commissure. Heryng has constructed a variety of these, as have many operators. The Krause-Heryng double curet forceps[4] are used in

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Solis-Cohen: Diseases of the Throat. New York, William Wood & Co.

[2] Browne, Lennox: Throat and Nose, Ed. 4, 1893, p. 131.

[3] Williams, Watson: Diseases of the Respiratory Tract, 1901, p. 224.

[4] Ballenger: Diseases of the Nose, Throat and Ear, p. 522.

Europe, but seldom in this country. The first of this kind of forceps was invented by Stoerk, and modified by Schroetter, both of Vienna; Mackenzie,[5] who describes them in his text-book, also invented a tube forceps, a wire within operating on one or both blades. Gottstein's laryngeal forceps[6] had their place in the evolution of the instruments employed in the early eighties. To-day, however, we have gone back to the general shapes of Fauvel and Mackenzie, and I will present some of the modern modifications of the same, and especially the universal handle of Meyrowitz with laryngeal and sphenoid tips of Krauss and Cordes.

Various forms of epiglottis lifters have been devised for the better observation of the larynx during operative procedures. Among the best are Mount Bleyer's and Escat's.[7] These instruments are of the greatest assistance in cases in which an overhanging epiglottis is encountered. A downward and forward pressure at the base of the tongue in front of the epiglottis causes the latter to assume the perpendicular. These instruments are very useful in cautery work.

The preparation of the patient for operation is a simple one:

Cleanse the throat and larynx with an alkaline spray, and then spray into the larynx a 4 per cent. cocain muriate solution in small quantity. Touch the uvula, pillars and posterior pharyngeal wall with the same solution with a cotton applicator, and massage these parts with the applicator to accustom the throat to the feel of the instrument. Have the patient hold out the tongue with a napkin, or have an assistant, in case the epiglottis is in the way, use an Escat epiglottis lifter. The head of the patient should be steadied by a nurse and the instrument introduced, by daily practice if necessary, until all fear on the part of the patient is overcome. In operating it is well to educate the patient to use the vowel sound *A*, changing to *E* without moving the tongue. The *A* changing to *E* brings the cords on the highest plane possible, and gives the best view of them in their fullest extent. Then without dropping the cords and in the *E* emission, at the command, "Now," the patient should be taught to take a deep breath suddenly without making any sound or body movement, and with complete relaxation. At that instant the forceps are introduced and the growth is seized. This applies to subglottic growths and those on the border of the cords. Growths situated on the upper surface are removed during the *E* emission. It is surprising how skilful one may become in this procedure, so much so, that having habituated oneself to this method, direct laryngoscopy seems really more difficult.

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[5] Mackenzie: Diseases of the Throat and Nose, 1880, p. 187.
[6] Bosworth: Diseases of the Nose and Throat, 1892, p. 735.
[7] Grant, Dundas: Brit. Jour. Laryn., Rhinol. and Otol., December, 1904.

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**The Pulpit on the Medical Profession.**—As St. Luke's day fell on Sunday this year (October 18), the "praise of the physician as the servant of God" was the theme of many sermons. Dr. Prince of Chicago spoke from this text, saying that "the tendency in certain circles to-day to ignore the physician is a monstrosity." He compared the physician to the Panama Canal, the link uniting the ocean of man's need with the ocean of the power of God, defining the power of God in part as the "mastery of the spirit over the body." He said that the gain in the last fifteen years is this, namely, that "we have ceased to defend the absence of miracles in modern days. The 'faith' of many persons does not reach beyond the physician, but to ignore the physician and his science is to ignore the provisions of health, just as if we should ignore and do without the sunshine."

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# METHOD OF SUSPENSION (KILLIAN)

## DEMONSTRATION OF THE LATEST FORM OF THE APPARATUS *

ROSS HALL SKILLERN, M.D.
PHILADELPHIA

### CHOICE OF ANESTHESIA

After trying cocain, scopolamin and ether I and my associates unhesitatingly state that ether is by far the anesthetic of choice. Scopolamin has not been a success in our hands, although the technic as laid down by Killian, with even greater dosage, has been adhered to. Whether this lack of sufficient action has been due to the drug or to the difference in racial characteristics between the German and American, I am at loss to say. In our cases the patients were made only drowsy although 1/200 grain was twice and even three times administered in conjunction with morphin (1/64 grain), and in each instance it was necessary to resort to ether. The best form of administering the ether is the colonic method. The patient need not be apprised of the fact that he is being etherized and in this manner no apprehension on his part need exist.

### DIFFICULTIES ENCOUNTERED

1. *Patients*—In order to procure a perfect view of the glottis it is almost necessary that the patient have a long, slender and supple neck. On this account this method of procedure is particularly adaptable to children as in practically every patient under the age of 12 we have been able to procure a good view of the anterior commissure. In short, thick-set individuals it is particularly difficult, and in older people with arthrosis it is absolutely contra-indicated. A good idea of its practicability on a given individual can be obtained by first endeavoring to examine him with the direct laryngoscope.

2. *Lights*—Either reflection from the indirect mirror, the headlight, or a light on the apparatus may be used. In our clinic the latter has been almost exclusively applied with almost complete satisfaction so far as illumination is concerned. The only fault at present is the tendency to slip off the mouth-piece and always at the most inopportune moment. If this mechanical fault were eliminated the device would be practically perfect.

3. *Operating-Room*—A special room is a great advantage although not absolutely imperative. The table on which the apparatus is fixed must be suitable for the purpose and adaptable to raising and lowering, as the operator is seated and must have his eyes on a level with the long axis of the patient's trachea. Arrangement of the theostat, instrument tables, etc., should always be approximately the same. A most important factor is darkening the room. In many of our modern general operating-rooms this is impossible.

### INTRODUCTION OF INSTRUMENT

Care must be exercised in introducing the spatula, otherwise the following accidents may occur:

1. The spatula may not be deep enough, thus forcing the base of the tongue backward and obscuring the view to the glottis.

2. The spatula may not be in the median line of the tongue, causing a lateral bulging.

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

3. The spatula chosen may be too short so as to prevent the epiglottis holder from properly acting.

4. The clamp on teeth must be fixed and padded, otherwise the incisor teeth may be forced loose.

5. The spatula must not be forced into the mouth as the posterior pharyngeal wall may be lacerated.

6. While the patient is swinging, coughing must be guarded against as the hook may be thrown off the bar.

7. The patient in swinging position should have the shoulders resting on the table.

### ADVANTAGES

1. A direct view of the larynx is continually present.
2. The operator is seated in a comfortable position.
3. The field is continuously illuminated.
4. A sufficient amount of working room for both hands is obtained.
5. The upper air-passages cannot be flooded with blood.
6. There is no danger of inspiration of blood or pieces of tissue.

### PARTICULAR INDICATIONS FOR USE

1. Removal of intralaryngeal growth and hypertrophies.
2. Removal of foreign bodies in larynx and mouth of esophagus.
3. Curettage of larynx.
4. Diagnostic purposes.

2032 Chestnut Street.

## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. CURTIS, JACKSON AND SKILLERN

Dr. Robert Levy, Denver: The present generation, as distinguished from the older one that was expert in the indirect method, and that studied under the old masters, has something also to offer in the way of laryngologic skill. Among the younger men there are many whose early training, even within the past ten years, was sufficient to enable them to remove intralaryngeal growths by the indirect method. This in no way detracts from the importance of the direct method and the work of the early operators, but there is still much attention paid in the training of our specialists to the use of the mirror and manipulation by the indirect method; so that while the number of experts with the direct method become more numerous, nevertheless there are more men who are expert in the use of a mirror and the indirect use of the forceps than with the instruments used in endoscopy. So long as our teaching still enables us to perform operations with the mirror this method of removing growths and performing other manipulations within the larynx must of necessity continue. I would not in any way detract from the advantages of endoscopy. Many improvements have been made in the instruments since 1880 and Curtis has shown some. The double curet particularly is a great improvement. Another instrument of great value is the Schlinamann forceps, an instrument which has at its extremity a small curve, so that the instrument may be placed in any position. It is capable of great nicety of manipulation. The overhanging epiglottis may be controlled by the Escat depressor but more satisfactorily in some instances by putting a ligature through the epiglottis. Then it is absolutely under control. This is particularly useful in operating under general anesthesia. Another method of operating within the larynx and one especially useful in large tumors is by means of the snare used in the following manner. Through the loop of wire one passes first a pair of laryngeal forceps the handle of which may be locked. The tumor is firmly held by the forceps and the snare-loop drawn completely over the growth. Gentle traction by an assistant draws the tumor by means of the forceps well into the loop at the same time that the operator passes the loop around the tumor. In this way the complete removal of a sessile growth is readily accomplished. One method Dr. Skillern did not speak of, though I am sure he has it in his paper, is that of bringing the anterior commissure into view by making counter pressure over the thyroid cartilage; another thing is that suspension is especially valuable in the case of children. There is no other method by which the child can be so easily operated on as by this one. With reference to anesthesia, Dr. Skillern said he used ether by preference. I question whether he would administer ether in every case to an adult on whom he desired to perform some simple procedure under suspension.

Dr. Harris P. Mosher, Boston: Naturally, when this procedure came in, rather extravagant claims were made for it. It has been in use now for a number of years and I think the consensus of opinion is that we need to modify those claims but little and that is saying a great deal for a new procedure. It is one of our great advances in the work on the larynx and upper end of the esophagus. Dr. Murphy said to me when this first came out, "What we need is simplification of the apparatus." It is rather complicated. If we can simplify the instrument or procedure in any way, it will be well worth while. I am familiar with the open speculum and tried to do what I could to modify that speculum and I think I can claim that now in 90 per cent. of cases it will work for this method of inspecting the larynx. When the procedure was introduced it was to be used under cocain. I am glad it has been changed to a procedure under general anesthesia, because I work practically always with general anesthesia. The satisfaction of seeing the cords right in front of one and of watching the rhythmic movements is beyond expression.

Dr. Lynch of New Orleans, who recently read a paper at the meeting of the Laryngological, Otological and Rhinological Society, has markedly extended the procedure and has devised instruments for dissecting out growths, papillomas, etc., in the larynx, and I feel that that is a great advance in the use of the suspension method. As for the removal of tonsils in this way, every one who speaks of it says that the tonsils can easily be removed by the suspension method.

Dr. Sidney Yankauer, New York: I have used the suspension apparatus ever since it was first brought out by Killian and I endorse all that Dr. Skillern has said about the advantages of the use of this method for intralaryngeal work. I do not quite agree with Dr. Skillern about the particular instrument used. I had the original instrument as it was first brought out by Killian, and also this later model. The later model is much more complicated than the original and I find that with the original instrument and spatula I can bring the anterior commissure into view in practically every case without making counter pressure, and in every case with the aid of counter pressure. With the newer apparatus I haven't been so successful in this. The epiglottis lifter seems to be rather in the way. The tooth plate on the newer apparatus is larger and longer and gets in the line of vision. Killian uses the method very much in the removal of tuberculous lesions, which are generally in the anterior commissure. About a year ago I operated in a case of carcinoma of the epiglottis and the manner of the removal of the growth was so entirely different from anything that could have been previously done and the success was so much greater than by any other method that there was no question about the great advantage of this method. At the recent meeting of the Laryngological, Otological and Rhinological Society the removal of foreign bodies by the introduction of the bronchoscope with the suspension apparatus was spoken of. Some time ago I had a case of a tumor on the posterior wall of the trachea and tried this method. While I was able to remove the growth I was not quite satisfied with the aspect of the posterior wall and tried to introduce the tube, but the larynx first comes forward and then makes a bend downward and I could not get behind that curve with the tube. Recently a patient was seen who said he had swallowed a fish bone. It was just below the cricoid cartilage. It was removed under local anesthesia by the suspension method. I can endorse what Dr. Skillern says about the introduction of the open tube into the esophagus being easier with the suspension apparatus, as it partly opens the esophagus, but after the entrance of the tube all advantage of the suspension method is lost and it is in the way. In the case in question I failed to see the foreign body and could only see the anterior wall and part of the lumen; I could not see the posterior wall. Therefore, the only advantage in passing the esophagoscope with the suspension method is the ease of introduction, but by this the mobility of the tube is sacrificed. If the extraction is difficult or the foreign body is against the posterior wall, the suspension apparatus interferes with movement of the tube and that is a very important objection.

Dr. Thomas E. Carmody, Denver: I am glad to hear Dr. Yankauer speak of operating on the epiglottis. I have used this instrument about fifteen months and have examined some cases of tuberculosis in which we wished to remove the epiglottis, but being more familiar with the indirect method I used that. The experience of Dr. Yankauer as to impaired movement of the esophagoscope after introduction with the suspension apparatus has been mine also. There are two modifications, one of Lockard's, which has an eyelet so that the horizontal portion can be separated; the other is a vulcanite rubber pad on the tooth plate. This must of necessity be of the soft or velum rubber so as to conform to the shape of teeth or anterior part of the palate.

Dr. E. J. Bernstein, Kalamazoo, Mich.: We are indebted to Dr. Curtis for his views regarding singers' nodes and his method of treating them. Just how much does Dr. Jackson think there is in Dr. MacKenzie's criticism of taking off a slice of growth for diagnosis? Most of us feel there is great danger in excising a portion of any growth for diagnostic purposes, as it may likely cause absorption by the lymphatics and bring about metastases elsewhere. I know such is the view in major surgery. In removing the breast for malignant growths, the surgeons first attach and tie off the arteries, veins and glands remote from the breast and cut wide and away from all involved structures.

Dr. H. W. Ridpath, Indianapolis: One can readily see that, in the removal of tonsils by the suspension method, the stretching open of the mouth in this position will bring considerable tension on the anterior and posterior pillars. That forces a portion of the tonsil into the median line and it will be found that the superior portion of the tonsil is drawn back into the cavity; therefore, in enucleating tonsils by this method one must be careful to get the superior lobe out, as otherwise it will be overlooked. One other point. We have in our clinic several patients in whom the tonsils had been partially removed or massacred by some other operator, and who were brought in to the hospital in a serious condition as to bleeding. On two occasions it was impossible for us to stop the bleeding by ordinary means, due to the amount of hemorrhage. The patient was put in the position in which blood would go down into the postnasal space and one could get a clear field and ligate without difficulty. One of our patients I am sure would have bled to death if we had not as a last resort used this method.

Dr. Otto T. Freer, Chicago: The direct method of entering the larynx has merely added to our powers, it does not supplant the older way of operating with the mirror; and to be an expert the operator must be trained in both methods. The use of the spatula tubes employed for direct laryngoscopy puts a strain on the muscles attached to the hyoid bone and on the thyrohyoid and hyo-epiglottic ligaments. This strain is borne by some patients with but little discomfort, but others suffer a good deal when much force is needed to get a direct view. However brilliantly done, direct laryngoscopy is a forcible entry into the larynx, while the indirect method has the advantage of entering along the natural curves. It is therefore incomparably the more elegant and gentle way and merely because he has not learned it, the operator has no excuse to turn to the rougher direct way in order to remove a papilloma from the cords or a foreign body from the larynx. I reserve the direct method for cases in which I cannot operate with the mirror as in the case of children. In younger children, because of the smallness of their laryngeal lumina and their ready closure by swelling, it is best to precede an intralaryngeal operation, as for laryngeal papilloma, for instance, by a tracheotomy. I have always used this precaution, and twice, once in an operation on a child for laryngeal papilloma and again in a case of a bone in the larynx, although all gentleness and speed were used, the larynx closed by swelling for a day or two and I was glad that I had my tracheal tube in place. I have heard of others, good operators, who have had to do a hurried tracheotomy after an intralaryngeal operation on a child and in one case the operator was too late. In holding the cutting forceps for operating with the mirror it is customary for many to enter the rings of the usual scissors-handle by placing the thumb in the uppermost ring. This hinders wrist flexion and so prevents the operator from reaching the anterior commissure with the beak of the forceps. When the thumb is placed in the lower ring and the index finger in the upper, flexion becomes easy and all parts of the larynx can be reached without effort.

Dr. George F. Cott, Buffalo: One point which has not been brought out is the matter of tolerance of the larynx in children; how long will it tolerate manipulation? I had a sad experience in this connection: a child had a key in the esophagus for a week. I introduced the esophagoscope but could not find the foreign body, although roentgenoscopy showed where it was. The swelling was so great I could not see it. I worked a half hour and then decided to do a lateral esophagotomy, which I did. It took but a short time and the key was removed, but that night the child suddenly died without any apparent cause. I found out later that another physician had worked on the child for an hour or more by the indirect method before I saw it. Had I known that, I would not have subjected it to such a continued shock.

Dr. A. B. Thrasher, Cincinnati: Dr. Curtis has partially repaid a very old debt which we laryngologists have so long owed to a singing-teacher, E. Garcia, for the discovery of the laryngoscope. Now a laryngologist teaches the proper singing method for the prevention and removal of singers' nodes. I turn these cases over to a singing-teacher with the instructions which Dr. Curtis has given us.

Dr. W. B. Chamberlin, Cleveland: Although my early training and instruction was in the indirect method, I have used the direct method almost from its beginning. I am in favor, however, of the indirect method in suitable cases. It is certainly a much less formidable operation than the direct method. I fancy that if any one of us were offered his choice of the methods on himself, he would unquestionably choose the indirect, granting, of course, that it were applicable to the particular case. Not long ago I was able to remove very easily a pedunculated tumor from beneath the cords at the anterior commissure in this way. There is an opinion among men who have been trained in the direct method that the indirect method is difficult. That is not so. It is no more difficult than the methods which the dentist uses every day in his operations on the teeth. Take a wide-mouthed morphin bottle, cover it with dark paper, and on the bottom sketch a larynx, then place a shot or pin in any position and one can practice the indirect method to one's heart's content.

Dr. Burt R. Shurly, Detroit: Those of us who have used the indirect method for many years have a certain amount of sentiment concerning this method, and we sincerely trust that it never will become a lost art. There are a great many things one can do by this method first, and then if not successful one can use the direct method if necessary.

Dr. C. G. Dwight, Madison, Wis.: The otolaryngologist who lives in a large city knows very little of the disadvantages encountered when the general surgeon has first had the case. Most of my work is in the removal of foreign bodies. I had in one case a Catholic sister who had lodged in her throat a black-headed pin such as they use to fasten their bonnets. The patient had been in the hands of a general surgeon three hours before I was called to see her. The pin was lodged straight across and imbedded. Of five different instruments none were powerful enought to detach it because it was so firmly imbedded. I broke two instruments in the attempt. This led me to devise an instrument which is useful for grasping pins of this type. The delicate instruments we have for grasping growths, etc., are very perfect, but we need something stronger to remove these firmly-imbedded things.

Dr. Holbrook Curtis, New York: I am glad to see that there are so many advocates of the old method. I agree with Dr. Freer that we should be expert in both. No laryngologist can afford to neglect the opportunities in which he can use the indirect method. With regard to practicing the indirect method, I have taken an old pin-cushion and put it at the bottom of a three-inch iron tube and then practiced picking the pins out one by one, using a laryngoscope and forceps.

Dr. Chevalier Jackson, Pittsburgh: In reply to Dr. Bernstein's question with regard to the removal of a specimen in malignant cases, as Sir Felix Semon pointed out years ago, it is unwise to remove a specimen in any case that, clinically, seems to be malignant unless the patient has consented to immediate operation in the event that the specimen proves malignant. The question should be submitted to the patient beforehand. If he declines external operation, which is the only route in malignancy, then no specimen should be taken. If consent has been obtained, preparation must be made to operate immediately, as soon as we get the report on the frozen section, which we can get now on the same day that the specimen is taken. There is little risk of metastases resulting if operation immediately follows.

Dr. Ross H. Skillern, Philadelphia: Dr. Levy spoke of this method not being used in the simple procedures in the larynx, such as making examinations and removing papillomas, under ether. We have tried it without ether and have succeeded. So far as Dr. Mosher is concerned, he is too modest to state that he perfected an instrument of his own and had I seen it first the Killian instrument would not have been in our armamentarium. I had the pleasure of seeing his work, and later the work in the Chariteé in Berlin, the home of this method, and had I to have the method used on me I should prefer to go to Boston. As to the removal of foreign bodies by this method, we have in the last month removed a number of such bodies and it progressed very nicely, except the last case, a penny in the esophagus. We saw it very beautifully and demonstrated it to several physicians in the room with a great deal of pride, but the pride went just before a fall because when we went after it it went down and down and finally passed into the stomach. Dr. Ridpath spoke of the enucleation of tonsils by this method. In that respect one thing is notable: the remarkably small amount of hemorrhage when this method is used. It is due to pressure on the tongue and some of the vessels that supply the tonsil. As soon as we take the tonsil out the blood seems to start up but is soon controlled. Dr. Freer spoke of the matter of soreness of the throat after the employment of this method. In 100 or 150 cases the children did not complain of any particular soreness. I have asked them frequently. Some of the adults complained of a certain amount of stiffness in the neck. I am not advocating any particular method in every case. We must select the method that is suitable for the case in hand.

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**The Medical Profession and the Eradication of Disease.**—People say there must be a "nigger in the woodpile" somewhere, that the medical profession should strive to reduce illness, for it is thereby they make their living. I will acknowledge the doctor is a queer beast, but his mission in life is not to accumulate any great wealth, but to eradicate disease, and that alone will make him happy. I deny most emphatically that money is the strongest motive that moves the mass of mankind. I will admit that anything that requires money is not easily accomplished, but a good lawyer, if you will go to him with your case, will advise you in the majority of instances not to litigate, and a good preacher will try to save your soul before it gets past saving; and the good doctor rejoices much when he can keep you well.—Victor C. Vaughan, *Jour. Indiana State Med. Assn.*

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# HEALTH SERVICES IN AMERICAN COLLEGES AND UNIVERSITIES

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The wide-spread interest in the economy of health conservation has placed this consideration of medicine on a sound basis. The means to this end are being socialized because it is of public concern. It is significant that this broad consideration of health and disease has crystallized early around our educational institutions.

In our colleges this work has assumed the form of variously organized health services. These services provide for care of individual sick students, but recognize instruction, inspection, and the preservation of health as equally important work.

## GENERAL METHODS

All university health services have certain uniformity of methods since they have similar aims in view. Differences apply to peculiar local conditions and policies.

A general policy is to provide easily accessible medical attention to the student, with instruction and preventive service. Medical attention is also provided for the faculty and officers in a few services.

The staff usually consists of a university physician, health officer, or medical adviser, as he is variously designated, with assistants as required, often including a woman physician.

A committee of the faculty often serves with the staff as directors.

At most places convenient quarters are provided where examinations and office treatments are supplied. A number of services provide for bed patients in student hospitals spoken of as infirmaries. A medical department in a school is a great help to the student service.

The expense of this work is usually provided for by a general student fee. The connection of staff members with the teaching faculty provides for part of the salaries, from the institution.

## ENDOWED AND PRIVATE INSTITUTIONS

The older health services at the endowed schools have as a rule been slower in development and more conservative in their policies than the leaders among state universities. As a class they have better infirmary facilities, but are less active in dispensary and inspection work.

### *Princeton*

Since 1893 an infirmary has been maintained at this institution for the exclusive care of students in illness. There have been recent plans for a new building in the work. The infirmary is endowed and has about thirty beds. Hours are kept for office consultations, which average about fifteen daily. There are 1,500 students, who pay an annual fee of $7 each, for which they receive consultation and treatment with limited time in the infirmary where at request they may have local physician of choice and special nursing at their own expense.

There have been about four hundred bed patients annually. The examination of freshmen at the gymnasium is especially well done by Dr. Joseph Rycroft, who is much interested in this work. General inspection has been provided for by the local health officer, whose salary has been paid in part by the university. Dr. Conochan is in charge of the clinical work.

### *Harvard*

The service was established here in 1894. It is now in charge of Dr. H. M. Bailey, who has no assistants and devotes most of his time to the work. Students at Cambridge pay $4 a year as general tax, which provides for office consultations, treatment and limited care in the infirmary. Dispensary consultations averave about twelve daily, including calls at the rooms as requested. The dispensary is located in one of the dormitory buildings on the campus.

The infirmary is a splendid new building, well endowed and thoroughly modern in every respect. It has sixty-five beds, about one half of which can be used for isolation purposes. Patients are given ordinary nursing except as they provide for themselves. They usually have outside physicians while in the infirmary, although the university physician cares for those unable to pay. There is an average of about five hundred infirmary patients annually.

Examination of entrants is done by the physical director, and is limited to a consideration of their physical exercise and athletic work. No lectures in hygiene are required.

### *Cornell*

Since 1911 an organized service has been in operation at Ithaca. A general fee of $6 is received from about 4,600 students. Three physicians, including one woman, see an average of sixty patients daily for consultation and care of minor troubles. Major cases requiring continued treatment are referred to local physicians. Advisory calls are made at the rooms.

An infirmary is maintained with sixty beds, where two weeks' ordinary care is given. Patients pay physician of choice for all services, medicines, and supplies. There were 1,041 bed patients during the last year. Examination of freshmen is compulsory and lectures on hygiene are optional. The service has complete medical care and examination of athletes. Dr. S. Munford is in charge.

### *Columbia*

A service has been established here during the past year. Dr. W. H. McCastline keeps hours twice daily, caring for about thirty students. A well-equipped dispensary is maintained in one of the campus buildings. The service is rapidly extending although there has been no definite provision whereby the service can give infirmary privileges to bed patients. No fee has been charged of the student as the dispensary has been established and maintained by the university. Examination of entrants is limited to that in the gymnasium, and no general lectures in hygiene are required.

### *Yale*

The conservatism in this work is especially felt by those most interested in the health of the students at Yale. A suitable endowed infirmary is maintained in charge of a nurse matron. Students pay $1.50 a day for ordinary care and employ their own physician and special nursing. There is no organized student health service, and Dr. W. G. Anderson as gymnasium director has been able to do but little in the way of medical examination and instruction in hygiene. That an organized service could do a splendid work at Yale is the conclusion from my recent visit there.

### *Stanford*

The work here has no organization as a definite service. The provision for the student health is supervised in general by a committee of the faculty. This committee is responsible to the president for the public health of the campus. They inspect rooming-houses enforce vaccination, and do some detailed work through the medical advisers who are directors of the gymnasia.

The medical advisers, one woman and one man, act in an advisory capacity in connection with their work in the gymnasia. They do no treatment, but examine entrants in relation to their gymnasium work. Bed patients are provided for by an organization of students known as a hospital guild. This is supervised by a faculty committee, and membership is compulsory for each student at $4 per year. This entitles the student to ordinary hospital care in a local hospital, except for contagious cases, which are provided for otherwise by the guild. Medical care, private rooms and special nurses are not furnished the patient.

### *Chicago*

During 1911 a committee of the faculty of the University of Chicago was appointed to investigate student health problems. A thorough study was made of their own situation as well as systems then in operation at other schools.

Their report emphasized the obligation of a university in the provision for good health among its students. The sanitary condition of their university was pointed out; the general policies and methods of other institutions were shown. The recommendations of this committee were to the effect that there was need for an organized service to coordinate the activities of the various departments of the university whose work touched on sanitation. They recommended the maintenance of an infirmary for students; that general instruction by lectures be developed by the health officer for new students and that such entrants be given a medical examination on matriculation. They asked that consultation hours be maintained for sick students and that vaccination be enforced.

A recent report is to the effect that the university has not undertaken the care for sick students since October, 1912, up to which time there had been a university physician. A committee of the faculty supervises sanitation and the gymnasium directors do some medical work among the students incidentally. Freshmen are examined at the gymnasia and are required to attend lectures on hygiene during the first quarter. The policy seems to be not to assume responsibility in caring for sick students.

### *Williams*

A twenty-four-bed infirmary is maintained for students, faculty, and their families at a rate of $1.50 per day for the patient.

The staff is composed of three local physicians, one or whom, Dr. F. H. Howard, delivers compulsory lectures on hygiene and examines entrants. Other physicians care for infirmary patients at request of parents. There is no general fee and no dispensary work is done.

### *Massachusetts Institute of Technology*

At this school the 1,700 students pay no fee. They may consult a college physician during certain hours. The medical adviser delivers lectures to first year students.

### *Pennsylvania*

The University of Pennsylvania has no organized health service. The need of it there is felt by those most in touch with student health. The ample facilities at the university hospital on the campus have supplied this want with certain satisfaction. The exclusive ward for students makes a suitable arrangement for cases requiring bed care. The patient pays a nominal fee for ordinary care. The medical attention is supplied by the hospital staff.

### *Haverford College*

For a small school the service is especially commendable. The students contributed a sum of money and a beautiful infirmary building, well equipped, has been established by added endowment. Dr. J. A. Babbit is teacher of biology, director of the gymnasium, and college physician. The cooperation of these departments is a special feature of this excellent service.

### *Culver Military Academy*

As an instance of the provision made in boys' preparatory schools, Culver may be cited. An organized service has been working there since 1908. There are about four hundred and fifty students during the regular winter term. The medical staff consists of one physician and two nurses devoting full time. The average of dispensary calls is about twenty daily. Room visits are made as needed.

A seventeen-room infirmary is maintained. It is in charge of the academy physician, who asks outside consultation as required. Two hundred and fifty bed patients were treated during the last session. Frequent examination of all students with weekly lectures in general hygiene are required. General supervision and remedial gymnasium work are emphasized features. Dr. C. E. Reed is physician in charge.

### *Vassar*

For about twenty years this school has made provision for student health. About one thousand students are cared for. Three women physicians, headed by Dr. Thelberg, are employed in the service, and they do some other instruction work in the college.

A good dispensary is maintained and detailed treatment is given. The thirty-room infirmary where bed patients pay $1.50 a day, is well equipped. Careful examinations are required on entrance and attendance on lectures is compulsory.

### *Wellesley*

This school has a plan very much as that described for Vassar. Each of the thirteen hundred students pays a $5 annual fee. For this they receive dispensary privileges, supervision, and two weeks' care in a well-equipped infirmary. Dr. Katherine Raymond and two nurses are employed. Local physicians are called at request of the patient. The inspection of entrants is especially complete.

### *Smith*

Until the last year the service was much as described for Vassar and Wellesley. Since that time the policy has been changed. Hours for advisory consultation are maintained and cases requiring treatment are referred to local physicians. The local physicians aid by making careful reports to the college physician, Dr. Florence Gilman, also director of the gymnasium, who has large authority in handling medical affairs at the school.

The infirmary is inadequate and inferior, although a suitable rest home is maintained in addition. The generous inspection of the school and the examination of entrants is well maintained. Lectures are provided for instruction in hygiene. There are about fifteen hundred students.

## STATE UNIVERSITIES

### *California*

As typical of the progressive element in western institutions the university of California has probably developed the best service. It has been organized since 1906. Dr. G. F. Reinhardt, professor of hygiene in the university, heads the staff and does the surgery in addition to the administrative work. Two men care for the daily clinics and house patients. One man for eye, ear, nose, and throat trouble is kept very busy during part of each day. Another man does epidemiologic work, and three women do the clinic and house work for the women students. One of the women does a large amount of orthopedic work and one of them has charge of anesthesia and the laboratories. Each of the eight physicians works with the service about four hours daily. Some of them are connected with the medical teaching staff of the university.

There are over five thousand students who pay $6 each annually for medical service. Operations and special nursing are not covered by this sum. The average daily dispensary patients number about one hundred. Calls are never made in the rooms, as bed patients are sent to the infirmary, which is exclusively for students and has forty beds. Five hundred and eighty bed patients were treated during the last year. Local physicians are called as consultants only.

"Applicants must appear before the university medical examiners and pass a satisfactory examination to the end that the health of the university community may be safeguarded." During two years seven were refused admittance to the university by the service. Of these three died later of tuberculosis and one is in an institution for the insane. Weekly two-hour lectures on hygiene are required of freshmen during the first term.

In a report Dr. Reinhardt points out that through the service the students receive valuable education from experience with economical and efficient organized medical aid; that similar statistics and observations can be made in no other way; and that such service instils democracy. The published reports of this service with reference to the diseases of young adults are elaborate and instructive.

### *Michigan*

Out of general demand from the campus the organization of a service was undertaken in October, 1913. It was organized to undertake both preventive work and instruction, and the care of students when ill.

Administrative officers and deans serve with the staff as directors of the service. Dr. H. H. Cummings heads a staff of four full-time physicians, including Dr. Elsie Pratt, whose duty is with the women. A pharmacist dispenses drugs without added expense to the students.

A building on the campus is equipped for examinations and office treatments. These have averaged about sixty daily throughout the college year. The university hospital provides excellent consultation and care at small expense to bed patients able to pay.

Over five thousand students paid a compulsory fee of $2 each. For sick call at the room the patient pays to the service fund $1 for day and $2 for night call. Summer students pay a general fee of 50 cents.

Next year the college year fee is to be $4. This will enable the service to send any student into hospital care for sixty days' limit without added expense to the patient. The contemplated examination of entrants with early and vigorous isolation of infectious cases should do much for the protection of the student group. Compulsory lectures on hygiene for the freshmen would further assist. It is planned to enrol members of the different house groups as health service representatives. These students will be instructed so that they may be of value in preserving the good health of their several houses.

The health of students at Michigan is generally good; in the last few years, however, there has been an apparent epidemic of acute pharyngitis.

There has been no expressed opposition to the service. Student sentiment is eminently satisfactory. Students have been surprised that in the past they did without such a service, where now in need they come for advice and treatment.

### *Iowa State*

Since 1886, a service has been at Ames. Dr. C. G. Tilden is the only staff physician.

Twenty-eight hundred students pay an annual fee of $4 each. Daily calls average one hundred. Calls at rooms cost extra. Lectures and physical examinations are given in connection with gymnasium work only.

The infirmary has thirty beds and cared for 370 patients last year. Infirmary patients pay $3 weekly for three weeks and $7 thereafter. Local physicians treat infirmary patients at the discretion of the college physician.

### *Wisconsin*

Since 1910 an unusually good service has been operated at Madison. Without special fees from the students the university has taken hold of many problems concerning student health and general medical instruction. Broad economy rather than medical philanthropy is given as a policy in their service.

The staff has six full-time physicians intimately related to the medical faculty. The duties of these men embrace teaching, research, and attention to the health of the individual student.

An ample infirmary has not been developed, although two hundred and fifty bed patients were provided for in a general hospital. This was done at nominal cost to those able to pay. In the dispensary, detailed treatment was given to about one hundred and twenty students daily during the last school year. Calls at sickrooms have averaged about ten daily.

The medical examination of entrants is considered important, but lectures on hygiene are not required. The service supervises sanitation throughout the university as for example, instruction is given to janitors and other university employees.

As emphasized features, Dr. J. S. Evans may be quoted. "There is close relationship between this department and the administrative officers in an attempt to correct errors in our educational practices. The compulsory observation of each student given special privileges because of medical defects. The attempt to prove that the prevention and treatment of disease must go hand in hand in the development of public medicine."

As in other institutions, the local physicians have had trouble in adjusting themselves to the advances of this service. The situation is fast coming to be recognized, however, as the natural course of medicine in its relation to public welfare.

### *Texas*

The University of Texas has had a service since 1910. Twenty-two hundred students pay a fee of $5 a year for this service. A woman physician during two hours daily cares for girls. Dr. Joe Gilbert, in charge of the service, cares for male students in the same way. The number of office patients averages fifteen to forty daily, detailed treatment being given. Calls at the rooms are made without charge for the first three visits.

Hospital arrangement is made with a local hospital for the care of students. The hospital receives $15 per week for each patient and gives in return ordinary care. The patient receives five hospital visits from the university physician without cost. When another physician is called the patient pays for his services, but the hospital care is provided the same. Bed patients average from five to ten daily. Provision is made for compulsory examination of freshmen on entrance and for lectures on hygiene, which must be attended.

### *Washington*

During 1910 a sick benefit service was organized as a result of student agitation. It applies only to those students who come from out of the city and are not under the jurisdiction of some home in Seattle. A fee of $1 is collected by the university for the privileges given. The director of the service is a physician, who cooperates with the faculty committee on hygiene and sanitation. Sick students are first seen by the director without expense for the first visit. If continued medical attention is required, a local physician is called by choice of the patient or in rotation by the director.

Patients requiring hospital attention are sent to local hospital without additional expense to the patient. All entrants must have a medical examination. They also are required to take a course in hygiene consisting of one hour per week throughout the year. It is pointed out that this service does not interfere with the family physician, and that it reduces the student's expense because of the free first call which is all that is required in the majority of cases. It is expected that the fee will be increased soon to $1.50.

### *Missouri*

A service was organized in Columbia, Mo., in 1910. Dr. Moss devotes his entire time to the work and the University Hospital is available. Twenty-five beds were used last year without additional expense to four hundred bed patients. Local physicians may care for hospital cases at the choice of the patient. Office calls average about twenty daily.

There are about three thousand five hundred students and each pays a fee to the service. The examination of entrants and lectures on hygiene are required.

### CONCLUSIONS

For the institution which recognizes an obligation in the care of student health, and wishes to handle it certain things are advisable.

1. A definite organization should be able to use and direct effort in any department of university work, to the purpose of the service. The work should be headed by an interested physician who devotes, preferably,

whole time. He should be given large authority in carrying out the policies of the service and additional staff as needed. Having a supervisory board of the faculty is helpful.

2. The needed equipment depends on that available in other departments of the university. If the policy of detailed treatment is chosen, which seems the most practical, a definite headquarters must be provided with ample room sufficiently convenient that students may call without loss of time. Good office facilities and a laboratory are needed for efficient work.

Provision for bed patients should especially include care for contagious cases. This should be so provided that there need be no financial hesitation about ordering any suspicious case into isolation.

3. The service expense should be borne largely by the student through general tax. Money for this purpose is economically spent by the institution. The use of staff members on the teaching faculty provides for part of their salaries.

4. The work of instruction, inspection, and supervision is to be emphasized. The effect of instruction in matters of hygiene and sanitation has an unlimited scope as directed to future teachers and leaders. If this provision for the care of health impresses students favorably, there should be demand for similar service outside the university. The relation of such services to the medical profession should be early established.

The health of a school will depend in part on the health of those admitted. It is certain that schools should be protected from a number of applicants each year, and that a good medical examination would avoid some failures in a college career.

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# THE THERAPEUTIC EFFECT OF IODIN *

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Iodin and the iodids, either in inorganic form or as organic compounds, have been successfully used for many years in the therapy of various disease conditions, without definite knowledge as to their mode of action in the body.

The beneficial results obtained, more especially the effects in causing absorption of necrotic material, such as is found in gummata, have been variously ascribed to the influence on the general metabolism of the body; to the lowering of blood-pressure; to changes in the viscosity of the blood; to a lymphocytosis; to increased lymphatic activity and to the oxidizing properties of free iodin. As is so frequently the case, the very multiplicity of these views indicates that probably none is satisfactory; indeed, practically all the theories advanced have been seriously questioned.

Much work has been done on the absorption, distribution and excretion of iodin. (Winternitz, Wells, Loeb, McLean.) The older view that iodin combines with the proteins of the body has been disproved by McLean, who found that in experimental animals the lipoid fraction of the tissue contained 32 per cent. and the water soluble fraction 67 per cent. of the iodin absorbed. The extracted protein contained no iodin.

In a series of papers recently published we have demonstrated that the lipoids containing unsaturated carbon atoms are antitryptic when in colloidal solution; that tubercle bacilli and tuberculous caseous material contain such lipoids, the resistance of caseous material to solution and absorption being due to the presence of these compounds, the inhibitory effect of which is overcome when the caseous material is extracted with lipoid solvents, or when the unsaturated bonds are oxidized or satisfied with iodin.

We have furthermore shown that the antitryptic activity of the serum is due to similar lipoids which can be extracted with lipoid solvents (chloroform, ether, etc.). We have observed that iodin and the iodids when incubated with serum, markedly lowered the antiferment property. Serum from which the antiferment has been extracted becomes toxic because of autolysis (serotoxin), a similar process (absorption of the antiferment by agar, kaolin, bacteria, etc.) being the basis of the toxicity of the so-called anaphylatoxin.

These studies suggested the possibility that the action of iodin in the body may be due to a combination with the fatty acid, the saturation of the unsaturated valences causing a corresponding neutralization of the antiferment activity of these lipoids. This lowering of the antiferment index of the blood and tissues in general would permit the removal of necrotic tissue by autolysis. In view of the work of McLean showing that a large amount of the iodin is actually combined with lipoids after absorption, such an explanation might seem rational.

Drs. Fordyce, McMurty and Sharpe of the Vanderbilt Dermatological Clinic, Columbia University, have kindly placed at our disposal a series of cases in which we were able to determine the antiferment index of the blood at various times, both before and during the course of iodid therapy. In these thirteen cases, eleven of which were specific, we have observed a progressive lowering of the antiferment index of the serum, the effect being greatest when the limit of tolerance was reached—from 100 to 150 drops per day of a saturated solution of potassium iodid. The number of cases studied is not large, but the results were sufficiently uniform to show that the iodids so administered to human beings cause a considerable reduction in the antiferment activity of the blood, the net result being of course an increase in the proteolytic activity of the blood and tissues.

In those patients in whom toxic symptoms were noted (gastric disturbance, rash, etc.) the antiferment index, which had been lowered, was increased to the original strength, this being similar to the effect observed following many other intoxications—anaphylaxis, serotoxin, burns, protein poisoning; such a toxic rise being most probably due to a mobilization of lipoids from cells, will, of course, defeat the object for which the iodids are given.

## TUBERCULOSIS

The impression is quite general among clinicians that iodids are harmful in tuberculosis, as they promote the spread of the infection by causing a softening of the tubercles and also interfere with connective tissue formation. Whether or not caseous tissues take up iodin from the circulation other than in a

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* Complete protocols and references to the literature will appear in a more detailed report in *The Archives of Internal Medicine.*

purely physical manner, is an open question. (Leeb, Wells, Lewis). Boudreau believes that iodin is a specific agent in the treatment of tuberculosis and reports favorable results.

In our work on the antiferments contained in tubercle bacilli and in tuberculous caseous material, we found that the enzyme-inhibiting action was due to the unsaturated fatty acid radicals of the lipoids. At first we believed that this action was due entirely to the soaps of the unsaturated fatty acids, but subsequent work showed that a large portion of the enzyme-inhibiting agents could be removed by extracting with chloroform. The substances contained in the chloroform extracts are not active as anti-enzymes when suspended in salt solution, as they are insoluble; but the sodium soaps prepared from these acids are active, and we found that their activity was in proportion to the degree of their unsaturation, but that this action was lost if the acids were first saturated with iodin. These experiments were repeated with the chloroform extracts of tuberculous caseous material and with unextracted caseous material, with the result that the soaps prepared from the chloroform extracts became inactive, and the caseous matter which, previous to treatment with iodin, had not been acted on by trypsin, was now readily attacked. The loss of anti-enzyme action cannot be attributed to any activating influence on trypsin, as iodin inhibits the action of this ferment.

Thus we have definite evidence of the action of the iodids on tuberculous tissue, and the explanation of the well known clinical observation that iodids cause tubercle bacilli to appear in the sputum of patients with pulmonary tuberculosis, though they were previously absent. When iodids are taken into the tissues a portion of the iodin is liberated and combines with the unsaturated carbon atoms of the fatty acids. As soon as this occurs in necrotic tissue to a degree sufficient to lower or remove the antiferment action, autolysis ensues, as in most instances ferments are present. That the inorganic iodids diffuse readily throughout caseous matter and are thus in a position to furnish the iodin, has been shown by Loeb and Michaud, and Wells and Hedenberg.

### SYPHILIS

Clinical experience teaches us that in the tertiary stage of syphilis iodin is almost a specific in bringing about the amelioration of symptoms, and the disappearance of lesions, and yet little is known concerning the means by which these results are obtained.

Authorities on this subject are unanimous in the belief that iodids are not curative in the sense that they prevent the return of the lesions; this can be accomplished only when the iodids are combined with some other form of treatment. Tomasczewski found that the administration of iodin does not prevent the development of experimental syphilis in monkeys and rabbits; neither has it a curative action; but iodized animals recovered quickly when given mercury. That iodin does penetrate into syphilitic tissues has been shown by O. Loeb.

As experimental work and clinical observations have demonstrated that the iodids do not destroy the infecting organism, we must assume that the results obtained are due to the power the iodids possess of causing resolution of the lesions present. That this actually occurs will be attested to by every clinician of experience.

Owing to its scarcity we have not been able to examine material from gummata, and so we are unable to state positively that the anti-enzymes present are similar to those found in tuberculous caseous matter, but it is probable that the same agents are active here as in those anemic infarcts in which autolysis does not occur. If this assumption is correct, it is not difficult to explain why large gummata rapidly disappear when the patient is brought under the influence of iodids. It is due to the fact that the unsaturated fatty acid radicals which inhibit autolysis, have become saturated with iodin. As soon as this occurs, the ferments which are present, or which may be brought in, become active, autolysis takes place, and the necrotic tissue is absorbed. Here, also, the local action of the ferments is made less difficult by the reduction of the anti-enzyme in the circulating blood. It must be borne in mind that the iodids are not as effective in the earlier stages of syphilis when necrosis of tissue is not so evident.

If the above interpretation of the action of iodin is correct, it gives the clinician a rational idea of what he is accomplishing when he gives iodids to a patient in the tertiary stage of syphilis. According to this view, iodin neutralizes the action of the agents which prevent resolution and absorption of the diseased or necrotic tissue, and at the same time lays bare to the action of the real germicidal agent the infecting organism which previously had been protected by the necrotic tissue. With the exposure of the infecting organism, such agents as mercury and salvarsan would be much more effective.

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# CONTRIBUTION TO THE STUDY OF THE VALUE OF QUININIZATION IN THE ERADICATION OF MALARIA

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My excuse for adding this paper to the already rather voluminous literature on malaria prevention is that it embodies the result of a unique experience, and one which, I feel, should be recorded.

My principal duty in Daressalam was to institute a campaign against malaria, and although my training has been almost entirely along the lines of attack on the anophelines (in Panama), I was under the impression, formed from the perusal of Claus Schilling's article in Ross' "Prevention of Malaria," that the method of Koch, introduced in Daressalam by Ollwig[1] in 1901-1903, has been successful in so far as it has at least considerably reduced the incidence of malaria.

The results of my study of the conditions in Daressalam have been embodied in a report to the imperial governor of German East Africa, but I was impelled to the writing of this paper by the appearance of Henson's article,[2] and the wish to show, by citing the results achieved by such an attempt, the difficulties in the way of reducing malaria to any reasonable extent by systematic quininization in a community of considerable size. Let me say here that I do not wish to be understood to the effect that the attempt should never be made, that this method of prophylaxis stands condemned as useless. It may have a cerain degree of usefulness, but it is, much to my regret, a very insignificant degree when applied to a permanent community of considerable size in a country where anophelines capable of transmitting malaria abound, and where, in addition, changes of population due to immigration serve to introduce more or less continuously gamete carriers.

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[1] Ollwig: Die Bekämpfung der Malaria, Ztschr. f. Hyg. u. Infektionskrankh., 1903, xliii.

[2] Henson, Graham E.: Man, the Principal Etiologic Factor in the Perpetuation of Malaria, with Special Reference to the Endemicity of the Disease in the Temperate Zone, The Journal A. M. A., May 2, 1914, p. 1374.

Daressalam is a town of about 23,000 inhabitants, of whom approximately 1,000 are whites and Goanese, and the remainder mostly Swaheli of Negro-Arabic descent. The town is divided into practically two settlements: the white quarter, situated along the beach, and the native quarter, farther inland. To the east of the town is the Indian Ocean, to the south the harbor and Geresani Creek, a rivulet divided from the harbor by a dam and forming behind it a swamp about $^8/_{10}$ of a square mile in area. This swamp and the creek itself are prolific anopheline producers. The distance from the dam to the center of the town is about a mile.

In the very center of the native quarter are two large pools, one permanent, and the other containing water only during the rainy seasons, of which there are two annually. Both of these breed anophelines. One of these, to which reference will be made later, known as Karavanserai Pond, has recently been cleaned out and the banks trimmed, and it is being periodically treated with a phenol preparation. While thus treated it has remained free from mosquito life.

Then there was also, until very recently, a swamp, heavily infested with anophelines, about a mile long and 50 yards wide, in a valley on the very edge of the native town, with a branch toward a small European suburb. This swamp drains into the Msimbasi rivulet, the banks of which are also breeding grounds for anophelines during the dry seasons, and which winds its way in close proximity to the native town.

Across the narrow inlet to the harbor, and less than a mile away from the town, are a number of mosquito-breeding pools and swamps.

The town has no public water supply, nor any sewerage system.

There are about 200 wells, most of these badly covered and containing anopheles larvae. The European houses mostly have pits, into which the sewage is water borne. For this service water tanks are installed under the roofs, few of which are free from mosquito larvae. In addition, anopheles larvae were found in roof gutters.

In the rainy season pools of water, which stand for weeks in many instances, form in numberless places on streets, lots and in yards, and very soon mosquitoes breed in these.

Ollwig arrived in Daressalam apparently firmly believing in the soundness of Koch's theory[3] that malaria can be eradicated by attacking the parasite within the human host. He also believed, as he states in his articles in the *Zeitschrift für Hygiene und Infectionskrankheiten* and in private letters to Koch, since published, that a campaign against the mosquito in Daressalam was certain to be fruitless. He lays particular stress on the opinion of an unnamed "expert engineer" that the most prolific anopheles-producing area, the swamp at the mouth of Geresani Creek, is undrainable. Let me here remark, by the way, that a survey showed this swamp to be drainable, and that when I left Daressalam the creek and swamp were practically free from mosquito larvae, as a result of clearing the creek and ditching, which was done only on a small experimental scale because of the absence of funds.

Ollwig therefore instituted his campaign on the lines of an attack on the parasite in the human host, and this campaign is, so far as my information goes, still continued; at least, it was being continued when I left Daressalam in March of the present year.

The campaign is carried out on the following lines: Blood specimens are taken from all natives employed or living within the European quarter and in the immediately adjacent area. "Thick" smears are made, stained with Giemsa stain and examined. All those whose blood shows the presence of malaria parasites are given 1 gm. of quinin daily for six days and 1 gm. twice a week for ten weeks. The quinin is given in solution and is taken in the presence of a trained nurse.

The accompanying tables show the results accomplished. They have been compiled by Dr. Manteufel of the Daressalam Research Institute. The figures are from carefully kept records, and are not subject to the usual errors of such compilations.

TABLE 1.—MALARIA AND HEMOGLOBINURIC FEVER—MORBIDITY AND MORTALITY AMONG EUROPEANS IN DARESSALAM

| | | Morbidity | | Mortality | |
|---|---|---|---|---|---|
| Fiscal Year | Population | Cases | Percentage of Population | Cases | Percentage of Population |
| 1903-04...... | 377 | 168 | 44.5 | 0 | 0 |
| 1904-05...... | 350 | 141 | 37.1 | 3 | 0.8 |
| 1905-06...... | 657 | 355 | 54.0 | 4 | 0.6 |
| 1906-07...... | 851 | 287 | 33.7 | 6 | 0.7 |
| 1907-08...... | 827 | 268 | 29.8 | 6 | 0.7 |
| 1908-09...... | 743 | 342 | 48.0 | 3 | 0.4 |
| 1909-10...... | 750 | 506 | 67.5 | 5 | 0.7 |
| 1910-11...... | 930 | 460 | 49.5 | 10 | 1.1 |
| 1911-12...... | 1,024 | 667 | 65.2 | 11 | 1.1 |

TABLE 2.—INCIDENCE OF MALARIA INFECTION AMONG THE NATIVE POPULATION OF DARESSALAM BASED ON BLOOD EXAMINATION

| | Adults | | Children | |
|---|---|---|---|---|
| Fiscal Year | Examined | Infected Per cent. | Examined | Infected Per cent. |
| 1904-05....... | 8,000 | 10 | None examined | |
| 1905-06....... | No examinations made | | | |
| 1906-07....... | 14,752 | 7.5 | 3,234 | 18.9 |
| 1907-08....... | 15,263 | 15 | 4,352 | 27.0 |
| 1908-09....... | 28,267 | 14 | 3,747 | 33.4 |
| 1909-10....... | 17,889 | 21 | 5,563 | 29.4 |
| 1910-11....... | 15,960 | 18 | 4,136 | 27.7 |
| 1911-12....... | 24,917 | 17 | 4,800 | 25.1 |
| 1912-13....... | 19,782 | 20 | 3,308 | 32.0 |

Manteufel in his paper,[4] from which the tables are abstracted, says:

> When the above-mentioned expedition [Ollwig's] commenced its work in Daressalam, the Europeans were already in the habit of using mosquito bars on beds. However, the use of mosquito gauze for the protection of dwellings, and the taking of quinin prophylactically, as well as measures against mosquito pest, were only gradually introduced during the following years. In considering the influence of Koch's method upon the malarial morbidity of the European population, the above-mentioned factors must naturally be taken into consideration.

Now, the objection may be raised that the quininization was extended to only a portion of the population. The answer to this is that it represents a comparatively steady part of the population: house servants and artisans, who are less subject to migration than the traders, porters and agricultural laborers, who make up the remainder of the population of Daressalam. It follows that the results obtained among these people would be rather better than the average.

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[3] Koch, R.: Die Bekämpfung der Malaria, Ztschr. f. Hyg. u. Infektionskrankh., 1903, xliii.

[4] Manteufel: 12 Jahre Malariabekämpfung, etc., Ztschr. f. Hyg. u. Infektionskrankh., 1913, lxxvi.

It is recognized, of course, that by leaving the bulk of the population untreated, the chances for infecting the treated portion remain very good.

An experiment was therefore instituted by me to determine the effect of treating all the inmates of a closed community.

For this experiment the negro pupils of the Daressalam Trade School, who live in dormitories and do not come into contact with the outside population, were selected. The school is in the European quarter. Five days after the school was opened, April 5, 1913, blood specimens from all the pupils were examined. One hundred and thirty-one of these were natives of Daressalam; of these sixty-six, or 46.8 per cent., had malaria parasites. One hundred and twelve came from the country; of these fifty-two, or 45.5 per cent., were infected.

All those found to be infected were put on the routine treatment with quinin, and this treatment was continued until Oct. 29, 1914. November 11, the blood of all was examined; 26.4 per cent. were infected with malaria.

The school was closed for the Christmas holidays. Jan. 15, 1914, again five days after the school was opened, 254 pupils were present. Of the 152 who spent the holidays in Daressalam, fifty-one, or 37.4 per cent., were infected with malaria. Of the 102 who spent the vacation in the country, thirty-seven, or 36.2 per cent., were infected with malaria.

A parallel inquiry was carried out. Oct. 3, 1913, 100 adults and fifty children living in the vicinity of the mosquito-breeding pond mentioned before, Karavanserai Pond, had their blood examined by the same person who examined the blood of the schoolchildren, and who had no idea whatsoever of the purpose or nature of the experiment. None of those examined had ever taken quinin prophylactically, and the subjects were taken at random from the huts in the vicinity. Of the adults thirty-two harbored the parasites of malaria (32 per cent.); of the children twenty-six were infected (52 per cent.).

The pond was cleared of vegetation, the banks trimmed, and the water near the banks treated every ten days with a phenol preparation. The work of clearing was completed in November, 1913. Feb. 26, 1914, again 100 adults and 50 children were taken at random from the population residing in the vicinity of the pond. None of these had had quinin. The blood smears were examined by the person who made the first examination. Of the adults fourteen, or 14 per cent., were infected with malaria; of the children sixteen, or 32 per cent., a decrease of 18 and 20 per cent., respectively.

Among those treated with quinin according to the Koch-Ollwig method, the decrease in a community under ideal control was 13.9 per cent.

It is to be noted that the climatic conditions remained practically constant during the period covered by the inquiry. It is also to be noted that the control of the one breeding area did not by any means eliminate anophelines from the vicinity from which the subjects were drawn. The number of anophelines was reduced, however, to quite a marked extent in such areas.

I want to draw attention to one other factor in connection with the experience in Daressalam with the Koch-Ollwig method.

In the past two years the energetic medical adviser to the governor, Generaloberarzt Dr. Meixner, has had quite a number of measures introduced, all of which tended to decrease the number of anophelines in Daressalam. Unfortunately, conditions are such that Dr. Meixner and his associates are not in a position to carry into effect all the measures against malaria that they rightly consider necessary. The power of the able and zealous officers is greatly curtailed and hampered in East Africa, and their efforts are rendered almost sterile by passive and active resistance, lack of funds and "red tape" in volumes beyond the comprehension, I fear, of the average American.

# A COLLOIDAL COMPOUND OF STRYCHNIN AND ITS PHARMACOLOGY *

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The migration of drugs in the body, and consequently their action, is largely dependent on their diffusibility through colloidal membranes and their interaction with colloidal bodies. Since I wish to present the action of a colloidal compound of strychnin, it may be of interest at first to give a brief summary of the properties of colloids.[1]

In 1861, Graham found that not all substances acted in the same way when their solutions were separated from water by a parchment membrane. Crystalline substances like sodium chlorid, potassium iodid, sugar and the like passed through, while substances like gums, starches and proteins did not. Those that passed through he called crystalloids, those that did not, colloids.

This difference in diffusibility is perhaps the most striking distinction between the two classes of substances; it is not, however, the only one nor is it an absolute one, since all these bodies diffuse to some extent, at least on longer standing.

## THE NATURE OF THE COLLOIDAL SOLUTION

Various facts indicate that colloidal solutions are not true solutions but more of the nature of suspensions of fine minute particles of one form of matter in another. The solid particles are separated so that they do not come in contact with each other and are known as the disperse phase. The liquid molecules touch each other and are for this reason called the continuous phase of the colloid. All colloids are made up of these two phases—disperse and continuous. A difference in the size of the particles causes a difference in the refraction of light and consequently a difference in the appearance or color of the solutions. In the crystalline state it is well known that copper sulphate is blue, but if this be finely powdered it is white. Similarly the red oxid of mercury becomes yellow when more finely divided. For the same reason a colloidal solution of gold may be pink, red or purple in water and blue in organic solvents. The ultramicroscope also shows that many colloidal solutions contain fine particles.

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* From the Laboratory of Pharmacology, Northwestern University Medical School.

[1] This summary is taken mainly from an Introduction to the Chemistry of Plant Products by Haas and Hill, Longmans, Green & Co., London and New York, 1913, p. 273.

The fact that colloids contain these particles suggested a reason for their not diffusing through a membrane, and to explain this the mechanical or filtration theory states that colloids do not pass through simply because the particles are too large. There are some known facts, however, such as the passage through one kind of membrane of a colloid which will not dialyse through another of different composition, which prevent the acceptance of this theory as the only process involved in dialysis. For this reason some chemists advance a chemical theory which holds that the passage of a substance through a membrane is due to the latter playing an active part in the process. Kahlenberg asserts that the substance which passes through a membrane is soluble in the membrane. This theory might be also used to explain the selective affinity of tissues for drugs and the ability of tissues to break up such weak colloidal compounds as strychnin with kaolin.

The nature of the solvent is also important. A substance may be crystalline in one medium and colloidal in another. Gallic acid in water acts like a colloid, while in glacial acetic acid it is crystalline. While gold may be pink, red or purple in water, and blue in organic solvents, it is ruby red in glass. Sodium chlorid is white, but blue rock salt is considered a colloidal solution of sodium in crystalline sodium chlorid. Sodium chlorid also may be obtained in colloidal form in benzene, while in water it is decidedly crystalline. Soap is colloidal in water but not in alcohol.

### GEL FORMATION

Colloidal solutions readily undergo change, and unless conditions exist either for their preservation or renewal they soon deteriorate. The emulsions of the pharmacist "crack" and precipitate. The precipitation form of a colloid is called gel, the dissolved form, sol. Since both dissolved and precipitated forms of colloid may exist for many solvents, the terms "hydrosol," "hydrogel," "alcosol" and "alcogel," etc., are used to indicate the kind of solvent—water, alcohol, etc. If the precipitate or gel be one that cannot go into solution again, the action is said to be irreversible. If, however, the change is only temporary and through change of temperature or the like it again goes into solution, it is said to be reversible.

### TYPES OF IRREVERSIBLE AND REVERSIBLE CHANGES OF COLLOIDS

1. Spontaneous precipitation: Some colloids like silicic acid or pharmaceutical emulsions, after keeping precipitate spontaneously.

2. Gel formation due to altered concentration: An ether solution of collodion on evaporation will form a gel. Fruit juices and agar gel on evaporation due to the presence of a colloidal carbohydrate-pectin. Gelatin, a protein substance prepared from tendon or bone, gelatinizes on evaporation of its solution. All of these changes are reversible with heat.

3. Coagulation by heat. This change is well known in urinary analysis in the heat test for albumin; also well known in the cooking of eggs. The action is irreversible.

4. Coagulation by enzymes. The well-known coagulation of the emulsion milk by rennet and by various plant enzymes is an irreversible reaction. The suspensoid colloids resemble closely the enzyme, catalase, in many of their reactions.

5. Precipitation by electrolytes: The colloids of the blood or urine may be salted out by the addition of varying amounts of different salts; usually a large amount is required. Other colloids, especially suspensoids, may be precipitated by mere traces of an electrolyte. Thus colloidal iron is precipitated by extremely minute amounts while emulsoids, like milk or blood, require large amounts.

6. Precipitation by other colloids of opposite sign: Colloids are known to carry electric charges, and it is this that enables them to remain in solution. When neutral they are precipitated. The proteins of the blood are amphoteric, that is, they carry charges of either sign. Colloidal kaolin is negatively charged and colloidal ferric hydrate positively. The last two will mutually precipitate each other. One of the best methods of removing the proteins of the blood for the determination of the blood-sugar is to mix the blood-serum or laked blood with colloidal iron, in slight excess. The blood thus treated takes on the character of the added colloid but still remains in solution. On the addition of an electrolyte bearing an opposite charge such as sodium sulphate or magnesium sulphate, the positive charge on the iron is neutralized and in precipitation it carries down the protein with it. For a similar reason ferric salts are used in the purification of sewage water. The negatively charged particles of the sewage are precipitated by the positively charged ferric hydroxid hydrosol. It has also been suggested that the neutralization of toxin with antitoxin, and the phenomenon of bacterial agglutination, may be regarded as the mutual precipitation of two colloids.

### THE PROTECTIVE POWER OF COLLOIDS

Many organic substances such as gelatin and pectin bodies, when added to inorganic colloidal solutions, protect these from precipitation by electrolytes. As an explanation it has been suggested that the suspensoid becomes covered with a layer of the gelatin or pectin body and in a measure insulated with a coating of the added body whose character it takes on. Suspensoids so protected or insulated may be evaporated to dryness and again redissolved. This property of increased stability is valuable in the preparation of some of the colloidal solutions of silver and mercury used in medicine.

In like manner colloids protect sensory nerves from the action of acids, bitters, corrosives, etc. Sugar dissolved in mucilage tastes less sweet than in water, and acids in colloidal mixtures are less appreciated, as is observed in many fruits. The raspberry contains more acid and less sugar than the currant, but in the former the acid taste is concealed by the presence of large quantities of colloids so that the raspberry is regarded as a sweet fruit and the currant as an acid one. For the same reason ice cream does not taste so cold as frozen water (Cushny). One of the most common measures in the treatment of corrosive poisoning is the administration of colloids in the form of milk or eggs, because of this protective property. Charcoal, Fuller's earth or Lloyd's reagent would also lessen the rapidity of absorption.

### CLASSIFICATION OF COLLOIDS

Two classes are recognized—suspensoids and emulsoids. This classification is based largely on the properties and composition of organic and inorganic colloidal solutions. Organic colloids are sticky and viscous. Inorganic colloids are never viscous. This difference is accounted for by assuming that the disperse phase of the suspensoids consist of solid particles in a liquid medium, whereas the disperse phase of the viscous colloids consists of liquid particles suspended in a more dilute solution or liquid medium.

*Emulsoids.*—Serum may be regarded as a type. The ultramicroscope reveals no distinct particles. Whether this is due to the particles being too small or not having a refractive index sufficiently different from that of the liquid in which they are suspended is not known.

The assumption that emulsoids are made up of one liquid suspended in another would to a certain extent explain their viscosity. The lack of a sharply defined surface of separation would account for their lack of marked electrical properties and their indifference to electrolytes as compared with suspensoids. A relatively great concentration of an electrolyte is required for their precipitation, while a trace precipitates a suspensoid. If a suspensoid be added to serum the latter takes on the property of the suspensoid and is then readily precipitated or dragged down with the suspensoid on the addition of a trace of an electrolyte.

*Suspensoids.*—These are perhaps of less importance in medicine and biology than emulsoids, but because our kaolin strychnin compound comes under this head a brief description of their properties is given. The method of their preparation sustains the assumption that they are electrically charged, and the ultramicroscope reveals the presence of solid particles. By analogy some of these properties are thought to apply to the emulsoids.

They may be prepared: (1) by the disintegration of metals by an electric current under water; (2) by the reduction of metallic solutions with reducing agents; (3) by the passing of hydrogen sulphid through arsenious acid, whereby the arsenic trisulphid instead of being precipitated remains in colloidal solution.

It is natural to suppose that in the method of preparation by an electric spark the particles should be electrically charged and that these particles, being charged with the same kind of electricity, repel each other and so keep in solution — or suspension. If electrolytes are added, the charge may be neutralized and the suspensoid precipitated. This explains why suspensoid colloids cannot be kept for any length of time unless carefully freed from electrolytes by dialysis. This property of neutralization of colloids by electrolytes and the neutralization of a positive by a negative colloid may explain the phenomenon of absorption which some colloids exhibit and which concerns us directly in the kaolin strychnin compound.

### ABSORPTION

When a solid body is introduced into a solution the dissolved substance tends to accumulate at the point of contact between the solution and the solid. To all such cases of purely surface absorption the term "adsorption" is applied. This property is exhibited by wood charcoal to a large degree, and charcoal has long been used in chemical analysis to clarify solutions and to absorb gases. It has also been used in medicine to absorb gases from the stomach. Other colloids such as fuller's earth and china clay have been similarly used, and it is from fuller's earth that Lloyd's reagent is mainly prepared.

### COLLOIDAL STRYCHNIN

The preparation known as Lloyd's reagent was prepared by J. U. Lloyd[2] from fuller's earth. It has the property of completely removing alkaloids from neutral and acid solutions. The reagent is essentially hydrous aluminum silicate. According to Waldbott[3] it has the approximate composition given in Table 1.

TABLE 1.—APPROXIMATE COMPOSITION OF LLOYD'S REAGENT

| | Per Cent. |
|---|---|
| Water | 17.41 |
| Silicon dioxid | 55.30 |
| Aluminum oxid | 9.82 |
| Ferric oxid | 14.80 |
| Calcium monoxid | 1.58 |
| Carbon dioxid | undetermined |

He also found that heating to 130 C. (266 F.) does not destroy its activity, but red heat renders it inert. Other colloidal materials, among which are colloidal arsenious sulphid and colloidal silicic acid, plainly precipitate quinin sulphate.

The use of this reagent for the separation of alkaloids has been investigated somewhat in detail by Gordin and Kaplan.[4] Because of the rather firm combination which the substance forms with alkaloids and the fact that it has been advised as a means of concealing the unpleasant taste of quinin, it was thought advisable to investigate its pharmacologic action. For this purpose Professor Gordin kindly furnished me with a colloidal combination of strychnin with Lloyd's reagent. The strength of the sample was 4 gm. of strychnin sulphate precipitated with 60 gm. of the reagent. The final product when dried weighed 65 gm.

Since the product contains about 6.15 per cent. strychnin sulphate, one is surprised to find that it is rather tasteless, and only after holding it in the mouth for some time does the bitter taste develop. It is this concealment of the bitter taste and its use for this purpose in pharmacy that makes the investigation advisable. As already reported by Dr. Gordin,[4] the colloidal precipitate acts very much like strychnin diluted with an inert substance. In fact, it has the typical colloidal property of delaying and lessening the effect of the strychnin.

In determining this I used frogs of about the same size and compared the action of pure strychnin with the colloidal form. The time of the onset of tetanus was noted in each case, and the amount of pure strychnin corresponding to the colloidal form estimated. This method has a limited application, but it shows beautifully the lessening of the tetanic dose and marked changes in the rate of absorption. The tables are self explanatory. The amount of colloidal strychnin is given in terms of strychnin sulphate, which is 6.15 per cent. of the amount of kaolin precipitate used. Equal volumes of fluid were used in each injection. The injections were made into the anterior lymph sac.

In comparing these two tables we find that where 1/50 mg. of the pure strychnin produced tetanus in about an hour, the same amount in a colloidal form was without effect and that about four times the amount was required to produce tetanus in this time. The weakening effect is much more marked in the stronger colloidal suspensions. One twenty-fifth mg.

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[2] Lloyd, J. U.: Chem. Abst., 1913, vii, 683.

[3] Waldbott: Jour. Am. Chem. Soc., 1913, xxxv, 837.

[4] Gordin and Kaplan: Am. Jour. Pharm., 1914, lxxxvi, 461; Jour. Am. Pharm. Assn., 1914, iii, 627.

will produce tetanus in about the same time as 3.6 mg. or about ninety times as much of the colloidal compound. It is quite apparent, therefore, that this method will not give us the relative strengths of the preparations. It does show, however, the retarding action of the colloid. This difference in the apparent strength of colloids on dilution is perhaps not given the weight it deserves in the biologic standardization of drugs.

TABLE 2.—EXPERIMENTS WITH PURE STRYCHNIN SULPHATE

| Weight of Frog, Gm. | Amount of Strychnin, Mg. | Time of Onset of Tetanus, Minutes |
|---|---|---|
| 27 | 1/5 | 3.5 |
| 29 | 1/5 | 2.0 |
| 25 | 1/10 | 5.0 |
| 21 | 1/10 | 4.5 |
| 30 | 1/10 | 5.5 |
| 24 | 1/25 | 35.0 |
| 24 | 1/25 | 35.0 |
| 25 | 1/25 | 23 |
| 27 | 1/25 | 40 |
| 22 | 1/25 | 23 |
| 22 | 1/25 | 18 |
| 23 | 1/25 | 39 |
| 22 | 1/50 | 62 |
| 22 | 1/50 | 73 |
| 21 | 1/50 | 75 |

TABLE 3.—COLLOIDAL STRYCHNIN

| Weight of Frog, Gm. | Strychnin, Mg. | Time of Onset of Tetanus |
|---|---|---|
| 23 | 1/25 | No Tetanus |
| 18 | 1/25 | No Tetanus |
| 17 | 1/25 | No Tetanus |
| 18 | 1/25 | No Tetanus |
| 18 | 1/13 | 76 |
| 16 | 1/13 | 46 |
| 23 | 1/13 | 75 |
| 21 | 1/13 | 13 |
| 20 | 2/13 | 66 |
| 18 | 2/13 | 51 |
| 19 | 2/13 | 43 |
| 19 | 2/13 | 45 |
| 24 | 2.4 | 37 |
| 24 | 2.4 | 28 |
| 23 aver. weight of 10 | 3.6 | 32 |
| 20 aver. weight of 4 | 4.8 | 31 |

The difference between crystalline and colloidal strychnin is undoubtedly due to a retarded absorption. This can be lessened to such an extent that the rate of excretion may be nearly equal the rate of absorption, when no action would be expected. Other colloids have the same effect and it is well known that strychnin in mucilage is not nearly so quickly absorbed through the frog's skin as strychnin in water. O. H. Brown[5] has reported a colloidal albumin combination of strychnin whose properties are similar to the compound which I have described.

All of the animals that received the larger doses of the colloidal preparation died. Those that received the pure strychnin in smaller doses, but which produced tetanus in the same time as the larger colloidal doses, recovered. The colloidal combination, therefore, apparently acts mainly by delaying absorption, and if given in larger amounts is only a little less toxic than the pure alkaloid.

When administered by mouth the action is also delayed, but if the amount given contains a fatal dose of strychnin, tetanus is somewhat delayed and it requires a little more to cause death. The main difference is in delayed action due to delayed absorption. Cats and dogs react similarly to frogs. The exact diminution in the toxicity we have not measured, but it is not great.

## CONCLUSIONS

The action of strychnin when combined with Lloyd's reagent is retarded. In this respect the reagent modifies the action in a manner similar to other colloids. The combination is broken up in the body and the typical strychnin action exerted. The toxicity of the alkaloid is somewhat lessened owing to delayed absorption, but the main effect is a retarded action.

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[5] Brown, O. H.: Jour. Biol. Chem., 1906, ii, 149.

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# THE INTRASPINAL TREATMENT OF SYPHILIS OF THE CENTRAL NERVOUS SYSTEM WITH SALVARSANIZED SERUM OF STANDARD STRENGTH

### REPORT OF CASES *

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The purpose of this communication is to describe a method of preparing human serum containing a known quantity of salvarsan and suitable for employment intraspinally in the treatment of syphilis of the central nervous system, and to report a series of fifteen cases treated with such a preparation.

Recently Marinesco and Minea[1] reported having treated twenty patients with serum prepared in a somewhat similar manner, but in which neosalvarsan was used instead of salvarsan. Their work was started about the same time (November, 1913) as that herein reported. Reference will be made later to this article, and to a subsequent one by the same authors.

In support of the rationale of intraspinal treatment there are reasons which readily commend it to those who are familiar with the anatomic and physiologic conditions existing in the central nervous system. While necessarily a delicate procedure, and one that requires the greatest care and thoroughness of technic, the method may be considered free from hazard when the essential precautions are carefully observed. There can be no doubt in the minds of those who have followed the developments of the past few years that, in so-called parasyphilis or metasyphilis, we are dealing with either active syphilitic disease of the central nervous system, or the results of such a process. It is in the former class of cases only that we may hope to achieve success with any form of therapy. The findings of Noguchi and Moore,[2] and subsequently of others, have removed all doubt as to the true etiology and pathology of paresis and tabes.[3] The indications for a rational therapy have been definitely established. We are confronted with the task of dislodging the *Treponema pallidum* from the poorly vascularized regions of the brain and spinal cord. That the perineuronal and perivascular lymph-spaces are in direct communication with, and a part of, the subarachnoid space has been demonstrated. Dandy and Blackfan[4] in their experiments in producing artificial hydrocephalus, have shown that when phenolsulphonephthalein is injected into the subarachnoid space, only faint traces can be demonstrated in the thoracic and right lymphatic ducts even after an interval of two hours, whereas it appears in the blood in three minutes, and at the end of two hours from 35 per cent. to 60 per cent. has been excreted by the kidneys. This experiment indicates that the subarachnoid space and its accessory perineuronal and perivascular lymph trabeculae are not a part of the general lymphatic system of the body. It also shows that there is a free passage of spinal fluid into the blood-stream. The reverse is not true, however, for substances introduced intravenously and intra-arterially do not enter the cerebrospinal fluid. Tilney and Woolsey,[5] in a series of extremely important and interesting studies in vital staining, introduced solutions of trypan blue subcutaneously, intra-arterially, intravenously, and intraspinally. By the first two methods they found that the skin and thoracic and abdominal viscera stained readily; but the central nervous system, on the other hand, remained entirely free from stain. Given intravenously, the stain reached the dura mater and the pia, but did not penetrate into the nerve-tissue. Even after the use of *twice the quantity of the solution and a concentration three times as great* as that used in the first two methods, there was but little evidence that the dye had traveled into the substance of the brain and cord. After an intraspinal injection, however, *using only one-tenth the strength of dye solution* used in the first two experiments, the meninges were not only found to be deeply stained, but the dye had penetrated deeply into the nerve-tissue and through the walls of the veins and capillaries, even reaching the endothelium of the latter. Microscopic examinations of sections showed that the stain had traveled along the trabeculae of the pia.

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* Read before the American Association of Immunologists at Atlantic City, June 22, 1914.

* On account of lack of space this article is abbreviated in The Journal by omission of some case reports. The complete article appears in the author's reprints.

[1] Marinesco and Minea: Bull. de l'Acad. de méd., 1914, lxviii, 259.

[2] Noguchi and Moore: Jour. Exper. Med., 1913, xvii, 232-238; Moore, J.. W: Jour. Nerv. and Ment. Dis., 1913, xl, 172-179.

[3] Noguchi, H.: Jour. Cutan. Dis., 1913, xxi, 543-549.

[4] Dandy, Walter E., and Blackfan, Kenneth D.: An Experimental and Clinical Study of Internal Hydrocephalus, The Journal A. M. A., Dec. 20, 1913, p. 2216.

These results suggest strongly the necessity for other than intravenous administration of salvarsan if we are to reach the diseased areas in syphilis of the central nervous system, other than gummas and endarteritis. The cells of the choroid plexus are secretory in character. To them is due, in a large part, the elaboration of the spinal fluid, although Dandy and Blackfan have shown that the ventricles of the brain also play a part in the secretion of this fluid. It is well known that only a few substances and these of the most simple character, such as urea and sodium chlorid, normally pass from the blood into the subarachnoid space. The question of the presence of salvarsan in the cerebrospinal fluid after an intravenous treatment is one on which investigators differ. While the majority have obtained entirely negative results, a few claim to have detected small quantities of arsenic. There can be no doubt, however, that the impermeability of the fluid secretory apparatus accounts for the comparative inefficiency of other than subarachnoid administration of curative agents in diseases affecting the meninges and adjacent nerve-tissue. Flexner,[6] in his work in epidemic cerebrospinal meningitis, Lamar,[7] in pneumococcic meningitis, Wollstein,[8] in influenzal meningitis, and more recently Flexner and Amoss,[9] in poliomyelitis, have demonstrated beyond a doubt that diseases of this type cannot be controlled except by subarachnoid therapy. Syphilitic meningo-encephalitis and meningomyelitis differ in no way from other diseases of these parts in so far as the method of treatment to be employed is concerned. While potassium iodid, mercury, and salvarsan intravenously, are of unquestioned benefit in many cases, not infrequently resulting in rapid amelioration of symptoms, they are rarely sufficient to eradicate the biologic evidences of active disease as shown by the findings in the spinal fluid. Until this is accomplished, and permanently so, our therapy is inadequate and an additional means of attack seems therefore very desirable.

We are indebted to Swift and Ellis[10] for the original work in intraspinal treatment of syphilis of the nervous system. Their method was to use the blood removed from a patient one hour after the intravenous administration of salvarsan. At this time the serum possesses the maximum spirocheticidal action and the minimum irritative qualities. The results obtained by Swift and Ellis in the treatment of tabes and cerebrospinal syphilis were extremely good. In this country a number of men, including Fordyce, Ayre, Tilney, Hough, McCaskey, Fry, Myerson, Byrnes, Cotton, Esper, Draper, Cutting and Mack, and Ogilvie, have employed the method in treating paresis as well as tabes and cerebrospinal syphilis. With the exception of Myerson, who discredits the method in both theory and practice, the consentient opinion of these men is that the results so far obtained, in all but the hopelessly irreparable cases, are very encouraging.

Efforts made to introduce solutions of neosalvarsan intraspinally have not met with very encouraging results. Swift and Ellis[11] found that solutions containing from 0.1 to 1.5 mg. produced marked lymphocytosis in the spinal fluid of monkeys, indicating that the drug was intensely irritating to the meninges. In this work they used 40 per cent. serum as a vehicle. Solutions containing 1.0 mg. of salvarsan produced a lymphocytosis of over 1,000 cells per cubic millimeter in every case, while in one monkey 3.2 mg. caused paralysis of the hind legs. Wechselmann[12] found that 0.1 mg. of salvarsan in solution of from 1 : 500 to 1 : 800 produced convulsions and subsequent death in dogs when given intracranially. Less concentrated solutions were better borne. He later[13] reported having treated two paretics and two cases of congenital syphilis intraspinally with doses of neosalvarsan ranging from 0.5 to 3.0 mg. without ill effects. Marinesco[14] reported severe reaction following the use of 5.0 mg. of the drug in a concentration of 1 : 800. Eight out of thirteen patients treated had vesical retention or incontinence. Three had paresis of the lower limbs and one had anesthesia below the site of puncture. Berger,[15] in a series of experiments on twenty-five dogs, found that a solution containing 1.0 mg. produced death when given intracranially. At necropsy even doses of 0.5 mg. had produced severe irritation at the site of the injection. This was evidenced by congestion and infiltration of the surrounding tissue, minute hemorrhages, etc. Only 0.1 mg. in a 1 : 10,000 solution could be given without irritation. Beriel[16] reports the death of three out of four paretics treated intracranially and intraspinally. Two of these received 2.0 mg. of neosalvarsan. One suffered no ill effects after 1.0 mg. and 2.0 mg. and appeared to be somewhat improved. Two of those who died were treated intracranially. Ravaut[17] reports no ill effects in nine patients receiving 63 treatments. He used from 4.0 to 12.0 mg. of neosalvarsan in isotonic sodium chlorid solution. His clinical and serologic results are vaguely summarized. Marie and Levaditi,[18] treated 14 patients and of this number five died within a month. Two others showed evidence of severe local irritation, vesical retention, paresis of the lower limbs, etc. Out of the total number treated there was improvement in one case. Jeanselme, Verne and Block,[19] treated five cases of tabes, four of paresis, and one of latent syphilitic meningitis. They record no unfavorable sequelae other than temporary increase of tabetic pains, rise of temperature and general weakness. They used from 0.25 to 5.0 mg. doses. Clinically their results are inconclusive. They found a reduction of the cell and globulin content of the spinal fluid in most cases, and the Wassermann reaction influenced in four out of five tabetics. Lorenz[20] reports fifteen cases treated intraspinally with neosalvarsan dissolved in 0.4 per cent. sodium chlorid solution. In ten cases there was a reduction of cells, in eight, decreased globulin, and in four the Wassermann was changed to negative. He used from 0.03 to 0.06 mg. of the drug at each treatment and believes this method less dangerous than the Swift-Ellis. In the work of Marinesco and Minea,[1] referred to above, the authors used neosalvarsan in human serum. The serum was first inactivated by heating at 56 C. (100.8 F.) for thirty minutes. From 6.0 to 12.0 mg. of the drug was then added and the combination heated at 37.5 C. (99.5 F.) for forty-five minutes. Six out of twenty cases of tabes and latent syphilitic meningitis showed improvement in one way or another. There was no improvement in the remaining fourteen cases. There was no parallelism between the changes in the spinal fluid findings and the clinical results obtained. Transitory retention of urine was noted as the chief unfavorable sequela. Later the same authors[21] report having treated twenty-one cases of paresis intracranially with serum prepared in a similar manner. There were signs of improvement in seven cases and death in one. They used as much as 1.0 mg. of the drug in only 5 c.c. of the patient's serum. In this series they record epileptiform attacks, rhythmical spasms of the legs and a transitory hemiplegia on the side opposite the point of injection, following treatment.

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[5] Tilney, F., and Woolsey, W.: A personal communication; to be published. Also Tilney, Frederick: Long Island Med. Jour., 1914, viii, 128.

[6] Flexner, A.: Jour. Exper. Med., 1907, ix, 168.

[7] Lamar, R. M.: Jour. Exper. Med., 1912, xvi, 581-606.

[8] Wollstein, A.: Jour. Exper. Med., 1911, xiv, 73.

[9] Flexner and Amoss: Jour. Exper. Med., April 1, 1914, p. 411.

[10] Swift and Ellis: New York Med. Jour., July 13, 1912.

[11] Swift and Ellis: Jour. Exper. Med., 1913, xviii, No. 4.

[12] Wechselmann, W.: Die Behandlung der Syphilis mit Dioxydiamidoarsenobenzol (Ehrlich-Hata 606), Berlin, 1911, ii, 11.

[13] Wechselmann, W.: Deutsche med. Wchnschr., 1912, xxxviii, 1446.

[14] Marinesco, G.: Ztschr. f. diätet. u. physik. Therap., 1913, xvii, 194.

[15] Berger: München. med. Wchnschr., 1914. lxi, 563.

[16] Beriel: Bull. et mém. d' hôp. de Paris, 1913, Series 3, xxxix, 970.

From a study of these results one can but conclude that, while apparently well borne in a small percentage of cases, neosalvarsan administered subdurally in any vehicle is attended with far too much hazard to warrant its use, even if the clinical results obtained were more encouraging. It is well known that both salvarsan and neosalvarsan attain their maximum spirocheticidal power only when in combination with blood-serum, and, as Swift and Ellis[22] have shown, this action is enhanced by heating at a temperature of 56 C. for thirty minutes. The heating of neosalvarsan at this temperature is impracticable because of its instability, and therefore its use is prohibited in any work that attempts to salvarsanize a serum in vitro. Recently Stühmer[23] has shown that salvarsanized serum, unheated, exerts a curative action for twenty-four hours in mice infected with trypanosomes, and a protective action for forty-eight hours, whereas, if the serum is heated at 56 C. for thirty minutes the curative effect is prolonged for three days and the protective influence for four days. He believes, with Swift and Ellis, that the heating of a salvarsanized serum in this manner is absolutely essential to promote the biologic and chemical changes necessary to attain the highest possible curative efficiency.

Convinced of the value of the Swift-Ellis method, from observation of results in some 200 treatments, but believing that, as in the employment of all other anti-syphilitic medication, the maximum efficiency would more readily be attained if we were able to increase or decrease the strength of our curative agent, I undertook, in November, 1913, to prepare in vitro a serum of known salvarsan content that could be safely administered intraspinally.

## TECHNIC

The technic employed is as follows:

About 50 c.c. of blood are drawn into a centrifuge bottle by means of a MacRae vacuum needle. The bottle is immediately placed in a large centrifuge and the fibrin and cellular elements are thrown down. It requires a speed of about 3,000 revolutions for fifteen minutes to produce a perfectly clear serum. It is rarely necessary to centrifuge more than once if the blood is freshly drawn, but the process should be repeated if the serum is not absolutely free from cells and fibrin. To 15 c.c. of serum is then added the amount of salvarsan to be given. This is done by mixing the salvarsan as for an intravenous treatment, using freshly distilled and boiled water, and bringing the total quantity up so that each 40 c.c. of the solution will contain 1.0 dg. (0.1 gm.) of the drug. Each cubic centimeter of this solution will then contain 2.5 mg. of salvarsan. With a 1 c.c. pipet, graduated into tenths, the desired amount can be readily measured from 0.25 mg. upwards. *In adding the sodium hydroxid it is of the greatest importance to use only the exact amount required to very faintly alkalinize the solution.* When this has once been determined by testing with litmus paper the sodium hydroxid should always be added quickly, and not drop by drop. *It is also very important that the temperature of the salvarsan and serum be the same when the two are mixed.* The serum is then gently agitated to thoroughly mix the two and is placed in a thermostat at 37 C. for forty-five minutes. From this it is placed in a thermostat at 56 C. for thirty minutes. It is now ready to be given intraspinally and it should be used as soon after preparation as possible. *Under no circumstances should a serum be used that is more than three hours old.*

The lumbar puncture is done with the patient lying on his side, the back flush with the edge of the bed, and the thighs flexed on the abdomen. Spinal fluid to the amount of 15 c.c. is permitted to flow through the cannula of the puncture needle, and the serum is then introduced by gravity from the barrel of a glass syringe. I have not found that the intraspinal pressure is of sufficient importance in the average case to require its measurement before and after treatment. In the absence of any evidence of extreme pressure the practice of simply removing the same quantity of fluid as of serum to be introduced has proved to be entirely satisfactory. After a treatment the patient is kept in the recumbent position, without pillows, and with the foot of the bed elevated, for four or five hours. The bed is then lowered, but he is not permitted to get up for from thirty-six to forty-eight hours, depending on the nature of the reaction following.

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[17] Ravaut, P.: Bull. et mém. Soc. méd. d. hôp. de Paris, 1913, Series 3, xxxvi, 752, 761.

[18] Marie and Levaditi: Bull. et mém. Soc. méd. de hôp. de Paris, 1913, Series 3, xxxvi, 675.

[19] Jeanselme, Verne and Block: Bull. et mém. Soc. méd. d. hôp de Paris, 1913, Series 3, xxxvi, 792.

[20] Lorenz, W. F.: Wisconsin Med. Jour., 1913-14, xii, 171, 177.

[21] Marinesco and Minea: Compt. rend. Soc. de Biol., 1914, lxxvi, No. 4, 672, 674.

[22] Swift and Ellis: Jour. Exper. Med., 1913, xviii, No. 4.

[23] Stühmer: München. med. Wchnschr., 1914, lxi, 745.

In the cases herein reported a total of seventy-five treatments were given. The reactions observed have been chiefly in the form of root pains in the lower extremities. These followed in about 50 per cent. of the treatments, varied considerably in intensity, and were invariably more marked in tabetics in whom lightning pains had been a prominent symptom. In three tabetics with vesical insufficiency, this symptom was temporarily increased with the pain. In one paretic who had not previously had bladder trouble, there was retention of urine necessitating catheterization for several days following a dose of 3.5 mg. Another paretic developed vesical and rectal incontinence, with numbness and weakness in the lower extremities, within six hours after a treatment with the same amount. In this case the patient got out of bed a few minutes after the treatment was given and walked about the room. The severe reaction that followed was attributed, in part, at least, to the probability that the erect posture had prevented the serum from properly diffusing within the spinal canal, and had caused an irritation of the roots in the dependent part of the dural sac. With the exception of this patient, who, although slowly improving, has not yet completely recovered, the reactions have all been temporary. In several tabetics and one taboparetic there was accentuation of the ataxic symptoms coming on several days after a treatment. In every instance, however, these symptoms slowly disappeared, and the patient's condition was eventually improved over what it had been prior to the treatment. When pains have followed a treatment they have usually responded to the ordinary anodynes given for the relief of tabetic crises. Occasionally it has been necessary to give morphin hypodermically. In only one case was there any elevation of temperature following a treatment, and this disappeared in twenty-four hours. In 50 per cent. of the treatments there was no reaction of any kind beyond a slight temporary weakness.

As will be seen by the table in Case 4, as high as 4.0 mg. of salvarsan was given at a treatment. In this instance there followed a temporary retention of urine and severe root pain. Although numerous other instances show a dosage of 3.0 and 3.5 mg. I would particularly emphasize the importance of keeping the dose within 1.0 mg. The treatments given with relatively small amounts of the drug were well borne, and the clinical improvement was more marked than when larger doses were used. This was very noticeable in Case 1, in which the patient showed the greatest improvement while on small doses. It would seem that nothing is to be gained by using larger quantities of the drug, and, in addition, the possibility of injury to the nerve-tissue is reduced to the minimum when the dose is kept within the above mentioned limit. *For repeated use, from 0.25 mg. to 0.5 mg. is the safest and most effectual dose to employ.* The giving of heroic doses does not contribute to the efficacy of the treatment, but, on the contrary, not only minimizes its value as a therapeutic measure, but may entail grave danger to the patient.

The following reports[24] must be considered as purely preliminary, since sufficient time has not yet elapsed for proper observation of the cases. In order to present them as concisely as possible, only brief abstracts of the examinations and analyses made before and after treatment will be given.

## REPORT OF CASES

CASE 1.—Tabes. Man, aged 41, married, salesman, was seen Nov. 15, 1913.

*Symptoms.*—Patient has difficulty in walking; marked ataxia; general weakness; periodic root pains; loss of position sense in feet and legs; paresthesia; numbness in feet and legs; hypersensitiveness to hot and cold water. Duration, three to four years, steadily worse.

*History.*—Patient had syphilis ten years ago. Primary and secondary manifestations. Orthodox treatment for three months. From February, 1912, to October, 1912, he received fourteen intravenous treatments of salvarsan and neosalvarsan, and reacted badly to each; absolutely no improvement.

*Examination.*—Patient is poorly nourished, weight 116 pounds. Gait and station very poor. Uses heavy cane; walks with difficulty. Easily fatigued. Knee-jerks and ankle-jerks absent, right and left. Pupils: 2 mm., round; fixed to light; very sluggish to accommodation. Position sense in feet and legs, nil. Hypesthesia in feet, calves, and post-thighs.

TABLE 1.—RESULT OF TESTS AND TREATMENT IN PATIENT 1*

| Analyses | Cerebrospinal Fluid | Blood | |
|---|---|---|---|
| | | Date | Reaction |
| 11/15/13 | Wass. ++ in 1.0, 0.8, 0.6, 0.4 c.c.; — in 0.2 c.c.<br>Cells 46 per cu. mm.<br>Glob. ++, 0.2 c.c. | 9/ 4/13 | += |

| Date of Treatment | Intraspinous mg. Salvar. | Reaction Root Pain | Intravenous Salvarsan | HG and KI |
|---|---|---|---|---|
| 11/21/13 | 0.25 | — | | |
| 11/29/13 | 0.25 | — | | |
| 12/13/13 | 0.5 | — | | |
| 1/ 8/14 | 0.75 | — | None | No administration |
| 1/27/14 | 0.75 | — | | |
| 2/19/14 | 1.0 | Moderate | | |
| 3/10/14 | 1.5 | Moderate | | |
| 4/16/14 | 3.0 | Severe | | |
| 5/28/14 | 3.5 | Very severe | | |

| Date of Analyses | Cerebrospinal Fluid | Blood | |
|---|---|---|---|
| | | Date | Reaction |
| 5/29/14 | Wass. ++ in 1.0, 0.8; — in 0.6, 0.4, 0.2 c.c.<br>Cells None.<br>Glob. None | 5/29/13 | ++tng |
| | | 6/ 9/13 | — |

* In these tables ++ equals complete inhibition; —, negative.

*Examination.*—June 2, 1914: Objective: Areas of hypesthesia in feet and legs are very markedly diminished. Patient's position sense is only faintly impaired, at times appears to be perfectly normal. Nutrition greatly improved. Musculature firm. He has gained 8 pounds in weight. Gait and station very markedly improved. Subjective: Patient states that he feels better than at any time since the onset of his trouble. He is able to walk from six to eight miles without the aid of a cane, and without undue fatigue. He has been absolutely free from pain and girdle sensations for more than three months.[25]

CASE 4.—Postman, aged 23, single, seen Feb. 10, 1914.

*Symptoms.*—Patient shows marked weakness of lower extremities; ataxia, very marked; vesical insufficiency; almost constant dribbling of urine; pains in arms and legs, not severe in character but practically constant. Duration three and one-half years, steadily worse.

*History.*—Patient had genital ulcer four years ago. No secondaries of any kind. Six months later developed bladder weakness and difficulty in walking. All symptoms were pronounced within a year. In November, 1911, was given two intravenous treatments of salvarsan.

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[24] For lack of space only four case reports are given here. The full series will be found in the author's reprints.

[25] He has had nine intraspinal treatments; no salvarsan by vein; no mercury or potassium iodid. The improvement was most noticeable when he was receiving small doses, that is, under 1.0 mg.

*Examination.*—Patient is very poorly nourished; musculature soft and flabby. Weight 110 pounds. He is unable to walk more than twenty feet without assistance. Even this requires a great effort. Position sense in lower extremities is nil. Marked incoordination both manual and pedal. Knee-jerks and ankle-jerks absent. Pupils: 3 mm. round, very sluggish to light; to accommodation normal.

TABLE 4.—RESULT OF TESTS AND TREATMENTS IN CASE 4

| Analyses Date | Cerebrospinal Fluid | Blood Date | Blood Reaction |
|---|---|---|---|
| 3/ 2/14 | Wass. ++ in 1.0, 0.8, 0.6 c.c. — below.<br>Cells 98 per cu. mm.<br>Glob. ++, 0.2 c.c. (Marked excess.) | 3/ 2/14 | — |

| Date of Treatment | Intraspinous mg. Salvar. | Reaction Root Pain | Intravenous Salvarsan, gm. | HG and KI |
|---|---|---|---|---|
| 3/ 2/14 | 0.5 | — | .. | |
| 3/17/14 | 1.0 | Slight | .. | |
| 4/ 4/14 | 1.25 | Slight | .. | |
| 4/17/14 | .. | ...... | 0.5 | |
| 4/18/14 | 1.5 | Severe | .. | No administration |
| 5/ 6/14 | .. | ...... | 0.5 | |
| 5/ 7/14 | 2.0 | Severe | .. | |
| 5/22/14 | 4.0 | Severe† | .. | |
| 6/ 6/14 | 2.0 | Slight | .. | |

| Analyses Date | Cerebrospinal Fluid | Blood Date | Blood Reaction |
|---|---|---|---|
| 6/ 9/14 | Wass. Negative in all dilutions.<br>Cells None.<br>Glob. ±, 0.2 c.c. (Very faint excess.) | 6/ 9/14 | — |

† On this date there was temporary retention of urine.

*Examination.*—June 1, 1914: Objective: There is definite improvement in the pupillary light reflex. Other reflexes unchanged. Coordination improved in both upper and lower extremities. His station with eyes open is very good; with eyes closed poor. His gait, although markedly ataxic, has improved so that he walks very well with the aid of a cane. He has gained 8 pounds. Muscles of his lower extremities are much more firm. Subjective: He is able to walk the length of ten city blocks with but little fatigue. He can get on and off street cars without difficulty. He has no trouble with his bladder other than occasional difficulty in retaining urine if bladder is not emptied promptly. He has had no tabetic pains for the past six weeks. He states that there is a definite improvement in his position sense in his feet and legs.

Case 9.—Paresis. Man, aged 46, married, merchant, seen Nov. 3, 1913.

*Symptoms.*—Patient is wildly maniacal. He has been in this condition practically constantly for the past nine months. For the past four months it has been impossible to keep a stitch of clothes on him, and he has lived in a room devoid of all furniture except a bed. He fights his attendants and raves and curses at the top of his voice. He is tractable only in the presence of his family physician.

*History.*—No history of syphilis obtainable. Seven years ago patient suddenly developed diplopia which disappeared under mixed treatment. He suddenly became violent nine months ago and was immediately committed. During this time he has had a number of intravenous treatments of salvarsan given at irregular intervals whenever his condition would permit.

*Examination.*—Knee-jerks and ankle-jerks diminished; R > L. Pupils about 2 mm., irregular margins, practically fixed to light. He is unusually well-nourished. It is difficult to make a thorough examination on account of his excited condition. He is oriented as to place and person but very vaguely so as to time. He talks in a rambling, disconnected manner.

*Examination.*—May 1, 1914: There is definite improvement in patient's condition. During the greater part of the time he is quiet and tractable. For the past month he has dressed himself each day and walks about the grounds of the sanatorium with an attendant. Otherwise there is no change in his mentality.[27]

TABLE 9.—RESULT OF TESTS AND TREATMENTS IN CASE 9

| Analyses Date | Cerebrospinal Fluid | Blood Date | Blood Reaction |
|---|---|---|---|
| 11/ 8/13 | Wass. ++ in 1.0, 0.8, 0.6 0.4 and 0.2 c.c.<br>Cells 75 per cu. mm.<br>Glob. ++ 0.2 c.c. (Marked excess.) | 11/ 8/13 | ++ |

| Date of Treatment* | Intraspinous Serum† Percentage | Reaction | Intravenous Salvarsan, gm. | HG and KI |
|---|---|---|---|---|
| 11/ 8/13 | 50 | — | | |
| 11/15/13 | .. | .. | | |
| 11/19/13 | 50 | — | 0.5 | |
| 11/29/13 | 75 | — | .. | Impossible to give either mercury or potass. iodid |
| 12/ 2/13 | .. | .. | 0.5 | |
| 12/ 6/13 | 75 | — | | |
| 12/11/13 | .. | .. | 0.5 | |
| 12/15/13 | 80 | — | | |

| Analyses Date | Cerebrospinal Fluid | Blood Date | Blood Reaction |
|---|---|---|---|
| 12/15/13 | Wass. ++ in 1.0, 0.8, 0.6 0.4 c.c. — in 0.2 c.c.<br>Cells 14 per cu. mm.<br>Glob. ++, 0.2. c.c. (Moderate excess.) | 12/15/13 | ++ |

| Date of Treatment‡ | Intraspinal mg. Salvar. | Reaction | Intravenous Salvarsan | HG and KI |
|---|---|---|---|---|
| 2/20/14 | 0.75 | — | | Sajodin gr. 90 t.i.d. in food |
| 3/11/14 | 1.0 | — | | |
| 4/ 2/14 | 1.5 | — | None | |
| 4/10/14 | 2.0 | — | | |

| Analysis | Cerebrospinal Fluid | Blood |
|---|---|---|
| 4/14/14 | Wass. — in all dilutions<br>Cells None<br>Glob. ±, 0.2 c.c. (Very faint excess.) | Not made |

* In this course of treatment the Swift-Ellis method was used. There was no change in his mental or physical condition. Patient was so resistive to treatment that it was necessary to precede each intraspinal injection with morphin and hyoscin hypodermically.

† Exogenous (Swift and Ellis).

‡ Serum of standard strength was used in this series of treatments.

Case 11.—Paresis. Man, aged 44, married, broker, seen Feb. 12, 1914.

*Symptoms.*—Patient has thick, slurring speech; defective memory; depression, epileptoid attacks; feeling of numbness in backs of hands, wrists, arms and forearms; irritability; childishness; numerous signs of slow mental deterioration. Duration, about eighteen months. First symptom was an epileptoid attack while in his office. Since then he has had numerous similar attacks; loss of consciousness, clonic and tonic twitchings, generalized.

*History.*—Patient had syphilis eighteen years ago. Genital chancre, no secondaries. Local treatment only. Within the past year he has had one intravenous treatment of neosalvarsan with potassium iodid and mercury by inunction irregularly. He has been unable to attend to business for some months. During the past week he had several epileptoid seizures within twenty-four hours and was dazed and disoriented the entire day. He has failed rapidly in every way during the past three months.

*Examination.*—Patient has typical paretic speech defect. It is often difficult to understand what he says. He shows a marked confusion of details covering the past six to eight months. There is a coarse tremor of the hands, tongue and at times the facial muscles. He is dull and stupid. Knee-jerks: right, normal; left, diminished. Ankle-jerks diminished. Deep reflexes of arms, normal. Pupils: round, 2 mm. fixed to both light and accommodation. His station and gait are normal.

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[27] It is interesting to observe that there was no change whatsoever in the patient's condition while he was on the Swift-Ellis treatment, that there was an interval of over two months between this course of treatment and the four treatments with serum of standard strength, and that the serologic findings were rapidly influenced by the latter treatment.

TABLE 11.—RESULT OF TESTS AND TREATMENTS IN CASE 11

| Analyses Date | Cerebrospinal Fluid | Blood Date | Blood Reaction |
|---|---|---|---|
| 2/12/14 | Wass. ++ in 1.0, 0.8, 0.6, 0.4 and 0.2 c.c.<br>Cells 56 per cu. mm.<br>Glob. ++, 0.2 c.c. (Marked excess.) | 2/12/14 | ++ |

| Date of Treatment | Intraspinous mg. Salvar. | Reaction | Intravenous Salvarsan, gm. | HG and KI |
|---|---|---|---|---|
| 2/20/14 | .. | .. | 0.5 | |
| 3/ 4/14 | .. | .. | 0.5 | |
| 3/14/14 | 0.5 | — | | Mercury inunctions. |
| 4/ 3/14 | .. | .. | 0.5 | Potass. iodid up to gr. 60 t.i.d. |
| 4/ 4/14 | 1.0 | — | | |
| 4/18/14 | 2.0 | — | 0.5 | |
| 5/ 4/14 | .. | .. | | |
| 5/ 5/14 | 3.0 | — | | Mercury inunctions. |
| 5/18/14 | 3.5 | Headache two hours | | Potass. iodid up to gr. 60 |
| 5/27/14 | .. | .. | 0.5 | |

| Analyses Date | Cerebrospinal Fluid | Blood Date | Blood Reaction |
|---|---|---|---|
| 5/18/14 | Wass. ++ in 1.0, 0.8 c.c. ± in 0.6 and 0.4 c.c. — 0.2 c.c.<br>Cells 3 per cu. mm.<br>Glob. Normal content. | 6/12/14 | — |

*Examination.*—May 27, 1914: Objective and subjective: Patient is entirely free from all his original symptoms. He has not had an epileptoid attack since his first treatment. His speech is normal. He has no tremors. Mentally he is bright and alert. He has gained in weight and his general health is better than at any time in the past two years. The numbness of which he complained in his hands and arms has entirely disappeared. The deep reflexes are unchanged. The pupils are still fixed to both light and accommodation.

## SUMMARY

From a study of these cases it will be seen that the laboratory evidences of active syphilis, as shown by the Wassermann reaction in the blood, and the cell-count, globulin content and Wassermann reaction in the spinal fluid, were reduced in every instance to a greater or less degree, and that, in the majority, there was a concomitant clinical improvement. As to the permanency of these changes one must necessarily hold a conservative view, since it is yet far too early to draw any definite conclusions. It seems reasonable to believe, however, that those cases that have responded favorably, both clinically and biologically, can be controlled with proper supervision and sufficient treatment.

The work is only begun. It is of interest at this time chiefly in that it demonstrates the practicability of giving salvarsan in small doses intraspinally without jeopardy to the patient. The importance of keeping the dosage within 1 mg. cannot be too strongly emphasized. The relatively small amounts of arsenic found in serum salvarsanized in vivo (according to the method of Swift and Ellis) suggests that its spirocheticidal properties are not wholly dependent on the salvarsan content, but probably also on the formation of some substances in the blood-serum, with the nature of which we are as yet unfamiliar. It was, therefore, in an effort to preserve, so far as possible, the principles of the Swift-Ellis method, that the plan of first incubating the serum at body temperature for forty-five minutes was evolved.

105 West Seventy-Second Street.

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**Its Value.**—There is nothing of which men are so fond, and withal so careless, as life.—Bruyere.

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# THE PREVENTION OF COMMUNICABLE DISEASES IN GENERAL HOSPITALS *

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I cannot hope to present to you any scheme which will entirely prevent the introduction of transmissible diseases into hospitals. The object of this paper is to point out briefly how such incidence can be very materially diminished.

We must first take a more intelligent interest in this matter and provide the means for accomplishing better results. Very few American hospitals, either general or contagious, keep an accurate record of diseases contracted within the hospital and record them in their annual reports. At most, they make brief mention of any considerable outbreaks. This is an unfortunate state of affairs. How shall we make any progress until we face this problem honestly, publish our results, good and bad, and study the situation from the standpoint of facts, not theories? Such an endeavor will bear fruit and will be to the advantage of hospitals, for the incidence of infectious diseases to any considerable degree injures the local reputation of a hospital, diminishes its efficiency, and is a needless financial burden.

Before the direct consideration of the problem, I wish to emphasize a few principles which underlie the transmission of infectious disease and point out some errors which we have all been committing. We have been led to believe that the causative agent survives for a considerable period after leaving the human body and may be more or less widely distributed; that the entire room of an infectious patient and its contents—bed, bedding, etc.—are permeated by the organism causing the disease; and that such contagion may be wafted to neighboring rooms and buildings. Teachers and text-books have presented many examples of scarlet fever contracted from some article of clothing or toys used by a scarlet fever patient, years before. These are all fallacies, however, under which we have been laboring, and it is no wonder that efforts to control infectious disease have not yielded better results. The truth of the matter is that, fortunately for humanity, infective organisms, under ordinary conditions of drying, rapidly lose their virulence. Though we admit the claim of bacteriologists who tell us that they can resuscitate organisms after the lapse of considerable time, it is not proved that any one ever contracted disease from such sources. Indeed, there is much practical evidence against such a supposition, and to obtain results we must turn our attention to the most common ways in which infection actually does find its way into the individual living, for the purposes of this discussion, under hospital conditions.

Infectious diseases are kept alive in any community by exposure to frankly clinical cases, to missed cases which are unrecognized or unrecognizable, and to carriers. Infection is transmitted from these three sources to the well either by direct contact, or indirectly; that is, on commonly used articles, by insects, by water, milk, and perhaps other foodstuffs, especially the uncooked. Indirect infection occurs but rarely through an uninfected third person, and by clothing, etc. In all cases, the medium of indirect infection must have been freshly infected.

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* Read before the Section on Hospitals at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

In hospital practice it is commonly believed that visitors introduce infection. This, I believe, is another fallacy, though I admit that they may do so on rare occasions; however, it is not of any practical importance. Many curses are heaped on the hospital laundry. This is also a mistake, for linen which has passed through washers as it is done in hospital washing is well sterilized. In practically all cases, the infection is introduced into the hospital on patients who are suffering from unrecognized infectious diseases, on patients who are carriers, or on patients who are admitted during the incubation period and not removed until damage has been done. It also happens, occasionally, that nurses and maids are on duty when in an infectious condition and may give rise to an outbreak.

I shall discuss the means of preventing such introduction of infection under two heads: construction and management. In treating of construction first, I do not mean to give it primary importance. It is, however, a factor of some consequence, especially as it bears on facilities for proper management. If, for instance, every person admitted to a hospital had a separate room during his entire residence, there would be less likelihood of a general, extensive outbreak of infectious disease; but such construction would not entirely prevent transmission. It would diminish personal contact but not indirect contact, a process which is of great importance in a general hospital where nurses and physicians, perhaps with fresh, virulent secretions on their hands, pass from one patient to another.

The construction which I would advocate for children's hospitals and for those portions of general hospitals given up to the care of children, comprises two departments: an isolation division and a convalescent division. Hospitals or portions of hospitals which treat adults only, do not require enough provision for the isolation of all new cases, though there should be sufficient isolation facilities for infectious or suspiciously infectious cases.

The isolation division should consist of rooms containing not more than three beds each. Fifty per cent. of the rooms should be for one patient only, and the capacity of the division should equal one-third, or better, one-half the total capacity of the hospital for children, but a much smaller proportion to the adult capacity of the hospital. The objection that single rooms are lonesome is not valid if they are situated on opposite sides of a common corridor and have sufficient glass area in the walls to permit of patients seeing and talking to those in other rooms. The isolation wards should be concentrated, but it is not necessary that they occupy a separate building. They should be centrally situated to favor transfers, but enough cut off from the rest of the hospital that they will not be a thoroughfare. An old open ward may be cut up into cubicles or stalls so that the beds will be 12 feet apart on centers, and should be provided with a sufficient number of lavatories to make hand washing convenient. The ventilation of the isolation wards does not need any special attention above that employed in other parts of the hospital. Of the ward equipment I shall speak a little later.

The isolation rooms described above are designed for the detention of all children under 14 years for a period of one week, if possible, and for the isolation of all real or suspicious infectious patients. All suspicious cases should be sent here, certain less highly transmissible diseases for as long a time as necessary, and all frankly clinical cases of contagious disease, provided there is no infectious disease hospital in the community to which to send them. Just here I cannot refrain from condemning the practice of sending home cases of contagious disease during a hospital outbreak, only to spread it in the community. There is a real objection to a detention period for surgical cases, particularly for those who need immediate surgical attention. As a matter of fact, surgical cases are less liable to bring infection into the hospital than medical cases. The situation may be met by providing each surgical ward with a sufficient number of detention rooms, and by removing to the isolation division all cases which are really infectious or suspiciously so.

The convalescent division is the main portion of the hospital and is to be kept uninfected by means of the filtration process already described. It should comprise wards or rooms of not more than twelve beds, and better, only six to eight in wards for children. The rooms for adults may be larger. At the end of a week's detention, all children may be transferred to the convalescent wards, as well as all other cases which have been proved non-infectious or free from infection.

It is the management, however, which is of paramount importance, and perhaps the admitting officer is the chief factor in this connection. From any point of view, this officer is of great value to the hospital, and especially with relation to the introduction of contagious diseases in new patients and the careful supervision of all cases in the hospital. In addition to the usual qualifications, he should have had practical experience with infectious diseases, particularly with regard to diagnosis and methods of control. If he has been rightly taught, he will have learned that over and above the positive clinical cases of all acute disease, there are a large number of doubtful cases and many which are unrecognizable. Chapin believes that the number of missed cases equals or may exceed the true clinical cases. The admitting officer must be familiar with the clinical syndrome of the various infections, their probable incubation periods, the ways in which the infecting agents leave the body, and special modes of transmission. He must always remember that every acute disease whose clinical picture is not evident on admission is a menace to the hospital until the diagnosis is made. He must remember that all sore throats, rashes, nasal or aural discharges, vaginal discharges, and coughs occurring either in new patients or in convalescents, require isolation for observation. He must be alert in detecting suspicious symptoms and he must be ultraconservative in placing with convalescents any suspicious case.

The admitting officer should have the supervision of the isolation wards and should be given complete authority to transfer patients into them from the convalescent wards, as well as from them into the convalescent wards. The management of the isolation wards is of the greatest importance. It must be carried out along the line of surgical cleanliness. Infection should be confined to the rooms occupied by patients, while the corridor, utility rooms, etc., are expected to be free from infection. In order to carry out these measures successfully, the isolation wards must be in charge of graduate nurses who have had experience with infectious diseases and appreciate the importance of proper aseptic nursing technic. It may be necessary to have two graduates on duty by day, if the number of patients is large, and it is important to have a graduate on duty at night, for undoubtedly errors in technic are more liable to occur at that time than by day. Pupil nurses who have had their operating room training are best adapted for the work; they must also have had their training in infectious diseases, if the hospital affords such training, and must be carefully selected. The same nurses, observing strict cleanliness, may care for all the patients in the ward.

You may say that such extreme care is not necessary for the ordinary case, even if a child, as it enters the hospital. But that is just the point I wish to make; namely, that because of our limitations in accurate diagnosis, we may let infectious cases pass into the hospital; if, however, they are first placed in properly conducted isolation wards, you may be very certain that little or no damage has been done. The further value of this detention period is seen in the opportunity it affords for further observation, cultures, vaginal smears, and other clinical examination to determine diagnosis.

Some of the conditions which should be sent to the isolation wards are sore throats, vaginal discharges, rashes, coughs suspicious of whooping cough, unexplained temperatures, nasal discharges, congenital and acquired syphilis, gonorrhea in any form, open cases of tuberculosis, septic conditions, impetigo, ringworm, cerebrospinal meningitis, anterior poliomyelitis, typhus fever, and all suspicious cases. Add to these all frank forms of the common contagious diseases, such as diphtheria, scarlet fever, measles, rubella, chicken-pox, whooping cough, etc., if the hospital must continue to care for them. Remember, however, that measles and chicken-pox are the most difficult contagious diseases to care for by aseptic nursing.

In order to confine the infection to the rooms occupied by the patients, they must be kept within their individual units, and everything must be surgically clean when it leaves the room. Certain equipment is necessary in order to accomplish this. The rooms should be provided with lavatories having forearm or foot valves; this is very important. There should be sterilizers for dishes, utensils, and bed-pans and urinals. There must be proper receptacles for refuse of all kinds, particularly things soiled with infectious discharges, all of which should be burned. The isolation rooms may contain from one to three beds; in the latter case, the beds should be from 10 to 12 feet apart on centers, in order to afford ample working space about them. The three beds in the same room may be utilized for different conditions, barring measles and chicken-pox, by barriering each bed separately so that the nursing force will know that they are to be treated as if in separate rooms. The many other details can be readily worked out, if one always remembers that patients suffering from different conditions must be physically separated and that strict surgical asepsis must be applied when passing from one unit to another. The danger of aerial transmission is a negligible factor. Fumigation of rooms is useless and a waste of time and money. The use of soap and water is sufficient. The nurses may live in the same home with the other nurses and eat in the same dining room, provided they change their uniforms and wash hands and face before leaving the ward.

There are several points in the general management of a hospital which I should like to emphasize. Nurses should be taught more about the transmissibility of disease and should be thoroughly imbued with the importance of cleanliness, both in protecting patients and in protecting themselves from infection. This should be taught them during their probation period. There should be a sufficient number of nurses, supplemented by nurse maids, to care for patients, particularly in children's, typhoid, and surgical wards. Many of the so-called precautions observed in all hospitals are truly of limited value. It is very important that there should be enough lavatory basins so that it will always be convenient for nurses and physicians to wash their hands frequently in running water. Every ward should have sterilizers for utensils, bed-pans, urinals, and dishes. Everything soiled with infective discharges should be carefully sterilized or destroyed. Nurses should be vaccinated against typhoid fever and small-pox. Printed instructions should be posted in all employees' rooms, stating how infectious organisms enter the human body, and itemizing the common ways based on the well-known fact that a large proportion of infectious diseases must enter through the oral cavity, so that everything must be kept out except food and drink, and these introduced with clean hands. As far as possible, wards should be under charge of graduate nurses, especially those in which children are treated. Head nurses should be taught to be always on the lookout for suspicious symptoms and should be authorized to barrier any case until the admitting officer has seen it. All new employees should have nose and throat cultures taken and all employees should be under watchful supervision at all times. They should never be sent on duty with sore throats or rashes or any acute illness, unless it is known to be non-infectious. Common drinking cups and common towels should be prohibited everywhere. Thermometers should be wiped and immersed for one minute in some antiseptic fluid before being used on the next patient. Soiled linen from infectious cases should be removed from the wards directly to the washers. The ambulance should be provided with clean blankets and pillow slips between infectious cases and the hands of driver and attendant washed. After the more highly infectious diseases, soap and water should be used on those parts of the ambulance which may have been touched by the patient. All new patients should have nose and throat cultures taken, and vaginal smears should be made on all female children.

These recommendations are based on four years' experience at the Providence City Hospital, in which a very large variety of highly transmissible diseases is treated and the problem of preventing patients contracting secondary diseases is much the same as in a general hospital, except that the danger is greater. I must not take time to develop further details or quote statistics about our results, but will refer you to the several hospital reports and articles published on our work.

## SUMMARY

1. Infectious diseases are introduced into the hospital chiefly by new patients.
2. Well-equipped and well-managed isolation wards should be provided for all suspicious and infectious cases and for all children under 14 years during a detention period.
3. There should be very careful admission of all patients, nurses, and help, and supervision of the same.
4. There should be sufficient equipment for all wards and better teaching of nurses and help about infectious diseases.

Providence City Hospital.

## ABSTRACT OF DISCUSSION

Dr. H. M. Bracken, Minneapolis: There is a great deal for a public-health man to know relative to the handling of infectious diseases, and the question of the proper hospitalizing of these patients is an important one. It certainly would be an advantage if we could house some of these patients in a general hospital, yet I presume it would hardly be safe for me to suggest such action. If handled in a general hospital it would have to be with as careful isolation as in a hospital set aside especially for that purpose, and sometimes this would be difficult. Dr. Richardson states that success in handling these cases depends largely on the individuals in charge and this is most certainly the case. I was pleased to note his attitude as to air-borne infection, and disinfection. As a matter of fact the spread of disease is chiefly dependent on personal contact with the infected. When it comes to the spreading of disease the whole thing depends largely on the nurse and the physician in charge. A great many patients are released too early. The sooner we throw fumigation to the wind the better. The ordinary method of fumigation conveys an idea of safety that does not exist. The proper care of the patient is important, while the burning of the so-called fumigating candles is a waste of time and money. I wish we were doing more in the way of hospitalizing the infectious-disease cases. It is a lamentable fact that, except in the larger cities, there is no proper hospital accommodations for such patients. Our knowledge of infection in relation to surgery revolutionized the hospital in its relation to surgery. In surgical work an individual is sent to the hospital to prevent his own infection. In preventive medicine we should send one individual to the hospital to prevent the infection of many others.

Dr. C. H. Cook, Natick, Mass.: How many physicians have seen a case of small-pox? I had service for six months in a small-pox hospital. Forty years ago I was willing to take my chances in diagnosing the disease, even mild cases of varioloid, but I would not to-day. I know the difficulties. If physicians have no opportunity to see these cases how are they going to become good diagnosticians? They read about them and that is all. I do not wonder that there is case after case of mild varioloid not recognized by the physicians. I do not think the general practitioner is to blame. One has to send for experts. I would have been willing forty years ago to serve, but I wouldn't to-day, although I have seen those cases. With regard to the way small-pox is carried, I have no explanation, but I want to state this fact: in an insane hospital, the extreme ends of which were 700 feet apart, one case broke out in each end. The patients had been there for years. I know this, for I had the care of the patients after they were admitted to the small-pox hospital. How did the infection occur?

Dr. William H. Walsh, Philadelphia: With the principles of the technic of contagious nursing, as set forth by Dr. Richardson, I am heartily in accord, but I believe that he is going too far in the matter when he declares it possible to nurse contagious diseases in an ordinary ward of a general hospital without the risk of contagion. Statements of this kind are misleading, for while it might be possible to carry out the rigid technic necessary for such work in Providence, R. I., it does not follow that the same work can be successfully done in other parts of the country, under different conditions. We all admire Dr. Richardson's work, but we realize that his hospital is a small one, and that the technic which can be successfully employed in a small institution is much more difficult to maintain in a large hospital. It might be considered, in many parts of the country, criminal malpractice to attempt the treatment of contagious cases in a general ward and I am exceedingly doubtful, in case an accident occurred, whether the excuse that a nurse had slipped up on her technic would be considered a mitigating circumstance. Dr. Richardson's whole theory depends on the infallibility of the nurse and we must not forget that nurses are only human, and that in contagious nursing, as in any other occupation, there is a limit to the extent of human endeavor. The use of pupil nurses for this method of caring for contagious diseases would be almost impossible, for the reason that it requires a long, continuous training before nurses can be trusted in a ward with mixed infections; and it would therefore be necessary, if this technic were generally adopted, to dispense with the services of pupil nurses and depend entirely on graduates, thus materially increasing the cost. I did not learn from Dr. Richardson whether he would treat a case of scarlet fever and one of diphtheria in the same room, but I can most emphatically state that we would not attempt that in Philadelphia, where we have a staff of experienced nurses. Another point to be remembered in connection with municipal institutions is the fact that the nursing force is subject to sudden and extensive changes, and if such a thing should happen in an institution where Dr. Richardson's technic had been adopted, the whole system would be immediately turned upside down. I have recently learned that a number of smaller cities have attempted the treatment of contagious diseases in general hospitals, only to be met by dismal failure and considerable embarrassment.

Dr. H. O. Collins, Minneapolis: It has been stated that the usual method of disinfecting laundry is not reliable, that the sterilization process sometimes permits linen to go through without being disinfected. What method of disinfecting the linen of contagious patients is the best?

Dr. G. L Kiefer, Detroit: Did Dr. Richardson, in speaking of the isolating of children under 14 years of age in a general hospital, mention the time?

Dr. D. L. Richardson, Providence, R. I.: One week.

Dr. G. L. Kiefer, Detroit: It does not seem to me that that answers the purpose, for the simple reason that a week does not reach the incubation period. We tried it out in one of the children's hospitals in Detroit, and lengthened the time of detention. The child may have been exposed some time before it came to you, or only the day before. One point Dr. Richardson made should be emphasized. It means more to me now than it did before I heard him say it, and that is with regard to the strict surveillance of all nurses so far as the possibility of their being infected is concerned. We have thought we practiced it, but I do not think we were careful enough. Supervision should mean personal inspection of all the employees at frequent intervals. Of course the answer to the gentleman who had the experience with small-pox, is that it was carried to the hospital. Our experience in Detroit with regard to the transmission of small-pox has been quite the opposite of that brought out in this discussion, and I am absolutely sure small-pox cannot be made an exception to these contagious diseases. For example, we put our cases of tuberculosis in a large building that had been occupied as a small-pox hospital. It was one building. There were separate entrances. At first the tuberculosis cases were put in the north wing and the small-pox cases in the south wing. There was never any small-pox in the tuberculosis hospital. We followed that up by having our tuberculosis hospital on the same ground, and never had a case come over to the tuberculosis side. Why some men still class small-pox as the one disease that can be transmitted through the air I never could understand. It is not different from any other.

Dr. Dana Hubbard, New York: New York handles between 75,000 and 82,000 cases of contagious diseases annually in a population of over five million people.

I have had something similar to Dr. Kiefer's experience, except that I attributed the infection to a central focus—in all probability, milk. Fly infection in small-pox hospitals must be considered. We took flies at North Brother island in 1892 and covered them with magnesia dust and flour and turned them loose; it was astonishing to see how many of these flies turned up in the kitchen. The hospital (Riverside) was built in units. The small-pox service is in a large, two-story brick structure, thoroughly screened, as we thought, with double doors at entrances, but the doors constantly being opened and shut let flies in and out. The small-pox patient, by reason of the pus odor, attracts flies, and it is difficult to keep them away from him. For eighteen months following the installing of screens we did not have a single case of small-pox develop in another ward. The foundling service gave us some bad cases of nasal diphtheria which attracted flies, and before the screens were installed small-pox appeared from time to time in this service. This was before the day of the recognition of the bacillus. Diphtheria broke out in our wards as cross-infection quite frequently and, in the small-pox service, more often than small-pox in the diphtheria service. Now, we are thoroughly screened and have very little trouble from cross-infection. I would not hesitate for a moment, if I had competent help, to put a case of diphtheria in any ward with any other contagious disease, as we do typhoid fever. I have seen diphtheria treated in Roosevelt Hospital in ward service without spreading the disease. I firmly believe that the strict aseptic handling of the patient proved that diphtheria could be treated in a general ward the same as typhoid. At the Chickamauga service in the Spanish-American war, we had typhoid fever by the hundred cases and I attributed its spread entirely to flies. Here the flies were smeared with magnesia dust and flour and turned loose and were caught in numerous other regimental camps. The toilets were open and unscreened. I believe typhoid fever in the Spanish-American war existed because of the failure to recognize the cause and to take proper precaution. I take exception to the elimination of fumigation. I do not believe we can say that fumigation is "not worth anything." Fumigation, properly done, will answer a good purpose. There are many instances where disinfection is necessary and can be properly done.

Dr. J. P. Sedgwick, Minneapolis: From my experience it is possible, with proper care in nursing and proper care of the hands, to prevent carrying these contagious diseases in a manner that we before thought impossible. There is a type of contagious disease which is frequently not considered such in hospital work, and which usually causes the infants more trouble than small-pox, diphtheria or scarlet fever. This type is what I might call, for want of a better name, the grippal infection, an infection of the respiratory tract particularly, which occurs frequently in children's wards. We have records in our wards in which the weight lessens with these infections and rises slowly after they are remedied, and we can follow these two together. We see this repeatedly. I think I can agree with one of the writers in the *American Journal of the Diseases of Children,* that these acute infections of the respiratory, urinary and gastro-intestinal tracts are more important to the hospital infants in causing a larger death-rate and holding back an increase in weight than are the common acute contagious diseases. The hospital grippal infections in infants, which are being studied so much by pediatrists, are important. Meyer believes that the well-known "hospitalism" of infants is due to these "grippal" infections.

Dr. John A. Hornsby, Chicago: I am in almost constant receipt of inquiries concerning the proper means of taking care of the communicable diseases under the average conditions of a general hospital. We are not discussing ideal conditions for the care of the communicable diseases in institutions specially devised for them and handled by people specially trained over a period of years, but about institutions in the United States that are not equipped for taking care of these cases, but which, under the obligation of our newly conceived responsibilities, find themselves obliged to consider such. Goldwater and a good many of the best men in the hospital world think that no hospital of any kind ought to be permitted to exist unless it is prepared to take proper care of every case that comes to it, or of every disease that develops after the patient gets in; for instance, an eye hospital must take care of a pneumonia, or any other disease which develops. How is a hospital that is run for general purposes, to take care of any sort of sickness under crude equipment, going to handle those cases? Is it sufficient that we put a tapeline around the bed and practice Koplik's constructive isolation? Can we maintain it? Have we the nurses properly trained for it? Can we develop the technic of it among our medical men? Dr. Richardson's scheme is ideal; but I do not believe that the twenty-five- or fifty-bed hospital in Podunk can render such technical care of communicable diseases. Isolation is the thing, but we ought to think ahead a little to a time when they are about to build a hospital for Podunk. How should it be built so that they can take care of those cases in the light of our present knowledge of communicable diseases? The best way to do it is to isolate in the architecture of the building. Suppose, for instance, that we are building a hospital, and we have an area for communicable diseases, say four wards on two floors. Let us assume that we have a whole medical staff that is entitled to take care of patients; how would it do to have separation in the architecture and have different sorts of clothes for each one of the units? Suppose we have scarlet fever, diphtheria, and, let us say, small-pox. Why not have some brown clothes for scarlet fever? They have been sterilized and cleaned up and put in the lockers of the dressing-room to be there put on. Suppose the doctor puts on that brown suit, with head-piece, mouth-piece and gloves. He goes up with the brown clothes on to the scarlet-fever ward. On the same floor he has a case of diphtheria, across the hall. He goes over there, but the nurse says: "I am sorry, Doctor, but you have on the wrong clothes. Won't you kindly put on your diphtheria clothes?" That means that he has to go back, clean up, and take off the scarlet-fever clothes and put on the clothes used in case of diphtheria. I contended in one hospital that we have been building, that that sort of technic was ideal for the particular condition we had to meet.

Dr. Robert J. Wilson, New York: The Schick test for determining if diphtheria antitoxin is present normally in the blood, is important with regard to the spread of diphtheria in the hospital. If no reaction follows, it means that there was one or two or three units of antitoxin in the blood; when we do give the injections to secure active immunization the antitoxin runs up immediately. The number of patients immune to all diseases all the time is very large, and it can be proved for diphtheria and inferred for scarlet fever, measles or any other infectious disease. To say that one cannot contract any disease by air-borne dust or exudates that have been recently deposited in the room, that is, within the length of time that we know the organism could not have died by drying, is contrary to scientific reasoning. If but little infectious material were in the room and no cases were susceptible no disease would be contracted, and, therefore, one could argue it was not air-borne; if out of many cases only one was susceptible and there were only a little infected dust, disease might not be contracted because those immune might inhale the dust and the non-immune would not get it. I am not going to consent to the non-air-borne proposition until it is proved that the organisms die instantly or within a reasonably short period of time after being deposited. No visitor is allowed from a home where there is contagious disease. In reply to Dr. Collins relative to the best way to sterilize the laundry; I think sterilizing washers give the best results; if you get the contents of the washer up to the boiling point all the germs that produce contagious disease are destroyed. In New York City we have a minimum period of quarantine—scarlet fever thirty-five days, measles five days from the beginning of the initial rash. We never discharge a patient who gives us reason to believe that infectious organisms are still retained in the discharges. Dr. Cook asked how you would educate all practitioners to be diagnosticians. It cannot be done, but every community should have in it one good diagnostician. Dr. Sedgwick referred to grippal infections. We found in the Willard Parker Hospital, about fifteen years ago, that some of our patients with very severe diphtheria were being carried off with bronchopneumonia, and we thought it spread from bed to bed; so to get around that condition we built stalls between every two beds in a ward and by this simple procedure the number of cases of bronchopneumonia was very much diminished. It has been proved that the droplets of sputum emitted by ordinary speaking will be suspended in the air for some time before they finally drop to the ground. Without intervention the slightest draft would carry them over to the adjoining bed; the wall prevents it.

Dr. D. L. Richardson, Providence, R. I.: Dr. Bracken spoke of carriers among visitors. These are, of course, a possible but I do not believe a very frequent source. If we rule out visitors to the children's ward under 14 years of age that would eliminate danger to a large extent. With regard to nursing, if one tries for oneself what nurses can do and will do regarding aseptic nursing, one's ideas will change. Relative to pupil nurses, we have a staff of graduate nurses and from twelve to fifteen pupil nurses who come to us and work in the diphtheria and scarlet-fever wards, and one isolation ward, and they stay with us only two months altogether, but you would be surprised at the intelligence and care they exercise. I grant that it would be a good deal better if you could have all graduate nurses, but the expense is sometimes prohibitive. If you can get nurses who have had operating-room training, and have had some experience, say in the third year of their course, and teach them the simple elements of absolute cleanliness, you can expect better results. I advise anybody who does not believe it to take a ward of six beds in an infectious hospital, and try it. That is the only way to be convinced. Dr. Kiefer spoke of a detention period of one week. I spoke of that merely as a working-basis which we have taken in our hospital. It is not long enough for measles, chicken-pox, etc., but it is a great help, because the numbers of cases that would be exposed just before admission to the hospital would be comparatively small. All hospitals ought to be screened. It makes no difference whether they are contagious hospitals or not.

The respiratory and intestinal conditions I did not speak of. Dr. Sedgwick brought that to mind. In the children's hospital some day we will carry out the same exact conditions throughout. Dr. Hornsby spoke of isolation in architecture. I do not at all agree with him in that. Theoretically, every infectious-disease patient that enters the hospital should have his own room, nurse and service. Practically, that is utterly impossible, and with a small or a large hospital, unless it is a very large community, they cannot afford to build either a hospital or a portion of a hospital for measles, another for whooping-cough and another for chicken-pox, etc. If hospitals are to furnish an asylum for infectious diseases, they must provide the most feasible plan. You cannot control infection unless you have careful supervision and absolute cleanliness. With regard to outside physicians coming in, we have a consulting staff, and I have failed to find a man who will not do as he is requested.

# OIL OF CHENOPODIUM IN THE TREATMENT OF HOOKWORM INFECTIONS

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The majority of observers at present regard thymol as the vermifuge of choice in the treatment of uncinariasis. The work of Stiles and of the Porto Rican Commission has clearly demonstrated its value. The administration of thymol, however, is associated with certain very definite disadvantages: 1. It does not succeed, in a certain number of individuals, in eradicating the infection. 2. Its ingestion is accompanied in about 45 per cent. of cases by disagreeable aftereffects, as has recently been pointed out by Stiles and Boatwright.[1] 3. In a few instances, it has produced fatal poisoning. 4. At present, owing to conditions brought about by the European war, the supply of thymol is limited and its cost high.

It seems desirable, therefore, to call attention to the use of a vermifuge which has apparently been entirely overlooked in this country in the treatment of hookworm disease and whose value in this connection has recently been pointed out by Schüffner and Verwoort.[2] The object of their investigations was to determine whether or not thymol deserves its reputation as an anthelmintic in uncinariasis, especially as compared with more recently suggested remedies. Accordingly, 1,457 infected individuals were put through two "cures" at intervals of several days, thymol being regularly alternated with one of the other preparations to be tried out. In this manner two parallel columns of statistics were obtained, one in which a group of patients had received thymol first, the other in which they had taken it second. So both drugs had the opportunity of demonstrating their action on untreated as well as on previously treated parasites. The strength of the anthelmintics was rated in proportion to the number of worms found in the washed stools.

As a result of these comparative studies Schüffner and Verwoort determined that the "coefficient of efficacy" of the various drugs investigated, was as follows:

1. Oil of eucalyptus, 38.
2. Beta-naphthol, 68.
3. Thymol, 83.
4. Oil of chenopodium, 91.

Cases of infection with both the New and Old World types of worm were included in their series. In no instance in this large number of observations were disagreeable symptoms noted, nor were there any signs of intoxication following the taking of the chenopodium. They conclude, therefore, that the oil of chenopodium, in view of its remarkable efficiency and its harmlessness, deserves a thorough trial in the campaign against uncinariasis.

## CASE REPORTS

The following case, from the service of Prof. L. F. Barker, and shown before the Johns Hopkins Hospital Medical Society, Dec: 15, 1913,[3] afforded an unusually good opportunity for trying out the comparative efficiency of thymol and the wormseed oil. It is, as far as can be determined, the first report in this country, of a case of uncinariasis treated with oil of chenopodium.

Case 1.—O. C., a Norwegian sailor, aged 23, was admitted to the Johns Hopkins Hospital, Oct. 13, 1913, complaining of headache, general bodily pains and swelling of his legs. The present illness began in Mexico one month before admission. There, for the first time in the course of his wanderings, he went about barefoot. He soon developed a painful sore on the dorsum of the left foot, which discharged and resisted all efforts made to treat it. There was no itching of the foot. Shortly afterward the feet and legs began to swell and the patient felt weak and incapable of work. He entered a hospital in Mexico and remained there for three weeks, during which time he was given no medicine. The swelling of his legs disappeared, however, and he was discharged somewhat improved. Twelve days before admission here, his legs again began to swell, he felt feverish and weak, and there was moderate diarrhea, so he boarded a ship for this country and landed in Baltimore.

On admission, there was striking pallor, fever, tachycardia, brawny edema of ankles and lower legs and a pigmented scar on the dorsum of the left foot. He was extremely weak and very irritable. The blood showed: red blood cells, 1,660,000;

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[1] Stiles and Boatwright: Thymol Administration: Subjective Effects in 464 Administrations in 243 Patients, Pub. Health Rep., 1913, xxviii, 1497.

[2] Schüffner and Verwoort: Das Oleum chenopodii gegen Ankylostomiasis und eine neue Methode der Wertbestimmung von Wurmmitteln, München. med. Wchnschr., 1913, lx, 129.

[3] Levy: A Case of Infection with Agchylostoma Duodenale Treated with Oil of Chenopodium, Bull. Johns Hopkins Hosp., 1914, xxv, 100.

white blood cells, 6,440; hemoglobin, 25 per cent. (Sahli). In addition, there were seen many hyaline and crescent forms of estivo-autumnal malaria. An examination of the stools revealed ova of *Trichocephalus dispar* and *Ankylostoma duodenale*.

The malarial infection was soon under control. The whipworm ova spontaneously disappeared from the stools following vigorous purgation. But the usual medication with thymol, as recommended by the Porto Rican Commission, failed to expel the hookworms, though the treatment was thrice repeated at intervals of one week.

Accordingly, the patient was given the oil of chenopodium essentially in the manner prescribed by Schüffner and Verwoort. He was starved for eight hours, at the end of which period he was given an ounce of Epsom salt. Two hours later 16 drops of the oil of chenopodium on a teaspoonful of granulated sugar were administered. This dose was repeated at two-hour intervals until three doses had been given. Two hours after the last dose of chenopodium the patient was given an ounce of castor oil, containing 50 minims of chloroform. On sifting of the stools collected during the next twenty-four hours, nineteen hookworms of the Old World type (*Ankylostoma duodenale*) were found. Ova continued to be discharged in the feces. On repetition of the treatment five days later, seven more hookworms were expelled and no ova could subsequently be demonstrated in the stools. Another course of chenopodium was given to make sure that no parasites remained; none were expelled. The stools continued free from ova. The man gained 30 pounds in weight. His blood on discharge showed: red blood cells, 4,110,000; white blood cells, 11,000; hemoglobin, 70 per cent. (Sahli).

A second case demonstrates in like manner the prompt success of the chenopodium when thymol medication had failed.

Case 2.—C. P., a South Carolina farmer, aged 33, entered the Johns Hopkins Hospital in the service of Prof. T. C. Janeway, Sept. 17, 1914, complaining of stomach trouble. He had previously been admitted to the hospital in September, 1906, with similar symptoms, which had appeared following an attack of "ground itch" earlier in the year. On the first admission, hookworm ova were found in the stools, and several thymol treatments were administered. Following therapy there was a gain of 6½ pounds in weight coincident with general improvement, and on discharge no ova were seen in the feces.

The present illness was a continuation of the gastric disturbance which had brought the patient to the hospital in 1906. After a period of about two years, during which he was relatively free from discomfort, there developed fulness after meals, belching and vomiting, associated with sweating, headaches, dizziness, dimness of vision and roaring in the ears.

Examination revealed a moderate secondary anemia, and an eosinophilia of 9.2 per cent. Ova of hookworm were seen in the stools.

The usual thymol treatment was ineffectual; ova continued to be discharged in the feces. So five days later the oil of chenopodium was administered as follows:

First Day: No supper. One ounce of Epsom salt at 8 p. m.

Second Day: 7 a. m., 9 a. m. and 11 a. m., 16 drops of the oil of chenopodium on a teaspoonful of granulated sugar; 1 p. m., 1 ounce of castor oil containing 50 minims of chloroform.

Unfortunately, the resultant stools were not carefully sifted and only one female worm (*Uncinaria americana*) was observed in a casual examination of the "castor-oil stool," in which the parasites are usually found. During the three weeks following the chenopodium medication, while the patient remained under observation, no ova were found on repeated stool examinations, and he left the hospital with a gain of 15 pounds in weight, much improved.

It is worthy of note that in neither case did the patient object in the least to the taste of the chenopodium, nor did he complain of any unpleasant effects following its administration.

Further experience is afforded in the following personal communication from Dr. C. G. Guthrie:

> During the past summer, which was spent in a hospital in Central America, an opportunity was presented of testing the efficacy of the drug (chenopodium) on a fairly large scale. Most of the patients admitted to the hospital were either Jamaican negroes or whites of the peon class. Among both of these the incidence of infection with intestinal parasites was extremely high; fully 80 per cent. harbored some form of parasite. Multiple infections were the rule, in one instance six types being present. Next to whipworm, the form of intestinal parasite most frequently encountered was the hookworm; both the Old and the New World types were found, the latter being the more prevalent variety.
>
> Thymol was the method of therapy in vogue at this hospital, and while it was, in the main, successful, many cases were observed that required repeated treatments, and a few in which three courses of thymol still left the patient heavily infected.
>
> Accordingly, it was considered desirable to try the effect of oil of chenopodium. The method of administration was patterned after that of Schüffner and Verwoort, except for the fact that the drug was administered in capsules. The criterion used for an effectual treatment was the disappearance of hookworm ova from the stools. The treatment was tried in about sixty cases, and the results compared with those obtained by other methods. These results, with the conclusions drawn, may be briefly mentioned as follows:
>
> 1. The treatment was well borne; no ill effects were noted and no complaints of subjective discomfort were elicited on careful questioning.
> 2. The treatment was successful in both Old and New World infections. It sometimes had to be repeated, but it practically never failed to eliminate some worms or to reduce the number of eggs in the stool.
> 3. It succeeded in cases in which thymol had been tried, sometimes repeatedly, and had failed.
> 4. When given in parallel series to unselected cases, the chenopodium seemed much more efficient than thymol.

### OIL OF CHENOPODIUM

Oil of chenopodium, or American wormseed oil, as it is commonly called, is a volatile oil distilled from the fruit of *Chenopodium anthelminticum* Linné (of the *Chenopodiaceae* family), a roadside weed common in the United States, and most abundantly found in the eastern portions of the country. It has always been official in the Pharmacopeia of the United States. It is largely distilled in Maryland and is often referred to as "Baltimore oil" in contradistinction to the western or "Missouri oil" which has also played a rôle on the market. When recently distilled, it is of light yellow color, but becomes deeper yellow or even brownish by age.

It has a peculiar, penetrating, somewhat camphoraceous odor and a pungent, bitter, though not altogether disagreeable taste. Garrigues found it to be composed of two distinct oils separable by distillation; one of these has the formula $C_{10}H_{16}$ and is probably limonene. The other is heavier and possesses the formula $C_{10}H_{16}O$. A body having the formula $C_{10}H_{16}O_2$ has been recovered from the oil by Brüning.[4] Both in its general characteristics and pharmacologic action, it resembles closely the mother substance.

The oil has long been effectively used as an anthelmintic in the roundworm infections in children in a dosage of from 5 to 10 minims, two or three times daily for two days, to be followed by a brisk purge (Wilkins,[5] Brüning,[6] Gockel[7]).

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[4] Brüning: Zur Kenntnis des amerikanischen Wurmsamenoles, Ztschr. f. exper. Path. u. Therap., 1906, iii, 564.

Its cost at jobbers' prices is from $2.50 to $3 a pound.

The account of the oil in the United States Dispensatory is concluded with the following statement: "Oil of chenopodium has in various cases acted as a lethal poison." In order to obtain further information concerning its toxicology, regarding which the available data are exceedingly scanty, the reported cases of chenopodium poisoning have been collected and are given in the accompanying table.

An analysis of this table brings out the following points:

REPORTED CASES OF POISONING WITH OIL OF CHENOPODIUM

| Case No. | Observer | Age of Patient, Years | Dose of Oil | Symptoms | Result | Remarks |
|---|---|---|---|---|---|---|
| 1 | P. T. T.[9] | 6 | Not stated; less than 1 ounce | Deep, stertorous breathing; small, weak, rapid pulse; eyes insensible to light or external objects; convulsive movements of right half of body; attempt at deglutition threatened suffocation | Death in 36 hours | Vial of what purported to be "Wormseed oil" obtained from a wandering quack; to be given in doses of 15 drops until worms were expelled |
| 2 | W. C. Paramore[10] | 6 | 8 drops 3 times daily for 2 days; 8 drops on 3d day | Drowsiness; thirst; fever; nausea and vomiting; coma | Death in 4 days | Coroner's case; oil not followed by a purge |
| 3 | W. C. Paramore | 3 | 6 drops 3 times daily for 2 days; 6 drops on 3d day | Drowsiness; thirst; fever; nausea and vomiting; spasms; coma | Death in 5 days | Member of same family as Case 2; no purge |
| 4 | W. C. Paramore | 1 | 4 drops 3 times daily for 2 days; 4 drops on 3d day | Drowsiness; thirst; fever; nausea and vomiting; spasms; coma | Death in 8 days | Member of same family as Cases 2 and 3; no purge |
| 5 | T. R. Brown[11] | 31 | 1½ ounces plus 30 drops of turpentine at a single dose | Vertigo; nausea and vomiting; deafness with buzzing in ears; periodic motor aphasia; staggering on attempting to walk; peculiar actions suggesting dementia; subsequently, spasm of right arm and hand, followed by right-sided paralysis; fever; convulsions; terminal icterus | Death in 5 days | Physician had ordered 1 ounce of castor oil and 20 minims of turpentine; prescription changed by neurotic patient |
| 6 | A. C. Pole[12] | 2 | 2 teaspoonfuls in 1 afternoon | Prostration; restlessness; tachycardia; staggered on attempting to stand or walk; headache; abdominal pain; vomiting; deafness | Well in 5 days | Symptomatically treated; deafness gradually disappeared |
| 7 | I. C. Gable[13] | 63 | "Nearly" an ounce in divided doses in 1 day | Initial "peculiar symptoms" rapidly followed by coma, profuse perspiration and salivation; tachycardia; dilated pupils | Death next day | Necropsy: "No special symptoms in the stomach, though there was considerable smell of the oil about the abdominal viscera |
| 8 | Alfred North[14] | 12½ | 1 dram | Next day heavy breathing; difficult to rouse; unsteady gait, with partial loss of coordination; frontal headache; ringing in ears; deafness; dulled mentality; 5 days after onset, coma, with weak, slow pulse; dilated pupils, sluggish to light, and vomiting; on 7th day, hallucinations; subsequently, steady improvement | Recovery in 2 weeks | Chenopodium given in a mixture so that exact dose is uncertain; partial persistence, at end of 2 weeks, of headache, deafness and tinnitus |
| 9 | Alfred North | 10 | About 1 dram | Nausea and vomiting; unable to walk or adjust clothing owing to ataxia; deafness, tinnitus and frontal headache | Recovery in a few days | Sister of patient reported as Case 8; given dose from same mixture; deafness still present after two weeks |
| 10 | Cited by North[15] | Adult | 2 doses of "30 grains" each 3 hours apart | Found in coma | Death | No details given |
| 11 | A. K. Bond[16] | 3 | 10 drops ineffectual; 2 days later ½ dram | Vomiting; stupor; pupils small; sweating; twitching of right hand; tachycardia; suppression of urine; râles in lungs | Death same day | |
| 12 | E. T. Ramsey[17] | 61 | 1 tablespoonful | Numbness and tingling in hands and feet, followed by peaceful sleep; nine hours later, roused with difficulty; irrational; rapidly went into coma | Death same day | Patient a mentally deficient epileptic; administered overdose to herself |

[9] P. T. T.: Boston Med. and Surg. Jour., 1851, xlv, 373.
[10] Paramore, W. C.: Chicago Med. Times, 1875, vii, 336.
[11] Brown, T. R.: Maryland Med. Jour., 1878, iv, 20.
[12] Pole, A. C.: Maryland Med. Jour., 1880, vii, 107.
[13] Gable, I. C.: Philadelphia Med. Times, 1880, x, 404.
[14] North, Alfred: Am. Jour. Otol., 1880, ii, 197.
[15] North, Alfred: New York Tribune, June 15, 1880.
[16] Bond, A. K.: Maryland Med. Jour., 1897, xxxvii, 289.
[17] Ramsey, E. T.: Northwest. Lancet, 1903, xxiii, 325.

1. Eight of the twelve cases occurred in children under 13 years of age.

2. Nine of the twelve cases ended fatally.

3. In seven instances, the individuals received what may be considered an overdose. Of the remaining five, the dosage is uncertain in two. In one of these (Case 1), what purported to be wormseed oil was obtained from a wandering quack, so that its exact nature is by no means certain. Furthermore, no limit was set as to the amount which might be given. In the other case (Case 10) we have only the account of a newspaper reporter to the effect that "two doses of thirty grains each were taken, three hours apart."

4. In the cases reported by Paramore (Cases 2, 3 and 4) death occurred in three members of the same family following the administration of what were apparently doses which may be considered within the limits of safety, though not followed by the usual purge. All were coroner's cases, yet no question was raised as to the amounts said to have been given by

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[5] Wilkins: An Account of the Oil of Chenopodium Anthelminticum, Philadelphia Med. Museum, 1808, v. 252.

[6] Brüning: Weitere Erfahrungen mit em amerikanischen Wurmsamenöl als Antiaskaridiakum bei Kindern, Deutsch. med. Wchnschr., 1907, xxxiii, 425.

[7] Gockel: Ueber Askaridiasis und ihre erfolgreiche Behandlung mit dem amerikanischen Wurmsamenöles, München med. Wchnschr., 1910, lvii, 1643.

the father, nor was there any inquiry as to the nature of the contents of the bottle. Paramore himself asks, "Are these fatal results an accidental coincidence, or are we to suppose that in these three children some peculiar idiosyncrasy existed, forbidding the use of the remedy?" To which the editor of the *Chicago Medical Times* replies:

> In the cases above reported the wormseed oil, which was probably the Oleum Chenopodii, was administered in doses at least one-third larger than are usually recommended. Another element which may figure in the case is the difficulty which persons unaccustomed to dropping find in accurately dispensing medicines by the drop, hence the possibility that these children may have even taken more than was thought or intended.

5. The symptoms of poisoning have made their appearance usually several hours after taking the oil. Nausea, vomiting, abdominal pain and headache have been the first warnings of trouble. These were soon followed by drowsiness, deafness and tinnitus aurium, the latter having been a prominent feature in several instances.[8]

Ataxia, with staggering on attempting to walk, is noted by four observers. In the fatal cases coma has rapidly supervened, with tachycardia, convulsions, and in one instance right-sided hemiplegia. These symptoms indicate clearly irritation of both gastro-intestinal tract and central nervous system.

Concerning the pathologic lesions present, no data whatsoever are available. In the one instance in which a necropsy was performed, there is only the note that "there were no special symptoms in the stomach, though there was considerable smell of the oil about the abdominal viscera." In animals experimentally poisoned with oil of chenopodium, Brüning[5] has found hyperemia and small hemorrhages in the mucous membrane of the stomach and small intestines, and, microscopically, pigment accumulations in the liver and the formation of cylindroid-like structures in the convoluted tubules of the kidney.

### MODE OF ADMINISTRATION

A convenient schema, which may be followed in administering the treatment, is herewith given:

First Day: Liquid diet; 8 p. m., 1 ounce of Epsom salt.

Second Day: Omit breakfast and luncheon; 5 a. m., 1 ounce of Epsom salt; 7, 9 and 11, 16 drops of the oil of chenopodium on a teaspoonful of granulated sugar; 1 p. m., 1 ounce of castor oil containing 50 minims of chloroform. Soft supper.

Third Day: Resume full diet.

The treatment may be repeated at intervals of one week until ova can no longer be found in the feces. The worms are usually expelled in the "castor oil stool." It is desirable to add the chloroform to the castor oil, as it appears to assist in the narcotization of the worms in their passage through the intestinal tract. In children, the size of the individual dose of chenopodium as advocated by Gockel[7] in ascaris infections, may well be adopted as a safe standard in the therapy of hookworm disease:

From 6 to 8 years, 8 drops.
From 9 to 10 years, 10 drops.
From 11 to 16 years, 12 drops.
Over 16 years, 12 to 16 drops.

### CONCLUSIONS

1. Oil of chenopodium is an effective vermifuge in the treatment of uncinariasis.
2. It is not unpleasant to take, its ingestion is followed by no disagreeable symptoms and it is cheap.
3. In therapeutic doses it is non-toxic.
4. Oil of chenopodium deserves a thorough trial in the campaign against hookworm disease.

I desire to thank Professors Barker and Janeway for permission to report these cases.

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# CONGENITAL PHTHISIS BULBI

## WITH REPORT OF A CASE

AARON BRAV, M.D.
Ophthalmologist to the Lebanon Hospital
PHILADELPHIA

Phthisis bulbi as a result of some suppurative traumatic or non-traumatic uveal inflammation is not a very rare condition, but shrinking of the globe as a result of uveal inflammation *in utero* is very rare indeed, and deserves to be recorded in medical literature. The case which I am reporting has been carefully differentiated from other congenital abnormalities, such as microphthalmus and anophthalmus, and by a process of exclusion fortified by a microscopic examination of the ocular discharge the diagnosis of phthisis bulbi seems clinically to be certain.

The child was delivered by Dr. Rappoport. Labor was normal. No instruments were used. While trying to instil a 2 per cent. solution of silver nitrate into the child's eyes, the doctor noticed that there were practically no eyeballs.

At the request of Dr. Rappoport I saw the case in consultation at Atlantic City on the third day after birth, July 29, 1914, and found the following conditions: Baby is well developed; weighs about 10 pounds; has several erosions on the face. One on the chin had some suppurative appearance. Eyelids were normal but closed. There being no attempt at elevation, they were, however, easily separated. I separated the lids with lid retractors so as to get a good view of the orbital contents. Both orbits showed marked signs of inflammation and contained some pussy discharge. There were no extraconjunctival folds or adhesions, but the conjunctiva was very much congested. Deep down in the right orbital cavity there was a remnant of an eyeball the size of a large pea. Scleral tissue was easily recognized, in the center of which was a slight remnant of corneal tissue about 2 mm. No pupillary area could be determined; neither was there any iritic tissue noticeable. The stump was soft and quadrilateral in shape and still showed evidences of a retrogressive inflammation. The conjunctiva was red and congested, but did not show any signs of an anatomic anomaly. The left eye was also in a state of inflammation and the stump was much smaller than in the right eye. The stump here was so small that it could only be seen after the lids had been well separated with lid retractors, and was deep down in the apex of the orbit. It could not be palpated. The discharge in the left eye was more marked than in the right eye. Limbs, upper and lower extremities were normal; so was the trunk and head of the baby. Temperature of the baby by rectum was 101.

The parents are healthy and apparently free from any taint. The mother is a well-developed woman and has had two healthy children before. Mother was well during the period of pregnancy except for a pustular acne eruption which appeared about one month before delivery. This was probably an external manifestation of some deep-seated infection. The mother attributed the condition to materna impression as she says her older child had been playing with a doll that had no eyes. The only other etiologic moment the family recalls is a fright of the mother during a severe thunderstorm which occurred about three weeks before delivery. It is hardly necessary to say that neither of these causes could be given any consideration. Everything points to a severe inflammation. At my suggestion Dr. Rappoport has made a microscopic examination of the ocular discharge of the infant, and he reports to me the presence of diplococci which did not respond to the gonococcic stain.

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[8] Sexton: A Note on the Aural Phenomena Produced by Chenopodium Poisoning, Am. Jour. Otol., 1880, ii, 197.

There is no doubt in my mind that we deal here with a case of phthisis bulbi, resulting from a suppurative intra-uterine uveitis. The marked local inflammatory symptoms, the absence of any other anatomic anomaly, the pustular eruption on the mother four weeks before the delivery of the child, the presence of the diplococcus in the ocular discharge, and the appearance of the stump make the diagnosis of phthisis bulbi certain. Of course the number of cases of microphthalmus reported in the literature are many, but most of them were the result of some arrest of development.

Opinions on this subject are divided. Hirschberg, von Graefe, Samelsohn and Deutschmann advanced the theory of intra-uterine inflammation, while the developmental theory was defended by Hess and Treacher Collins. There is, however, a definite group of cases in which there can be no reasonable doubt that the condition is one of congenital phthisis bulbi. This is especially true of Schaumberg's[1] case in which the eye continued to shrink after birth. In my case the inflammatory cause is well substantiated by clinical evidence and laboratory findings.

917 Spruce Street.

## A SEVERE CASE OF EXOPHTHALMIC GOITER, WITH COMPLETE RECOVERY WITHOUT OPERATION, REST OR MEDICATION

Edward Swasey, M.D., Worcester, Mass.
Oculist and Aurist to Worcester City Hospital

It may not be safe or profitable to draw conclusions from any one case of illness, either medical or surgical; and yet a single case may present some features of importance and interest that may render its history worthy of public record. I believe the following case is in this class:

Mary M. is now 24 years of age. When she was 12 I gave her glasses for a rather high degree of astigmatism. She has been under my observation at intervals for these past twelve years. Some five or more years ago her mother first noticed a growth in the neck. This rather rapidly increased in size so that the neck band of her dresses required frequent enlargement. The girl soon began to show signs of nervousness, was easily fatigued, and complained of palpitation on slight exertion. Soon the eyes seemed to enlarge and become prominent. She consulted her family physician who gave her some simple tonics for her evident weakness.

Some months later she came to my office to see if some change in her lenses was necessary. The change in her appearance since her last visit one year before was decided, for now there were all the classical signs and symptoms of a typical case of exophthalmic goiter. The eyes were bulging, so that a line of white sclerotic was seen between the iris and the upper lid. The swelling in the neck was firm and pulsating; the pulse was then more than 150 per minute, soft and compressible. The ear or hand over the cardiac area showed a large pulsating heart, in rapid action. In fact, all the signs and symptoms of a well-established case of Graves' disease were present. I have had the case under observation from that time to the present. I gave her no medicine, but for a time she had a simple tonic from her physician and also from one of the city dispensaries.

The chief interest in this case, I believe, is not that she has entirely recovered, and that all her symptoms have disappeared; but that during the entire duration of these severe symptoms she was daily at her work at the counter of one of the largest department stores in the city. She continued her tonics for a year or more in a somewhat irregular way, but finding no benefit from their use gave them up entirely. A year or more after she had given up all medication she began to improve, in that she felt stronger and more able to do her work; the heart action was less troublesome, the swelling of the neck less evident. This improvement has gone slowly but steadily on until now (for I saw her but a few days since) the neck is free from any swelling, and palpation reveals no thyroid enlargement; the pulse is strong, steady and under 80 per minute; the eyes have returned to the normal in position and appearance. She has never taken any of the modern powders or serums that are now given for this trouble. She has never taken any season of rest in bed, but, on the contrary, has taken no vacation, but worked on. In the months that the symptoms were at their worst I felt certain she would have to come to a surgical operation to save her from the severe toxemia that I thought might overwhelm her in a severe attack of diarrhea or fatal exhaustion; but she said she must keep at her work and would not listen to advice for an operation.

I have recently followed the case of a patient in whom the symptoms were not more severe than in this poor girl, and not so long in duration, that finally came to operation in the Johns Hopkins Hospital, but the patient survived the operation but a few hours. I have had for a number of years a patient who has the eye symptoms and enlarged thyroid. Both of these have been stationary for years.

It may be that cases similar to this are common, and in a somewhat careful search in the literature of the subject I find many recorded cases of recovery, of course; but I have yet to find the history of one with severe symptoms for many months and a total duration of more than five years, yet going on to complete recovery that has not had prolonged course of treatment, either by rest in bed, the use of the modern drugs, the application of some external treatment to the thyroid, the Roentgen ray, or one or all of these at different times. Hence I believe that the case of this patient who had no treatment, but just work, and plenty of it, and yet has gone on to complete recovery, deserves a place in the records of this serious disease.

The question may arise regarding the subsequent history of this patient. Will this great and prolonged activity of the thyroid finally result in an atrophy more or less complete and cause a myxedema? It will be interesting to watch the patient for a few years.

390 Main Street.

## TRAUMATIC RUPTURE OF THE HEALTHY AORTA WITHOUT EXTERNAL SIGNS OF THE CAUSE OF DEATH

Gordon Grote Copeland, B.A., M.B., Toronto

Complete rupture of the healthy aorta without external signs of the cause of death is of sufficient rarity to warrant the publication of a synopsis of necropsy which I made recently.

A laborer, aged about 40 years, was struck by a large mass of falling earth which gave him a glancing blow on the back and knocked him down, though it covered only his legs. A few seconds later he was picked up dead, and was seen by a medical man in a few minutes who could find no cause externally for the sudden death. I examined the body a few hours later but saw no apparent cause of death. There was a large scalp wound on the forehead down to the bone, but the frontal bone was not fractured. The mouth, nose and ears were free from blood or foreign matter. There was a little frothy mucus in the back of the throat. There were several small bruises on the body, especially over the right loin, and a suspicion that the pelvis was fractured.

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[1] Schaumberg: Dissertation, Marburg, 1881.

The scrotum was torn and the testicles lay loose between the thighs. There was practically no hemorrhage.

The face, tongue, gums and mucous surfaces generally were blanched, and suggested internal hemorrhage.

### INTERNAL EXAMINATION

The diaphragm was about 4 inches above the intercostal notch, and did not communicate with the thorax; though it was torn at several places, the rents did not extend through the muscle completely. There were nearly 10 ounces of free blood in the peritoneal cavity. The liver was terribly torn and ruptured so as to admit the whole hand at several spots. The right kidney was torn, but the capsule was intact and the blood did not go into the pelvis of the kidney or the ureter. The bladder was intact although the pelvis was fractured from the symphysis through the body of the pubic bone. The peritoneal surfaces of the intestines and many of the blood-vessels going to them were torn. With these lesions the abdominal cavity should have been filled with blood.

The whole condition was explained when the thorax was opened. The left pleural cavity contained 38 ounces of measured fluid blood. Opening into this cavity were the gaping ends of the descending aorta, which was cut across as cleanly as with a knife. The ends were separated about 1 inch at the widest part and half an inch at the closest part. The rupture was at right angles to the length of the artery. The aorta was quite healthy; the intima was smooth and devoid of plaques and dilatations as far as could be seen or felt. The heart was firmly contracted and the chambers were empty. The valves were normal, as was the heart in every particular. The coronary arteries were patent for a distance of 2 inches. I passed my finger through the aortic valve (the heart being opened *in situ*), and at the proximal opening in the torn artery, my finger tip appeared. The distance from the aortic valve to the tear was about 3½ inches. The right lung was adherent throughout to the chest wall and was very hard to remove. All the lobes were fused and the organ was quite solid and non-crepitant; it resembled the stage of red hepitization of pneumonia. The left upper lobe was normal but the left lower contained a lot of coagulated blood. Aside from the injury to the aorta, the man would have died rapidly from the terrible hemorrhage that would otherwise have resulted from the injuries to the liver, mesenteric vessels, etc. What caused the rupture I am unable to say, though the idea of a force acting like a contrecoup seems tenable.

73 Bloor Street, East.

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## EXOPHTHALMIC GOITER AS A CLINICAL MANIFESTATION OF HEREDITARY SYPHILIS

Oscar Clark, M.D., Rio de Janeiro, Brazil

I have had the opportunity, during the last five years, of observing an interesting case of exophthalmic goiter in a woman, aged 24, in whom there can be no doubt that it is a late clinical manifestation of hereditary syphilis. The patient began about five years ago to suffer from palpitation and tachycardia, accompanied by violent attacks of nervousness, while her mother also called attention to a swelling of the neck. There was very little protrusion of the eyes.

Four years ago when I was first consulted (shortly before leaving on a journey to Europe, during which I was kept informed of the progress of the case), the clinical symptoms had become decisive and the syndrome grew steadily worse until the patient fell into a drowsy, almost comatose condition, with pulse over 200 beats, the sphincters quite paralyzed, with continuous vomiting lasting a fortnight. Dr. Sylvio Moniz, a well-known Brazilian physician, was summoned to the patient in this very bad condition and had the happy thought of trying the Wassermann reaction. To this he was led by the "Olympic forehead" and the *crâne natiforme*, being told also that the girl when 12 years old, had had several "epileptiform" fits. The Wassermann reaction was strongly positive, both with the patient's mother and with the patient herself.

With this diagnosis, Dr. Sylvio Moniz prescribed mercurial frictions and epinephrin (1:1,000 solution, 20 drops three times daily) to relieve the arterial hypertension and the vomiting; the latter rapidly ceased, while the patient had in two days recovered consciousness.

After eight days the pulse was just 150 and the goiter sensibly smaller, while the protrusion of the eyes was a little better. After thirty frictions the patient was much better both as regards the hyperthyroidic manifestation and the general health. The next month she was given two injections of salvarsan (0.3 and 0.6 gm.). By the third month she had quite recovered. Neither the goiter nor the protrusion of the eyes was to be seen. The pulse was 75 beats and the nervousness had disappeared.

The patient returned to North Brazil (she was at Rio de Janeiro), and ceased the mercurial and salvarsan treatment. Twelve months later, however, the Merseburger triad reappeared but a fresh recovery has been effected by the same treatment.

I think that this case is undoubtedly one of hereditary syphilis appearing late, as Dr. Sylvio Moniz made every laboratory test in order to exclude tuberculosis, malaria, etc. The father is dead, of what cause I am not aware; the positive Wassermann in the mother has been mentioned. The patient is from the best society and is virgin and there can be no suspicion of syphilis by contagion. She has never had any clinical sign of infection, but on the other hand, presents skeletal stigmata, and, as previously remarked, had epileptiform fits at the age of 12.

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# Therapeutics

## PREVENTION IS GREATER THAN CURE

(*Continued from page 1855*)

### IX

### PHYSICAL EXAMINATION AND PHYSICAL EXERCISE

When it is remembered that there are twenty million pupils in the public schools, large percentages (as previously stated) being defective in some form or other, it will not be surprising that the following recommendations for the physical examination of children, as distinct from medical inspection which will be discussed later, is urged. These recommendations seem more or less ideal, but they will come to be the rule, if not the law, nevertheless.

If it is agreed, as advanced by some thoughtful educators and physicians, that from the age of 6 to 8 the time should be devoted to physical culture directed by the public schools, and that book work should not begin until the age of 8, just what would be the method of procedure?

First, no sick child should be allowed in the public schools, whatever the age, and sick children should be immediately sent home to the care of their parents. Every child on entering the public school, we will say at the age of 6, should be carefully examined by a skilled physician. This is more than "medical inspection," which only seeks for contagious or transmittable diseases. The record of each child should be kept on a large card suitable for filing alphabetically. One side of the card should be filled out by the teacher with such data as name, residence, age, sex, nationality, height, weight; condition of parents (living or dead, and health), brothers and sisters (number and health); what diseases the child has had, besides a record of fits, headaches, asthma, hay fever, bilious attacks or attacks of abdominal pain (information on these subjects should be obtained from the parents by the teacher); the number of rooms in the tenement or house of the family, the number of windows in the sleeping room of the child, the number of persons sleeping in this room; and the kind of food and drink the child receives (question of coffee, tea, etc.).

On the reverse side of this card the physician should note the condition of the hearing, the eyesight and the teeth; defects in the palate; condition of the tonsils, question of adenoids, mouth breathing, condition of the nose, and of the glands of the neck; the shape of the chest and abdomen; any defects of the spine, legs and feet; and the condition of the lungs, heart and abdominal organs. If there is bed-wetting it should be recorded, and in such cases the condition of the prepuce noted by the physician, or the condition of the clitoris noted by the trained nurse. If there is suspicion of kidney disturbance the urine should be examined. If the child appears anemic the blood should be examined. A general statement of the state of health and nutrition, and the condition of the skin should be noted; also the medical opinion of the development of the child up to the present time. The disposition of the case should also be stated, that is, what advice was given. The card should be carefully dated. Subsequent examinations should be on a separate card, which should be clamped to the original.

The results of the foregoing examination should determine the proper treatment, if any treatment is needed, and should determine the instructions that should be given the parents as to the need of seeking the advice of their family physician or of consulting a specialist. Also, the outcome of this examination would disclose the need, or not, of special physical exercises to correct beginning deformities. All children deemed able should then be taught by a physical teacher the physical culture exercises deemed wise for children of this age; one hour a day of various exercises under instruction as classes, and another hour in the school playground. The physical teacher should devote two or more hours a day teaching and treating children with physical defects.

All of this requires money, but to what better object could public money be devoted than to building up the physique of our children and to prevent future defectives and future disease?

At 8 years of age the child is physically and mentally ready for regular school work (not too many hours, or too much home study, as previously cautioned). Such children on growing up keep the habit of exercise, thus acquired, to their benefit, as they will live in the age of labor-saving devices and work that requires but little muscular effort.

Bad home food and bad home and house hygiene would be corrected as far as possible by the visiting nurse, who can be the trained nurse attached to each large public school. Again, all this costs money and seems ideal, but such an outlay would pay the community good dividends on the investment by raising healthy citizens and in preventing disease. Some of this cost could be offset by not appointing so many teachers of things that are not essential and devoting more time to the groundwork of education.

To repeat, it should be urged to push only the essential studies, and curtail or cut out non-essentials and trimmings. Later, both boys and girls, but the latter especially, should be instructed in bacteriology and physiology and hygiene. Much valuable information may be given by the picture method of illustrating the causes of disease, etc.

It is not advised to pauperize the people by developing or using too many unneeded free dispensaries. *Let all parents, unless they are positively unable, take their defective children to physicians, surgeons and dentists of their own selection.* Of course provision must be made for those children whose parents cannot pay for such services; but let the visiting nurse make this decision.

As the children grow older they should be taught how to walk, and dancing exercises of the supervised type might be a part of the physical culture.

When the child is 8 years of age and begins the regular school work, its mental condition should be noted, unless it has been previously declared "feeble-minded." Those who are "feeble-minded" should be segregated and taught separately from the bright children, and an entirely different course and entirely different future plans of educational work should be outlined for such children, distinct from the regular course of instruction for the normal children.

It is an economic mistake not to separate mentally defective children from normal children. Three years ago it was estimated that there were three million children in the United States repeating a school grade a second, third, or even a fourth time at a cost of a hundred million dollars annually to the country, a needless and wasteful expense.[2] It is declared that the mental capacity of an idiot at any age does not exceed that of a child of 2 years; that of an imbecile of any age does not exceed that of a normal child of 8; and that of a feeble-minded person of any age may range from the normal mental capacity of a child from 8 to 13, but never exceeds the 13-year limit. These figures emphasize the necessity of the segregation of feeble-minded children, and also the crime of punishing for indifference or delinquency these children, who are doing all they can do.

The frequency of the physical examinations must, of course, depend on the findings in each case. Defective children should be examined, at least as to the condition of the defect first found, once in three, six or twelve months, depending on the kind of defect. The results, for instance in adenoid or anemic children, should be certified to by the trained nurse on the reverse side of the child's card; that is, whether or not operation has been done in the one case, or whether the child is improved or otherwise in the other case, the child, supposedly, being under the care of the family surgeon or physician.

All of this is paternalism, but only thus is the good of the greatest number accomplished, and no person should be allowed to cause himself to become a tax on the community, to spread disease, or to break well-known laws of health and hygiene.

As the child grows older, as suggested above, he should be taught general hygiene, the laws of contagion, and the ordinary methods of communicating each disease, and simple rules of prevention. Simple anatomy and simple physiology, and the simplest kind of life problems should be taught in public schools. Sex hygiene should not be taught to mixed classes or much in mixed schools. The girls, at or before maturing age, should be instructed in such hygiene individually, not in classes, by the trained nurse. The boys may be talked to by the principal of the school in small groups confidentially, not from the platform.

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[2] Report of Committee on Medical Inspection of Schools, The Journal A. M. A., Nov. 25, 1911, p. 1753.

It is necessary to urge the foregoing physical examination because of the twenty million children attending public schools in the United States only about two-fifths have more or less efficient school inspection and only a very few have medical examinations, and the muscle strength and physical development of our people is said to be deteriorating.

It should be urged that good able physical instructors must be obtained, or serious mistakes are liable to be made. After 10 years of age it is very doubtful if the games and exercises played or taken by boys should be as strenuous for girls; but it has been shown by some careful observers that girls are not harmed by ordinary exercises while menstruating. In fact, it is a serious error for a girl or her mother to believe that she must be an invalid for one or two days every time she menstruates, and a young ladies' seminary that puts each girl to bed for a day at each menstrual epoch does a serious mental injury to the girls. On the other hand, it is not advisable to cause these growing, maturing girls to climb stairs all day in a schoolhouse.

Chronically nervous children, and certainly the epileptics, should be sent home until cured (if cure is possible), or given an entirely different kind of schooling, away from large numbers and the shame caused by the publicity of their defects. Open-window or outdoor schools with small numbers of pupils and individual teaching, and scientific medical psychopathic decision of the best management to overcome such nervous defects as stage fright, stammering, weeping, brain storms, etc., should be the course followed with such children. The regular teachers, underpaid and overworked, should not be made responsible for the instruction or welfare of these children.

The only treatment for developed chorea is rest in bed; if the case is not severe, open air treatment in the country or at the seashore is essential, best where it is warm, and where the child can be under the care of one well-balanced person. Books, and playing with other children should generally not be allowed. Parenthetically, it might be mentioned that rheumatic germs should be suspected, and all disease from tonsils, adenoids, teeth and gums eradicated.

Mental fatigue (with good judgment as to hours of confinement and study and of intermittent play and exercise periods) should rarely occur, except in the nervous or neuropathic or otherwise diseased child. Precociousness and the morbid desire to overstudy is a sign of mental unhealth, and such children should be restricted in their book work and be compelled to do more physical work. If such management is not successful, they should be treated as psychopathic and as nervous children.

It may be briefly suggested here that adenoids, which are so frequent in young children, tend to shrink by the age of 14 or 15; but the teacher may readily observe, without medical examination, that a child is a mouth breather, looks dull and stupid, that there is beginning deafness, that the speech is imperfect, and that the chest expansion is incomplete. Mouth breathing interferes with the growth of the face and nose.

About 1 per cent. of children have discharging ears, and such ears may carry infection. Hence both for the child's sake and for the sake of others a discharging ear should be treated by an expert.

Eye-strain is of frequent occurrence in children, and headaches, granular lids, twitching of the lid muscles, and disturbances due to imperfect eyesight should be ever watched for by the teacher. Much absence from school, much loss of appetite, much nervousness, and much inability to study properly and advance are due to eye defects, a large proportion of which may be corrected.

*(To be continued)*

## New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

**BACILLUS PYOCYANEUS VACCINE** (See N. N. R., 1914, p. 254).

E. R. Squibb and Sons, New York City.

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**STREPTOCOCCUS VACCINE** (See N. N. R., 1914, p. 257).

E. R. Squibb and Sons, New York City.

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H. M. Alexander and Co., Marietta, Pa.

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SATURDAY, NOVEMBER 28, 1914

## RUBBER AS A SOURCE OF HYGIENIC DANGER

Every physician is necessarily interested in the chemistry of rubber because this is one of the materials which enter into numerous articles and devices daily applied in medical and surgical practice. Experience teaches the unlike qualities of different types or brands of rubber. Some of them retain their original elasticity for a long time under the imposed conditions of usage, while others speedily deteriorate into brittle and useless scrap despite the various precautions of preservation that are embodied in familiar directions. The economic aspect of the quality of rubber goods offered for sale to the medical profession is an important one, because the expenditures in this department of the physician's equipment as well as of the supplies for the sick room and hospital are not inconsiderable.

The time is arriving when the purchaser of rubber will demand some reliable information as to the quality of the product which he is paying for. Rare, indeed, is the person at the present time who has any idea whatever of the make-up of rubber. Pure india-rubber, or caoutchouc, in its natural state is entirely unsuited for commercial use. It is soft and sticky, and readily undergoes spontaneous oxidation to a hard, brittle resinous substance. By vulcanization, a process in which mixtures of the crude gum with sulphur, or metallic sulphids or oxids are heated, a rubber is formed which is more permanently elastic and less subject to spontaneous change. The simplest type of vulcanized rubber, such as would be obtained from a properly heated mixture of sulphur and pure gum, is quite soft and offers little resistance to ordinary rough usage. Rubber of tougher qualities, but with lower elastic limits, is produced by the addition of metallic oxids, such as those of lead and of zinc, to the other ingredients before vulcanization. Among other constituents added to give required characteristics are the various pigments which furnish the color, Venetian red (iron oxid), ultramarine, lampblack and various organic dyes being among the ingredients which are employed.

A recent government report[1] calls attention to the fact that a large number of additional materials are used in rubber compounding simply to reduce the cost of the product. Among these may be mentioned whiting (calcium carbonate), barytes (barium sulphate), clay and various rubber substitutes, such as artificial rubber, oils and tar products. Finally, so-called recovered rubber, or shoddy, is used to a large extent in rubber compounds, resulting in a varying and generally unknown composition of the mineral constituents of the finished product. It is further stated that antimony sulphid can replace the sulphur, wholly or in part, in a simple vulcanized rubber, the resulting product being a brilliantly colored terra-cotta rubber. As the metallic base also gives a certain toughness and durability to the product, the use of antimony sulphid in place of sulphur was formerly considered highly desirable in the production of a rubber having wearing qualities. Despite the fact that even better wearing qualities can now be obtained by the use of other metallic compounds, especially zinc oxid, red rubber is still popularly regarded as a superior product. This in turn has led to the artificial coloring of ordinary rubber by the use of other compounds, such as iron oxid and organic coloring matter, so that one may find on the market many varieties of red rubber that are free from antimony.

In the case of most articles of rubber the existence of filling materials, pigments, etc., has no hygienic import. Cost and durability are the chief concern of the purchaser. The use of various heavy metals in the manufacture of nursing-nipples and small rubber toys affords an instance of a possible unsuspected danger to the health of infants, who tend to extract soluble products from such articles in the mouth or by the gastric juice when small pieces of the rubber are accidentally swallowed. Obviously they should be free from soluble toxic substances.

The Public Health Service has lately published information respecting the general characteristics of rubber used in nipples and toys with special reference to the use of heavy metals and to the presence of residual acidity in the compound. All specimens examined contained both iron and aluminum in considerable quantities. This indicates a rather general use of clay as a filling material. In the red rubbers either zinc oxid or magnesia was used in addition, while in the black rubbers two samples contained zinc oxid and three samples contained barytes. Antimony was found in four cases out of seven among the black rubbers and in five cases out of eight among the red rubbers. The three remaining specimens of red rubber were colored with Venetian red. The white rubber toys contained clay and zinc oxid, and one of them contained barytes. No traces of arsenic, lead or mercury were found in any of the samples examined.

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[1] Phelps, E. B., and Stevenson, A. F.: The Chemical Composition of Rubber Used in Nursing-Nipples and in Some Rubber Toys, Hyg. Lab. Bull. 96, U. S. P. H. S., 1914, p. 55.

The government chemists state that the occurrence of antimony in black rubber can be explained only on the hypothesis that rubber scrap or recovered rubber has been used in the compounding. We are told that the use of miscellaneous scrap, and especially of recovered rubber or shoddy, is objectionable because of its unknown chemical composition. The use of lead compounds in rubber preparations is common, and salts of mercury are used to some extent. Either of these metals would be highly objectionable in a compound to be used for nipples or children's toys.

A study of the solubility of the antimony found in rubber nipples—particularly of the red variety—was made under conditions approximating what might exist with infants. They showed an extraction of quantities of antimony of 20 per cent. of an emetic dose in normal saliva and of from 40 to 160 per cent. of an emetic dose in saliva of an acidity commonly found in an infant's mouth. It is apparent, therefore, without further discussion of the possibilities of a cumulative action of slight dosings resulting from the absorption of small amounts of antimony over a considerable period of time, that the use of antimony rubber in nursing-nipples, teething-rings and other rubber materials used by young infants is at least undesirable.

There are certain specifications which determine the general hygienic properties of rubber nipples in respect to ease of cleansing. With regard to the composition of these and other rubber articles which are given to young children the government report concludes: The articles should be made of a good grade of black rubber, free from shoddy and from antimony, lead, arsenic and mercury. Of the fillers commonly employed, magnesia, zinc oxid and clay are less undesirable, and barytes is probably without harmful influence. There can be no objection to a red rubber colored with iron oxid, although the advantages of such a compound will probably not compensate for the disadvantages of its being confused with antimony rubber.

## CHANGES IN THE ADRENAL GLAND IN DISEASE

The large amount of discussion regarding the structure and function of the adrenal glands and the rôle they play in various diseases has given rise, on the whole, to conclusions which have been rather contradictory. According to Elliott,[1] the normal amount of epinephrin in the glands as estimated by various observers has been too low, owing either to faulty technic or to failure to take into account the rapid post-mortem loss of the substance. Usually this loss amounts to from 10 to 15 per cent. in eighteen hours, a considerable factor which must be taken into account in drawing conclusions from post-mortem material. The adrenal of a normal adult man should weigh from 4 to 5 gm. and should contain from 4 to 5 mg. of epinephrin. Conditions of fright, anesthesia, cerebral injury, bacterial intoxications, etc., have been found to exhaust the store of epinephrin in animals through the action of the splanchnic nerves, and it is fair to assume that these conditions probably produce a similar effect in man, so that any disease complicated with such conditions should show loss of epinephrin. In infectious diseases such as malignant endocarditis, pneumonia and all acute infections in general, the residual amount of epinephrin in the gland was found by Elliott to be considerably lessened, but apparently not enough in any case to endanger the circulation. The greatest loss was found in cases of afebrile, acute cardiac failure associated with great mental distress in the struggle for life. Simple cardiac failure without emotional disturbances, on the other hand, seems to produce very little loss of epinephrin.

The belief held by many that certain diseases with high blood-pressure are associated with hypertrophy of the medullary substance of the adrenal is not substantiated by Elliott. Obviously it would be difficult to measure the size of the medulla and the amount of epinephrin in the gland and circulation accurately enough to determine whether or not there is an increase in the amount of epinephrin. But if in a chronic case of high blood-pressure with renal disease, the patient dies from simple uremic intoxication without secondary infections and circulatory failure, without the adrenals being hypertrophied and without accumulation of epinephrin, we may then conclude that medullary hypertrophy is not a chief factor in the disease. In Elliott's work the glands examined in this condition did not show any enlargement which could not be ascribed to cortical adenoma or edema. In fact, there is no proof that the store of epinephrin is increased in any disease.

As a rule, changes in the medulla of the gland are slight if any; changes are common in the cortex, adenomatous growths of cortical substance being often found as, also, are changes in the amount of cortical lipoid. Under normal conditions the lipoid is stored in the form of doubly refractive granules, and when for any reason the cortical substance is diminished, the granules become smaller and finally disappear. These cortical lipoids are stored and lost under conditions entirely different from those which govern the other fats of the body. In persons dying from diseases with extreme emaciation, from starvation, such as is seen in anorexia nervosa or chronic tuberculosis without acute febrile reaction, in which the body fat is completely exhausted, there is little or no loss of cortical lipoids. In acute infections the cortical lipoids vanish rapidly. In Elliott's series of cases, pneumonia produced the most rapid and complete exhaustion. Scarlet fever, measles, malignant endocarditis and acute febrile tuberculosis also produced great loss, but not so complete as pneumonia. In various septic infections the amount of loss depended on the severity of the infection, but was considerable in all cases. Diphtheria, being a disease of great toxicity and little febrile reaction, produced little loss of cortical fat. Also, a case of cerebral compression, in which there was a postoperative non-septic fever to 107 F. for long periods of time, resulted in no loss of cortical fat. On the other hand, chronic renal disease is often associated with cortical adenoma and hypertrophy. In this disease there is a tendency for cortical fats to appear in excess, especially in conjunction with arteriosclerosis. In these conditions, however, no definite relations can be said to exist, so that we cannot say that arteriosclerosis is caused by cortical hypertrophy. It is of importance, too, that according to Kolisko[2] constant changes are found in the adrenals in deaths from burns. There may be more or less extensive hemorrhagic infarction in acute cases, and when death occurs later, marked hyperemia with great reduction of lipoids. Possibly these changes stand in direct relation to the cause of death in burns, concerning which there are various views. It would be of interest to learn something in regard to the content of epinephrin in the adrenals in burns.

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[1] Elliott, T. R.: Pathological Changes in the Adrenal Glands, Quar. Jour. Med., 1914, viii, No. 29.

The observations cited indicate the need of further work in the hope that the relationship of the structural and chemical changes in the adrenals in various morbid conditions to the general physiologic disturbances may be made clear.

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[2] Kolisko: Vrtljahresschr. f. gerichl. Med., 1914, xlvii.

## THE PALPATION OF ARTERIES

By palpation, writes Osler in connection with the diagnosis of arteriosclerosis, we are enabled to judge with fair accuracy the degree of thickening of the vessel wall. It requires not only experience, but also education, to form a correct judgment on the state of the arteries. A perfectly normal vessel, when contracted, may feel hard and cord-like. On the other hand, in a radial definitely thickened, but in a state of extreme relaxation, the hardening of the walls may escape detection. The state of the tissues about the artery, the amount of fat in the skin, the size and fulness of the veins—all have to be considered. One of the commonest of mistakes is to regard as thickened any vessel one can roll under the finger. But in a state of very high tension and if very full, the arterial tube may feel cord-like. To estimate the presence of sclerosis it is not sufficient to examine the radials and temporals.[1]

It is as difficult at times, as it is important, to recognize the difference between the hard sensation conveyed to the finger by a high-tension pulse and that conveyed by stiffening of the arterial walls. The two may even coexist. If the palpation of the arteries is to reach the dignity of an accurate aid to diagnosis, it becomes necessary to be able to correlate the tactile impressions of the physician with the true anatomic and functional conditions of the vessels he is examining. A few competent investigators have actually compared the subjective impressions gained by palpation of the radial arteries with the structural conditions revealed in the same vessels on examination post mortem. The conclusions are far from concordant in respect to the sufficiency of the judgment of the respective observers. One group has gained the distinct impression that the palpability of the vessels actually depends on the relative thickening of the arterial wall, the thickening of the intima preponderating over the hypertrophy of the media. Another group of clinicians has reached an utterly skeptical conclusion. They have compared the histologic picture of the vessels examined with the recorded judgment of the clinician who previously examined them by palpation. Many of the arteries which felt at most only slightly rigid showed marked sclerosis of the intima; others, in turn, which exhibited pronounced rigidity on skilful palpation were free from significant histologic changes. There is no question as to the competence of the observers in these different cases; they rank among the leaders in American and European medicine. The impartial judge has inevitably been constrained to the tentative conclusion that the strength of the middle coat of the arteries and the varying conditions of tonus of the arterial musculature must be of some moment in the palpation of blood-vessels.

The skepticism awakened by careful investigations is, indeed, justified by a very careful study just published from Romberg's clinic in Munich and conducted under the guidance of Schlayer. This work of Landé[2]—a comparison of Romberg's judgment of the living subject with the actual anatomic finding after death—shows that in a very considerable number of cases of apparently rigid arteries the histologic picture furnishes no explanation for the estimated rigidity. These discrepancies, which may also involve the reverse situation of sclerotic vessels that go unrecognized by the touch of trained clinicians, are not merely occasional. At least half of the records collected in considerable number involved irreconcilable features. They lead to the conclusion that so simple a clinical fact as the rigidity of arteries is by no means correlated with equally simple anatomic and functional conditions of the vessels palpated.

In the actually sclerotic arteries, as Landé notes, the increase in rigidity is brought about by the alteration of the particular tissue portion which is most called into play functionally by the type of vessel concerned. In highly muscular arteries the smooth musculature of the media undergoes degenerative change; in the more elastic vessels it means the replacement of the more elastic fibers by less responsive connective tissue. Nevertheless, despite these unlikenesses in acquired pathologic structure, the palpable effect—the arterial rigidity—is essentially the same. For the other cases of rigidity, when an anatomic exhibition of typical sclerosis is lacking, the explanation is not easy. In some, such as the arteries associated with contracted kidneys, there may be an increase in the entire thickness or volume of the vessel wall; in still others, the cause of the palpation results is not evident. The comparison of post-mortem facts with ante-mortem clinical judgments has long been one of the best and surest ways of bringing progress into the field of diagnosis. We need more of it.

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[1] Osler, W.: Modern Medicine, 1908, iv, 443.

[2] Landé, Lotte: Ueber die Palpabilität der Arterien, Deutsch. Arch. f. klin. Med., 1914, cxvi, 295.

## EMBOLISM AND THROMBOSIS OF THE MESENTERIC VESSELS

Occlusion of the mesenteric vessels is regarded generally as a very uncommon condition. It occurs often enough, however, to require consideration whenever obscure, acute abdominal lesions are subjected to thorough examination with a view to accurate diagnosis and proper treatment. That it is not in any sense an extremely rare disease is shown by the fact that recently Trotter[1] collected no less than 366 cases, seven being original, from the careful study of which he has been able to draw some valuable conclusions. It appears that the disease rarely affects children, adults between 30 and 70 years being most liable to be attacked, and men nearly twice as often as women. The occlusion may involve the arteries (53 per cent.), the veins (41 per cent.), or both together (about 6 per cent.). The superior mesenteric vessels appear to be involved much more frequently than the inferior. In 64 per cent. of the cases considered by Trotter, the result was hemorrhagic infarction of the intestine. Anemic infarction occurred in 2.7 per cent. When typical infarction was absent, extreme engorgement, ulceration or perforation were observed in the area corresponding to the occluded vessels. The most common cause of arterial occlusion appears to be embolism, originating in most cases from acute or chronic endocarditic changes, and less frequently from thrombi in the aorta or heart. Occasionally, however, occlusion results from thrombosis due to chronic, sclerotic changes in the mesenteric artery or in the aorta. Occlusion of the mesenteric vein is due to thrombosis, usually a downward extension of thrombosis in the portal vein, but occasionally arising in the mesenteric vein itself as a result of an inflammatory process in the appendix or in the pelvis in the case of women.

The most striking clinical manifestations of mesenteric occlusion are sudden onset, acute abdominal pain, vomiting and diarrhea, the stools and vomit not uncommonly containing blood, the stools sometimes a great deal. In some cases constipation is present. Usually shock is severe with rapid and irregular, small pulse and normal or subnormal temperature which soon rises above normal. The abdomen becomes distended. In a few cases the hemorrhage between the mesenteric layers has been felt as a swelling through the abdominal wall. Visible peristalsis is rare. In Trotter's series peritonitis was present in at least 28 per cent. of the cases. When large or medium-sized vessels are occluded, death practically always results in a few days unless operation is made at an early stage.

That the clinical diagnosis of mesenteric occlusion is difficult is indicated by the circumstance that in Trotter's series it appears to have been made in only thirteen cases. The presence of endocarditis and of embolic manifestations elsewhere are valuable guides to diagnosis in cases presenting acute colicky abdominal pain, profuse bloody diarrhea, or constipation, vomiting, abdominal distention and grave constitutional disturbances. One difficulty is that the clinical picture is extremely variable, often incomplete; but if the idea that mesenteric vascular occlusion is a very uncommon condition could be forgotten, so that the possibility of its being present would be considered when the diagnosis of an acute abdominal lesion is under discussion, it no doubt would be diagnosed oftener. The cases in which operation with resection has been made appear to give 36.2 per cent. of recoveries. It would seem that if operation were made as soon as possible after the onset of acute symptoms, better results would be obtained.

## THE DISTRIBUTION OF IODIN

Although iodin and products containing it have long belonged to the armamentarium of medical practice, a unique interest in the element was aroused by the discovery by Baumann, in 1895, of its presence in the thyroid gland. There has been no lack of speculation as to the significance of this and the literature is full of conflicting statements as to the possible part that iodin may play in the animal economy. With the accumulation of reliable facts regarding the distribution of iodin in nature it seems more and more probable that its appearance in special tissues, notably the thyroid, in comparatively greater abundance than elsewhere, is not a mere accident.

Undoubtedly the true biologic significance of iodin will become more and more elucidated when our knowledge of its distribution in living forms has been extended far more widely than at present. To Dr. Cameron of the University of Manitoba at Winnipeg, we owe an important contribution involving many laborious estimations of iodin in all sorts of animal and plant tissues.[1] Facts thus collected are important in indicating not only the possible sources for the commercial preparation of the element, but also the sources from which it can find its way into the animal organism. It has long been known that iodin is present in almost all sea-weeds; indeed, it was discovered in kelp by Courtois in 1811. It now appears to be an invariable constituent of all marine algae in amounts greater than 0.001 per cent. Distinct variation of iodin content can occur in the same species, growing under almost the same conditions, and in different, but closely related species. No satisfactory cause has yet been assigned to explain such differences. The marked difference between fresh-water plants and the ordinary vegetables, on the one hand, and marine algae on the other is unquestionably due to difference in the iodin content of the environment, and therefore in the diet of these plants. The differences in different species growing under similar conditions, Cameron suggests, may be associated with a specific quantitative action of the plant in retaining iodin.

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[1] Trotter, Leslie C. B.: Embolism and Thrombosis of the Mesenteric Vessels, Cambridge, 1913.

[1] Cameron, A. T.: Contributions to the Biochemistry of Iodin. I. The Distribution of Iodin in Plant and Animal Tissues, Jour. Biol. Chem., 1914, xviii, 335.

Iodin is present in appreciable quantities in certain tissues of all marine species. Cameron remarks that as we get higher in the scale there is more differentiation (and probably less total iodin in the whole organism) until in vertebrates, and particularly in mammals, thyroid tissue alone is of consequence in connection with the storage of the element. We are reminded that where there is a circulation of iodin in the organism, other tissues will also contain minute amounts; but the smallness of the figures obtained by Cameron and others indicates that the presence of iodin in such tissues is in all probability without significance. It is less than 0.001 per cent. in all non-thyroidal tissue.

Despite the marked variations of iodin content in thyroid tissue even in individuals of the same species —variations traceable to differences in diet—the element is an invariable constituent of normal tissue of this gland. The minimal quantity appears, according to Cameron, to be about 0.01 per cent., the maximal quantity approximating 1.16 per cent. Under normal conditions the diet always contains sufficient iodin for the upkeep of a minimal amount.

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**Natural Selection and Functional Selection.**—Of course natural selection plays its part, as it must in all cases, even in the inorganic world, and I believe that in many cases, as for example in protective resemblance and mimicry, that part has been an extremely important one. But much more important than natural selection appears to me what Baldwin has termed "Functional Selection," selection by the organism itself, out of a number of possible reactions, of just those that are required to meet any emergency. As Baldwin puts it, "It is the organism which secures from all its overproduced movements those which are adaptive and beneficial." Natural selection is here replaced by intelligent selection, for I think we must agree with Jennings that we cannot make a distinction between the higher and the lower organisms in this respect, and that all purposive reactions, or adjustments, are essentially intelligent.—Arthur Dendy, *Medical Journal of Australia.*

# Current Comment

## SINGEING THE HAIR

The reams of paper that are used up each month in articles in the daily papers — and weekly and monthly papers — on beauty culture is conclusive evidence that it is as natural for man to desire to beautify the person as it is "to indulge in the illusions of hope." A sound mind in a sound body suffices the serious-minded minority, but apparently the innumerable majority, if they had their way, would have a comely body and take their chances on any old kind of a mind, on the principle that it is better to be good looking than wise, because more people have sight than understanding. To decorate and beautify the body is an inborn passion; the savage does it differently from us, but when it comes to the many manipulations and remedies that are recommended for avoiding wrinkles, giving the eyebrows an aristocratic arch, coaxing the lashes to be long and languorous, making the ears pink and small or the nose straight and thin, removing a double chin or taking the core out of the Adam's apple, we have nothing on our uncivilized and supposedly more ignorant brothers. The hair in particular is the object of all mankind's cosmetic endeavors. When it comes to civilized man he is universally engaged in trying to save what he has left or regrow what he has lost. Women, with few exceptions, do not become bald, but all women, in their opinions, are threatened with that unspeakable calamity; men not only may get bald, but a large number of them are already so. And thus the popular remedies for the hair need almost a Surgeon-General's catalog. Vibratory and electrical treatments, hair tonics that feed the hair roots, as though they grew out of the scalp like broom-sedge out of an old field, neat's-foot oil and crude kerosene, massage and mange cures, all have their futile trials. Among these our particular topic now is singeing the hair. This is recommended to overcome splitting at the ends and to prevent falling of the hair, the reason for the latter being that it "closes the pores and keeps the fluid in the hair." With the long hair of a woman which has a tendency to split at the ends, it is possible that singeing the tips may be of some use; it substitutes a charred blunt end of fused horn for one tapering to a point or cut clean across. But even in cases of this sort it is less useful than greasing lightly the hair and thus supplying the fat which is lacking in such hair. For the hair of men, which is kept short, singeing is not of any use in preventing splitting; hair which is not allowed to grow to its natural length does not split, unless it has a deep-seated disturbance for which there is no such simple remedy. Of course singeing the hair-ends in order to prevent the fluid in the hair from escaping, like sap from a tree, is based on an entire misconception of the hair's structure and nutrition. The hair does not contain any more sap than a buggy whip; it is not nourished by any fluid in it, but by the blood plasma that reaches only the hair root. The hair above the skin surface is a spine of horn, which is even oiled from without, and singeing its tips has no effect whatever on either its nourishment or its growth. It is certain that singeing the hair is of no value in preventing its fall; in fact the only value the procedure has is to the zealous hairdresser who gets his little fee for doing it — unless it is worth a quarter to the seeker after hair to think he is doing something, even if he is not.

## CHLORIN-BLEACHED FLOUR

Since the bleaching of flour with the oxids of nitrogen has been forbidden in the United States under the Food and Drugs Act, there are signs of the introduction of other processes intended to produce similar changes in the wheat product. In one of these chlorin is the bleaching agent employed, the anhydrous gas being diluted with an inert gas and then used to "mature and whiten" the flour. Without commenting at this time on the legal aspects of the matter, we may fairly ask whether the new process confers any advantages on the cereal which will render it superior to the ordinary unbleached patent flour. Mere appearance need not be taken into consideration here. Experiments conducted in connection with the pure food work at the Kansas State Agricultural College[1] in Manhattan have shown that although the chlorin content of untreated flour may run as high as 576 parts per million, chlorin-treated flour will contain over 600 parts per million. Chlorin-treatment increases the acidity of the flour. The gluten tests run practically alike for the bleached and unbleached flour. The baking experts report that there are no differences in loaf volume; but the bleached flour gives a loaf having an objectionable color and texture. In nearly every case the bread made from the unbleached flour graded better. Evidently the chlorin-bleaching cannot be defended on the ground that bread-making qualities of the flour are improved.

## GAME, STOCK AND CITIZENS

The epidemic of foot-and-mouth disease and its effect on the packing industry and the stock yards of Chicago have been commented on widely in the daily press from various points of view. One of the most illuminating comments appears in a recent issue of the Chicago *Journal* under the heading "Live Stock Versus Quail." Taking the best available estimates of the amount of live stock contained in the state and figuring on an average value of horses at $140 a head, milk cows at $65, other cows at $50, swine at $15, sheep at $6 and mules at $150 (minimum valuations, as most will admit), the *Journal* says the total value of live stock in Illinois would be $435,276,000, for the protection of which the state legislature appropriated for the current year a total of $37,340. By way of comparison, the *Journal* quotes the appropriation for the protection of fish and game for the same time, which amounts to $151,600. The *Journal* properly characterizes such a situation as "intolerable." It says, "To spend four times as much money protecting quail, ducks and prairie chickens as we spend in caring for one of the basic industries of the state is sheer communal lunacy." This is true. The farmers and business men of Illinois should see to it that every cent that is necessary to protect the live stock of the state is provided, no matter what economies may be necessary in other directions. But, if such appropriations are justified for the protection of the lives and health of animals, how much should be appropriated to protect the lives and health of the men, women and children of the state? Certainly more than for fish, game and live stock. Yet the appropriation for the protection of the 5,638,591 men, women and children in the state was for 1914 only $120,000, $30,000 less than was appropriated for the protection of fish and game. Are the lives of its citizens of less value to Illinois than the preservation of its quail and bass?

## VENOUS BLOOD-PRESSURE

Until quite recently it has been generally assumed that venous blood-pressure passively responds to changes in the peripheral resistance within the circulation and that it rises and falls inversely to the pressure in the arteries. There is now a growing belief, supported in part by experiments on both animals and man, that the pressure in the venous system may be dominated by a special nervous mechanism. We cannot review the entire story of this chapter of the physiology of the circulation which is still far from being presented in its final form. One apparent earlier obstacle to the hypothesis of a "venomotor" nervous mechanism has been in part met by the now well-established demonstration that the venous system is actually supplied with motor nerves. Only recently it has been shown that the veins may respond to epinephrin with constriction,[1] thereby furnishing one of the evidences nowadays accepted as indicative of sympathetic innervation. As a physiologist has expressed it,[2] although the evidence available at present is insufficient to establish definitely the existence of a venomotor system comparable to the vasomotor system proper, none of the evidence is against such a hypothetic nervous mechanism, and much of the data is impossible of explanation without such an assumption. It remains a fact, however, that no direct experimental proof has as yet been put forth. In distinction from the assumption that under normal conditions of life the peripheral resistance alone controls the magnitude of the venous pressure, Yandell Henderson has put forth the hypothesis that there is a venopressor mechanism which functions to maintain an optimum feeding pressure to the heart. This forms a part of his theory respecting the maintenance of the volume output of the heart.[3] The newest researches of Hooker,[2] at the Johns Hopkins Medical School, on the venous blood-pressure in man are in harmony with the existence of the hypothetic venomotor mechanism. He finds that normal venous pressure is independent of changes in peripheral arterial resistance. The capacity of a vein may vary without affecting the internal pressure. According to Hooker, the venous pressure in man exhibits a distinct diurnal rhythm, rising throughout the day from 10 cm. to 20 cm. and falling again during the night. The normal venous pressure varies very considerably, averaging in the day time and under usual conditions about 15 cm. of water; in sleep, at night, it may fall to 7 or 8 cm. The study of venous pressure in man has been comparatively neglected in the past. With a renewal of interest in its problems we may look forward to some valuable contributions to the knowledge of the circulation.

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[1] Utt, C. A. A.: Some Characteristics of Chlorine-Bleached Flour, Jour. Industrial and Engineering Chem., 1914, vi, 908.

[1] Gunn and Chavasse: Proc. Roy. Soc. London, 1913, B, lxxxvi, 192.

[2] Hooker, D. R.: Observations on the Venous Blood-Pressure in Man, Am. Jour. Physiol., 1914, xxxv, 73.

[3] Henderson, Y., and Barringer, T. B.: Am. Jour. Physiol., 1913, xxxi, 352

## THE COST OF TUBERCULOSIS AND TYPHOID

Estimates regarding the loss caused by preventable diseases are always interesting, although necessarily general. The smaller the area affected, the more accurate are the figures apt to be. Prof. Irving Fisher's estimate, in his report on national vitality, of the economic loss for the entire country at one and one-half billions a year is familiar to students of public health conditions. An estimate recently issued by the Minnesota State Board of Health shows the economic loss from death from typhoid fever in Minnesota in the last six years to be $21,958,940, while the deaths from tuberculosis are six times as great and the loss three times as great as that from typhoid, or $66,583,320, making a total loss from the two diseases alone of $88,542,260 for six years, or an annual loss of $14,757,043. In making this estimate the following economic values were used in computing the financial loss from deaths: professional business men and farmers, $500; skilled laborers, $300; unskilled laborers and domestics, $200; married women, $200; children under 15 years of age, $100. These valuations are conservative and should represent the minimum rather than the maximum loss.

# *Medical News*

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

## ARKANSAS

**Change in State Hospital Head.**—Dr. James L. Greene has resigned as superintendent of the State Hospital for Nervous Diseases, Little Rock, and has been succeeded by Dr. Frank B. Young, Springdale, secretary of the State Board of Health, who will take charge of the institution November 30.

**Free Clinic Established.**—The first of the semi-weekly series of clinical lectures and examinations was held October 23, in the laboratory of the University of Arkansas, Little Rock. The clinic is maintained by the Pulaski County Anti-Tuberculosis Society. On Tuesday morning, white patients will be seen and on Friday morning negro patients will receive care.

**Hospital Opened.**—The Leo N. Levi Memorial Hospital, Hot Springs, made possible by the generosity of the late Leo N. Levi, was opened for the inspection of the public, November 1. The medical board of the institution is composed of Dr. William V. Laws, chairman; Dr. William H. Deaderick, secretary; and Drs. James C. Minor, Orvis E. Biggs and Samuel D. Weil.

**New Medical Society Organized.**—The South Nevada Medical Society composed of physicians residing in the southern portion of the county and the Nevada County Medical Society whose membership is made up of physicians residing in the northern portion of the county, met in Prescott, October 20, and perfected an organization to be known as the Nevada County Medical Society.——Dr. Thomas J. Mendenhall, Rosston, was elected president and Dr. William M. Garner, Bodcaw, secretary.

## CONNECTICUT

**Personal.**—Dr. Harry St. John Williams has resigned as assistant superintendent of the Undercliffe Sanatorium, Meriden, to become superintendent of the Samuel L. Towne Memorial Hospital, Poughkeepsie, N. Y. Dr. Williams has been succeeded by Dr. Edward J. Degman, Southington.

**The Brady Laboratory.**—Plans are practically completed for the construction of the Anthony N. Brady Memorial Laboratory of the Yale Medical School. The laboratory and administration building will be erected early in the spring of 1915. The plans call for a three-story and basement building.

**Tuberculosis Commissioner Appreciated.**—The Bridgeport Employees Tuberculosis Relief Association of Bridgeport has presented John F. Gunshanan, Hartford, former tuberculosis commissioner of Connecticut, with a set of handsomely engrossed resolutions appropriately framed and setting forth the appreciation of the services of Mr. Gunshanan to the organization.

## FLORIDA

**New Board Member.**—Dr. James Burnie Griffin, St. Augustine, has been appointed a member of the State Board of Homeopathic Medical Examiners, succeeding the late Dr. Henry R. Stout, Jacksonville.

**Open Meeting of Medical Society.**—On November 24, the Escambia County Medical Society held a public session at which the subjects for discussion were bubonic plague, mosquitoes, uses of the state laboratory, tuberculosis, medical inspection in schools and the cancer problem.

## ILLINOIS

**Personal.**—Dr. Pierce Tyrrell, the oldest practitioner of Elgin, is reported to be critically ill.——Dr. George D. Hauberg, Moline, has been appointed official deputy coroner of Rock Island County.

**New Tuberculosis Hospital.**—A hospital to be used exclusively for tuberculosis patients is to be erected at Collinsville by Dr. Moses W. Harrison, who now conducts a private hospital and tuberculosis colony at that place.——The city commission of Danville has inspected a 2½-acre tract at that place with the view to its purchase as a site for its municipal tuberculosis sanatorium.

**Proposed Buildings for Epileptic Colony.**—Plans for the buildings for the State Colony for Epileptics, Dixon, have been prepared and bids for their construction have been asked for. The buildings consist of an administration building with three wings; dining halls and a service kitchen and a dormitory building to accommodate 52 persons. The dormitory cottages are to be built in groups of four around the main buildings.

### Chicago

**Red Cross Christmas Seals.**—The sale of Red Cross seals opens in Chicago at stores, theaters, public buildings, etc., Monday, November 30. Each seal costs one cent. Remittances may be sent direct to the Chicago Tuberculosis Institute, Room 1212, Hartford Building, 8 South Dearborn Street.

**Chicago Hall of Fame.**—A hall of fame to commemorate the achievements of the citizens of Chicago is proposed as an adjunct to the sunken gardens which the city will place in Grant Park. The request of the Chicago Medical Society for permission to erect a $25,000 memorial to Dr. Nicholas Senn is believed to have led to this suggestion.

**Health Department to Open School.**—The Chicago School of Sanitary Instruction is soon to be opened by the health department. A course of instruction will be given to superintendents of milk plants consisting of lectures and demonstrations on the general principles of milk hygiene. All new employees of the health department will be obliged to take a six months' course of training. Students of medical schools in Chicago will be given instructions in public health work during the winter. In connection with the school the health department will supply speakers on health work to clubs and other organizations.

## INDIANA

**New Dispensary.**—A free medical dispensary was opened at the Campbell Settlement House, Gary, November 16. The dispensary is open each afternoon from 1 to 2 o'clock.

**Fatal Epidemic Among Rabbits.**—A disease said to have caused the death of thousands of rabbits near Vevay, Switzerland County, is being investigated by the chief food inspector of Cincinnati: It is said that many shipments of rabbits have been made to the markets of Cincinnati and other cities since the outbreak of the epidemic.

**Legal Question Delays Bond Issue.**—An agreement by the Marion County Council, November 12, to authorize a bond issue of $80,000, the proceeds to be applied to a new county tuberculosis sanatorium, has been deferred on account of a legal question as to the date on which the council which has had charge of the appropriations and bond authorization, was succeeded by the new city council.

**Personal.**—Dr. John W. Sluss, superintendent of the Indianapolis City Hospital, has resigned and has been succeeded by Dr. Thomas L. Sullivan, Jr.——Dr. Raymond H. Stinger, Broad Ripple, has been appointed a member of the staff of the Southeastern Hospital for the Insane, Madison.——Dr. A. Golding Chittick, Frankfort, has been recommissioned as Captain, M. C., Ind., N. G., and reassigned to the command of Field Hospital No. 1, Frankfort.——Dr. Richard A. Poole, Indianapolis, has been elected coroner of Marion County.——The office and residence of Dr. Edwin L. Sigmon, New Albany, was destroyed by fire, November 6.——A reception was given by Dr. Anna I. McKamy, New Albany, November 5, to the members of the Floyd County Medical Association in celebration of the opening of her new hospital for women.

## IOWA

**Trichina.**—An appeal to the State Board of Health for aid has been made from New Liberty, Scott County, where thirty-five cases of trichina are reported.

**Publication Office Changed.**—The publication office of the *Iowa Medical Journal*, the official organ of the Iowa State Medical Society, is to be changed from Washington to Des Moines. Dr. David S. Fairchild, Clinton, is editor of the journal.

**Health Exhibit Opened.**—Dr. Guilford H. Sumner, secretary of the State Board of Health of Des Moines, opened the state health exhibit in that city, November 5. The exhibit includes the material which was secured and exhibited at the state fair in August. A lecture is delivered each evening by Prof. A. E. Kepford, state lecturer on tuberculosis.

## LOUISIANA

**Pediatrician Wins Suit.**—In a recent suit tried at Shreveport, in which Dr. C. Pearl Munday claimed a fee of $1,000 for medical service rendered as a pediatrician to two infants and in which a counter charge of malpractice was made, the jury returned a verdict in favor of the physician for $665 and costs.

**Personal.**—Dr. Charles C. Bass, New Orleans, winner of the Southern Medical Association medal for scientific research, was awarded the medal for a third time at the annual meeting in Richmond, Va., November 12.——Dr. J. George Dempsey, New Orleans, has been nominated for president and Dr. George F. Patton, New Orleans, for secretary of the Louisiana Anti-Tuberculosis League.

## MARYLAND

**Personal.**—Dr. Robert P. Bay, Baltimore, has been appointed chief medical examiner of the state industrial accident commission. To date 353 accidents have been reported to the commission since the workmen's compensation law went into effect on November 1.——Dr. Clapham P. King, Annapolis, has sailed with a Red Cross unit on the steamer *Finland* for duty in Servia.

### Baltimore

**Portrait Presented to Faculty.**—A life-size protrait of Dr. Samuel Claggett Chew, dean of Baltimore physicians, former president of the Medical and Chirurgical Faculty of Maryland, member of the board of regents of the Maryland University for more than forty years, and one of the best known medical men in the country, was presented to the faculty November 19, by the medical profession of Maryland. The presentation was made by Dr. Charles W. Mitchell, who spoke of Dr. Chew, the teacher, and Dr. William S. Thayer, who told of Dr. Chew, the physician. Dr. Randolph Winslow, president of the faculty, accepted the portrait.

**Health Work at Stake.**—A cut of $135,000 has already been made in Dr. Nathan R. Gorter's estimate to the Board of Estimates for the annual appropriation for the City Health Department. The board eliminated $50,000 for a modern hospital building at Quarantine and $85,000 for improvements the Commissioner of Health considered necessary at Sydenham, the municipal hospital for minor infectious diseases. That the department may be put on a more effective basis next year, Dr. Gorter has asked for twenty-five additional employees, increasing his salary account by $9,250. He has also asked for an increase of $10,680 in his expense account. These items have not been passed on definitely by the Board of Estimates, but the statement is made at the city hall that they will probably be reduced.

**Applicants Turned Away.**—The number of applicants for admission to Johns Hopkins University Medical Department was much larger at the beginning of the present session than previously. More students were turned away than were accepted—not on account of their lack of technical entrance qualifications, but because of a lack of room. The enrolment of students is limited to ninety in each class.——In order that the best qualified students may be chosen, no applicants for admission are accepted after July 1 of each year, and all selections are made between that date and July 15. In this selection the college officials are guided by (a) the student's grades in the scientific branches at college; (b) a personal letter from one of the science teachers, setting forth the student's fitness to study medicine; and (c) the general character of the institution in which the student obtained his preliminary collegiate training.

## MICHIGAN

**Sanatorium Notes.**—The opening exercises of the new Anna T. Dodge Children's Building of the Municipal Sanatorium, Detroit, will be held October 28 and 29, simultaneously with the celebration of tuberculosis day.——The State Sanatorium, Howell, will ask the legislature for an appropriation of $55,000 for maintenance during the next biennium; $15,000 for an infirmary and $12,000 for a children's pavilion. During the last year 376 patients were admitted for treatment and in more than 75 per cent. improvement took place.——The committee on ways and means of the Wayne County Sanatorium, Eloise, has voted to build an addition to the institution to cost $130,000.——At the annual meeting of the Michigan Association for the Prevention and Relief of Tuberculosis, at Muskegon last month, Dr. Arthur F. Fischer, Hancock, was elected president; Miss Carol F. Walton, Ann Arbor, secretary, and Dr. Henry J. Hartz, Detroit, treasurer; Drs. Walter H. Sawyer, Hillsdale; John H. Kellogg, Battle Creek; Edward T. Abrams, Hancock; Robert B. Harkness, Houghton, and Aldred S. Warthin, Ann Arbor, were elected directors, and Drs. Herman Ostrander, Kalamazoo; Collins H. Johnston, Grand Rapids; Victor C. Vaughan, Ann Arbor, and John H. Kellogg, Battle Creek, were elected medical members of the executive committee.

## MINNESOTA

**Sanatorium Notes.**—Blue Earth County has voted to build a tuberculosis sanatorium.——Lac Qui Parle County has voted to join with Yellow Medicine, Chippewa and Renville counties to build a joint sanatorium.——Grant and Poke counties have voted to unite with Stevens and Douglas counties to build a sanatorium.——About thirty-five counties in the state will build sanatoriums within the next year.

**County Tuberculosis Sanatoriums Authorized.**—At the general election, November 3, four counties, Grant, Douglas, Lac Qui Parle and Blue Earth, voted to establish county tuberculosis sanatoriums. The legislature will be asked to make appropriations, in accordance with the county sanatorium law, for half the cost of construction and half the maintenance of patients unable to pay. There are now thirty-five counties which have taken action for county tuberculosis sanatoriums.

**Health Week.**—The program of the Minnesota Public Health Association for Health Week beginning with Tuberculosis Sunday, November 29, is as follows: Tuberculosis Sunday, November 29, with the suggestion that sermons on tuberculosis be preached in all churches, with union services to be held wherever they can be arranged and addresses be made by physicians or tuberculosis specialists wherever possible. The collections should go to local church or community antituberculosis work.——Measles Monday, November 30, to show the prevalence of measles, schoolchildren are asked to form "M's" and "O's" about 3 inches square, the "M" to be worn by those who have had measles and the "O" by those who have escaped.——Typhoid Tuesday, December 1, is to be devoted to the investigation of the water supply.——Whooping-Cough Wednesday, December 2, is to be devoted to showing the prevalence of whooping-cough. All schoolchildren who have had the whooping-cough will wear a "W" badge and all who have escaped an "O" badge.——Children's Thursday, December 3, should be devoted by all mothers and fathers to a consideration of the sanitary condition of the dairies from which their milk is obtained.——Fly-Day Friday, December 4, should be devoted to render houses and outhouses fly proof.——The week closes with Seal Day Saturday, December 5, and an especial effort is to be made on this day to sell Red Cross Christmas Seals.

## NEW YORK

**County Sanatorium Approved.**—A proposition for a county tuberculosis sanatorium for Lewis County was carried at the November election by a majority of 700.

**Jamestown Tests Milk Supply.**—The secretary of the board of health of Jamestown has secured the equipment for a municipal bacteriological laboratory to meet the requirements of the new sanitary code.

**Society Honors Its Dead.**—The Albany County Medical Society held its annual memorial service October 30, in honor of the deceased members of the last year, Drs. Charles H. Smith, Daniel V. O'Leary and John V. Hennessy. Appropriate resolutions were adopted and fitting addresses were made by several members of the society.

**County Tuberculosis Hospitals.**—At the recent election three additional counties, Chenango, Lewis and Suffolk, voted to establish tuberculosis hospitals. There are now twenty-nine counties in the state which either have or have planned for such hospitals. It is also reported that Nassau County, L. I., finds that the vote in favor of a tuberculosis hospital near Hempstead, L. I., must stand in spite of the objections of residents in that neighborhood.

**Alarming Spread of Foot-and-Mouth Disease.**—While it is reported from Albany that the epidemic of foot-and-mouth disease through the upper part of the state is well under control, the state department of agriculture is alarmed over the spread of the disease on Long Island. The epidemic has attacked four additional herds of dairy cattle aggregating 733 milch cows. The state department of agriculture has appealed to the federal bureau of agriculture for additional help and a special appropriation will have to be made by the state to meet the emergency.

**Reduction of Summer Infant Death-Rate Through the Establishment of Infant Welfare Stations.**—The New York State Department of Health announces that the infant death-rate during the past summer, for the city of New York, fell to 100 (as against 112 in 1913) and for the rest of the state exclusive of the city, to 119 (as against 143 last year). The department attributes part of the reduction to the mild summer but remarks that it is probable that much of the improvement is due to the infant welfare exhibits and stations which were established during the past summer.

### New York City

**Milk Pasteurization Ordered.**—The health department issued an order on November 13 that all milk hereafter sold in New York City must be pasteurized. The order is based principally on the epidemic of foot-and-mouth disease.

**Dr. Byrne Still Lives.**—In The Journal of September 19, the notice of the death of Dr. Joseph Henry Byrne, New York City, appeared. This report was published on information given by our local correspondent for New York City. Under date of November 13, Dr. Byrne writes us that he is "very much alive and capable of kicking strenuously," at which we, together with Dr. Byrne's many friends, rejoice.

**Personal.**—Dr. Haven Emerson, sanitary superintendent, and Dr. William H. Park, general director of laboratories in the New York Health Department, have received a raise of salary from $5,000 to $6,000 a year on the condition that they give their full time to the work, relinquishing their private practice and their college work in Columbia University.

**Montefiore Home Report.**—The annual meeting of the directors of the Montefiore Home and Hospital for Chronic Diseases was held November 8, when a gift of $25,000 was announced. The income of this fund is to be used for juvenile patients. During the past year the institution cared for 630 patients at a cost of $265,050 and there was a deficiency of $15,000.

**Academy Celebrates Anniversary.**—The anniversary meeting of the New York Academy of Medicine was held on the evening of November 19. Hon. George McAneny, president of the board of aldermen, made the address. It being the custom of the academy to emphasize its interest in public welfare on these occasions the speaker chose as his subject, "Some of the Relations of the Profession of Medicine to Municipal Government." The meeting was followed by a reception and a collation.

**Two Red Cross Units for Servia.**—Two more Red Cross units sailed on the *Finland*, November 21, for services in Servia. The directors of the units are Dr. Ethan Flagg Butler and Dr. Ernest P. Magruder of Washington, D. C. The staff physicians are Drs. James F. Donnelly, S. H. Dodge, Knoxville, Tenn.; Clapham P. King, Annapolis, and Morton Lane. The company will land at the Piraeus and proceed at once to Nish via Salonika. They carry 75 tons of material for dressings and other stores.

**Experiment in Physical Examination of Schoolchildren.**—In accordance with a suggestion made by the committee on hygiene of the board of education an experiment is being made in the private examination of schoolchildren. Two districts have been selected and the parents given the opportunity to have their children examined by their own physician before entering school for the first time. If it is found that such examinations are made in any considerable numbers the medical inspectors will employ the additional time thus saved to the examination of children in the upper grades, and if the experiment should prove a success, the system will be extended.

**Attempt to Solve the Ventilation Problem.**—Arrangements have been made for a series of scientific tests on sixty or more Bronx schoolchildren with the object in view of solving the problem of ventilation in the schools. These experiments are to be conducted by the State Commission on Ventilation, of which Prof. C. E. A. Winslow is chairman. Preliminary experiments have been under way for the past nine months at City College. The new school building in which these experiments are to be conducted has two schoolrooms fitted up with every conceivable ventilating appliance, and having double ceilings, walls and floors in order to provide inlets and outlets for air at any point. There are seats for about thirty children in each room. While the commission has not yet made its official report, it is understood that it has reached some conclusions that apparently upset some fresh-air theories of long standing.

## NORTH CAROLINA

**New Hospital Opened.**—The Winston-Salem City Hospital was opened for visitors November 4, by a reception at which the building was formally presented to the city and accepted by the mayor. The institution represents an investment of more than $100,000. On November 11 the hospital was opened to receive patients.

**Sanatorium Wins Suit.**—At Charlotte on November 6, the jury in the superior court, in an accident for damages brought by a woman against the Charlotte Sanitarium on account of the occurrence of nephritis said to have been due to a careless administration of ether at a minor operation six years before, rendered a verdict in favor of the sanatorium.

**Personal.**—Dr. James N. Gill, Weaverville, has recovered from injuries received in an automobile accident near Asheville early this month.——The residence of Dr. L. S. Blade, Elizabeth City, was damaged by fire November 6.——Dr. Robert H. Bradford, Burgaw, who was operated on for appendicitis at the James Walker Memorial Hospital, Wilmington, is reported to be convalescent.

**County Sanatorium Wanted.**—An appeal has been made to the commissioners of Guilford County, Greensboro, November 4, to provide a hospital for incipient tuberculosis. The commissioners appointed a committee composed of representatives from the County Health Board and the County Medical Society to look over the situation and recommend what course should be adopted.

**State Hospital Vindication.**—The supreme court of the state has handed down a decision confirming the judgment of the lower courts in the case of Salisbury vs. The Hospital for the Insane, Raleigh. The evidence shows that a former governor had appointed the plaintiff in the action, a director of the State Hospital by an interim appointment and at the meeting of the legislature the next governor designated another individual to fill the vacancy for which the appointment had been made, but not confirmed by the Senate. The court sustained the appointment of the official director, taking the position that the governor, at the time of the initial appointment, could nominate only for an interval term pending the session of the Senate which would confirm or refuse to confirm the appointment.

### OHIO

**Union Meeting of District Societies.**—At the union meeting of the First and Second Councilor Districts Medical Society held in Dayton, clinics were held at St. Elizabeth, Miami Valley and the Dayton State hospitals. Eminent specialists from Chicago, Cincinnati and Indianapolis conducted the clinics.

**State Health Board Member Dead.**—Mr. Josiah L. Hartzell, the oldest member of the State Board of Health, who was made a member in 1893, and was twice its president; one of the earliest advocates of modern sanitation in Ohio; formerly editor of *The Repository*; a member of the American Public Health Association, and one of the trustees of the Ohio Historical and Archeological Society; died at his home in Columbus, November 11, aged 81.

**Personal.**—Physicians of VanWert County attended a banquet in VanWert, November 12, in honor of Dr. J. Arthur Hines who celebrated his seventy-second birthday anniversary and the fiftieth anniversary of his initiation into practice. Dr. Hines was presented with a gold headed cane suitably engraved.——Dr. Louis L. Syman, Springfield, has been reelected superintendent of the medical department of the Detroit, Toledo and Ironton Railway.

### OKLAHOMA

**Insane Patients Transferred.**—The State Insane Asylum at Norman recently transferred 250 inmates to the new State Hospital at Vinita. More than 800 patients still remain at Norman.

**Foot-and-Mouth Disease.**—Dr. John C. Mahr, Shawnee, state commissioner of health, has issued a warning regarding the possibility of the spread of foot-and-mouth disease to human beings.

**Free Pasteur Treatment.**—The state health commissioner, John C. Mahr, Shawnee, announces that he is prepared to furnish free, from health officers or physicians of the state, the Pasteur treatment for hydrophobia to all who are unable to pay for the treatment.

**Personal.**—Dr. James A. Young, Oklahoma, who fractured his leg recently, is reported to be convalescent.——The house of Dr. John H. Baldwin, Calera, was destroyed by fire recently.——Dr. Harry E. Breese, Henryetta, who has been ill with malaria and complications, has recovered.——Dr. James A. Rutledge, Woodville, recently fractured his leg while playing foot-ball.——Dr. Herman E. Yazel, Oklahoma City, has sailed for Europe in the Red Cross service.

### TEXAS

**New Texas Surgical Organization.**—At the annual meeting of the Medical Association of the Southwest at Galveston recently a new society to be known as the Texas Surgical Association, was organized. The members of the executive committee are Drs. Joseph H. Reuss, Cuero; John T. Moore, Houston; John B. Smoot, Dallas; Frank Paschal, San Antonio; William B. Thorning, Houston; Joseph D. Becton, Greenville, and James E. Thompson, Galveston.

**Report of State Hookworm Commission.**—Dr. Morris H. Boerner, Austin, assistant state health officer and director of the state hookworm commission, in his quarterly report says that the field work during July, August and September in Burleson, Milan, Bell, Anderson and Nacogdoches counties covered over 4,800 square miles and reached directly and indirectly more than 100,000 persons. Over 6,000 persons were examined for hookworm of whom 1,225, or 19 per cent., were found to be infected and given free treatment. The disease was found to be much more prevalent among children than among adults. Over 3,000 children were examined and 960, or 31 per cent., were found infected.

### GENERAL

**Canal Zone Physician Resigns.**—Dr. Walter G. F. Baetz has resigned as a member of the medical staff of the Ancon Hospital, Canal Zone, and will practice in New York City.

**Life Insurance Medical Directors to Meet.**—The semiannual meeting of the medical section of the American Life Convention will be held at French Lick Springs, Ind., March 3-5, 1915. Dr. Frank W. Foxworthy is chairman of the program committee.

**Southern Surgeons and Gynecologists to Meet.**—The twenty-seventh annual meeting of the Southern Surgical and Gynecological Association will be held in Asheville, N. C., December 15 to 17, with headquarters at Grove Park Inn. Dr. John Wesley Long, Greensboro, is president of the association.

**Southern Medical Women Elect Officers.**—The second annual session of the Association of Medical Women was held in Richmond, Va., November 10, and the following officers were elected: president, Dr. Mary E. Lapham, Highlands, N. C.; vice-president, Dr. Mary A. Parsons, Washington, D. C.; secretary, Dr. L. Rosa H. Gantt, Spartanburg, S. C.

**Orthopedic Club to Meet.**—The next meeting of the Central States Orthopedic Club will be held in Detroit and Ann Arbor, Mich., December 28 and 29, under the presidency of Dr. Albert H. Freiberg, Cincinnati. The first day's meeting will be held in Detroit and in the evening the club will be the guest of the Detroit Medical Society. The second morning will be spent in the clinics and laboratories of the University of Michigan, Ann Arbor.

**Good Health in the Army.**—In the annual report of Surgeon-General William C. Gorgas it is announced that the hospital rate for the year was the lowest on record, that typhoid fever has been virtually stamped out, that there has been less alcoholism than at any time in the history of the Army and that in spite of the large number of men on duty in the tropics, the malarial fever rate is the lowest since 1898. Surgeon-General Gorgas especially commended the high hygienic standards maintained in camps.

**Measures Against Importation of Disease Into This Country at the Close of the War.**—The United States Public Health Service is making preparations to prevent the entrance of disease into this country at the close of the European war. American consuls in Europe have been instructed to report the appearance of epidemics immediately to the health service and particularly to watch for cholera. The Public Health Service also has representatives of its own abroad watching for manifestations of disease. The closest inspection of immigrants is to be maintained.

**Progress in Legislation Against Child Labor.**—The tenth annual report of the National Child Labor Committee compares the laws on this subject in 1904, when the committee was organized, with those of 1914. The number of states which impose a 14-year-age limit on all factory work has increased from thirteen in 1904 to fifty-six in 1914. In the same time the number of states having an eight-hour day for older children has increased from one to eighteen. Night work was prohibited for children under 16 in 1904 in five states, and in 1914, in thirty-four states. Factory inspection was provided for in thirteen states in 1904 and in thirty-four states in 1914.

**Foot-and-Mouth Disease.**—The federal quarantine against the foot-and-mouth disease has been extended to New Jersey, Rhode Island, Massachusetts, New York, Ohio, Pennsylvania, Indiana, Illinois, Maryland, Michigan, Wisconsin, Delaware and Iowa. Shipments of live stock from Canada to the United States are also forbidden. There is no evidence yet of foot-and-mouth disease in Canada, but it is intended to prevent the return of infected cars which have been sent over the border. State quarantine has also been declared against states not yet under federal quarantine. Suspected cases of infection of human beings are said to have occurred in Akron and Cleveland, Ohio; Berrien County, Mich.; Providence, R. I., and Anderson, Ind. The Rockefeller Institute for Medical Research through its director, Dr. Simon Flexner, has undertaken to investigate the cause of the disease.

**Southwestern Physicians Elect Officers.**—At the ninth annual meeting of the Medical Association of the Southwest held in Galveston, Tex., November 10 and 11, the following officers were elected; president, Dr. Jefferson D. Griffith, Kansas City, Mo.; vice-presidents, Drs. Ernest F. Day, Arkansas City, Kan.; Thomas H. Flesher, Edmond, Okla.; Arthur E. Sweatland, Nacogdoches, Tex., and Estill D. Holland, Hot Springs, Ark.; secretary-treasurer, Dr. Fred H. Clark, El Reno, Okla. (reelected for the tenth time), and executive committee, Drs. Matthew M. Smith, Dallas, Tex.;

John H. Barnes, Enid, Okla.; Jacob G. Dorsey, Wichita, Kan.; William H. Stauffer, St. Louis, and Edward H. Martin, Hot Springs, Ark. The association approved the adoption of the *Southwestern Journal of Medicine and Surgery* as the official organ of the association. Oklahoma City was selected as the next place of meeting and the secretary was directed to extend an invitation to the state medical bodies of Colorado, New Mexico and Louisiana to affiliate with the association.

**National Economic Problems to be Discussed by the Civic Federation.**—Among the national problems of medical interest to be discussed by the National Civic Federation at its fifteenth annual meeting in New York City, Dec. 3 to 5, 1914, will be that of food and drugs. The committee on plan and scope for the proposed department on food and drugs will report recommendations based on answers to a questionnaire sent out to over 5,000 federal, state and municipal drug, food and public health officials as well as to manufacturers and retail dealers. The questionnaire dealt with the conditions of the sale of meat, poultry, milk, eggs, pastry, drugs, etc., and included an inquiry as to proprietary remedies and the advisability of the adoption of an official standard of drugs to be supervised by the government. Among the topics discussed in the report of the welfare department also are several which have a medical bearing such as that on industrial fatigue, relation between hours of work and output and physical examination of new employees. In connection with this department, a permanent exhibit is to be established on the thirty-fifth floor of the Metropolitan Tower.

**Southern Physicians Hold Meeting.**—The eighth annual meeting of the Southern Medical Association was held in Richmond, Va., November 9 to 12, under the presidency of Dr. Stuart McGuire, Richmond, and the following officers were elected: president, Dr. Oscar Dowling, Shreveport, La.; vice-presidents, Drs. Robinson C. Dorr, Batesville, Ark., and McGuire Newton, Richmond, Va.; Dr. Allen W. Freeman, Richmond, Va., chairman; Dr. James A. Hayne, Columbia, S. C., vice-chairman; and Dr. Waller S. Leathers, University, Miss., secretary of the section of public health.——Dr. Joseph B. Greene, Ashville, N. C., chairman; Dr. Edward H. Cary, Dallas, Tex., vice-chairman, and Dr. Thomas W. Moore, Huntington, W. Va., secretary of the section on eye, ear, nose and throat.——Dr. Isidore Cohn, New Orleans, chairman; Dr. John H. Blackburn, Bowling Green, Ky., vice-chairman, and Dr. Franklin Webb Griffith, Asheville, N. C., secretary of the section on surgery.——Dr. William H. Deaderick, Hot Springs, Ark., chairman; Dr. Charles L. Minor, Asheville, N. C., vice-chairman, and Dr. Stewart R. Roberts, Atlanta, Ga., secretary of the section on medicine. Dallas, Tex., was selected as the next place of meeting.

**United States Civil-Service Examination.**—The United States Civil Service Commission announces an open competitive examination for epidemiologist, for men only. From the register of eligibles resulting from this examination certification will be made to fill a vacancy in this position in the Public Health Service for service in the field, at a salary of $4,000 a year, and vacancies as they may occur in positions requiring similar qualifications, unless it is found to be in the interest of the service to fill any vacancy by reinstatement, transfer or promotion.

The duties of the position will be to make laboratory and field investigations of the diseases of man in relation to prevalence, causation and methods of control, and to conduct field studies of public health matters. Competitors will not be assembled for examination, but will be rated on the following subjects, which will have the relative weights indicated: Education, 25; Experience and fitness, 50; Publications, 25.

Graduation with an A.B. or B.S. degree from a college or university of recognized standing, and graduation with an M.D. degree from a medical school of recognized standing, and at least five years' experience in epidemiologic research, including field studies and laboratory technic, and at least five years' public health service under federal, state or municipal authorities, are prerequisites for consideration for this position. Experience in epidemiologic research and experience in public health service may be concurrent. Applicants must have reached their twenty-fifth but not their fortieth birthday on the date of the examination. Persons who meet the requirements and desire this examination should at once apply for Forms 304 and 2095, stating the title of the examination for which the forms are desired, to the United States Civil Service Commission, Washington, D. C.

**Prevention of Infant Mortality.**—The fifth annual meeting of the American Association for Study and Prevention of Infant Mortality was held in Boston, November 12-14. At the close of the meeting Mr. Homer Folks of New York, who was elected a year ago, became president for 1915, succeeding Dr. J. Whitridge Williams of Baltimore, and the following officers were elected: president-elect, Dr. Samuel McC. Hamill, Philadelphia; vice-presidents, Drs. William C. Woodward, Washington, and William Palmer Lucas, San Francisco; secretary, Dr. Philip Van Ingen, New York; treasurer, Mr. Austin McLanahan, Baltimore; executive secretary, Miss Gertrude B. Knipp, Baltimore. The meeting was the largest in the history of the association. Delegates were present from eighteen states, the District of Columbia, Canada and Panama. Over 120 organizations engaged in baby-saving work are now identified with the association. Fifty-two of these were represented by delegates at the meeting. In connection with the meeting an interesting exhibit of local and national activities was held in the Boston Public Library. The selection of place and date for the 1915 meeting were left to the incoming executive committee.

The second day's session of the association was opened by the election of the following new directors: for five years, George R. Bedinger, Boston; Dr. Sara Josephine Baker, New York; Dr. Arthur B. Emmons, 2d, Boston; Dr. William W. Butterworth, New Orleans; Dr. Charles V. Chapin, Providence, R. I.; Dr. Frank S. Churchill, Chicago; Miss M. F. Etchberger, Baltimore; Dr. Charles L. Furbush, Philadelphia; Dr. Clyde E. Ford, Cleveland; Dr. Caroline Hedger, Chicago; Dr. William Palmer Lucas, San Francisco; Dr. Helen MacMurchy, Toronto; Harold McCormick, Chicago; Dr. Fred W. Schutz, Minneapolis; Dr. George M. Tuttle, St. Louis; Dr. Borden S. Veeder, St. Louis; Dr. William H. Welch, Baltimore; for four years, Dr. Howard C. Carpenter, Philadelphia; for three years, Dr. Watson S. Rankin, Raleigh, N. C., and Dr. Ernest C. Levy, Richmond, Va.; for two years, Dr. Carl L. Alsberg, Washington; for one year, Mrs. C. B. Crane, Kalamazoo, Mich.

## FOREIGN

**New University in Austria-Hungary.**—Austria-Hungary has just founded a new university, the fifth in the empire. It is located at Presburg, in Hungary, about 40 miles east of Vienna. It was inaugurated with simple ceremonies, October 4.

**Yellow Fever Suspects.**—Two passengers on the steamer "*Esperanze*" from Progreso, Mex., which arrived at Havana, November 16, showed signs of yellow fever and were isolated for observation. Two cases of yellow fever are reported at Merida, Yucatan.

## WAR NOTES

**The American Ambulance.**—The American Ambulance Society, Paris, has found it possible to convert an ordinary motor car into an ambulance at a cost of $50.

**Medical Graduating Class Proceeds to the Front.**—Prof. G. Reinhold is the newly elected rector of the University of Vienna, and he conferred the degrees on the graduating class in the medical department, October 2. The graduated physicians all entered the army at once. About twenty of them were already in uniform at the graduating exercises.

**Hospital Ship Wrecked.**—The hospital ship *Rohilla* en route from Queensferry, Firth of Forth, to Belgium for wounded, was wrecked off Whitby, October 30, with considerable loss of life. None of the medical officers or nursing sisters was lost. The crew and passengers were rescued by the ship's boats and the Whitby life boat.

**Dearth of Medical Officers.**—The British Expeditionary Force is said to be so short of medical officers that those they have are seriously overworked. It is suggested also that there is a lack of medical supplies. The demand for motor ambulances is very great and the London *Times* has raised a fund of nearly $2,000,000 to supply this demand.

**War Surgery.**—In the *Journal des Débats* appears an article by Henry de Varigny dealing with the subject of amputations in the present war. During the first month of surgical work at the Vichy Hospital more than 600 operations were performed, a very small number in comparison with the number of wounded, which was not less than 6,000. Of these 600 operations in the past month of war service, not ten amputations were recorded and the majority of these were minor.

**Return on the Red Cross Ship.**—The steamer *Red Cross*, which was sent to Europe by the American National Red Cross, with surgeons, nurses and medical supplies, returned to New York October 24. Rear Admiral Aaron Ward, U. S. N., who has charge of the work of distribution of supplies, laid special stress on the hospitality of the Hollanders. The stevedores at Amsterdam refused pay for their services; the Rotterdam Dry Dock Company declined payment for engine repairs and the Holland Railway Company transported four Red Cross units and more than 100 tons of supplies to the German frontier free of charge. The *Red Cross* brought home 150 refugees from Europe.

**Work of the British Red Cross.**—The pressure on the British Red Cross organization was exceedingly severe during the first week of November, during which nearly 10,000 soldiers were removed from trains to hospitals. The Royal Army Medical Corps handled the emergency admirably and the service was well equipped in every particular. The organization is rendering considerable help to the French, a large number of surgeons and dressers have been sent to Rennes and Calais to work among the French wounded. A body of surgeons was also sent to Dunkirk to look after the Belgian wounded. The first British Red Cross Hospital is now ready with a capacity of about 500 and motor ambulances are being placed in the field as rapidly as possible.

**Deaths in the Profession at the Front.**—Austria reports the death at the front of Drs. F. Haritz, Vienna; F. Mayer, A. Selinger, B. Mund; N. Ruczka and L. Stern.——The Vienna Medical Society has lost at the front three of the younger members, A. Jungmann, L. Grünfeld and E. Venus. ——In Germany the list of medical officers killed on the firing line includes R. Gottschalk, A. Bertheim, the chemist collaborator of P. Ehrlich, killed by accident on his way to the front; L. Kirchheim, assistant at the medical clinic at Marburg, aged 38; F. Meyer-Betz, and G. Herrenschneider. The *Münchener med. Wochenschrift* has published up to and including the issue for October 20, the names and titles of sixty-four physicians and medical officers and of nine last-year medical students, a total of seventy-three, besides several missing.

**Red Cross Hospital Train.**—A hospital train, said to be the most complete and efficient moving hospital ever constructed, has been given by the Hamburg Red Cross and is now in operation on the western battle front. The train has 36 cars, including 29 for the transportation of the seriously wounded, and 278 beds; a magazine car; a baggage car; a supply car; a physicians' car; an apothecary car; and a car for the hospital corps. Beds with spring mattresses and furnished with laundered linen and fresh blankets are supplied for the sick. The cars are fitted with every conceivable sanitary convenience and the beds are so constructed that they may be used as stretchers. One-half of the physicians' car is divided into compartments for the use of the physicians, while the other half contains a dining and consultation room.

**The Wounded Servians.**—A European journal gives an alleged extract from the diary of a dead German officer regarding the wounded Servians: "When one leaves the organized hospitals and wends one's way through the crowds of wounded who block the pavements and enters a lower-class café, the appalling tragedy of it all fills even the spectator with a sense of hopelessness. There, like cattle on their bed of straw, lie sufferers from all manner of hurts. They remain mute and uncomplaining, just as they have been dropped down from the incoming oxen transports. Their wounds—3, 4 or 5 days old—have yet received no attention save the primitive first aid of the battle-field. Blood poisoning is setting in; limbs that prompt dressing would have saved are fast becoming victims for the surgeon's knife. Most of them know the risk they run, for this is their third war—often, too, their third wound—in two short years. Yet the doctors cannot come, because every man of them is already doing more than human energy allows. It is a heart-rending sight to look down on this helpless mass and to realize that many of them have been sentenced to painful death for mere lack of primitive medical attention."

**Amateur Nursing.**—The *Deutsche med. Wochenschrift* says that the physicians and surgeons at the German front are grateful indeed for the thorough sifting process applied by the authorities to the crowds of women who volunteer to nurse the wounded and sick. The medical staff of a hospital is never very enthusiastic over "dilettante nurses." One volunteer nurse complained recently that the night service was too long; she thought six hours was long enough. Another was distressed because the day shift went on duty at 7; she was not used to getting up so early. Another did not want to have anything to do with tuberculous patients and she had to be transferred to the quarters of the wounded and her chum with her, as they would not be parted. Amateur nurses have such a preference for the care of the wounded that the Red Cross now will not accept them unless they agree to tend the sick with internal diseases as well as the wounded at need. These recent happenings, it is said, confirm the wisdom of the authorities in permitting scarcely any but trained nurses to be sent to the front. Extensive arrangements have now been made, however, to train nurses and attendants. All the public hospitals, the Red Cross and numerous other institutions are making every effort to train large numbers of nurses. The municipal sterilizing plants are sterilizing dressings and clothing donated for points outside. The *Medizinische Klinik* comments: "Thus the city of Berlin has shown in every way its preparedness for war (*Kriegsbereitschaft*)."

**German and Austrian Physicians Decorated for Gallantry at the Front.**—Austria reports that Dr. J. Winter has been knighted for distinguished service in the field and in the prevention of epidemics; the German Kaiser has also conferred a decoration on him. Other Austrian orders have been conferred on G. Arnstein, K. Wolfgang, R. Pollak, E. Bayer, F. Baruch, A. Lerch, V. Eisenmenger and K. Kaunitz. Official recognition for heorism on the firing line mentions the names of Drs. E. Hochmann, A. Polacco and F. Fischer in the latest published list. In Germany the iron cross awarded for special acts of gallantry has been given to 120 members of the profession, including nineteen professors who went from the lecture room to the front. Others besides those already mentioned in these columns are von Angerer, C. Engel, Graser, Riese, Schlayer, Thiemich, Ullmann, Wullstein, Müller of Munich, Lange, Benario, Berghaus, Kausch, Loening, Rumpel, Lennhoff, Stiertz, Küttner and Wachsen. The *Medizinische Klinik*, November 1, adds several more names to the list, among them that of T. v. Olshausen, a member of its editorial staff. This exchange is published by a syndicate of forty-eight physicians and nearly all are at the front, and most of them are already recipients of the iron cross. Bier is in this, and also is one of the group of fifteen that publish the *Münchener med. Wochenschrift.* Most of these also are on the list of those to whom the iron cross has been presented.

**Transportation of the German Wounded.**—The *Deutsche med. Wochenschrift,* October 15, publishes an official communication from the state war department deprecating suggestions from others in regard to the transportation of the wounded. No matter how well meant the suggestions, it says, if they are impractical or conditions forbid their being carried into effect, they merely render the public uneasy to no purpose. The communication is a reply to an article by Czerny in a previous issue in which he made a few suggestions, and his words were widely copied in the daily papers. The communication from the war department states further that theoretically it is in complete accord with most of Czerny's remarks, but all who have been out on the firing line know that there theory and actual practice—as so often happens in war—are worlds apart. "During the first of the campaign the army pushed forward so rapidly that no attempt was made to have the hospital organization keep up with it. The wounded were rushed back from the danger zone by thousands and thousands, and as the railroads had been destroyed, this was a difficult task, but the wounded all preferred to be sent back rather than to be left on the firing line. The hospital trains could not get down to the front, as the tracks were clogged with trains loaded with troops and supplies, so that there were no means of transportation for the wounded except freight trains. More than 120 trains were sent out, each carrying from 300 to 500 wounded. But all were well bandaged and able to bear the transportation. In order to accomplish this, the medical staff had to work with the utmost devotion at high pressure day and night. Only those not seriously wounded were sent back by train. The medical staff made strict provision for a medical force and attendants to accompany each train. If such was lacking at any point those who had the matter in charge were held to strict account. At present there are fifty hospital trains running, with practically clear passage from the front to the home zone.

"Each is fully equipped with physicians and nurses and everything needed for the transportation and care of the wounded, kitchen car, operating room, etc. If the tracks should again become congested with other trains—which is not impossible—then the freight trains will have to be utilized again, but provision has been made so that at many stations, especially those on the frontier, there are already ample supplies of blankets, mattresses, heaters, etc., with medical and other attendants, so that each train can be fitted out properly. The suggestion that one wall of the freight car be taken out is not practicable."

## LONDON LETTER

London, Nov. 6, 1914.

### Treatment of the Wounded

Though most of the wounds received in the war are slight and recovery from them takes place rapidly, some are of great severity and attended by complications, of which tetanus and emphysematous gangrene are the most important. The bacteriologic conditions are peculiar and novel to our bacteriologists working at the front in northern France. In England wound infection is almost exclusively due to staphylococci and streptococci. In France the infecting organisms usually are of the anaerobic class, such as the tetanus bacillus, the *Bacillus aerogenes capsulatus* and the bacillus of malignant edema. Only after a considerable time and sometimes not at all does ordinary pus form. The reason of the difference is that the soil of France and Belgium is cultivated to a degree unknown in England, what is known as "intensive cultivation." It has been thoroughly manured for many years and therefore teems with the anaerobic organisms which inhabit intestines of domestic animals. The soldiers standing in the trenches for hours get their clothing and hands caked with mud. A missile which hits them carries in with it these anaerobes.

The infections induced are serious and frequently fatal. A great improvement has been made in the transportation of wounded from the front. The time now occupied is much shorter and instead of mere trucks, thoroughly equipped ambulance trains are used. Each is provided with a staff of not fewer than three surgeons, four women nurses, and a number of orderlies. Everything necessary for the changing of dressings, and even for the performance of an operation by running the train into a siding, is provided. The feeding of the patients during transit has not been forgotten; there are one or more kitchens on each train. Now that the British army instead of facing north from the east of Paris has been moved into the north of France on the Belgian frontier and faces east, the distance from England is much shortened and the French seaports on the English Channel have become veritable hospital towns. Large buildings such as casinos have been converted into hospitals and in consequence of their good lighting and ventilation answer admirably. The hospitals have far larger professional staffs than the official regulations require, and, thanks to the system of specialization introduced in the Army Medical Corps about ten years ago, the staff of each includes at least one man who is a thoroughly skilled and experienced operating surgeon. Furthermore, of the men who have been enlisted as temporary surgeons, many have had considerable surgical experience. A good many of them are fellows of the Royal College of Surgeons of England. From these hospitals the wounded who are fit for the journey are sent home in splendidly equipped hospital ships, which are large transatlantic liners that have been converted. The bulkheads have been removed and the place of small cabins taken by large wards. The ships are well staffed with surgeons, nurses and orderlies, and the passage, which takes only a few hours, is accomplished without inconvenience. Many thousands of wounded are now in this country distributed in the hospitals throughout the British Isles. Mr. D'Arcy Power, surgeon to St. Bartholomew's Hospital, and lieutenant-colonel attached to the first London general hospital for the reception of the wounded, gives his impressions of the treatment in the *Lancet*. He finds that as in ordinary civil practice, the net result of the work appears to show that meddlesome surgery is generally bad surgery. Wounds need no longer be probed, drained and packed. Tempered with discretion, it is better to wait than to operate unless the patient is losing ground. Considerable experience, however, is required to decide when to wait and when to operate, because injuries which appear slight superficially may conceal conditions that demand immediate treatment. Looking to the fact that the chief infection seems to come from the patient's own skin, antiseptic surgery is preferable to aseptic methods. Dry dressings must give place to compresses and fomentations whereever possible. Iodin applications seem to be more effective than the solutions of mercuric chlorid and mercuric iodid, which have hitherto been the more generally used. The youth and health of the patients render the prognosis even of severe injuries correspondingly good and enable the surgeon to take waiting risks which might otherwise be hazardous. It is better, therefore, to err on the conservative rather than on the radical side of surgery, at any rate in the earlier stages.

#### THE BELGIAN WOUNDED IN ENGLAND

The advance of the Germans through Belgium led to the constant removal of the wounded from one hospital base to another. At length when driven to the sea the wounded were embarked in large numbers for England. One night some thousands were landed at Folkestone. The scene of landing was weird in the extreme. The whole town was in darkness—a military precaution adopted in the coast towns. A large hotel was prepared for their reception into which they were conveyed by physicians, medical students acting as dressers, and nurses who were hastily sent down from London. By the aid of electric torches, tripping over the flower beds of the hotel was avoided. The more seriously wounded were investigated on board the ships and sent in motor ambulances to the nearest military hospital. The rest were placed in ambulance trains and sent to various hospitals. As in the case of the British soldiers, most of the wounds were due to shells, the majority being in the upper limbs.

### Dispensary for Belgian Refugees

A dispensary has been opened under the auspices of the War Refugees Committee for the medical treatment of sick Belgian refugees. The enormous influx of refugees, many of whom speak only Flemish, has rendered it necessary to organize medical relief to secure separate quarters, and to take advantage of the services of Belgian physicians who have found an asylum in this country. Arrangements have been made for a service of consultations daily, and they are now in full working order with an efficient staff of nurses of the British Red Cross. Many Belgian physicians now in London, some of whom are well-known specialists, have offered their assistance for consultation in special cases.

### War the Absorbing Topic

The war, of course, is still the all-absorbing topic. It fills the newspapers almost to the entire exclusion of everything else There is not a very great deal of special medical interest, however, forthcoming at present—apart from the scientific reports on the casualties of war which are not public property yet. Our hospitals, military, permanent and extemporized, are filling up with wounded who have been successfully transported from the area of war, but generally speaking, notwithstanding the conditions of hardship and exposure, to which from the conditions and sanguinary nature of the fighting, the wounded are exposed, often without shelter and food, for hours, sometimes even for days, it is positively remarkable how well the majority of the patients do when they get here; though now that the fighting takes place actually nearer here than to the French base and we get the cases earlier, we are getting a large proportion of more severe wounds.

### Casualties and Rewards

The casualties in the medical corps continue to be heavier than in previous wars. Since my last report six officers of the Royal Army Medical Corps have been killed, one wounded and one reported missing. A particularly sad one is that of a young Australian doctor, Captain Brian Pockley, of the Australian Naval Reserve. He was the son of a prominent Sydney (N.S.W.) doctor, a former president of the Australasian Medical Congress, and graduated at the University of Sydney only this year. He was engaged with a landing party in New Guinea from an Australian warship, and finding a wounded sailor had to be sent to the rear, placed his Red Cross coat on the sailor who carried the wounded man, to indicate that he was temporarily non-combatant. While without his coat attending another wounded man he was shot by a German officer who failed to recognize his protected character in the absence of his badges. Captain Pockley was only 24 years old. As a set-off to the casualties it may be mentioned that the French Cross of the Legion of Honor has been bestowed on three officers of the Royal Army Medical Corps, Major S. L. Cummins and Captains S. E. Lewis, J. T. McEntire, H. S. Ranken, the last of whom has, unfortunately since died from his wounds.

### The Indian Wounded

The care of our wounded Indian soldiers, which on account of caste, questions and other details at one time seemed likely to be a difficult problem, has now been satisfactorily settled. At Netley Hospital, a considerable number have been received under the care of Colonel Sharman, of the Indian Medical Service, who has a staff of sixty Indian orderlies. Two hotels also have now been chartered by the government at Brockenhurst near Southampton, where the wounded land and whence they are transported by motor ambulances.

These two hospitals will accommodate 2,500 patients. Huts are also to be erected in Brockenhurst Park to accommodate a further 500. Their staff will consist of eleven medical officers and thirty orderlies. The enthusiasm in England over the brilliant and devoted service rendered by the Indian troops has stirred up a grateful activity to see that they lack for nothing from the native viewpoint. A large number of Indian residents, including many of very high position, barristers, educationists, and even retired native officers of the Indian Medical Service, have offered their services to Netley as orderlies. The Indians make wonderful patients, as they are redoubtable and marvelously disciplined fighters, and their loyalty and devotion to the empire are a revelation to those who have not hitherto realized it from experience in India.

### The Order of St. John of Jerusalem

The Order of St. John of Jerusalem, the English League of the Knights of Malta, has now united its forces with the British Red Cross under Director-General Arthur Sloggett. The order has 107 hospitals, containing 4,610 beds, England; also seventy-eight convalescent homes with 2,665 beds. Of these hospitals twenty-eight are in use and fourteen are now mobilizing. The order has also three hospitals of 100 beds each in France.

## PARIS LETTER

Paris, Nov. 5, 1914.

### Treatment of Gangrenous Military Wounds

October 21, Dr. Quénu, professor of clinical surgery at the Faculté de médecine de Paris, read an interesting paper on this subject before the Société de chirurgie. He did not agree with Dr. Delorme (The Journal, Oct. 24, 1914, p. 1492), that the treatment of gaseous gangrene should consist of subcutaneous or subaponeurotic injections of hydrogen peroxid. Quénu believes in free opening of the wound and scrupulous disinfection of the cavities with removal of foreign bodies and loosened fragments. Hydrogen peroxid is sufficient to disinfect superficial gangrene, but for gangrene extending into the depths of muscular masses Quénu uses hot air raised to 500 or 600 C. brought into contact with the gangrenous parts by a tube. The hot air first dries and then mummifies the gangrenous surfaces. A certain amount of time is necessary for this sterilization by heat, and large specula must be used like those employed in vaginal operations to sterilize the most remote crevices without danger of carbonizing the muscles and affecting the subjacent tissues too deeply. The large vascular and nerve trunks must be avoided and the hot metal tube must not be brought into contact with the tissues, which would cling to it, producing a closed cavity in which the air-pressure might cause accidents. The end of the tube must be held at a distance of some centimeters from the tissues and the various pockets in the wound must be reached. The following days the wound is to be washed with hydrogen peroxid. The little dried scars are quickly eliminated and the bottom of the wound soon shows a healthy pink tint.

### Tincture of Iodin for the Use of Soldiers

It is well known that bullet wounds immediately painted with tincture of iodin in the majority of cases are aseptic and benign. Similar painting done in ambulances where the soldiers are not received until hours or even days after having been wounded, is likely to be inefficacious. To do good, tincture of iodin must be applied at once, and this is possible only if the soldiers themselves are able to apply it. To provide the soldiers with tincture of iodin in a utilizable form without encumbering them too much is a problem which presents great practical difficulties. Iodin tablets, which are quite practicable for the ambulances, are not so for the soldiers, who have no facilities for dissolving them. A pharmacist in Paris, M. Ronert, has produced sealed ampules about 6 mm. (nearly a quarter of an inch) in diameter and about 6 or 7 cm. (2 inches) long containing tincture of iodin mixed with an iodid to make it unchangeable, and put up in a little case, taking up no more room in the pocket than a little pencil. Near one end the ampules are constricted and filed so as to break readily in the hand. Each one contains a cotton applicator and sufficient iodin to paint the wound and surrounding skin, and costs 10 centimes (about 2 cents). Dr. Pierre Delbet, professor of clinical surgery at the Faculté de médecine de Paris, has found them very practicable, and the Baroness Henri de Rothschild, who supports and directs an auxiliary hospital, has offered to give the army 200,000 ampules.

### The Nobel Prizes

The Swedish scientific institutions which award the Nobel prizes have decided, in view of the European situation, to postpone the distribution of the prizes in literature, medicine, chemistry and physics until next year. The assent of the government is needed, but it is regarded as certain to be given.

### The Situation of Students in the Army

The reopening of the departments of the universities has caused some families to fear that an unfair advantage would be given the students not in the army over those who are in the ranks. The minister of public instruction has just issued a promise that all measures will be taken to safeguard the rights of the students who are defending the country. Special examinations will be held, courses will be given for their benefit and competitive examinations will be adjourned until after the end of hostilities.

### Privileges for Belgian Physicians

At its last session, the Académie de médecine decided to ask for Belgian physicians who have taken refuge in France the privilege of practicing their profession in the numerous localities which have been deprived of medical assistance by the general mobilization.

### Thanks to the American Colony

M. Georges Lecomte, president of the Société des gens de lettres, recently presented to the American ambassador most hearty thanks for the remarkable work of the American hospital in Paris. "The admirable attentions lavished by eminent American physicians and surgeons," said M. Lecomte, "and the devotion of the whole American colony has filled our society with enthusiasm and gratitude."

### Personal

Dr. Marfan, professor of therapeutics at the Faculté de médecine de Paris, has been, at his own request, appointed professor of the hygiene and clinical medicine of early infancy in the school.

The *Journal Officiel* has just published a note in which the government expresses the gratitude of the country for the noble conduct of Dr. Langlet of Reims "who has been to his fellow citizens a most noble example of coolness, courage and dignity during the occupation and bombardment of the city."

## Marriages

Fred Desiré La Rochelle, M.D., Springfield, Mass., to Miss Elizabeth Sarah Henstridge of Hamilton, Ont., November 7.

James Henry McKellar, M.D., Pasadena, Cal., to Miss Dorothy Kellogg of Altadena, Cal., at Pasadena, November 4.

William Alexander Boyd, M.D., Baltimore, to Miss Harriet M. Shannon of Washington, D. C., November 4.

Stanley Henry Mellen, M.D., New York City, to Miss Hazel May White of Newark, N. J., November 4.

Walter Edgar Stewart, M.D., Cushing, Okla., to Miss Ethel Gill of Hattiesburg, Miss., October 18.

Richard Dale Hopkinson, M.D., to Miss Florence A. Savage, both of Philadelphia, November 4.

Fletcher Langdon, M.D., Cincinnati, to Miss Elizabeth Inman of Winchester, Ind., November 5.

Charles Newton Hahn, M.D., Dunnegan, Mo., to Miss Clara Flint of Cliquot, Mo., October 21.

Frank Henry Morrow, M.D., to Miss Catheryne Rusche, both of Columbus, Neb., November 4.

Robert Moffet Palmer, M.D., to Miss Olive Meyer, both of Johnstown, Pa., October 28.

Henry F. Deicher, M.D., to Miss Anna Kohl, both of Plymouth, Wis., November 4.

Franklin Bennett McCarty, M.D., to Miss Mary Bryan, both of Chicago, October 31.

Wilhelm Henry Vorbau, M.D., to Miss May Hearn, both of Athens, Ohio, October 8.

James F. Devin, M.D., to Mrs. Fannie Conger, both of Seattle, Wash., October 29.

David Gordon, M.D., to Mrs. O. D. Fields, both of Chillicothe, Mo., October 28.

# Deaths

**Charles Sedgwick Minot, S.D.** Harvard, 1878; James Stillman professor of comparative anatomy and director of the laboratory of anatomy at Harvard Medical School since 1905; formerly lecturer on embryology; instructor in oro-pathology and surgery; instructor and assistant professor and professor on histology and embryology in his Alma Mater; Harvard exchange professor at the Universities of Berlin and Jena in 1912 and 1913; eminent as an anatomist; member of many learned societies; author of numerous papers on anatomy, embryology and biology; died at his home in Boston, November 19, aged 61.

**John Shrady, M.D.** College of Physicians and Surgeons in the City of New York, 1861; a member of the Medical Society of the State of New York and once president of the New York County Medical Association; formerly editor of the *Medical Register*; for fifty years a practitioner of Harlem, N. Y., where he was familiarly known as the "Little Father of the Poor"; a veteran of the Civil War, in which he served as surgeon of the Second East Tennessee Volunteer Infantry and a captive in Libby Prison; died at his home in Stamford, Conn., November 11, aged 84.

**John Augustus Horgan, M.D.** Harvard Medical School, 1888; a Fellow of the American Medical Association and a resident of Roxbury for more than twenty-five years; president of the St. Vincent De Paul Society of Boston, and visiting physician to the Foxboro State Hospital; died at his home in Roxbury, Boston, November 11, after a surgical operation, aged 59.

**Eugene A. Hutchins, M.D.** Berkshire Medical College, Pittsfield, Mass., 1862; for thirty years a practitioner of Minneapolis; a member of the Minnesota State Medical Association; consulting physician to the Asbury Hospital. Minneapolis; died in that institution, November 9, after a surgical operation, aged 76.

**William Theodore Fletnitz, M.D.** University of Basle, Switzerland, 1895; National Medical University, Chicago, 1901; a Fellow of the American Medical Association; formerly treasurer of the Central-Western Kansas Medical Society; died suddenly at his home in Kansas City, Mo., November 1, aged 47.

**Wilson R. Priest, M.D.** Medical College of Ohio, Cincinnati, 1886; a member and once president of the Kansas Medical Society; local surgeon at Concordia, Kan., for the Missouri Pacific and Santa Fe systems; chief surgeon to St. Joseph's Hospital, Concordia; died at his home November 10, aged 54.

**C. Milo Brady, M.D.** Tulane University, New Orleans, 1893; medical inspector of the Louisiana State Board of Health for a time; for several months a student of tropical diseases on the West Coast of Africa and in Mexico; died at the home of his father in Waggaman, La., November 5, aged 45.

**Thomas Benton Spaulding, M.D.** New Orleans School of Medicine, 1860; assistant surgeon to the Fifteenth Louisiana Volunteer Infantry, C. S. A., during the Civil War, and later a practitioner of Kingston and Greenville, Texas; died at the home of his daughter in Dallas, Texas, October 27, aged 74.

**Jacob Lopes Cardozo, M.D.** Medical College of the State of South Carolina, Charleston, 1878; chief of staff of the Gates Avenue Dispensary and physician to the Eastern District Dispensary, Brooklyn; died at his home in Brooklyn, November 3, from senile debility, aged 82.

**Joseph Lewis Powers, M.D.** College of Physicians and Surgeons, Keokuk, Iowa, 1876; formerly health officer of Reinbeck, Iowa; but for several years a resident of Waterloo; died at the home of his daughter in that city, October 29, from cerebral hemorrhage, aged 90.

**Joseph P. Mellard, M.D.** Medical College of the State of South Carolina, Charleston, 1872; formerly a Fellow of the American Medical Association; a member of the South Carolina Medical Association; died at his home in St. George, S. C., October 12, aged 76.

**Walter C. Stillwell, M.D.** University of Pennsylvania, Philadelphia, 1873; a member of the Medical Society of the State of Pennsylvania and for many years a druggist of Philadelphia; died at his home in that city, November 14, from cerebral hemorrhage, aged 63.

**Henry H. Pemberton, M.D.** Jefferson Medical College, 1872; Hahnemann Medical College, Philadelphia, 1873; for forty years a practitioner and real estate broker of Long Branch, N. J.; died at his home in that city, November 11, from heart disease, aged 65.

**Simon Preston Brown, M.D.** Rush Medical College, 1869; for more than forty years a practitioner of Elgin, Ill.; died at his home in that city, November 7, from senile debility, aged 82. At his funeral eight physicians of Elgin served as active pallbearers.

**John Wilson Hammonds, M.D.** University of Nashville, Tenn., 1867; surgeon in the Confederate service throughout the Civil War; for nearly half a century a practitioner of Sevier County, Ark.; died at his home in Chapel Hill., Ark., October 28, aged 75.

**Charles Buchanan Martin, M.D.** University of Pennsylvania, Philadelphia, 1887; for several years a practitioner of Tacoma, Wash., but since 1903 a resident of Quarryville, Pa.; died at the home of his sister in that place, October 26, from nephritis, aged 53.

**Osmon Baker Way, M.D.** Dartmouth Medical College, Hanover, N. H., 1866; a member of the New Hampshire Medical Society and a well-known physician of Claremont, N. H.; died in Brattleboro, Vt., October 26, from arteriosclerosis, aged 74.

**Ward Beecher De Long, M.D.** Ensworth Medical College, St. Joseph, Mo., 1906; a member of the Missouri State Medical Association and a practitioner of Saline, Mo.; was killed by the overturning of his automobile near Saline, November 8, aged 43.

**Thomas Lafayette, M.D.** University of Lyons, France, 1844; a pioneer practitioner of Southwestern Missouri and assistant surgeon of Volunteers throughout the Civil War; died at his home in Hopkins, Mo., August 16, from senile debility, aged 95.

**Wilfred V. Stephenson, M.D.** University Medical College, Kansas City, Mo., 1905; of Mound City, Kan.; a Fellow of the American Medical Association; died in Wesley Hospital, Kansas City, Mo., November 10, from heart disease, aged 35.

**Andrew Sprague Oliver, M.D.** Hahnemann Medical College, Philadelphia, 1881; for four years a member of the board of public library trustees of San Jose, Cal.; died at his home in that city, November 8, from cerebral hemorrhage.

**Thomas Walker Stone, M.D.** Louisville (Ky.) Medical College, 1884; of Los Angeles, Cal.; formerly a member of the faculty of the medical College of Evansville, Ind.; died in the Stockton, Cal., State Hospital, November 6, aged 59.

**John F. Campbell, M.D.** University of Michigan, Ann Arbor, 1876; a Fellow of the American Medical Association and for fifteen years a member of the board of education of Lansing, Mich.; died at his home in that city, November 3, aged 61.

**Samuel Stem Apple, M.D.** Jefferson Medical College, 1869; a member of the Medical Society of the State of Pennsylvania and a veteran of the Civil War; died at his home in Easton, Pa., November 11, from senile debility, aged 75.

**Alexander Donaldson McDonald, M.D.** Washington University School of Medicine, Baltimore, 1877; a member of the Medical Society of the State of North Carolina; died at his home in Wilmington, N. C., November 7, aged 82.

**James Webster Belden, M.D.** Tulane University, New Orleans, 1888; of New Orleans; died in Touro Infirmary, New Orleans, November 7, from carcinoma of the intestine, three days after a surgical operation, aged 54.

**Alexander Martin Heron, M.D.** Medico-Chirurgical College of Philadelphia, 1899; a Fellow of the American Medical Association; formerly health officer of Lakewood, N. J.; died at his home in that place, October 11, aged 49.

**John Hooker McCutchan, M.D.** Starling Medical College, Columbus, Ohio, 1894; surgeon to the Evansville and Indiana Southern Traction Company at Evansville, Ind.; died in a hospital in that city, November 7, aged 44.

**John N. Kerr, M.D.** Starling Medical College, Columbus, Ohio, 1877; for many years a practitioner of Logan County, Ohio; died at his home in Boise, Idaho, September 4, from valvular heart disease, aged 62.

**Martin Luther Knight, M.D.** Tulane University, New Orleans, 1895; a member of the Mississippi State Medical Association; died at his home in Hazelhurst, Miss., July 18, from angina pectoris, aged 54.

**James Ward Keeney, M.D.** Bellevue Hospital Medical College, 1874; formerly a member of the board of health and police pension board of San Francisco; died in that city, November 7, aged 62.

**James Alison Lee, M.D.** State University of Iowa, Iowa City, 1873; for many years a practitioner of Lone Tree, Iowa; died at his home in Lisbon, Iowa, October 28, from carcinoma of the liver and mesentery, aged 66.

**Edward Harvey Taft, M.D.** Dartmouth Medical School, Hanover, N. H., 1897; a Fellow of the American Medical Association; died suddenly at his home in Milford, N. H., November 4, aged 45.

**Alvah Miller Wilson, M.D.** Washington University Medical School, St. Louis, 1896; formerly a Fellow of the American Medical Association; died at his home in St. Louis, November 3, aged 39.

**Joseph Muse Worthington, M.D.** University of Maryland, Baltimore, 1872; a member of the Medical and Chirurgical Faculty of Maryland; died at his home in Annapolis, September 21, aged 68.

**William H. Hall, M.D.** Eclectic Medical Institute, Cincinnati, 1870; died at his home in Havana, Ill., October 30, a short time after a surgical operation performed in Chicago, aged 74.

**Robert K. Cherry, M.D.** Leonard School of Medicine, Raleigh, N. C., 1906; a colored practitioner of Germantown, Philadelphia; died at his home, October 28, from pneumonia, aged 34.

**Samuel J. Hoffman, M.D.** University of Maryland, Baltimore, 1877; a member of the Medical Society of Virginia; died at his home in Woodstock, Va., from carcinoma, aged 62.

**Godfrey Beaumont, M.D.** University of Louisville, Ky., 1865; of Kalamazoo, Mich.; died at his summer home in Moore Park, Mich., September 26, from diabetes, aged 83.

**Solomon Adams Bergman, M.D.** Memphis Hospital Medical College, Memphis, Tenn., 1906; of Buck, Tex.; died in Moscow, Tex., August 1, from cerebral hemorrhage, aged 35.

**Henry C. Miller, M.D.** Homeopathic Medical College of Missouri, St. Louis, 1871; of Wilkinsburg, Pa.; died at the home of his sister in that place, November 2, aged 80.

**Milledge Marcellus Conner, M.D.** Kansas City Hospital College of Medicine, Kansas City, Mo., 1885; of Augusta, Ga.; died in the Augusta City Hospital, October 25.

**Deville J. Moyer, M.D.** University of Michigan, Ann Arbor, 1893; a member of the Kansas Medical Society; died at his home in Junction City, Kan., September 9, aged 52.

**Edward R. Wren** (license, Mississippi) for many years a practitioner of Amory, Miss.; died at the home of his son in Ensley, Ala., October 26, aged 76.

**Edward Horton Flint, M.D.** Hahnemann Medical College, Chicago, 1880; died at his home in Syracuse, N. Y., October 30, from pneumonia, aged 54.

**George Washington Chamberlain, M.D.** New York University, New York City, 1873; died at his home in Hinsdale, Mass., October 5, aged 65.

**A. G. Andrews, M.D.** University of Louisville, Ky., 1868; died at his home in Spring Creek, Tenn., August 16, from senile debility, aged 81.

**Eugene Bonaparte Cushing, M.D.** Hahnemann Medical College, Philadelphia, 1871; died at his home in Lynn, Mass., September 21, aged 68.

**W. Rudolph Froelich, M.D.** University of Würzburg, Germany, 1903; died suddenly at his home in Stuttgart, Ark., September 25, aged 37.

**Henry Jefferson Hascall, M.D.** Boston University School of Medicine, 1879; died at his home in Shrewsbury, Mass., September 19, aged 62.

**Isaac Grimshaw Worrall, M.D.** New York University, New York City, 1850; died at his home in Creskill, N. J., about October 26, aged 86.

**Charles Samuel Sargent, M.D.** Boston University School of Medicine, 1879; died at his home in Webster, Mass., September 26, aged 58.

**James Thompson Wilson, M.D.** University of Pennsylvania, Philadelphia, 1864; died at his home in Tyrone, Pa., September 23, aged 74.

**Eugene Hinton Rencher, M.D.** University of Alabama, Mobile, 1910; died at his home in Jamestown, Ala., September 17, aged 37.

**Lorenzo William Thompson, M.D.** Trinity Medical College, Toronto, 1885; died at his home in Listowel, Ont., September 13, aged 60.

**Ethan G. Allen, M.D.** Pulte Medical College, Cincinnati, 1889; died at his home in Shreveport, La., October 21, aged 58.

# Correspondence

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## Postgraduate Education

*To the Editor:*—If the practicing physician would either move forward, or prevent his falling behind the times, he must avail himself at intervals of postgraduate courses. The necessity for providing these has long been recognized both at home and abroad, notably in the German Empire, but the task of properly organizing the work of postgraduate instruction is still unfinished.

In December, 1899, distinguished physicians of Berlin in collaboration with the Prussian state government organized the Central Committee of Postgraduate Medical Education in Prussia, whose duty "is fulfilled in stimulating the scientific education of practical physicians, by promoting in the larger Prussian towns the organization of local unions which take on themselves the work of arranging gratuitous courses and lectures." Of these local unions not less than thirty-one are in existence. The expenses of organization of the central committee are met by a contribution from the Prussian state government, in certain parts of the empire by subventions from local societies, and by a small matriculation fee paid by auditors. During the years from 1900 to 1906 there were called to life in other states of the confederation and in Prussia national committees for the purpose of promoting medical extension courses.

In 1908 on the initiation of the Prussian central committee, the members of state committees of the various federated states of the German empire met and founded the Imperial Federal Board for Postgraduate Medical Education. The function of the federal board consists in giving definite suggestions at occasional conferences to the chairmen of the state committees, but the latter work quite independently for their own state. These demonstratorial courses and lectures are free (a small registration fee excepted), and the lecturers receive no recompense as a rule, "but only repayment of their actual expenses."

To Germany belongs the credit of the founding in 1910 of an international committee for medical postgraduate education, and not less than fifteen countries, including the United States, are represented by delegates. This committee holds periodic conferences, generally on the occasions of the international medical congresses, at which questions of vital interest bearing on postgraduate education are discussed with a view to mutual enlightenment and stimulation.

With a view to promoting postgraduate medical education in general, and at the same time as a memorial to the Empress Friedrich, the Kaiserin Friedrich-Haus was established in 1900, solely as the result of voluntary contributions, amounting to 1,500,000 marks, and dedicated in the presence of the emperor and empress. The annual cost of maintenance is about 50,000 marks ($12,500), derived partly from the state government, partly from rentals paid by both the university and exhibitors, and finally from the foundation capital not used up in building. The present director is Prof. Dr. C. Adam, who conducts visitors through the handsome structure, pointing out its numerous and varied treasures, and also the uses to which the various portions of the building are devoted. As stated in a leaflet issued by him, the Haus serves:

1. "As a central home for postgraduate medical education and its organizations, namely, (*a*) the Central Committee for Medical Postgraduate Education in Prussia; (*b*) the Federal Board for Postgraduate Medical Education; (*c*) the International Committee for Medical Postgraduate Education.

2. "As a center of instruction for physicians. It contains rooms and laboratories for practical courses in all the sciences auxiliary to modern medicine, such as clinical chemistry, microscopy, bacteriology, roentgenology and scientific photography; also a large and a small theater for lectures.

3. "As a central depot for auxiliary appliances for medical instruction belonging to the 'State Collection of Medical Educational Appliances.' This depot lends free of charge material for teaching purposes for physicians' courses, academic lectures, as also for the instruction of the lay public in

the science of public health, etc. It contains appliances for demonstrations of all kinds, such as diapositives, microscopic preparations, stereoscopic illustrations, charts, atlases, manikins, etc.; the other objects are collected in the following special divisions: plastic department, nursing department and medicohistorical department (with a historical collection of instruments and bandages). Admission to physicians, only, and free of charge. Open as a rule on Wednesday from 10 to 3.

4. "As a place of union for medical science and practical medical technology by means of the 'Permanent Exhibition for the Medicotechnical Industry,' where the doctor will find all the instruments and appliances necessary for the practice of his profession in the departments of surgery, electromedicine, optics, etc.; open to all free of charge, on weekdays (except Saturday) from 10 to 3.

5. "As a place for exhibitions, rooms being placed free of charge at the disposal of special scientific exhibitions for medical instruction.

6. "As a medical information bureau which gives, gratis, information concerning all postgraduate courses in the German Empire, as also concerning all other matters touching on the postgraduate education; furthermore, concerning all medical institutions, hospitals, collections, etc., in Berlin with regard to the time and conditions for their inspection; lastly, concerning the possibility of participation in clinical lectures and lecture evenings of medical associations.

7. "As a literary center for all matters concerning postgraduate education, since also the editorial offices of the *Zeitschrift für ärztliche Fortbildung,* published by the German organizations for postgraduate education, are to be found here."

If there was a single reason for the creation of so complete an organization of graduate medical education as has been developed in Germany during the last decade and a half, then there are a dozen equally cogent reasons why the question of the reorganization of postgraduate education in America should be taken up with a view to bringing about a uniform and much extended system. I would suggest that the work already begun in this country under the auspices of the American Medical Association be promptly enlarged and promoted.

J. M. Anders, M.D., Philadelphia.

### School Athletics and Gate Money

*To the Editor:*—I was much interested in the editorial on "High School Athletics" (The Journal, Nov. 14, 1914, p. 1765). I should like to see another dealing with the prevention of the evil therein discussed. My own experience, embracing my own student life at school and college, with participation in their athletic activities, three years as teacher in boys' boarding schools, and the observation of sixteen years as a physician sharpened by a never-waning interest in educational subjects, has long since led me to the conclusion that the key to the evil is *gate money.*

Students as individuals do not engage in professionalism, but colleges collectively do so, as surely as do the owners of the baseball league teams. They do not receive their profits in the form of dividend checks, but in the increased attendance and students' fees, and in endowment. The money received is spent on trainers, war material and commissariat, and even on spies. Athletic fields are erected that exceed in seating capacity the Colosseum. Athletics, intended as the young man's sport and recreation, *ut sit mens sana in corpore sano,* has become a commercialized asset, and the candidate for a school or varsity team completely loses his individuality and initiative, becoming the puppet of a professional coach, the tenure of whose office and the size of whose salary depends on the amount of kinetic energy he is able to extract from those under his direction.

Let us imagine, if we can, college athletic contests without a charge for admission. They would cease to be public property, and would be supported by the contributions of the students themselves and of those who are properly interested in their activities. Doubtless there would be less money spent, the public would be deprived of their entertainment, and the college of valuable advertising assets. Sport writers of the daily newspapers would be deprived of much material, and the poor trainer and coach would lose their jobs. The contests themselves would lose much of their proficiency. The training table would disappear, and the output of energy would be within the limit of that furnished by the ordinary college diet.

But even these woes might be endured if we had better sportsmanship, and fewer cardiopathies in later life.

B. M. Randolph, M.D., Washington, D. C.

### Proper Regulation of School Athletics

*To the Editor:*—To all those who are interested in the health of schoolchildren, the editorial on "High School Athletics" (The Journal, Nov. 14, 1914, p. 1765) is most welcome. Criticisms of unregulated and unguarded high school athletics are, however, often undeserved. I would join with you in the appreciation of well-conducted physical training work in the gymnasium. There are, however, two forms of athletics: the *intensive,* which is the usual form, in which a few boys in the school are collected on account of their individual powers to undergo a course of training and to represent their school on the athletic field, and the *extensive* form of athletics, in which we endeavor to get all of the student population in healthful athletic training.

In New York City we carry on the intensive form, but have emphasized strongly in recent years the more popular distribution of the benefits of athletics.

Since the organization of the Public Schools Athletic League in 1903, the incorporation of athletics as an official part of the Department of Physical Training, and the establishment of a system of medical examination of all prospective athletes, I have been unable to obtain an authentic record of damage to elementary or high school pupils as a result of athletics. Therefore, I feel constrained to recommend that the weight of medical opinion be directed not against the prohibition of athletics, but toward their proper regulation.

C. Ward Crampton, M.D., New York.
Director of Physical Training.

## Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### HOW CHAMPAGNE IS MADE

*To the Editor:*—Would you kindly tell me what kind of grapes or wine is used in making champagne? I understand that a dry, white wine with a dash of cognac brandy and a little sugar is used. How is it made?

J. M. White, M.D., Meridian, Miss.

Answer.—In sparkling wines, as champagne, the primary fermentation is checked at an early stage, so that a secondary or complementary fermentation may occur in the bottle, and cause the sparkle which is characteristic of this class of wine. The juice of black grapes only is used for some kinds, the skins being rejected to avoid the extraction of the coloring matter and tannin. For others red or white grapes are crushed, and, except when colored wines are desired, the juice drawn off at once to prevent the extraction of coloring matter and tannin from the skins and stalks. If a colored wine be desired, the initial fermentation is made before the juice is removed from the crushed fruit. The marc—that is, the crushed skins, etc.—is put under a screw press to remove the remainder of the juice. The latter process is now done in many manufactories by the centrifugalizing machine. The must is fermented in vats for about fourteen days, after which it is racked, the sediment allowed to deposit, and the wine put into casks until winter. It is then transferred to other casks, some finings (gelatin, albumin, kaolin, calcium sulphate, etc.) being added at the same time, and a month is allowed for it to clarify. After this it is blended, some mature wine being put into the mixture, and the amount of sugar in it ascertained. The presence of a definite amount of sugar is necessary to insure the future sparkle. If, therefore, the amount is deficient, some syrup or sugar-candy is added. It is now bottled, and the bottles laid on their sides for a few weeks until the development of carbonic acid gas commences. The wine is then transferred to cellars, some of which are more than 100 feet deep, cut into the chalk, and admirably suited by their uniform temperature to assist in the maturation of the wine. Here it remains three or four years, during which the same changes go on as in the maturation of other wines. A deposit forms, and, as it is desirable to prevent it adhering to the sides of the bottle, it is agitated now and then. After three years the bottles are placed obliquely, so that the deposit may fall on and firmly adhere to the cork. Finally the cork is removed, and the deposit with it; the bottle is filled up with liqueur made of old champagne, brandy and sugar, and it is freshly corked and wired. The secondary fermentation now continues, during which the flavor and aroma of the wine are developed, and the effervescence and sparkle are insured.

### CRITICISM OF A PRESCRIPTION

*To the Editor:*—Is the following prescription a good combination? Such a combination might frequently seem indicated in cases such as painful genito-urinary infection, renal or vesical, and yet the combination changes to a pasty gummy consistency. I wonder whether there is not some chemical change that would alter its efficacy. Please criticize:

Urotropin ....................................
Sod. Benzoat. ....................................
Aspirin ....................................āā ʒi
M. et divide in chart. No. xii.

X. Y. Z.

Answer.—The combination is not a good one for several reasons. Hexamethylenamin (urotropin) and acetyl salicylic acid (aspirin) are chemically incompatible. However, although incompatibility exists in solution, the hexamethylenamin decomposing to yield ammonia and formaldehyd, decomposition would probably occur only to a slight extent in the dry state. Therapeutically, there seems to be no objection to the prescription, if the author sees indications in a case under treatment for the remedies mentioned. If we suppose that hexamethylenamin is used as a urinary antiseptic, its use would probably be indicated for some time. The aspirin presumably is given to relieve pain. It must therefore be considered only as a temporary remedy to be given for a special purpose, and when that purpose is accomplished, should be discontinued. It would better not be combined in the same prescription with the urinary antiseptic lest its purpose be forgotten and the drug be unnecessarily continued. As The Journal has repeatedly pointed out, hexamethylenamin should be prescribed under its proper name, and not by a copyrighted trademark. By calling hexamethylenamin by the proprietary name the physician does not insure that he will get a purer or better drug. He enhances the cost to the druggist, if not to the patient, and prevents the using of any other brand of the pure chemical which the druggist may happen to have in stock.

### MILK-SICKNESS

*To the Editor:*—A family of six acquired milk-sickness which was traced to one cow having the trembles. Five of the family were severely affected, one dying. The father of the family was not affected by the disease. All of them excepting the father drank of the milk while it was sweet. The father used it only after it was churned, as butter and buttermilk. Please answer these questions as fully as possible:

1. Does the liberation of the acids formed by the transformation of sweet milk to buttermilk destroy the poison of milk-sickness?

2. Milk-sickness is evidently a germ disease. Tell what you can concerning its etiology.

3. What other toxemias are characterized by severe subnormal temperatures?

R. L. Talley, M.D., Bible Grove, Ill.

Answer.—1. Apparently not. There are many instances on record in which butter has been held responsible for the conveyance of milk-sickness. Probably in the case you mention the difference may have been quantitative—a smaller amount of buttermilk being used, so that the size of the dose was less than in the case of those drinking fresh milk.

2. We may refer you to a paper by Jordan and Harris appearing in the *Journal of Infectious Diseases*, September, 1909, vi, No. 4. You can probably obtain a reprint by addressing the authors.

3. Many non-infectious toxemias are associated with a low temperature, as seen in the collapse after organic poisoning, especially when there is vomiting and loss of food.

### ARTICLES ON TETANUS

*To the Editor:*—Please advise me of any recent developments in tetanus.

C. A. Hofer, M.D., Metuchen, N. J.

Answer.—The following is a list of recent articles on this subject:

The Administration and Value of Tetanus Antitoxin, editorial, The Journal, Aug. 30, 1913, p. 687.

Jones, F. R.: Tetanus, *Semana méd.*, Sept. 26, 1912; abstr., The Journal, Nov. 30, 1912, p. 2014.

The Value of Tetanus Antitoxin, correspondence, The Journal, Dec. 7, 1912, p. 2084.

Irons, E. E.: Treatment of Tetanus by Antitoxin, The Journal, June 27, 1914, p. 2025.

The Serum Treatment of Tetanus, editorial, The Journal, April 11, 1914, p. 1174.

Ashhurst, A. P. C., and John, R. L.: Rational Treatment of Tetanus with Report of Twenty-Three Cases, *Am. Jour. Med. Sc.*, June and July, 1913.

Holman, C. J.: Magnesium Sulphate in Tetanus, *St. Paul Med. Jour.*, June, 1911; abstr., The Journal, July 1, 1911, p. 45.

Parker, George: Treatment of Tetanus with Magnesium Sulphate, with Report of Three Cases, The Journal, June 8, 1912, p. 1746.

Kocher, T.: Magnesium Sulphate in Tetanus, *Cor.-Bl. f. schweiz. Aerzte.*, 1912, xlii, No. 26, abstr., The Journal, Oct. 19, 1912, p. 1496.

Kocher, T., and Arnd, G.: Cure of Tetanus by Magnesium Sulphate, *Cor.-Bl. f. schweiz. Aerzte.*, 1913, xliii, No. 4, abstr., The Journal, March 29, 1913, p. 1036.

### TUBERCULIN IN DIAGNOSIS

*To the Editor:*—1. Is tuberculin, given hypodermically, used as a diagnostic test for tuberculosis by the best clinicians at present?

2. Would it be advisable to give tuberculin for diagnostic purposes in a patient having night-sweats, in whom there is no discoverable cause for them?

Answer.—1. Yes. Koch's old tuberculin is used for diagnostic purposes by many of the best physicians. Some, however, regard its use as being attended by a certain risk of causing a flare up of a local focus, a danger that certainly attends the use of large doses. When used, the initial dose should be small, perhaps not more than 0.1 milligram. In the event of negative results the dose may be increased by 0.5 mg. or 1 mg. every two or three days up to a point at which even 5 mg. are given. Careful temperature records should be taken at short intervals after the injection. Otherwise no interpretation of a reaction is possible. In instances in which fever already exists, the reaction is difficult of recognition. It should always be kept in mind that a positive reaction, though showing the existence of tuberculosis, does not necessarily mean that the symptoms for which an explanation is sought are produced by the tuberculosis process that is somewhere in the body.

2. Tuberculin would probably be safe in the case described and might help in diagnosis.

### CUSTOM OF YOUNGER PHYSICIANS CALLING ON OLDER

*To the Editor:*—In a recent discussion, the question was brought up as to whether it was correct for the new practitioner in a town to call on his fellow practitioners first, or whether they should call on him first. Can you put me right on this?

R. L. K.

Answer.—The Journal has replied to this question before, as follows: "It is an accepted custom for young physicians and newcomers to call on the older physicians and those of longer residence in the locality. It is a mark of courtesy and respect due from one locating in a new place. He thus announces his arrival and his desire to be recognized in professional circles and friendships." This custom must not be confused, as it appears sometimes to be, with that which governs social relations when a family takes up its residence in a new locality.

### ACCIDENTS TO UNSUITABLY EMPLOYED EPILEPTICS

*To the Editor:*—I am preparing a paper on "Accidents Due to Epileptics Being Unsuitably Employed," or being in unsuitable places at the time of seizure, to be illustrated by photographs of patients showing resultant mutilations.

Will you kindly put me in touch through the pages of The Journal with physicians having had such patients, who would be willing to send photographs showing result of such accidents? The physicians would get full credit, names of patients would not be mentioned, and photographs would be returned.

I feel the importance of such a paper of warning on account of the number of crippled epileptics, often preventable cases too, who frequent my consulting rooms.

Matthew Woods, M.D., 1402 Spruce Street, Philadelphia.

# *Medical Education and State Boards of Registration*

## COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 5, 1915. Chairman, Dr. W. H. Sanders, Montgomery.

ALASKA: Juneau, Jan. 5, 1915. Sec., Dr. H. C. DeVighne, Juneau.

ARIZONA: Phoenix, Jan. 5-6, 1915. Sec., Dr. John Wix Thomas, 200 Nat'l Bank of Ariz. Bldg., Phoenix.

CALIFORNIA: Los Angeles, December 8. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.

DELAWARE: Dover and Wilmington, December 8-10. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

FLORIDA: Palatka, December 2-3. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

KENTUCKY: Louisville, December 16-18. Sec., Dr. A. T. McCormack, Bowling Green.

MARYLAND: Baltimore, December 8. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton, Baltimore.

MINNESOTA: Minneapolis, Jan. 5-8, 1915. Sec., Dr. Thomas McDavitt, 814 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, December 14-16. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

NEW HAMPSHIRE: Concord, December 29-30. Regent, Mr. H. C. Morrison, Concord.

NORTH DAKOTA: Grand Forks, Jan. 5, 1915. Sec., Dr. G. M. Williamson, Grand Forks.

OHIO: Columbus, December 8-10. Sec., Dr. George H. Matson.

PENNSYLVANIA: Philadelphia, December 1-3. Sec., Dr. N. C. Schaeffer, Harrisburg.

RHODE ISLAND: Providence, Jan. 7, 1915. Sec., Dr. Gardner T. Swarts, State House, Providence.

UTAH: Salt Lake City, Jan. 4-5, 1915. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

VIRGINIA: Richmond, December 15-18. Sec., Dr. J. N. Barney, Fredericksburg.

WASHINGTON: Walla Walla, Jan. 5, 1915. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

## Arizona April Report

Dr. John Wix Thomas, secretary of the State Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, April 7, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 13, of whom 8 passed, including 2 osteopaths, and 5 failed. Licenses were issued to 4 candidates who were in active practice prior to the adoption of the law. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| Indiana Medical College | (1906) | 77.8 |
| University of Maryland | (1913) | 76.7 |
| Tufts College Medical School | (1903) | 75.3 |
| Washington University | (1907) | 80 |
| Medico-Chirurgical College of Philadelphia | (1913) | 76 |
| Royal College of Physicians, Edinburgh | (1882) | 68.6* |

* Ten per cent. credit allowed for years of practice.

FAILED

| | | |
|---|---|---|
| Chicago College of Medicine and Surgery | (1913) | 72.8 |
| Hospital College of Medicine, Louisville | (1904) | 40.3 |
| Baltimore Medical College | (1913) | 70.3 |
| Barnes Medical College | (1902) | 61 |
| University of Tennessee | (1901) | 53.9 |

## Colorado July Report

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the oral and written examination held at Denver, July 7, 1914. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 13, all of whom passed. Eleven candidates were licensed through reciprocity. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| University of Colorado (1914) 82, 82.9, 83.5, 84.3, 84.4, 85.1, 85.9, 85.9, 87.9, 91.4. | | |
| State University of Iowa, College of Medicine | (1914) | 83.2 |
| Harvard University | (1914) | 91.6 |
| National University of Ireland | (1911) | 87.4 |

LICENSED THROUGH RECIPROCITY

| College | Year Grad. | Reciprocity with |
|---|---|---|
| Arkansas Industrial University | (1891) | Missouri |
| Northwestern University | (1912) | Oklahoma |
| Medical College of Indiana | (1893) | Illinois |
| Louisville and Hospital Medical College | (1908) | W. Virginia |
| Tulane University of Louisiana | (1908) | Louisiana |
| University of Michigan, Dept. of Med. and Surg. | (1907) | Michigan |
| St. Louis University | (1911) Illinois; (1913) | Missouri |
| Hahnemann Medical College and Hospital, Phila. | (1899) | Penna. |
| Jefferson Medical College | (1912) | Iowa |
| Chattanooga Medical College | (1899) | Tennessee |

## Indiana July Report

Dr. W. T. Gott, secretary of the Indiana State Board of Medical Registration and Examination, reports the written examination held at Indianapolis, July 14-16, 1914. The total number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 42, of whom 41 passed, including 2 osteopaths, and 1 failed. Fifteen candidates were licensed through reciprocity. The following colleges were represented.

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| University of Colorado | (1913) | 83.8 |
| Chicago College of Med. and Surg. (1913) 82, 84.7; (1914) 84.2, 85.2, 88.8. | | |
| College of Physicians and Surgeons, Chicago | (1908) | 91.4 |
| Hahnemann Med. Coll. and Hosp., Chicago | (1912) 83.2, (1913) | 77.1 |
| Indiana University (1914) 81.6, 82.7, 82.8, 83.4, 84.4, 85.2, 85.7, 86.8, 86.8, 87, 88, 88.1, 88.2, 89, 89, 89.2, 89.3, 90.4, 90.7, 90.9, 92, 92. | | |
| Medical College of Indiana | (1904) | 82.8 |
| Physio-Medical College of Indiana | (1902) | 85.9 |
| University of Louisville | (1914) | 90 |
| Marion-Sims College of Medicine | (1892) | 75 |
| St. Louis University | (1914) | 89.2 |
| Bellevue Hospital Medical College | (1892) | 78.2 |
| Eclectic Medical College, Cincinnati | (1914) | 92.5 |
| Ohio-Miami Medical College | (1914) | 91 |

FAILED

| | | |
|---|---|---|
| Chicago College of Medicine and Surgery | (1913) | 62.8 |

LICENSED THROUGH RECIPROCITY

| College | Year Grad. | Reciprocity with |
|---|---|---|
| College of Physicians and Surgeons, Chicago | (1912,2) | Illinois |
| Rush Medical College | (1912) | Illinois |
| Drake University | (1906) | Iowa |
| State University of Iowa, Coll. of Med | (1912) | Iowa |
| University of Louisville | (1910) (1912) | Kentucky |
| University of Michigan, Department of Medicine and Surgery | (1908) (1911) (1912) | Michigan |
| Univ. of Michigan, Homeo. Med. College | (1912) | Michigan |
| National Normal University | (1892) | Ohio |
| Western Reserve University | (1909) | Tennessee |
| University of Pennsylvania | (1902) New York; (1912) | Penna. |

## Maine July Report

Dr. Frank W. Searle, secretary of the Maine Board of Registration of Medicine, reports the written examination held at Augusta, July 7-8, 1914. The total number of subjects examined in was 10; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 35, of whom 30 passed and 5 failed. Two candidates were licensed through reciprocity. The following colleges were represented:

PASSED

| College | Year Grad. | Per Cent. |
|---|---|---|
| Medical School of Maine (1914) 77, 79, 79, 79, 83, 84, 84, 84, 85, 87, 87, 88, 88, 88, 92. | | |
| Baltimore Medical College | (1911) | 83 |
| University of Maryland | (1914) | 81, 85 |
| College of Phys. and Surgs., Boston | (1913) 75; (1914) | 80 |
| Harvard University | (1911) 91; (1914) | 86, 92 |
| Tufts College Medical School | (1913) 85; (1914) | 80 |
| Columbia University | (1910) 86; (1914) | 91 |
| New York Homeo. Med. Coll. and Flower Hosp | (1888) | 83 |
| University of Pennsylvania | (1909) | 92 |
| University of Vermont | (1914) | 87 |

FAILED

| | | |
|---|---|---|
| Medical School of Maine | (1914) | 72, 77* |
| Maryland Medical College | (1912) | 74 |
| Boston University | (1914) | 74 |
| College of Phys. and Surgs., Boston | (1913) | 73 |

* Fell below the required average in one subject.

LICENSED THROUGH RECIPROCITY

| College | Year Grad. | Reciprocity with |
|---|---|---|
| College of Phys and Surgs., Chicago | (1889) | Missouri |
| Medical School of Maine | (1893) | W. Virginia |

# Book Notices

Public Health Laboratory Work. By Henry R. Kenwood, M.B., F.R.S., D.P.H., Chadwick Professor of Hygiene and Public Health, University of London. Sixth edition. Cloth. Price, 10 shillings net. Pp. 413, with illustrations. London: H. K. Lewis, 1914.

In this edition of Kenwood's book the summary of public health bacteriologic work, which was formerly included, has now been omitted, in order to keep the volume within the compass of a handy laboratory guide. It is devoted entirely to the chemical side of public health laboratory work. The author believes that the needs of the public health student in bacteriology are now fully provided for by several excellent laboratory books. The idea is a good one, and if authors in general were more careful to prevent duplication of material when many good text-books already exist, there would not be so many incomplete and superficial text-books on the market. In an introductory note the author discusses the various apparatus used for the examinations outlined in the rest of the book, and supplements it with tables of weights and scales. The first part of the book deals with the chemical, microscopic and physical examination of water for public health purposes; the second to an analysis of sewage; the third part to soil; the fourth to air; the fifth to food, and the sixth to disinfectants. It is complete and up to date. Every phase is taken up simply and with complete directions for making the necessary tests. In the part on food examination all the common articles of diet are considered. With this book as a guide the public health laboratory worker will be able to carry out examinations for adulteration and standardization of any products which may be brought to him for this purpose. There are eighty-seven illustrations and several large plates, which add to the complete nature of the book.

Diagnosis of the Malignant Tumors of the Abdominal Viscera. By Rudolph Schmidt, Professor of Medicine in the University of Innsbruck. Authorized English Version by Joseph Burke, Sc.D., M.D., Attending Surgeon, Buffalo Hospital of the Sisters of Charity. Cloth. Price, $4. Pp. 361. New York: Rebman Company, 1913.

This work is divided into three parts. In Part 1, consisting of fifty-nine pages, are discussed the general methods of examination in abdominal conditions, general symptomatology and such etiologic factors as may be of importance in the taking of histories of malignant growths. Part 2, of 110 pages, is special and in it are discussed growths of the separate organs and regions. Part 3, of 187 pages, is devoted to case histories. The author's endeavor is to present the subject in a practical and clinical manner. Special stress, therefore, is laid on the early symptoms and on a careful and painstaking history, so conducted as to bring out the essential points. The case histories are all arranged according to a definite plan, which materially facilitates comparison and enables one to grasp more easily the relative importance of any particular factor. The arrangement of the history taking is as follows: (1) ancestry and relationship; (2) congenital peculiarities, metabolic dieases, etc.; (3) previous infectious diseases; (4) previous history of the digestive tract; (5) other previous history; (6) initial symptoms and further course; (7) objective symptomatology; (8) dates of events and duration of the disease, and (9) findings at necropsy or laparotomy. After each history is a brief critical note on the essential facts as brought out in that particular case. The author is rather conservative regarding the value of the Roentgen ray in the diagnosis of these conditions. He says: "With respect to the value of radiological examination in regard to abdominal diseases in general and gastro-intestinal affections in particular, it would seem that at the present time there are prevalent some rather exaggerated notions not only among the laity but also in the medical profession. The fact must not be overlooked that as sources of error in methods of examination radiology ranks among those that head the list." The author is very careful in his observations and exacting in his technic, yet some of the exceedingly delicate tests are often of scientific rather than of clinical value, which fact is recognized by the author, and he says: "Whoever for example utilizes large amounts of feces to obtain blood-coloring matter will have positive results oftener than he, as I recommend it, who carries out the test in a coarser way. To search for the smallest traces of blood is senseless and to no purpose." The translation is at times quite literal to the extent of making what in English are very cumbersome sentences, but there is no difficulty in arriving at the intended meaning.

The Diagnosis and Treatment of Digestive Diseases. A Practical Treatise for Students and Practitioners of Medicine. By George M. Niles, M.D., Professor of Gastro-Enterology, Atlanta Medical College. Cloth. Price, $5 net. Pp. 507, with 87 illustrations. Philadelphia: P. Blakiston's Son & Co., 1914.

This book is of much interest, especially because it was written by one living in the South, whence few medical monographs of its size come. The author states in the preface that he has attempted a concise, easily intelligible description of the diagnostic methods employed by stomach specialists and an exhaustive discussion of general and special therapy applied to diseases of the stomach and bowels. He has succeeded in making easily intelligible descriptions, but has not been concise. His best work is in the discussion of treatment. While the student or practitioner can gain many ideas in regard to diagnostic methods and treatment from this book, it cannot take the place of more authoritative or encyclopedic works on this subject as, for example, those of Boas, Einhorn or Hemmeter. A sufficient number of pages are devoted to the chemical and physical examination of the stomach and intestines and their contents, but the consideration of these subjects is not sufficiently detailed, and various methods are not sufficiently adjudged or valued. Too little is said of Roentgen examinations which have become important aids to diagnosis. Much is said about treatment, and most of it is judicious and commendable. Chapters are devoted, among other subjects, to local treatment of the stomach, local treatment of the intestines, hydrotherapy and psychotherapy. Only the commonest individual gastric and intestinal diseases are considered at all. The subject of the symptomatology and diagnosis of these is so briefly and unsatisfactorily considered that it is doubtful if a student without the aid of other books could make a diagnosis; certainly he would not know the natural course and fully comprehend the symptomatology of the diseases. The subject of the treatment of these special diseases is for the most part sufficiently full and detailed.

Clinical Examination of the Blood and Its Technic. A Manual for Students and Practitioners. By Prof. A. Pappenheim, Berlin. Translated and Adapted from the German by R. Donaldson, M.A., M.B., Ch.B., Pathologist Royal Berks Hospital, Reading. Cloth. Price $1.25 net. Pp. 87, with 5 illustrations. New York: William Wood & Co., 1914.

"This little book differs from all others that treat of the blood in so far as it deals only with what is absolutely essential and of first importance in clinical methods of blood examination. Of the three cardinal lines of blood investigation (viz., staining, counting of cells and hemoglobin estimation) only those methods have been described which have been definitely proved of value. Coupled with the description of methods, the respective features of normal blood have been briefly discussed; while, in addition the most important facts in the semiology, necessary for a proper understanding of pathologic conditions, have been dealt with."

Owing to the recognized position of Pappenheim in the field of hematology, it is interesting to note that he recommends the combination of the May-Grünwald stain with the Giemsa stain as the most serviceable panoptic blood stain at our disposal. For hemoglobin determinations he recommends Sahli's hemoglobinometer as the most practical clinical instrument. This little work needs no recommendation beyond the name of its writer to all who wish a clear and concise outline of the essentials of hematology. While the two plates of the various types of red and white cells found in the blood are adequate for the size of this work, yet they are not sufficiently comprehensive for those who may wish to make a more elaborate study of the blood. For the latter workers Pappenheim's atlas is intended.

Manual of Military Hygiene for the Military Services of the United States. By Valery Havard, M.D., Colonel, Medical Corps, United States Army, Retired. Published under the Authority and with the Approval of the Surgeon-General, U. S. Army. Second Edition. Cloth. Price, $5 net. Pp. 786, with 258 illustrations. New York: William Wood & Co., 1914.

The author says it has been found that soldiers on the march or in hard fighting campaigns, even though on scant rations, with worn-out clothing, and subjected to great exposure, are less subject to infectious diseases and sickness than when they are in permanent or semipermanent camps where they attempt to make themselves comfortable and devote much of their time to eating, sleeping and diverting themselves. Hard work and plain fare are good preservatives against disease. The main purpose of the principles and the purposes of military hygiene, therefore, is to protect the soldier against himself, his habits and his surroundings while in camp or barracks, where he spends the major portion of his time. These principles and purposes are clearly set forth in the book as they apply to soldiers on land and the naval forces, and as they relate to service in tropical and far northern climates, together with a discussion of infectious and parasitic diseases, the nutritive value of the various foods composing army rations, etc., all according to the latest ideas on these topics. The book is abundantly illustrated and contains a list of the more recent works on hygiene. At a time when military matters are actively to the fore, this book is timely, interesting and valuable.

Local Anesthesia. By Dr. Arthur Schlesinger. Translated by F. S. Arnold, B.A., M.B., B.Ch. Cloth. Price $1.50 net. Pp. 211, with 22 illustrations. New York: Rebman Company, 1914.

This is a handy little volume devoted to the practical discussion of local anesthesia with only casual references to theory. A brief historical survey precedes a splendid exposition of the physical principles of local anesthesia. Cocain is the author's choice of anesthetic and his remarks on cocain poisoning ought to be of value to any one who makes use of cocain for producing local anesthesia. Brief mention is also made of other substances used for this purpose. Quinin and urea hydrochlorid are not even mentioned. The adjuvants in local anesthesia, especially the adrenal preparations, are discussed thoroughly. Individual chapters are devoted to the methods of local anesthesia, such as cold, infiltration anesthesia, nerve blocking and blood-vessel anesthesia, general technic, and their application in operations on the various parts of the body. For review purposes or to get the author's views on the subject, the book fills a place; but if one wishes to get a more comprehensive view of the whole subject of local anesthesia, other, larger books must be consulted.

Spectrum Analysis Applied to Biology and Medicine. By the Late C. A. Macmunn, M.A., M.D. With a Preface by F. W. Gamble. Cloth. Price, $1.75 net. Pp. 112, with 21 illustrations. New York: Longmans, Green & Co., 1914.

Although spectrum analysis is often the most certain, if not the most delicate method of detecting the presence of many substances of great medical importance, nevertheless, very little use is made of such examinations by the practitioner, or even by the skilled laboratory worker. For this reason the appearance of this little posthumous monograph of Macmunn must be considered very timely. Simple perusal of this work will reveal many applications of spectrum analysis which may be employed as direct aids in diagnosis. The subject matter is divided into a preface and nine chapters, treating of the principles of spectrum analysis and their application to the study of various pigments of importance in general biology and medicine. Especial attention is given to the characteristics and differentiation of hemoglobin and its derivatives as well as of the biliary and urinary pigments. An extensive bibliography greatly enhances the value of the monograph. The book may be recommended as an extremely useful and valuable work for the general practitioner and, especially, for the laboratory investigator, who should employ the methods of spectrum analysis to a much greater extent than is customary.

Trachoma and Its Complications in Egypt. By A. F. MacCallan, M.D., F.R.C.S., Director of Ophthalmic Hospitals, Egypt. Cloth. Price, $2.50. Pp. 74. New York: G. P. Putnam's Sons, 1913.

In the home of this ancient disease the author has had abundant opportunity to study it in its various aspects. The clinical material on which the monograph is based embraces a total attendance in 1912, of 341,211 outpatients and a total number of 21,315 operations performed. More than 6,000 patients with trichiasis were turned away because of lack of equipment, but by the end of the present year there will be eight permanent and six traveling hospitals fully equipped, so that all who apply for treatment will probably be accommodated. The author has not attempted to give a complete description of all the methods of treating trachoma, but rather to give a simple description of the disease as it is encountered in the East, and of its treatment as carried out in the Egyptian ophthalmic hospitals. Following a brief historical sketch, the major portion of the book deals with trachoma in its various clinical phases, pathology, diagnosis, complications, sequelae and treatment. Statistics are given which emphasize the high percentage of cases of blindness resulting from trachoma.

Die Aeussere Sekretion der Verdauungsdrüsen. Von Dr. Med. B. P. Babkin, Professor der Physiologie am Institut für Land- und Forstwirtschaft zu Nowo-Alexandria. Paper. Price, 16 marks. Pp. 407, with 29 illustrations. Berlin: Julius Springer, 1914.

This work, with numerous tabulations and curves derived from experimental studies, deals with the gross and microscopic anatomy of the several digestive glands, but more particularly with their innervation, the mechanism of their operation and the work they perform. The fact that Babkin was for ten years associated with Pawlow as assistant sufficiently indicates the character of the themes discussed. Such questions as enzyme action and the chemistry of digestion are touched on "only in so far as has been found unavoidable for a proper differentiation of the several external secretions." The book collects and presents for the first time in compact form all of the later studies of the Pawlow laboratory together with a general review of the literature bearing on these subjects. The latter is extensive if not complete. It will be found valuable to American readers because of its exhaustive treatment of the not easily available Russian publications.

Beiträge zur Frage nach der Beziehung zwischen klinischem Verlauf und anatomischem Befund bei Nerven- und Geisteskrankheiten. Bearbeitet und herausgegeben von Franz Nissl. Volume 1, Part 2. Zwei Fälle von Katatonie mit Hirnschwellung. Paper. Price, 2.80 marks. Pp., 112, with 48 illustrations. Berlin: Julius Springer, 1914.

It is the author's aim to publish the complete case histories of nervous and mental cases, their post-mortem findings, including microscopic examination of tissues, with a view of gaining more definite knowledge of the anatomic basis of nervous and mental disease. The issue before us contains the complete report, both clinical and anatomic, of two cases of catatonia, which constitutes interesting reading. Asylum physicians and neurologists will find much of value in the perusal of the histopathologic descriptions and interpretations of these two cases.

Surgical Diseases and Injuries of the Genito-Urinary Organs. By J. W. Thomson Walker, M.B., G.M.Ed., F.R.C.S., Hunterian Professor of Surgery and Pathology, Royal College of Surgeons of England. Cloth. Price $7. Pp. 879, with 324 illustrations. New York: Funk and Wagnalls Company, 1914.

This book, offered as a text-book for the general practitioner and the student, embodies a survey of the literature, together with much of the extensive personal experience of the author. Although containing numerous valuable cystoscopic and roentgenographic plates, in its discussion of surgical technic it seems lacking in adequate illustrative material and the detailed description which enables the student to carry out the procedures recommended. Accordingly the book may be selected as a reference work of great value but would seem to fall short of the value placed on it by the author as a text-book.

# Medicolegal

### Injunction Granted Against Annoyances from Hospital

*(Kestner et al. vs. Homeopathic Medical and Surgical Hospital (Pa.), 91 Atl. R. 659)*

The Supreme Court of Pennsylvania affirms a decree enjoining the defendant hospital, of Reading, from using its building as a hospital until the emergency operating room should be removed to some other part of the building, and also restraining the defendant from permitting persons occupying rooms in the hospital from throwing refuse matter on the complainants' premises. The court says that it was found that the complainants' building had twenty-one windows and nine doors facing the hospital, the windows and all the doors, except two, being from 9 to 12 feet distant from the hospital. The rooms facing the hospital included the parlor, living room, dining room, kitchen, pantry and summer kitchen on the first floor, and sleeping rooms on the second floor, the dining room being less than 13 feet from the emergency operating room. A wooden fence about 9 feet high separated the two yards. Noises came to the complainants' property from the hospital, mostly from the emergency operating room, almost daily, and at all hours of the day and night. The trial judge also found that the hospital was equipped with the modern surgical and medical appliances, employed sufficient physicians and nurses, and used with promptness approved methods of relieving patients from pain and suffering and of preventing the outbursts complained of. Also that shrieks and screams were of no greater frequency than those emanating from well-regulated hospitals treating the same number of patients; that such noises are bound to occur wherever sick or injured persons may be, and particularly in a hospital where a large number of persons are brought, or come, for medical and surgical treatment. The court holds that, under the authorities, the complainants were clearly entitled to equitable relief, such as was granted.

### Requirement in Prosecution for Practicing Medicine Without Authority

*(Feige vs. State (Okla.), 142 Pac. R. 1044)*

The Court of Criminal Appeals of Oklahoma reverses a judgment against Feige, who had been convicted of practicing medicine without first having procured a proper certificate as provided by law, and had been fined, the case being remanded to the county court with directions to cause a proper information to be filed and the trial proceeded with as provided by law. The court says that, under Section 6910 of the Revised Laws of Oklahoma of 1910, a person who prescribes or administers any drug or medicine, included in the materia medica, for the treatment of diseases, injuries, or deformities of human beings is subject to prosecution. Likewise, one who is not licensed to practice medicine as provided by law can be prosecuted for publicly professing himself to be a physician and prescribing for the sick. The information, however, should be direct and certain as to which of these provisions the state is prosecuting under.

The information in this case charged that Feige did, in Oklahoma County, on May 28, 1912, commit the crime of practicing medicine without a license in that he did then and there unlawfully, etc., practice medicine without first having obtained from the state board of medical examiners a certificate as provided by law, entitling him to practice medicine within the state of Oklahoma, in that he did then and there unlawfully and willfully prescribe for, and furnish medicine to, and treat one Cornelius A. Prohl, for compensation, contrary to the form of the statutes, etc. The information on its face was wholly insufficient. It should have charged, among other things, the administration of some drug included in materia medica in the treatment of diseases, etc., or that the accused publicly professed to be a physician and prescribed for the sick.

This prosecution was meritorious, but this court cannot overlook a fundamental right. The trial court should have arrested the judgment and directed the prosecuting attorney to file a proper information, when a motion was made in arrest of judgment, as an information which fails to state a public offense under the statute is subject to attack by a motion in arrest of judgment.

# Miscellany

### Trachoma in the Mountain Sections of Eastern Tennessee and Northern Georgia

A survey of the prevalence of trachoma in the mining and mountain rural sections of the Appalachians traversing Tennessee and Georgia, made under the direction of the Surgeon-General of the United States Public Health Service and in cooperation with the state boards of health of Tennessee and Georgia, is described in *Public Health Reports* for September 18. The work was begun in eastern Tennessee in December, 1913, and concluded in northern Georgia in April, 1914. The object was not to detect every case of trachoma, but to outline the areas of infection by examination of a representative number of persons in each county, to devise means for its control and ultimate eradication, and to arouse the medical profession and the public to a sense of its importance.

It was found impracticable to conduct house-to-house inspections, because of the time consumed and the impossibility of finding adults willing or able to spare the time to be examined. The examinations were therefore confined almost exclusively to schoolchildren. In Tennessee 130 schools distributed through thirty-one counties were visited and over 15,700 pupils and instructors examined; 341 cases of trachoma were found. In northern Georgia eighty-four schools distributed through twenty-five counties were visited and over 7,800 pupils and instructors examined; seven cases of trachoma were found. The attention of county health officers and local physicians was drawn to the disease wherever it was found. Only positive cases presenting clinically characteristic connective tissue hyperplasia with lymphoid cell proliferation, destruction of the overlying conjunctiva and scar tissue formation were considered as trachoma, suspicious cases (probably incipient trachoma) were not included in the statistics. The type of trachoma found in Tennessee and Georgia was, in the main, less severe than that found by Surgeon McMullen in the survey of Kentucky. Negroes, though not immune, appeared to be less susceptible to infection than whites. The foreign population of the state is small and this element is believed to be a negligible factor in the spread of the disease.

### Physical Condition of Chinese Students

The Yale Mission, Changsha, China, has examined all the students of the school under the same system as that used at Yale. The percentages of medical examinations were the following: The general physical condition of 25 per cent. was poor, while that of 53 per cent. was only fair. In muscular development the percentages were: poor, 39 per cent.; fair, 41 per cent.; good, 20 per cent. Nutrition and fatty tissue were subnormal in 27 per cent. and only fair in 46 per cent. Examinations for digestion showed 33 per cent. poor, 25 per cent. fair and in 74 per cent. the presence of Ascaris eggs. Unhealthy conditions in the respiratory system were noticeably prevalent. The vision of 40 per cent. was defective. In the circulatory system a thickening of the vessels was noticeable in 49 per cent., which is abnormal for an average of 18 years, 6 months. Thirteen per cent. had some enlargement of the heart, while 20 per cent. had either murmurs, or other signs of irritability. Beginning at 5 feet 2 inches, comparisons were made between the Yale students and those of the Chinese mission at nine intervening heights up to 5 feet 8½ inches and the differences in measurements for all heights were averaged. Chinese students average less than Yale students in most measurements. The results indicate that the physical condition of the Chinese people generally is defective.

# Society Proceedings

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## COMING MEETINGS

American Association of Anatomists, St. Louis, Dec. 28-30.
American Physiological Society, St. Louis, Dec. 27-30.
Amer. Public Health Association, Jacksonville, Fla., Nov. 30-Dec. 5.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Society of American Bacteriologists, Philadelphia, Dec. 29-31.
Southern Surgical and Gynecological Assn., Asheville, N. C., Dec. 15-17.
Western Surgical Association, Denver, Dec. 18-19.

## NEW YORK NEUROLOGICAL SOCIETY

*Meeting held Oct. 6, 1914*

The President, Dr. Smith Ely Jelliffe, in the Chair

### Double Cervical Rib Nerve Symptoms

Dr. S. P. Goodhart and Dr. Alfred S. Taylor: The patient was a woman, aged 30. Symptoms referable to the cervical ribs dated apparently from the eighth year. During her eighteenth year she noticed that certain movements necessitating placing the arm behind her caused flexor spasm of the muscles of the forearm and hand. When the patient was 23 years old she observed weakness in the grasp and in the finer movements of the left hand, followed by progressive atrophy of the small hand muscles, both the thenar and hypothenar surfaces being involved. Soon afterward a coldness of the left upper extremity, particularly from the elbow to the finger tips, was at times felt subjectively and could be demonstrated objectively. Examination revealed areas of hypesthesia and hyperalgesia distributed irregularly over the left forearm and hand. These areas varied and finally disappeared, leaving as the only sensory disturbance an area of hypesthesia for all forms of sensation in that part of the forearm and hand corresponding to the inner cord of the brachial plexus, particularly the ulnar distribution. At this time the left hand presented an appearance of the typical *main en griffe*, and some atrophy of the pectoral muscles was noted. Cervical ribs were now recognized. About 1907, involvement of the brachial plexus on the right side developed. Within the next few months numbness of the entire right leg and pains in the calf muscles were experienced. In May, 1908, the patient submitted to an operation for the removal of both false ribs. The subclavian artery crossed the first rib anteriorly and below the distal end of the cervical rib, the roots of the plexus lying over the false rib. The eighth cervical and first dorsal roots were undergoing the greatest tension and pressure. Immediately following the operation there was a paralysis of nearly all the muscles and the sensory surfaces supplied by the plexus on both sides. In the course of a week, motion and sensation began to return, and the improvement, though slow, was constant. About one year after the operation there was still considerable atrophy and very slight sensory changes over the inner surface of the forearm. At the present time, about six years after the operation, there is marked improvement in the muscle supply.

### Spinal Hematomyelia of the Hemiplegic Type

Dr. Frederick Tilney and Dr. C. L. Nichols, Brooklyn: The patient, a man aged 28, while diving in shallow water, fell into the water almost perpendicularly. He thought he struck the sandy bottom on his head, neck or on the vertex, posteriorly. He had to be dragged from the water and was found to be suffering from a complete paralysis of the right upper and lower extremities, and an awkwardness in the use of the limbs on the opposite side. There had been no loss of consciousness and he was perfectly oriented. His head was numb and the whole body felt bruised and sore. The pain was most severe over the right shoulder, extending down the arm and forearm. There were no spasmodic movements in this area. Several hours after the injury he still complained of the sensation of having been bruised, especially over the right clavicle and upper chest. The right pupil was smaller than the left: both responded to light and accommodation. The heart's action was slow and regular and the sounds of good character. The pulse was of fair quality and volume. The abdomen showed no abnormalities. No reflexes could be elicited on the right side, and sensation was absent, with the exception of variable areas of response to pin prick. The field of vision was undisturbed. The fundus showed slight congestion of the nerve; the margin was not well defined and the vessels were slightly engorged, evidencing some pressure. The hearing was affected on both sides. One week later, the anisocoria was still more apparent. Two weeks later he was allowed to sit in a chair and ten days after that he was able to walk.

On the first day after his discharge he had an agonizing pain on the right side of the head over an area extending from the forehead along the vertex in the median line to the occiput. This persisted for two hours. A similar attack, less severe, followed a week later. After the patient had been seated for any length of time he became stiff in the right hip, and on arising had a dull pain extending from the lower part of the spine forward into the right groin. He also complained of a similar pain extending from the cervical spine to the right shoulder. There were no urinary symptoms. The bowels had moved regularly ever since the accident. Examination at the present time shows a flaccid paralysis of the right upper extremity and a spastic paralysis of the right lower extremity. The tendon reflexes on this side were greater than those on the left, while the abdominal, epigastric and cremasteric reflexes were absent. The latter were present on the left side. The Babinski was positive on the right side, and there was permanent clonus in the ankle. In eliciting the triceps reflex on the right side, percussion on either the tendon or the muscle produced flexion of the forearm instead of extension. The roentgenogram showed a fracture of the sixth cervical vertebra.

### Case of Spinal Hematomyelia: Brown-Séquard Paralysis

Dr. Tilney and Dr. Nichols: The patient, a boy of 20, fell a distance of about 10 feet, striking the ground on his chest without losing consciousness. None of the extremities could be moved voluntarily. The pupils were equal, and reacted naturally. The pulse was regular and of good volume. The heart sounds were normal. The respiration was chiefly abdominal, the chest moving very little. The arms could be moved, though very slowly and with great difficulty. The fingers were held in a position of partial flexion, with no power either to flex or extend them. The knee-jerk was absent on the right side and present on the left. The Babinski could not be elicited. The toes of the right foot were red; those of the left were pale, and the surface temperature of the left lower extremity was diminished. There was an absence of the cremasteric reflex. There was tactile anesthesia in both lower extremities and in the trunk up to the second interspace. Pain sense was absent in the left leg and as far up as the third rib, but present over a corresponding area on the opposite half of the body, where it was apparently hyperacute. The temperature discrimination was entirely absent on the left side to a level a little below the clavicle, but was present on the right side, although the response to heat was not so good as to cold. There were sticking pains in the right leg, and the patient felt as though there was a strap around it and another around the shoulders, each being tightened in an opposite direction. There were fibrillary tremors on the left side. Priapism was present during the examination. Catheterization showed no evidence of hematuria. One month later the patient had a slight power of flexion of the left fingers. Sensation was unchanged. The pupils reacted promptly, but were unequal. The patellar reflex on the right side was exaggerated. One week later there was an involuntary urination. Up to that time catheterization had been necessary, but from that time on the control of the bladder was normal. The lesion in this case was located in the upper cervical region. The roentgenogram demonstrated absence of fracture or dislocation.

#### DISCUSSION

Dr. William M. Leszynsky: In cases of traumatic lesions of the cord the question of operation usually comes up, and I have been guided largely by the clinical manifestations. If it can be shown that we were dealing with a fracture dislocation producing crushing of the cord, an operation is inadvisable. When blood is found in the cerebrospinal fluid, the hemorrhage is usually subdural. When the cerebrospinal fluid is clear, as in hematomyelia, operation is not indicated. In many of these cases the early residual symptoms often become permanent, their severity depending on the amount of damage done to the cord. It is impossible to give a positive prognosis as to the ultimate outcome.

Dr. Benjamin Rosenbluth: I have seen four cases of injury of the cauda equina, and the result of operation was most encouraging.

Dr. J. F. Terriberry: In cases of hemorrhages within the cord, little can be expected from operative interference. These cases, as a rule, do much better under proper general care, with subsequent reeducation of the lost muscular function if the residual symptoms demand it. The fact should be borne in mind that this loss of function is sometimes attributable to a stiffening of the joints of the hands and fingers, which often does much to retard the reparative process, and it was only with care and perseverance that one could get the most out of these cases.

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## MEDICAL SOCIETY OF VIRGINIA

*Annual Meeting, held in Washington, D. C., Oct. 27-30, 1914*

The President, Dr. Southgate Leigh, Norfolk, in the Chair

### Officers Elected

The following officers were elected for the ensuing year: president, Dr. Samuel Lile, Lynchburg; vice-presidents, Drs. Samuel B. Moore, Alexandria, Joseph T. Buxton, Newport News, and Dr. J. W. Preston, Roanoke.

Place of meeting, session of 1915, Richmond.

### SYMPOSIUM ON GOITER

### Causes of Thyroid Diseases

Dr. R. M. Taliaferro, Lynchburg: The endemic form of goiter is believed to be the lack of something, mineral or albuminoid. It is asserted that the addition of Lugol's solution to the water-supply will cure. No country is exempt. It is closely associated with the generative organs in females; puberty, menstruation, menopause and especially pregnancy especially seeming to have some influence. Various toxemias have been associated, and there seems to be an effort of the body to have the metabolism meet the toxins.

### Pathology and Symptoms

Dr. J. C. Flippin, Charlottesville: The high percentage of iodin in the thyroid is very important. The thyroid of the fetus and the suckling animal probably contain no iodin. The iodin percentage is below normal in the diseased gland, while in exophthalmic goiter it is as much as 80 per cent. above normal. A certain relation to the other internal secretions exists. The epinephrin content is increased in exophthalmic goiter.

### Medical Treatment

Dr. George W. McAllister, Hampton: Iodin in the sporadic form gives the best results. No one factor is of so much importance as rest in the open air. I have been disappointed in the action of the extracts of ductless glands. Parathyroid sometimes controls the tremor. As to the benefit from the use of serums from thyroidectomized animals, testimony is conflicting.

### Surgical Treatment

Dr. J. S. Horsley, Richmond: Surgical treatment is of value in simple cases, malignant cases and in hyperthyroidism. In the hands of a competent man the mortality in simple cases should be less than 1 per cent. Surgical treatment is now practically limited to tying one or more arteries or to thyroidectomy. Two rules are of prime importance: Avoid exciting the patient, and use careful manipulations.

#### DISCUSSION

Dr. Tom Williams, Washington, D. C.: Enlarged thyroids may be due to toxemias, the result of multiple infections. I do not believe that it is always wise to remove the gland. The Roentgen ray inhibits the action of the gland and renders the patient comfortable.

Dr. Allison Hodges, Richmond: In the majority of cases we are wasting time by using medical measures. Of twenty-two patients only four were definitely improved in from three to eight weeks. Of the other patients twelve were operated on by surgeons, and eight were cured while four were partly cured. I am not anxious to submit these cases to the surgeons, but we should do what is best. The surgical cases in which there was no improvement were those in which excessive anxiety was associated. Do not protract medical treatment.

### Calcification and Ossification of Walls of Heart

Dr. Harry T. Marshall, University: A man died of heart failure. During life he had a murmur and myocardial insufficiency. The heart was much enlarged, hypertrophied to the left and both dilated and hypertrophied to the right. The left auricle was encased in a firm calcified sheath, which could not be collapsed by pressure. The muscle was unaffected. The endothelium was thickened from 1 mm. to half an inch, with ridges on the lining looking like loose bone. Lacunae and osteoblastic cells were to be seen, and unmistakable bone-marrow.

### Psychoneuroses in Their Relation to Chronic Infections

Dr. Allison Hodges, Richmond: Physicians do not always respect such influences as heredity and environment. A number of morbid conditions are apparently functional. Study the personal abnormalities of the patient. They have either a psychogenic or a somatic basis. In all cases that I have records of there is the element of heredity. There is physical suffering in the psychoneurotic, properly speaking. I have not found organic troubles to be a cause as often as I had anticipated. Woman is especially apt to think the uterus is the cause, and if this is so stated by the physician she is confirmed in her distress. Urethra and seminal vesicle disease in the male is likewise a source of disturbance. Gastro-intestinal disturbances are an unquestionable cause of psychoneuroses. Gall-bladder infections play only a minor part. The large majority of these troubles are purely in the brain. Rational treatment is the removal of the cause.

### Use and Abuse of Pituitary Extract in Labor

Dr. Virginius Harrison, Richmond: The forceps is not abused so much as formerly. Posterior lobe extract has been brought forward as a substitute for forceps. This drug has been standardized. This is important, for we may be using 1 or 2 mg. to the dose. If much chloroform is given before its administration, the effect is lessened, but if chloroform succeeds it the effect is increased. I have never seen it take more than six minutes before having effect, and this effect lasts from thirty to sixty minutes. If necessary, try the second dose in one hour; if no results, then use other methods. Twenty per cent. of my patients had bowel action without using a laxative. One patient had marked angina pectoris in two minutes; it passed off quickly. One child had convulsions, but they may have been due to injury to the head. It made a good recovery. The contra-indications are normal labor with good pains, high blood-pressure with arteriosclerosis, undilated cervix, and tumors. It will not start pains but will intensify those present. It shortens the third stage of labor, and prevents hemorrhage when given after the delivery of the child. It is capable of doing great damage to the soft parts and to the child. Its action is very prompt and the doctor should be prepared for emergency. Uterine inertia is the thing that will make us use it most frequently. It will convert a high forceps case into a low forceps case. Engagement should occur before it is given. It makes instrumental work easier. It prevents shock and post-partum hemorrhage, and makes anesthesia less in quantity. I have used forceps only three times in my last fifty cases; in my previous fifty cases I used them twelve times. I cannot agree with those who say we must not give it to primiparas; my best results have been with them. I have never seen a child born dead when this agent was used.

DISCUSSION

Dr. Leslie B. Wiggs, Richmond: There are two active principles in the posterior lobe, one a uterine-contracting and the other a blood-pressure raising agent. I think it will inaugurate contractions.

Dr. Greer Baughman, Richmond: I have had three failures; two of these were occiput posterior cases. I use fractional doses, half a decigram, and in half hour another half. I believe it is a substitute for forceps. The os must be completely dilated. It is a dangerous remedy when used wrongly. Passage and passenger should fit.

Dr. J. F. Winn, Richmond: It is a dangerous remedy. I recall a case of rupture of the uterus from this agent, followed by immediate death. We should diagnose accurately the cause of delay before using it. Do not blame a good thing if you do not know how to use it. I have not used it as much as Dr. Harrison has. If there is definite indication for the use of forceps, and you know how to use it, why not use the forceps? Do not take chances.

Dr. W. E. Anderson, Farmville: I class pituitary extract with the knife. It is more important to know when to use it than how. It does not take the place of forceps. You may have better results with forceps than with pituitary extract.

Dr. Virginius Harrison, Richmond: Ergot and pituitary extract are not the same in action and they may be combined in certain cases. There are eight preparations on the market, and we may be using the strong when we think we are using the weak.

### Sarcoma of Both Ovaries in a Child of Three Years

Dr. F. H. Smith and Dr. J. C. Motley, Abingdon: A white girl, aged 3 years, giving a history of nausea and vomiting, had a mass in the abdomen, thought to be due to worms. There was great distention unless the bowels acted thoroughly. No fever was noted at any time. In the right iliac fossa was a mass that might have been the appendix. She had a history of having been butted in the abdomen by a goat. Later a mass was found in each iliac region, hard and doughy, not tender. Rectal examination disclosed that there was no connection between the two. Operation was done to relieve what was thought to be intestinal obstruction. Both tumors were removed and found to be sarcoma of the ovary. Five months later the child had an abdominal tumor, in fact several tumors. Death ensued within sixty days.

### Caring for Premature Infants

Dr. S. G. T. Grinnan, Richmond: Aeration by osmosis should be tried when ordinary means to revive do not avail. The less the weight the more rapid is the loss of heat. Acid blood is found in premature infants. The electric pad gives uniform heat. Pure air is necessary for the lungs. Temperature must be kept at 90 degrees. Fatty soap is the best. Do not try to cleanse the mouth. Whey may be used when breast milk cannot be had. Evaporated, not condensed, milk may be used.

DISCUSSION

Dr. W. L. Harris, Norfolk: A home-made incubator is what has served me best, a rather deep padded box, with a hot-water bag. These children should not be shocked, and I think they are often killed by bathing. Start the nourishment early. Get milk from another woman if the mother cannot furnish it. Feed the baby according to what it can take. You may have to feed it with a medicine dropper, and ten or twelve times in the twenty-four hours.

### Necessity for Study of Fetal Heart Sounds in Placenta Praevia

Dr. Greer Baughman, Richmond: Inability to hear the sounds is generally due to listening at the wrong place or to a dead fetus. The two portions of the fetus transmitting the sounds best are the chest in front or behind over the region of the heart. The fetus gasps because of peeling off of the placenta. The same thing may happen if the cord be compressed intra uterum. Then the fetus breathes in amniotic fluid. The sounds are hard to hear during uterine contractions.

DISCUSSION

Dr. A. T. King, Washington, D. C.: I have looked over the United States census statistics and I find 1,200,000 home obstetric cases to 100,000 hospital cases. This by the way of emphasizing the importance of home obstetrics. Why not give salines under the skin of the child? It is suffering from hemorrhage as well as asphyxia.

### Chronic Catarrhal Otitis Media

Dr. C. R. Dufour, Washington, D. C.: Many suicides occur because of terrible noises in the head, beginning insidiously, with a sense of stuffiness. The patient thinks it is due to ear-wax. The noises are worse at night, and affect one ear or both. The disease is progressive and rarely clears up of itself. It does not yield readily to treatment. Six months is not too long to treat. Iodin and oils vaporized in the middle ear are good.

DISCUSSION

Dr. George J. Tompkins, Lynchburg: The general practitioner is apt to overlook adenoids. I recall a case in which I found adenoids in which the family physician was satisfied there were none. I was convinced that they caused the trouble.

Dr. W. E. Driver, Norfolk: Deafness due to local conditions in the throat is too simple to talk about. Diseased tonsils and adenoids should be removed. The common idea that you can take your finger and scratch out adenoids is barbarous. The eustachian tube is sometimes permanently stopped by cicatricial contraction.

*(To be continued)*

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## Current Medical Literature

### AMERICAN

Titles marked with an asterisk (*) are abstracted below.

#### American Journal of Medical Sciences, Philadelphia

*November, CXLVIII, No. 5, pp. 625-780*

1 *Ultimate Results Secured from Surgical Intervention in Cases of Cholelithiasis. J. G. Clark, Philadelphia.
2 *Clinical Study of One Thousand Cases of Cancer of Stomach. J. Friedenwald, Baltimore.
3 Some Clinical Aspects of Gastric Hemorrhage. J. A. Lichty, Pittsburgh.
4 *Laboratory Diagnosis in Early Stages of Congenital Syphilis. C. G. Grulee, Chicago.
5 Modern Methods of Treatment of Syphilis of Nervous System. B. Sachs, I. Strauss and D. J. Kaliski, New York.
6 Heart Syphilis: Report of Case. G. R. Callender, U. S. Army.
7 Duodenal Ulcers in Infancy. Report of Five Cases. B. S. Veeder, St. Louis.
8 Effects of Heredity in Bovine Tuberculosis. H. Brooks, New York.
9 *Examination of Urine for Tubercle Bacilli. J. W. Churchman, New Haven, Conn.
10 *Albumin in Sputum in Tuberculosis: Its Value in Diagnosis and Prognosis. C. H. Cocke, Asheville, N. C.
11 Personality Study of Epileptic Constitution. L. P. Clark, New York.

1. **Ultimate Results in Cases of Cholelithiasis.**—From a review of 160 cases Clark concludes that simple drainage is all that is necessary in cases of cholelithiasis in which there are no symptoms attributable to the presence of the stones. When the gall-bladder is thickened or greatly dilated, or if it is the seat of the so-called "strawberry change," as described by Moynihan, cholecystectomy should be the operation of choice. Of fifty-five gall-stone operations not associated with other gynecologic or abdominal conditions, 90 per cent. of results were traced. No patient returned for a second operation, and none had been operated on elsewhere. Of this number 69.5 per cent. were cured, 15.2 per cent. were greatly improved, and 2.1 per cent. were not improved. Of the entire number, 8.6 per cent. died after leaving the hospital from extraneous conditions not connected with the surgical operation.

Of seventy-seven cases of cholelithiasis with symptoms associated with other abdominal or gynecologic lesions 78 per cent. were traced; 59.7 per cent. were cured, 17.5 per cent. were greatly improved, 1.7 per cent. were slightly improved, and 8.7 per cent. were unimproved. Since leaving the hospital, 3.5 per cent. died of intercurrent diseases not connected with the biliary operation. Of thirty-one cases of cholelithiasis without assignable symptoms associated with other abdominal or gynecologic conditions 86 per cent. of the patients were traced, 64 per cent. were cured, 16 per cent. were greatly improved, 4 per cent. were slightly improved and 8 per cent. (2 cases—both excessively neurotic) were worse than they had been before operation. It is specially noteworthy that in the second class of cases, in which there were unquestionable symptoms of diseases of the upper abdominal organs, in 13 there were visible changes in the appendices, ranging from mild to acute inflammations. Thus the error in diagnosis falls chiefly between appendicitis and cholecystitis. In several of these cases the condition of the appendix gave rise to the acute symptoms which had precipitated the operation.

From this analysis Clark learned that the worst results occur among the combined cases in which there are manifest symptoms due to biliary changes. The ratio of the cures is in direct proportion to the severity of the symptoms. The weight of evidence most emphatically favors the early removal of gall-stones. The mortality will be small, the proportion of cures large and the hazard of a return of the patient to the hospital for a second operation slight. In the light of the results secured in this large series of cases Clark believes that his stand of a decade ago, which favors the removal of gall-stones associated with other gynecologic or abdominal lesions, whether they are producing symptoms or not, is amply sustained.

2. **Cancer of Stomach.**—The 1,000 cases of cancer analyzed by Friedenwald occurred in 10,416 patients affected with various gastric disturbances (9.6 per cent.); the maximum liability to the disease lies between the fortieth and sixtieth year (65 per cent.); the greater proportion of cases occur in males; 588 males to 412 females. An hereditary history of cancer appearing in various portions of the body occurred in 104 of the 1,000 cases (9.4 per cent.). A definite history of trauma was elicited in 19 cases, in 6 of which there had been blows on the abdomen. In 229 cases in which hemoglobin estimations had been recorded, anemia was present in 189 (82 per cent.). The average of the hemoglobin estimations was 43. Chronic endocarditis was present in 114 cases (11.4 per cent.); arteriosclerosis in 696 (69.6 per cent.) of all cases. Of the 132 cases in which blood-pressure examinations were recorded, 121 (91 per cent.) present readings of 170 mm. or more. Albumin was present in 401 (55.9 per cent.), and albumin and casts in 334 (46.4 per cent.).

In the 1,000 cases of cancer there was a history of some previous digestive trouble in 232 cases (23.2 per cent.). Seventy-three cases gave a definite history of former gastric ulcer. A history of former indiscretions in diet was obtained in 321 instances (32.1 per cent.); a history of alcoholism was obtained in 152 instances (15.2 per cent.). A history of syphilis was obtained in 79 instances; tuberculosis of the lungs was present in 48 instances. Over 89 per cent. of the cases presented an entire absence of free hydrochloric acid. Lactic acid was present in 601 instances, or 81.9 per cent. of the 733 cases in which the gastric secretion was examined. The Oppler-Boas bacillus was observed in 582 cases, or 79.3 per cent., of the 733 cases. It was found only in those instances in which lactic acid was observed. Sarcina were observed in 24 instances (32 per cent.). Visible blood was observed in the gastric contents in 129 instances (7.5 per cent.). Coffee-ground contents was obtained in 653 instances (61.8 per cent.). Roentgen-ray examinations were made in 32 instances, 8 cases presenting cancer at the cardiac region and 24 at the pyloric region. Anorexia and vomiting are most prominent symptoms, being present in 89 per cent. of cases. Hematemesis is present in 25 per cent. of all cases and melena in 19 per cent. Occult blood appears in the stools in 92.5 per cent. The tumor was sufficiently advanced to be palpable in 72 per cent. of cases, but only in 30 per cent. of these cases within a half year of the first appearance of symptoms, while in 60 per cent. of cases this symptom was manifested after the first six months. Clinically in 60 per cent. of cases the cancer is located at the pyloric area, in 7 per cent. at the cardiac area, and in 30 per cent. there is a general involvement.

Operations were performed in 266 instances (26.6 per cent.). Of these 138 (51.8 per cent.) were exploratory operations. Gastro-enterostomies were performed in 98 (36.9 per cent.); gastrostomies in 25 (7.8 per cent.), and pylorectomies and gastrectomies in 9 (3.3 per cent.). Of these there is not one patient living. It is therefore evident that the early diagnosis of cancer of the stomach is still fraught with difficulty, and that until more certain methods are available exploratory incisions should be urged on all persons over 40 years of age having gastric symptoms which are not relieved after a few weeks' treatment, especially is this the case if there be some loss of flesh, an absence of free hydrochloric acid in the gastric contents, and occult blood in the stools. Inasmuch as in a certain proportion of cases gastric ulcers become cancerous, it is well in all operations for gastric ulcers to consider the advisability of performing excision or partial gastrectomy to prevent possibility of the transition of ulcer into cancer.

4. **Laboratory Diagnosis in Congenital Syphilis.**—According to Grulee there is no test which is proved to be pathognomonic of congenital syphilis in the early stages between the birth and the development of active symptoms. The Lange gold chlorid reaction on the cerebrospinal fluid offers at present some hope that the evidence obtained in this way may be of distinct benefit. The Noguchi luetin test has a distinctly negative value, inasmuch as in all cases not syphilitic the reaction was negative.

9. **Examination of Urine for Tubercle Bacilli.**—The important point brought out by Churchman is the fact that in vesical tuberculosis, if the ulcer is on the vault of the bladder, in which it is seldom or never reached by the small amounts of urine present there at any one time, tubercle bacilli may quite readily be absent from the urine, or at least not present in great number. In such cases, therefore, and indeed in all cases of vesical tuberculosis one should add to the catheterized urine to be examined for the organisms, washings from the bladder surface. In obtaining these washings it is advisable to allow fluid to flow in until the bladder is distinctly distended, so as to obtain material from its whole surface.

10. **Albumin in Sputum in Tuberculosis.**—Cocke has collected from the literature the results of the analyses of 3,951 cases in all stages (not including 20 of his own), in which there was a positive albumin reaction in the sputum in 3,778, or 95.6 per cent. These cases were all definitely known at the time or later proved to be tuberculosis, so that the conclusion is inevitable that the large majority of all cases of tuberculosis show a positive albumin reaction in the sputum.

### Archives of Pediatrics, New York

*October, XXXI, No. 10, pp. 721-800*

12 *Some Manifestations of Influenza in Young Children. L. E. Holt, New York.
13 *Causes and Treatment of Eczema in Infancy and Childhood. R. G. Freeman, New York.
14 Recurrent Bronchitis in Children. C. G. Kerley, New York.
15 Effect of Sugars on Gastric Secretions in Infants. D. H. Sherman and H. R. Johnes, Buffalo.
16 Boston Floating Hospital. J. H. Young, Newton, Mass.
17 Roentgen Ray as Diagnostic Help to Pediatrist. L. E. La Fétra, New York.
18 Three Cases of Diabetes Mellitus in One Family. C. G. Moore, Schuyler, Neb.

12. **Manifestations of Influenza in Young Children.**—One thousand six hundred and fifty sputum cultures made from 1,053 patients during the winter and spring seasons of the past five years period showed that the influenza bacillus was present in from 32.5 to 42 per cent. of the cases. Holt believes that this accounts for many obscure symptoms seen in these patients. On two successive days in April sputum cultures were made from all the hospital inmates—doctors, nurses and patients. Of 90 persons examined, 31 showed the presence of influenza and 3 others had shown it previously, making a total of 34 infected persons, or 38 per cent.

The most marked prevalence of influenza was in the wards in which the patients with bronchitis and pneumonia were received. In two such wards, containing 21 patients, 10 had influenza. Of 8 nurses in attendance in these wards, 5 showed influenza. Six of the patients were suffering from bronchopneumonia, 3 others previously had slight temperatures not explained by the other symptoms present; a fourth patient, one of tuberculous meningitis showed only a few influenza organisms. Two nurses had no symptoms suggesting influenza infection, but one shortly after the culture was taken developed a severe cold; the other three were suffering from catarrhal symptoms of various degrees of severity.

A nurse in charge of a special ward containing 3 children who were suffering from influenza, showed the organism in the sputum. She had previously suffered from a mild cold. Of the remaining 25 nurses in the hospital only 4 showed the *B. influenza,* and 3 of these had suffered from colds or a nasopharyngeal infection. The resident physician had a severe paroxysmal cough and his sputum showed great numbers of influenza bacilli. Of 10 cases of pneumonia in the hospital at the time of the routine examination the sputum of 8 showed the *B. Influenza.* Of 8 children admitted with pneumonia during the week following, 5 gave positive influenza cultures. Since the number of children admitted with influenza is so large the presumption is that the nurses contracted it from these children and then possibly spread the infection to others.

An unusual prevalence of influenza has been noted in some other institutions in the city in which careful sputum cultures have been made. Dr. Swift of the Rockefeller Institute Hospital informed Holt that of 13 pneumonia patients during the first three weeks of April, 8 showed the presence of the *B. influenza* in the sputum cultures. Holt regards the want of correspondence between the general symptoms and the temperature as quite diagnostic. He knows of no disease in which such high temperatures are seen with so few general symptoms as in influenza.

13. **Causes and Treatment of Eczema in Infancy.**—Freeman believes that the eczema of infancy and early childhood, which is occasionally due to external irritation, is usually due to gastro-enteric derangement and must be attacked primarily by correcting that derangement. The food should be cut down to caloric requirements, the ration should be balanced and digestion aided. Stewed fruits and cream should be prohibited. The parts affected should be kept well covered with non-irritating applications.

### Boston Medical and Surgical Journal

*November 12, CLXXI, No. 20, pp. 731-766*

19 *Cancer of Uterus. Possibilities of Cure by Radical Abdominal Operation. F. Cobb, Boston.
20 *Cancer of Rectum. D. F. Jones, Boston.
21 *Cancer of Bladder. A. L. Chute, Boston.
22 Cancer of Prostate. H. Binney, Boston.

19. **Cancer of Uterus.**—In a series of 49 simple abdominal hysterectomies done by numerous men and referred to by Cobb there was an immediate mortality of over 34 per cent. and only 19 per cent. of cures. He concludes from these figures that an abdominal hysterectomy which makes no attempt to dissect the ureters and remove the parametrium, to say nothing of the pelvic glands, cannot be advocated as a safe or reasonable operation for cancer of the cervix because it exposes the patient to increased danger from shock, hemorrhage and peritonitis without making any wider removal of the disease and its lymphatics than in the simple vaginal hysterectomy. There were 40 radical Wertheim hysterectomies including 23 of Cobb's personal cases, with an immediate mortality of 22 per cent. and 50 per cent. of cures. In addition there were 27 abdominal hysterectomies for cancer of the fundus, 7 of which were Cobb's personal cases. The immediate mortality was 4, or 14.8 per cent., and of those cases in which the operation was done over five years before, only 42.8 per cent. were cured.

Summing up, Cobb says, that the extended radical abdominal operation is the method of choice, the method that offers the greatest possibility of cure in cancer of the cervix if done by specially trained men. The earlier the diagnosis is made the greater the chance of cure. Simple vaginal hysterectomy is a safer and better method than simple abdominal hysterectomy in ordinary hands. The extended abdominal operation is contra-indicated in marked adiposity and in feeble patients. Cobb has done the Wertheim operation for cancer of the cervix 34 times with an immediate mortality of 5, or 14.3 per cent. In addition he has done abdominal hysterectomy for cancer of the fundus 7 times with no immediate mortality. Only 6 of the cancer of the cervix cases were done over five years ago, 5 of these patients are alive and well and free from recurrence from five to thirteen years. The cause of death in Cobb's cancer of the cervix operations is as follows: One patient died of peritonitis within forty-eight hours; one in twelve hours of shock; one on the tenth day, cause of death not made out at necropsy; one in the fifth week of iliac thrombophlebitis, and one in the tenth week of intestinal obstruction.

20. **Cancer of Rectum.**—The results obtained in carcinoma of the rectum Jones states depend almost entirely on the character of the growth and its duration, and comparatively little on the operation done. That is, they depend on the vigilance of the patient, and the vigilance and thoroughness of the physician and surgeon. Certain cases in which there is much tenesmus demand a radical operation, even when hopeless, simply for the relief it gives, and which is not obtained in many cases with a simple colostomy. Theoretically, the combined abdominosacral operation is the operation of choice. Practically the mortality is too high except in selected cases. Statistics of late results are not sufficiently good to warrant taking the extra risk in the obese, the feeble, and in men over 50. The combined two-stage operation, if the second stage is done under spinal anesthesia, will give a mortality between 15 and 20 per cent. A serious objection to this operation is the danger of infecting the denuded area with cancer cells brought through the lymphatics from the growth. The Kraske operation is the operation of choice in the obese, the feeble and patients over 60.

21. **Cancer of Bladder.**—Chute believes that so long as a growth is confined to the mucous layer of the bladder there is probably no lymphatic involvement; that the moment it invades the deeper layers we have lymphatic involvement; that when this has taken place the lymphatics of the pelvis must be removed, no matter how small the original focus is, if patients are to be cured. Chute feels that we must accept total cystectomy temporarily at least, as a necessary part of any attempt at radical treatment of malignant disease near the bladder outlet.

### California State Journal of Medicine, San Francisco

*November, XII, No. 11, pp. 437-478*

23 *Early Symptomatology of Subacute Bacterial Endocarditis. E. C. Dickson and R. L. Wilbur, San Francisco.
24 Medical Hospital Bookkeeping. W. R. Dorr, San Francisco.
25 Leukocytic Extract in Treatment of Pneumococcus Infections in Rabbits. A. Meinhard and H. B. Reynolds, Palo Alto.
26 Case of Paroxysmal Hemoglobinuria Treated with Salvarsan; Disappearance of Characteristic Blood Reaction and of Positive Wassermann. W. V. Brem, Los Angeles.
27 Status Lymphaticus. J. M. Brown, Los Angeles.
28 Nasal Conditions Causing Asthma. W. H. Dudley, Los Angeles.
29 Relation of Local Infections to Joint Affections. L. W. Ely, San Francisco.
30 Treatment of Pneumonia with Leukocytic Extract. H. B. Reynolds, Palo Alto.
31 Complications in Cataract Extraction. V. H. Hulen, San Francisco.
32 Prevention of Tuberculosis in Children. T. C. McCleave, Berkeley.

23. **Early Symptomatology of Subacute Bacterial Endocarditis.**—Dickson and Wilbur emphasize the importance of certain manifestations by which an early diagnosis can be made in these cases, such as the painful nodules in the skin, in the occurrence of petechial hemorrhages in the skin, and especially in the mucous membrane of the mouth and in the conjunctiva; in the presence of Gram-positive diplococci in the urine when local cause for them can be excluded; and finally in the demonstration of the characteristic diplostreptococcus in the blood.

### Canadian Medical Association Journal, Toronto

*November, IV, No. 11, pp. 949-1043*

33 Intestinal Stasis. M. Einhorn, New York.
34 Id. A. McPhedran, Toronto.
35 Id. A. Primrose, Toronto.
36 Id. J. M. Elder, Montreal.
37 Id. F. N. G. Starr, Toronto.
38 Ileal Stasis. L. G. Cole, New York.
39 Early Diagnosis and Prognosis of Pulmonary Tuberculosis by Roentgen Methods. A. L. Gray, Richmond, Va.
40 *Subcutaneous Injection of Oxygen. H. O. Howitt, Guelph.

40. **Subcutaneous Injection of Oxygen.**—Howitt's experience with the intramammary injection of oxygen according to Derose which now covers nearly two years, includes the dyspnea of tuberculosis, gas poisoning, pneumonia (lobar and lobular) edema of the lungs, bronchial asthma and operative cases. In no case were any ill effects noticeable, either at the time or afterward. One asthmatic said that it relieved him, but Howitt did not notice appreciable improvement. The oxygen is generated from sodium peroxid coming in contact with water in a closed cylinder, and the gas set free escapes by means of a long rubber tube, at the distal end of which is an aspirating needle which is inserted into the subcutaneous tissue. The tube is then oiled and by a pumping action of the hand, sufficient force is used to raise a lump once or twice as large as the closed fist. The oxygen injected by this method forms a local emphysema which lasts for hours and may travel over the surface of the body. Apparently the body only absorbs that which is necessary. It is really the formation of an artificial lung.

### Georgia Medical Association Journal, Augusta

*October, IV, No. 6, pp. 167-195*

41 *Experimental Study of Abderhalden Test. A. H. Bunce, Atlanta.
42 Whitman's Method of Treatment of Fractured Hip. C. C. Harrold, Macon.
43 *Management of Pregnancy and Normal Labor. B. Moore, Atlanta.
44 Roentgen Ray in Treatment of Skin Cancer. C. Swanson, Atlanta.
45 Present Status of Radium. Report of Case. T. E. Oertel, Augusta.
46 Salvarsan. J. Swafford, Athens.
47 The Prescription. R. C. Wilson, Augusta.
48 Diet as Means of Oral Prophylaxis. M. T. Summerlin, Athens.

41. Abstracted in The Journal, May 9, p. 1499.

43. Abstracted in The Journal, May 2, p. 1429.

### Journal of Cutaneous Diseases, New York

*November, XXXII, No. 11, pp. 751-820*

49 *Clinical, Pathologic and Experimental Study of Lesions Produced by Bite of "Black Fly." J. H. Stokes, Ann Arbor, Mich.
50 *External Vaccine Therapy. H. P. Towle, Boston.
51 Autoserotherapy of Certain Diseases of Skin. J. S. Hilario, Manila.
52 Herpes Zoster Following Arsenic. R. C. Finlay, Grace, Miss.

49. **Study of Black Fly Bite.**—To the question as to whether the bites of the black fly are capable of giving rise to constitutional reaction in man, Stokes answers that the temperature in a small child which received twenty-five or more bites in one afternoon, never went above normal, although the lymphadenitis was marked and the child fretful and restless. Several persons under his observation expressed themselves as having felt "tired and stiff all over" after being severely bitten by the flies early in the season. Nothing comparable to the severe reactions described in the literature has come under Stokes' observation.

50. **External Vaccine Therapy.**—Vaccines were used externally by Towle in more than 150 cases. The vaccine containing preparations manifested their therapeutic activity as abundantly and so consistently that long continued experimentation was unnecessary to convince him that it was practicable to obtain vaccine effects by external methods of administration. Of the ordinary fatty substances, the final selection as ointment bases, alone or in combination was, in the order of preference; lanolin, vaselin, cold cream and (for use on the hairy parts) a fat emulsion known as liquid cold cream. Occasionally, one or the other was used alone, but increasing experience gradually led to the more frequent use of combinations.

No fixed formula has been followed. Instead, both composition and proportion have been varied, as the varying conditions in each case seemed to indicate. In a general way, the simplest formula, plus more or less powder, seemed the most useful in the presence of exudative conditions. The composition of the base was varied in accord with the ordinary rules for the use of pastes and ointments. For pastes, starch was ordinarily the substance added to stiffen the base. For ointments, the greatest satisfaction was derived from varying combinations of glycerin, vaselin, distilled water and lanolin, and of olive oil or almond oil, lime-water and vaselin. On the hairy parts, the use of pastes and ointments is inconvenient and frequently undesirable. As a compromise between the frequent use of a greasy but more or less penetrating salve and the more easily applied but superficially acting lotion, a thin emulsion, with cold cream added to give it more body, has been found to be an efficient means of applying vaccines to the scalp and other hairy parts.

Regardless of the form of the base chosen, it was found desirable that the vaccine preparation should be rubbed in with fingers until a considerable portion has disappeared, except in the case of an exudative eruption, in which the broken surface of the skin facilitates absorption. In the latter, it suffices merely to smear the vaccine preparation over the surface. External vaccine therapy was found the most efficient in the treatment of acute inflammation of infections whose seat is superficial, and therefore easily reached from without. Of all infectious processes, the staphylococcic is the most easily influenced by external vaccine therapy. On other infections the effects of external vaccine treatment are less marked, and in the various forms vary considerably.

### Journal of Nervous and Mental Disease, Lancaster, Pa.

*November, XLI, No. 11, pp. 681-744*

53 *New (Familial) Form of Progressive Spinal Myopathy. C. L. Dana, New York.
54 *Spinal Fluid Cell Counts in Untreated Cases of Cerebrospinal Syphilis. H. W. Mitchell, I. A. Darling and P. B. Newcomb, Warren.
55 Psychoses Among Negroes. E. M. Green, Milledgeville, Ga.
56 Cerebellar Syndrome of Babinski. Report of Case. H. K. Marks, New York.

53. **New Form of Spinal Myopathy.**—Dana cites a case occurring at the age of 53, in a family in which ten cases were known to have developed in three generations. The clinical history shows that its course is like that of a disease which destroys one group of spinal motor cells one after another. It is not a slowly developing atrophy followed by paralysis, but a rather sudden paralysis followed by atrophy. The disease progresses and the patient dies in a period of about one year. The patient's maternal grandmother had the same disease and died of it in her forty-first year. Maternal grandfather healthy. There were three children borne by her mother. One died at birth and one, a sister of the patient, died at 47 of gastric ulcer. Her mother died of this progressive paralysis at the age of 47. In her case the disease began in the fingers and then went to the legs and throat and the whole trouble lasted a year. The mother had three sisters who died of the same trouble, one at the age of 52, one at 42 and one at 37. In two of these cases the trouble began in the arms and in one case in the legs. In all cases the disease progressed upward. The mother had a brother whose son developed the trouble at the age of 35. She had two other sisters who did not have the disease, each married and had healthy children. Four are known to be living at ages of 50 to 60. In addition to this, three sons of the grandmother's sister died of the family disease.

54. **Spinal Fluid Cell Counts in Syphilis.**—In a review of thirty-four cases a count of three or less was found at some time in all but two, both far advanced paretics. Seven of the cases showing high average counts were paretics exhibiting excitable, grandiose tendencies during the period they were under observation, but similar results were also found in cases showing pronounced dementia and comparative remission of active symptoms. High counts were found in all stages of the disease, from the first to the tenth year of well defined paretic symptoms. In several cases very great variation was shown in the counts at two weeks' intervals without any appreciable changes in the patients' symptoms. Low average counts were also found to occur in all stages

of the disease. Of ten patients with the highest count below twenty, seven are dead or bedridden, two show remission of active symptoms and one is ambulant but much demented. The period of the disease in these cases varied from the first to the thirteenth year.

The authors conclude that great variation in the cell count may be found at short intervals in any stage of the disease. Both high and low average counts persist for months at a time in various stages of the disease. A low or falling count is common but not universal before death. A reduction in the cell count to the normal limit frequently occurs in progressive, untreated cases at any time during the course of the disease. The reduced cell count, accompanied with persistence of a positive Wassermann in the fluid, cannot be regarded as having valuable prognostic significance.

### Kentucky Medical Journal, Bowling Green

*November 1, XII, No. 21, pp. 651-702*

57 Serodiagnosis of Pregnancy. H. J. Farbach, Louisville.

### Lancet-Clinic, Cincinnati

*October 31, CXII, No. 18, pp. 471-498*

58 Inebriety in Old Age. T. D. Crothers, Hartford.
59 Extraction of Steel and Iron Particles from Eye by Electromagnet. V. Ray, Cincinnati.
60 Inflammation of Accessory Sinuses. C. R. Holmes, Cincinnati.
61 Mediastinal Tumor. J. E. Pirrung, Cincinnati.

*November 7, No. 19, pp. 449-522*

62 Is Genius a Matter of Chemistry? J. A. Hagemann, Pittsburgh.
63 Enlargement of Thyroid Treated with Epinephrin. Report of Case. H. J. Phillips, Louisville, Ky.
64 Acute Perforation of Stomach with Spontaneous Recovery. J. H. Schroeder, Cincinnati.
65 Dermatitis Herpetiformis (Duhring) Associated with Pigmentation and Keratoses. M. Scholtz, Cincinnati.
66 Huntington's Chorea Synonyms—Chorea Chronica Progressiva, Chorea Hereditaria, Dementia Choreica. H. H. Hoppe, Cincinnati.

### Medical Record, New York

*November 14, LXXXVI, No. 20, pp. 825-866*

67 *Toxic Diseases of Nervous System. Report of Case. E. D. Fisher, New York.
68 Cholera in Philippines During 1913. V. G. Heiser, Manila.
69 Faculty of Medicine in Original University of Louvain, 1426-1797. J. B. Stein, New York.
70 Case of Thrombo-Angeitis; Wassermann Long Negative now Positive. W. C. Lusk, New York.
71 Necessity for Broader Conceptions in Gastro-Enterology. C. S. Fischer, New York.
72 Mistakes Made in Taking and Interpreting Blood-Pressure Readings. G. Richter, St. Louis.
73 Neurosis and Purpose. G. M. Parker, New York.
74 Painless Parturition. M. W. Kapp, San Jose, Cal.
75 Recovery from Bichlorid of Mercury Poisoning. F. F. Durrah and G. W. White, Washington, D. C.

67. **Toxic Diseases of Nervous System.**—Four cases are cited by Fisher. The first was a case of ascending paralysis, with attending neuritis, which followed the usual course of extension, later involving the upper extremities and the bulbar nerves, resulting in respiratory failure. The pathologic findings are definite, involving both the peripheral and central nervous system. The course of the disease was longer than that usually described, extending over six weeks, but otherwise the case was typical in its manifestations. The second case was one of a distinct infection of an unknown character, involving the meninges, as shown conclusively by the rigidity of the neck, and the increased cell count in the spinal fluid. The neuritis of the lower extremities, a loss of reflexes, and ascending paralysis suggest a condition of the nature of Landry's paralysis., A third case from the symptoms suggested either some infection involving the membranes at the base of the brain, or basal syphilitic meningitis. The necropsy showed, however, a sarcomatous basilar meningitis. Small bodies resembling tubercles were found scattered over the meninges and the base of the brain, and two small tumors were found in the frontal lobes, incapable of causing any symptoms. There was also a secondary involvement of the liver and spleen. The fourth case did not correspond to syphilis of the nervous system nor did it respond to antisyphilitic treatment. There was evidently an acute affection of the nervous system, cord and bulb, suggesting acute ascending paralysis or poliomyelitis. Fisher suggests that possibly we may in the future put many of these cases of myelitis or primary lateral sclerosis down to toxic agents, especially when, as in one of these cases, there was no evidence of syphilis.

### Michigan State Medical Society Journal, Grand Rapids

*November, XII, No. 11, pp. 635-680*

76 Suggestions as to Origin and Remedy of Malpractice Actions. H. V. Barbour, Detroit.
77 Syphilis in Relation to Certain Nervous Disorders. W. Taylor, Detroit.
78 Treatment of Luetic Diseases of Nervous System. C. W. Hitchcock, Detroit.
79 Infantile Sensitization to Egg-Albumin. H. M. Rich, Detroit.
80 Diagnosis and Treatment of Acute Appendicitis and Its Complications. C. D. Brooks, Detroit.

### Modern Hospital, St. Louis

*November, III, No. 5, pp. 283-350*

81 Insurance Company Seeking to Improve Individual and Public Health. L. K. Frankel, New York.
82 Hospital Records. J. B. Howland, Boston.
83 First Aid Hospitals in Coal Mines. D. H. Lake, Kingston, Pa.
84 Fire Protection and Fire Drills in Hospitals. H. F. J. Porter, New York.
85 Lunches for School Children. E. F. Brown, New York.
86 How Nurses May Contribute Toward Hospital's Success. A. Beers, Fairfield, Ia.
87 Feeding the Hospital—Food. L. Graves, Cleveland.

### New Mexico Medical Journal, Las Cruces

*October, XIII, No. 1, pp. 1-40*

88 Eugenics. H. B. Kauffmann, Albuquerque.
89 Be a Man. C. M. Mayes, Roswell.
90 Snake Poisoning; Symptoms and Treatment. A. J. Evans, Elida.
91 Cholelithiasis. W. T. Joyner, Roswell.

### New Orleans Medical and Surgical Journal

*November, LXVII, No. 5, pp. 419-502*

92 Bacteriology and Pathology of Bubonic Plague. H. W. Wade, New Orleans.
93 Cystitis—An Over-Worked Diagnosis. A. Nelken, New Orleans.
94 Efficacy of Vaccines in Treatment of Chronic Diphtheria Carriers. A. I. Weil, New Orleans.
95 Surgical Surprises. M. J. Gelpi, New Orleans.
96 Acetone, Acetonuria, Acidosis, Acid Intoxication. E. D. Fenner, New Orleans.
97 Subcutaneous Traumatic Rupture of Gall-Bladder. L. A. Fortier, New Orleans.
98 Medical Aspects of Hodgkin's Disease. C. L. Eshleman, New Orleans.
99 Eosinophilia in Anaphylactic Reactions. F. M. Johns, New Orleans.
100 *Specific Cause and Specific Cure of Pyorrhea Alveolaris or Riggs' Disease. C. C. Bass and F. M. Johns, New Orleans.

100. **Pyorrhea Alveolaris or Rigg's Disease.**—In August, 1914, Bass and Johns found amebas in a stained preparation of pus from a case of pyorrhea alveolaris. They examined specimens from six other cases. Apparently the same species of ameba was found in each of the seven cases. Their close resemblance to the entameba of amebic dysentery and the marked specific favorable influence of treatment with ipecac and emetin in amebic dysentery led them to expect that the same effect might be exerted on this form of amebic disease also. They began treating patients with emetin hypodermatically. They examined material from the lesions in eighty-seven cases of pyorrhea and found ameba in eighty-five of them. One of the negative cases was a single slide prepared a distance from the laboratory, from the gum of a patient who was convalescing from plague. Pus could be squeezed from her gums and the diagnosis of pyorrhea alveolaris seemed indicated. The other negative case was that of a 13-year-old girl with acute gingivitis, involving all the gums, of about eight days' duration. Thorough search failed to show ameba, and the authors now believe this probably was not a case of pyorrhea alveolaris or Rigg's disease.

They also made more than 100 examinations of preparations made from apparently normal gums and teeth, either in the mouths of patients who had the disease involving other teeth, or in people who appeared to have normal gum margins. They have not been able to find amebas in a single instance. They have, however, found them on several occasions in instances in which the gum margin appeared inflamed and diseased. In several instances they found amebas in similarly mildly inflamed and "easy to bleed" gum margins of one or more teeth in patients who had well-advanced Rigg's disease around other teeth. They found amebas around teeth in what they considered to be all the different stages of the disease in the same case, from the slight redness at the gum margin and tendency to bleed easily to the tooth hanging loose in its socket or standing, entirely stripped of gum on the exposed carious bone.

The doses of emetin experimented with have been from ½ to 1 grain. Only one dose was given in a day. Several cases have been given a dose daily for several days. Others were given one or more doses until the amebas disappeared. In several instances no amebas could be found the next day after the first dose was given. In a few, however, they were found the next day after emetin had been given on two successive days. In no case have the authors been able to find amebas the next day after emetin had been given on three successive days. In one instance they found amebas on the fourth day after the last emetin had been given; in another instance on the sixth day; in several instances none could be found after seven days or longer intermission of treatment.

### New York Medical Journal

*November 14, C, No. 20, pp. 949-996*

101 Exophthalmic Goiter. R. S. Fowler, New York.
102 *Artificial Cultivation of Rabies Virus. F. Proescher, Pittsburgh.
103 Topical Employment of Tuberculin. W. W. Babcock, Philadelphia.
104 *Operative Treatment of Contracted and Deformed Hands in Multiple Arthritis. G. R. Elliott, New York.
105 Psychic Complex in Congenital Deformity. D. L. Sohn, New York.
106 Case of Double Compound Fracture. J. Hund, Fredonia, Wis.
107 Narcotic Addiction. P. M. Lichtenstein, New York.
108 Fancies, Facts and Consumption. T. J. Mays, Philadelphia.
109 Study of Methods of Lavage. J. P. Sawyer, Cleveland.
110 Present Situation in Tuberculosis. F. Tice, Chicago.
111 Meningococcic Empyema. Report of Case. A. I. Rubenstone, Philadelphia.

102. **Artificial Cultivation of Rabies Virus.**—Proescher describes his method as follows: Thirty c.c. of sterile, not filtered, sheep serum is filled into large test tubes 2.5 by 15 cm. and incubated for forty-eight hours, to prove the sterility of the serum. A large piece of the brain substance of a rabid animal removed under aseptic precautions is placed in the bottom of each serum tube, the serum sealed with paraffin oil, and the tube closed with a cotton plunger. The tubes can be kept under aerobic conditions. Proescher says that it is advisable to inoculate at least fifty tubes, as few only will show a growth. Typical changes in the culture medium are not noted. Tubes showing gas formation or coagulation of the serum are rejected. The tubes should be kept at least two months under observation and examined every eight or ten days. The first primary culture Proescher obtained was incubated for two months; repeated examinations before did not show any growths. For subcultures, serum bouillon only (one to ten) is used, as in the common culture medium no growths can be obtained. The serum bouillon after twenty-four hours' incubation is homogenous, cloudy, and after several days' incubation shows a granular sediment. The micro-organisms of the primary culture appear after staining with methylenazur in the form of cocci and oval bacilli, varying in size from just visible to 0.2 to 0.3 micron; in the form of diplococci or aggregated in small groups or short chains. With the Gram stain, using carbolfuchsin as counterstain, the larger forms are more or less Gram-positive, while the smaller forms are faintly stained red. The micro-organisms appear after several transplantations in serum bouillon somewhat larger, and the majority of the micro-organisms are Gram-positive. The inoculation of these cultures into rabbits, rats, and a monkey produced typical rabies.

104. **Operative Treatment of Contracted and Deformed Hands.**—The deformities are reduced by Elliott by forcible reduction and open operation combined. Most of the displacements can be corrected by redressing alone. The reduction is made under profound ether or chloroform narcosis. The fingers are taken singly, forcibly breaking down the contracture or hyperextension and redislocation if such exists. If the finger is contracted, it is forcibly hyperextended. The reverse is done in case of hyperextension deformity. All the hand deformities are overcorrected. The hands are placed on splints padded in such a manner as to keep up a continual overcorrection of the deformity. For three or four days the pain is intense and has to be partially controlled by sedatives. Each joint is wrapped in gauze, saturated with a lotion composed of aconite, belladonna, and glycerin. This dressing is extended over the back of the hand considerably above the wrist, and is covered with oiled silk. A very firm bandage is applied, leaving the tips of the fingers exposed. The pressure must be firm enough to prevent much swelling. The gauze is kept wet with the lotion and over this an ice bag is applied. The tips of the fingers offer a control, and undue localized pressure is readily detected. The splint is used for two weeks. The wet dressing is discontinued as soon as the reaction symptoms subside usually in four or five days. When the pain ceases, it does not return. Not infrequently certain deformities will not give way without a cutting operation. Whenever this is necessary, cutting should be done first. After the wounds are healed, redressment can be carried out.

### Pennsylvania State Medical Journal, Athens

*October, XVIII, No. 1, pp. 1-90*

112 Established Values in Dietetics. L. Litchfield, Pittsburgh.
113 Intestinal Stasis in Its Relation to Gastric and Duodenal Ulcer. E. LaPlace, Philadelphia.
114 Sero-Enzymes in Pregnancy and Disease. J. A. Kolmer, Philadelphia.
115 Work of Bureau of Medical Education and Licensure in Relation to State Medicine. J. M. Baldy, Philadelphia.
116 Retention of Urine and Its Treatment. T. C. Stellwagen, Jr., Philadelphia.

### United States Naval Medical Bulletin, Washington

*October, VIII, No. 4, pp. 541-749*

117 Some Prevailing Ideas Regarding Treatment of Tuberculosis. G. B. Crow, U. S. Navy.
118 Training School for Hospital Corps of Navy. F. E. McCullough and J. B. Kaufman, U. S. Navy.
119 Khaki Dye for White Uniforms. W. E. Eaton, U. S. Navy.
120 Some Facts and Some Fancies Regarding the Unity of Yaws and Syphilis. C. S. Butler, U. S. Navy.
121 Quinin Prophylaxis of Malaria. L. W. McGuire, U. S. Navy.
122 Nervous System and Naval Warfare. T. W. Richards, U. S. Navy.
123 Measles. Report of Case. G. F. Freeman, U. S. Navy.
124 Small-Pox and Vaccination. T. W. Raison, U. S. Navy.
125 Rabies. F. X. Koltes, U. S. Navy.
126 Syphilis Aboard Ship. G. F. Cottle, U. S. Navy.
127 Systematic Recording and Treatment of Syphilis. A. M. Fauntleroy and E. H. H. Old, U. S. Navy.
128 Organization and Station Bills of U. S. Naval Hospital Ship "Solace." W. M. Garton, U. S. Navy.
129 Succinimid of Mercury in Pyorrhea Alveolaris. P. G. White, U. S. Navy.
130 Case of Pityriasis Rosea. R. E. Ledbetter, U. S. Navy.
131 Emetine in Treatment of Amebic Abscess of Liver. H. F. Strine and L. Sheldon, Jr., U. S. Navy.
132 Salvarsan in Case of Amebic Dysentery. O. J. Mink, U. S. Navy.
133 Laceration of Subclavian Artery and Complete Severing of Brachial Plexus. H. C. Curl and C. B. Camerer, U. S. Navy.
134 Malarial Infection Complicating Splenectomy. H. F. Strine, U. S. Navy.
135 Case of Gastric Hemorrhage—Operative Interference Impossible. G. E. Robertson, U. S. Navy.
136 Operation for Strangulated Hernia: Report of Case. W. S. Pugh, U. S. Navy.
137 Case of Bronchiectasis with Hypertrophic Pulmonary Osteo-Arthropathy. L. C. Whiteside, U. S. Navy.

### Wisconsin Medical Journal, Milwaukee

*October, XII, No. 5, pp. 175-216*

138 State Medical Society of Wisconsin. C. S. Sheldon, Madison.
139 *Modern Treatment of Syphilis. O. H. Foerster and C. A. Baer, Milwaukee.
140 Diagnosis of Incipient Pulmonary Tuberculosis. L. M. Warfield, Milwaukee.
141 Preparatio of Bacterial Vaccines. E. V. Brumbaugh, Milwaukee.
142 Transfusion of Blood. H. M. Brown, Milwaukee.

139. Abstracted in The Journal, Nov. 1, 1913, p. 1657.

## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### Indian Journal of Medical Research, Calcutta

*July, II, No. 1, pp. 1-403*

1 Invasion of Tissues by Cholera Vibrio; Pneumonia in Cholera. E. D. W. Greig.
2 Lesions of Gall-Bladder and Biliary Passages in Cholera. E. D. W. Greig.

3 *Treatment of Snake-Bite. H. W. Acton and R. Knowles.
4 *Treatment of Snake-Bite with Potassium Permanganate. W. B. Bannerman.
5 *Pathogenesis of Experimentally Produced Goiter. R. McCarrison.
6 *Experimental Researches on Etiology of Endemic Goiter. R. McCarrison.
7 Summary of Year's Mosquito Work in Colombo. S. P. James.
8 Epidemic or Fulminant Malaria. Part Played by Immunity in Malaria. C. A. Gill.
9 Cinchona Derivatives Inquiry. A. C. MacGilchrist.
10 Stygeromyia Maculosa in Madras. W. S. Patton.
11 Classification of Bacteria for Purposes of Water Analysis. J. W. Cornwall.
12 *Study of Experimental Beriberi. R. McCarrison.
13 Parasite of Bat Malaria. F. P. Mackie.
14 Flagellate Infection of Sand-Flies. F. P. Mackie.
15 Bursate Nematodes from Indian Elephant. C. Lane.
16 Behavior of Parasite of Indian Kala-Azar in Dog Flea: Canine Kala-Azar and Its Relation to Human Disease. W. S. Patton.

3. **Treatment of Snake-Bite.**—The value of local remedies in snake-bite treatment, according to Acton and Knowles is strictly limited by two factors, the necessity of inoculating the patient with them before a fatal dose of venom has been absorbed, and the fact that only such venom as they happen to come into contact with *in situ* will be destroyed. They must be given before one minimum lethal dose has been absorbed into the circulation. For man, for 10 minimum lethal doses of cobra venom, this period is about ten minutes. The more concentrated and the larger the dose of venom given the shorter is the period available. An efficient ligature increases this time limit. Subcutaneous injection of these remedies in solution gives much better results than does incision and the rubbing in of moistened crystals. If they be given subcutaneously, no incision should be made.

The authors' experiments show that the immediate injection of 10 to 20 c.c. of a 1 to 5 per cent. solution of gold chlorid is the most efficient local remedy. In some cases this measure alone may save life. In others it will reduce to a minimum the amount of venom which has to be dealt with by means of systemic remedies. When brought into contact with large doses of venom in concentrated solution these remedies exert a more intense action than when acting on small doses in dilute solution. In the case of bites on fingers or toes, in which large volumes of fluid cannot be given hypodermically, two lines of procedure are open. Either a complete dissection of the area of the bite should be made and crystals of potassium or preferably of zinc permanganate should be rubbed in. Or an injection of ½ to 1 c.c. of a concentrated solution preferably of gold chlorid, should be made into several sites in the neighborhood of the punctures. Acton and Knowles are inclined to think that the latter method is the better.

The use of ox bile as a solvent improves the action of weak solutions of gold chlorid and iodin trichlorid. A 5 per cent. solution of gold chlorid in ox bile is not of greater value than a corresponding solution in saline. Bile improves the action of strong solution of permanganates but not of weak solutions. On intravenous injection these remedies are said to be not merely useless, but, owing to the danger of their causing intravascular clotting and pulmonary embolism, they are dangerous.

4. **Treatment of Snake-Bite with Potassium Permanganate.**—Bannerman concludes that a dog bitten by a cobra cannot be saved by the local application of powdered potassium permanganate rubbed in after free incision of the bitten place; nor by a similar application of a solution of the powder. It may be saved, however, by the immediate subcutaneous injection of 10 c.c. of a 5 per cent. solution of potassium permanganate; but this solution is so strong that gangrene of all the tissues of the foot is produced. If this treatment be delayed for even two minutes, a fatal result cannot be averted. A dog bitten under natural conditions by a Russell's viper, cannot be saved by the local application of potassium permanganate.

5. **Experimentally Produced Goiter.**—The pathologic process which results in the formation of goiter in rats, McCarrison says, is essentially of a diffuse character. This process initially affects epithelium of the gland giving rise to hypertrophy, hyperplasia and the formation of many new acini, and may ultimately lead to degeneration and death of the parenchyma cells. It is an exaggeration of the normal physiologic process and results primarily in an increased production and an increased absorption of colloid which may be followed by cell-exhaustion as a consequence of overwork and malnutrition. The transition from the physiologic to the pathologic state is very gradual and the line of demarcation between the two is arbitrary. The pathologic changes which result in the development of goiter in rats are the same as in man, and are probably, therefore, due to the same goiterigenous agent or agents. The goiterigenous agent or agents are of the nature of toxins which stimulate the thyroid gland to abnormal activity. The toxic agent or agents of endemic goiter are produced in the intestinal tract of man and animals. The goiterigenous agent or agents are intermittent in their action in the case of endemic goiter—continuous in their action in the case of Graves' disease. There is no evidence that the blood or thyroid glands of goiterous individuals contain organisms of a bacterial or protozoal nature.

6. **Etiology of Endemic Goiter.**—McCarrison claims that at certain seasons of the year goiterigenous substances may be present in the feces of goiterous and non-goiterous persons and animals which are capable of causing the development of massive goiters in rats. Factors of nutrition are not of paramount importance in the genesis of goiter in rats. Insect transmitters of disease are not responsible for the spread of goiter in rats. House, room, cage or fish-tank infection is an important factor in the genesis of goiter. The excreta of the human or animal subject is the main source of the disease. The infecting agent is capable of life, and it may be of some degree of growth, outside the body of man in fecally contaminated soil or grossly polluted water. Suspicion points to intestinal anaerobes as possessing a goiterigenous influence on the thyroid gland. Water, food, soil or other mediums whereby the infecting agent or agents of the disease reach the bodies of man and animals are of importance only as vehicles of its transmission.

12. **Experimental Beriberi.**—Of twelve pigeons fed by McCarrison only on dry polished rice, seven developed typical polyneuritis gallinarum within ten to twenty days. The remaining four escaped the disease within the period of the experiment. Of twelve pigeons fed only on boiled polished rice, nine developed typical polyneuritis within ten to twenty days. The remaining three escaped the disease within the period of the experiment. Of twelve pigeons fed on liberal diet none developed any signs of disease. Blood agar on ordinary agar plates were smeared with portions of the internal organs of six pigeons suffering from experimental beriberi produced as a result of the consumption of polished rice; innumerable colonies of a bacillus resembling that of hog-cholera appeared on the plates, after twelve to fifteen hours' incubation at 37 C. in all six cases.

The organs of three out of four control pigeons examined were sterile, while a very few colonies of this bacillus were obtained from the internal organs of the fourth. A few colonies of this organism were obtained from the organs of four out of eight pigeons which were fed on polished rice, but which showed no clinical signs of the disease within the period of the experiment. Living cultures of this bacillus, when inoculated into liberally fed rabbits, fowls and pigeons (a total of twenty-eight animals) produced in nineteen, or 67.8 per cent., within a period of nine days, symptoms which were indistinguishable clinically from polyneuritis gallinarum. The sciatic nerves of all such cases showed degenerative changes of greater or lesser degrees of severity, while those of seventeen controls, whose organs were sterile, have shown no evidence of pathologic change.

### Journal of Pathology and Bacteriology, London

*October, XIX, No. 2, pp. 139-304*

17 *Histologically Non-Malignant Angioma, with Numerous Metastases. T. Shennan.
18 Variation in Amount of Complement in Blood in Some Acute Infectious Diseases and Its Relation to Clinical Features. W. C. Gunn.

19 Comparison Lesions of Nervous System in Distemper of Dog with those of Human Poliomyelitis. J. P. McGowan and J. W. Dawson.
20 An Unusual Tumor (Granuloma or Myxosarcoma) of the Hand. J. A. C. MacEwen.
21 *Analysis of the Effect of Nuclein and Nucleic Acid on Normal Antibody. S. P. Bedson.
22 Simplified Method for Cultivation in Fluid Media Containing Coagulable Albumin, of Bacteria Requiring Anaerobic Conditions Notably Pathogenic Spirochetes. J. W. McLeod and A. R. B. Soga.
23 Studies of Strain of Gonococcus Grown on Ordinary Media. W. Broughton-Alcock.
24 Regulation of Blood Volume in Normal and Nephritic Animals. Experiments with Tissue Fluid. A. E. Boycott and J. S. C. Douglas.
25 Iron Content of Organs in Bronzed Diabetes (Hemochromatosis). R. Muir and J. S. Dunn.
26 *Study of Boas-Oppler Bacillus. H. M. Galt and C. C. Iles.
27 Fatty Changes in Liver, Heart and Kidney. C. G. Imrie.
28 Pathologic Changes in Liver Resulting from Passive Venous Congestion Experimentally Produced. C. Bolton.
29 Regulation of Blood Volume in Experimental Nephritis. R. A. Chisolm.
30 *Obligate Anaerobes in Alimentary Tract of Infants. E. J. Dalyell.
31 Purification of Crude Silk Peptones for Bacteriologic Purposes. I. W. Hall.

17. **Histologically Non-Malignant Angioma.** — Shennan's case was one of angioma which displayed no sarcomatous transformation or other histologic indication of malignancy, yet gave rise to numerous secondary growths throughout the body. The patient was 23 years of age. The clinical sequence of events was as follows: A toxic gastro-intestinal attack about 1900, thirteen years ago, when the patient was about 10 years of age. The influenzal attack, with barking cough, suggesting mediastinal pressure, in December, 1907, six years ago, when the patient was about 17 years of age. Hemoptysis, June and July, 1908, five and a half years ago. No return of symptoms until in July, 1909, when also hemoptysis occurred; a year later it was most persistent. Enlargement of the spleen was first detected in October, 1909, some time before her first attack of splenitis. Hemorrhage into the pleural cavity at the time of the first attack of splenitis in November, 1909. At the same time dulness and crepitation were detected for the first time near the root of the left lung. Petechial hemorrhages with beginning formation of nevi in the skin were noticed first about August, 1910. Vomiting of blood occurred on two occasions about October, 1911. Diarrhea with ascites developed in the late autumn of 1912; at same time enlargement of liver. About the same time swelling was detected in the sternum. March 3, 1913, ascitic fluid drawn off was seen to consist largely of blood. May, 1913, the ovaries were felt to be enlarged and cystic. Thrombosis of mesenteric vessels occurred four or five days before death, with infarct of part of intestine. The clinical history pointed to the mediastinum as the earliest seat of the disease. The end came suddenly and seemed to be due to heart failure. Metastases were found in the lung, spleen, liver, ovaries, sternum, left clavicle and lumbar vertebrae. A detailed post-mortem report is presented.

21. **Nuclein, Nucleic Acid and Antibody.**—Bedson found that nuclein alone, out of the three leukocytosis-producing substances examined, brings about a rise in the opsonic index. This rise is first in evidence twenty to thirty minutes after the injection, is still marked seven and one-half hours after, but has completely disappeared in twenty-four hours. The increased opsonic activity of the serum is readily destroyed both by heating for thirty minutes at 56 C. and by diluting with normal saline. It would appear, therefore, that there is no increase in the thermostabile opsonin normally present in the serum. This effect is not produced by all preparations of nuclein or nucleic acid, as, out of the four examined, two were found to be without effect. Seeing that these two latter preparations were the purest of the four, it would appear probable that this effect is not due to the nucleic acid radicle but to the presence of some impurity.

26. **Boas-Oppler Bacillus.**—Specimens of the Boas-Oppler bacillus were obtained by Galt and Iles from three definite cases of carcinoma of the stomach; in these cases free hydrochloric acid was absent, and lactic acid was present in the stomach contents. Isolation and primary cultivation were affected on special mediums, and the morphologic and cultural characters were compared under standard conditions with those of a known strain of the *B. bulgaricus.* The evidence went to prove that the Boas-Oppler bacillus is identical with the *B. bulgaricus* and not an organism *sui generis.* True dichotomy was observed in cultures both of the Boas-Oppler and of the *B. bulgaricus*, indicating that another member of the long rod group of lactic acid bacteria, namely, the *B. bifidus* of Tissier, is probably identical with the above organisms. The inference was drawn that in cases of cancer of the stomach it is the absence of hydrochloric acid that allows of the growth of the bacillus, and that the lactic acid is formed as a result of the activity of this organism.

30. **Obligate Anaerobes in Alimentary Tract of Infants.**—Two types of strict anaerobes were found by Dalyell in the intestinal tract eight to twelve hours after birth, and in the first forty-eight hours of life were more abundant than the facultative anaerobes of the coliform type. The powerfully fermentative and proteolytic *B. aerogenes* was present within twelve to twenty-four hours after birth, in all cases examined. The other anaerobe, also constantly present, is acidophilic and a feeble fermenter of sugars is markedly pleomorphic, and is affected by symbiosis and by variations in culture media. At the end of the first week of life, facultative anaerobes of the coliform type were numerous, but the same two obligate anaerobes were still present in fairly large numbers and could be demonstrated by cultivation in special media.

### Lancet, London

*October 31, II, No. 4757, pp. 1031-1078*

32 Advances in Knowledge Regarding Circulation and Attributes of Blood Since Harvey's Time. R. D. Powell.
33 Traumatic Tetanus. M. H. Gordon.
34 Further Results in Electrolysis Treatment of Cystitis. C. Russ.
35 Small-Pox, Vaccination and New Vaccination Law in Siam. H. C. Highet.
36 Periosteal Whitlow. H. R. Davies.

### Bulletin de l'Académie de Médecine, Paris

*October 20, LXXII, No. 32, pp. 163-178*

37 Present Supply of Milk in Paris. (Le lait du troupeau de Paris, son emploi.) A. Pinard.
38 Extension Apparatus for Fracture of the Humerus. P. Delbet.

### Presse Médicale, Paris

*September 30, XXII, No. 69, pp. 629-632*

39 *Pillow Extension Bandage for Fracture of the Leg. (L'extension continue des fractures compliquées de jambe par le procédé de l'oreiller.) Chaput.
40 Old Roentgen Tubes. (Quelques mots sur un vieux tube à rayons X.) Lomon.

*October 8, No. 70, pp. 633-644*

41 *Wounds Produced by the French Projectiles. (Des blessures produites par l'armement français.) E. Delorme.
42 *Causes and Treatment of Hospital Gangrene. (Pourriture d'hôpital.) Vincent.
43 *Tetanus in the Wounded. C. Walther.

*October 15, No. 71, pp. 645-648*

44 *Treatment of Acute and Subacute Dysenteric Colitis. A. Mathieu.
45 *Dentistry Protheses in Military Surgery. (La prothèse dentaire dans la chirurgie de guerre.) P. Martinier and M. Roy.

*October 22, No. 72, pp. 649-656*

46 Treatment of Fracture of Femur in the Field. (Traitement des fractures de la diaphyse du fémur par coups de feu.) Chaput.
47 General Principles for Military Surgery. (Blessures de guerre.) E. Delorme.

39. **Pillow Extension.**—Chaput gives an illustration of this means of treating compound fracture of the leg. He says that it not only is simplicity itself, but it acts better than more complicated apparatus and has several special advantages. The leg is dressed as usual with gauze and cotton applied thin and smooth all around the leg from the top of the foot to the knee. The leg is then placed lengthwise on an ordinary pillow, not too thick, the heel at the lower end. The sides of the pillow are then brought up and crossed over the leg and a bandage is wound tight around the whole to form a solid cylinder. A strip of cloth is pinned to the lower

part of the pillow on each side, and these are tied together 4 inches below the foot and a weight suspended from them.

41. **Wounds from French Firearms.**—Delorme reviews his experience in treating about 700 Germans wounded by the French arms, and comments on the remarkably large proportion of fractures of the legs, thighs and arms and the rarity of abdominal and chest wounds. He was also impressed by the lack of complications, except tetanus, which was comparatively frequent. The projectile had passed entirely through the foot in many instances, but there was no tetanus or gangrene or erysipelas in any of these cases.

42. **Chlorinated Lime in Treatment of Hospital Gangrene.**—Vincent found in the Madagascar campaign that the rotting wound was rapidly transformed to healthy conditions when it was dusted with fresh chlorinated lime mixed with about ten parts pulverized boric acid. He first cleanses the wound and then covers it generously with this antiseptic powder, dusting with it the skin around. In two or three days the wound assumes an entirely different aspect. He changes the dressings in twenty-four hours if there is much secretion; otherwise he waits for forty-eight. He adds that a 20 per cent. solution of iodin would certainly aid in warding off trouble if it could be applied at the time of the first-aid dressing. It might be possible to include the material in the first-aid packet so that the wounded could make the solution fresh as needed.

43. This article was summarized recently, p. 1684.

44. **Dysentery.**—Mathieu emphasizes that we should not speak of "dysentery" but of "dysenteries," as there are several kinds of dysenteric colitis. Even without waiting for bacteriologic examination it might be advisable to give an injection of antidysentery serum, as it is most effectual when administered at the first signs of dysentery of non-ameba origin. He has found useful a rectal injection morning and night for two days of silver nitrate, 0.25 gm. to a liter of tepid distilled water, suspending then or continuing according to indications. Among other remedies advocated he mentions sodium sulphate for its laxative and modifying action, 5 or 10 gm. in tepid water in the morning if there is not much solid matter in the stools. When there is actual diarrhea he gives smaller doses and gives a little opium with it. After subsidence of the dysentery, a course of small doses of the sodium sulphate may aid in restoring normal conditions in the colon. Persons with dysentery should be fed according to the principles applied in feeding infants with bowel trouble; nothing but water at first, or lactic-acid lemonade with 5 per thousand sugar, taking half a liter at first and then a liter. Sugar is useful in these cases, as it is nourishing and can be taken up to 50, 100 or 150 gm. a day. Fluid food can then be resumed, gradually coming to a vegetable diet with a little ham or roast chicken.

45. **Dentistry Protheses for the Wounded.**—Martinier and Roy remark: "The surgical prothesis as a branch of dentistry owes its origin to Claude Martin of Lyons, and it is thanks to him and to the French school that it has reached its present state of high perfection." Such protheses are useful not only to restore the shape of the jaw, but to promote the healing of a fracture of the jaw. This lesion is particularly serious on account of the wound being constantly bathed with saliva and exposed to infection of all kinds from the mouth. When suture is attempted at once there is almost inevitably suppuration, with additional and avoidable destruction of tissue. The ordinary measures for reduction of a fracture elsewhere cannot be applied to the jaw, but dentistry methods answer the purpose ideally if they can be applied early enough, immobilizing the fracture and permitting healing with the minimum of disfigurement and functional disturbance. "The collaboration of the dentist is thus indispensable to the army surgeon for early assistance in treating wounds, not only of the jaws, but of the skull, while his aid is of paramount importance in the later treatment of wounds leaving defects in the jaws, nose and ears." (The organized dentists of Paris have appointed a committee for assistance to aid in treating injuries of the jaws and face, and offer their services to the surgeons at the front.)

### Revue Médicale de la Suisse Romande, Geneva

*September, XXXIV, No. 9, pp. 561-588*

48 *Artificial Heliotherapy. (L'héliothérapie artificielle avec la lampe de Vignard.) C. Martin.
49 *Landau's Reaction in Diagnosis of Syphilis. J. Golay.

*October, No. 9, pp. 589-616*

50 *Hypertrophic Stenosis of the Pylorus in Infants; Five Cases. L. Exchaquet.
51 Intermittent Hydrosalpinx. P. Wanner.

48. **Artificial Heliotherapy.**—Du Pan has tried various lights for treatment of bone and joint diseases, but discarded the arc light, as it generates too much heat. The quartz mercury lamp sends out rays most closely approximating direct sunlight, but the middle ultraviolet rays act on the skin and, although useful for lupus and other superficial lesions, they are not only useless but injurious in treating deep lesions. They can be filtered out by interposing a sheet of "pastel" glass, white on the cut edge, which sifts out these middle ultraviolet rays. With a lamp constructed on this principle, with air passing out through a chimney at the top, the skin exposed to its light never gets warmer than 40 C. (104 F.), and there is no perspiration to debilitate the patient and make him thirsty. The lamp has 7,000 candle power and is run with a 500-volt current obtained from the street railway system. Four or five children are exposed to the light at a time. They lie on a large table which slopes down toward the center. Each wears goggles to protect the eyes, but no clothes, the aim being to imitate as closely as possible with artificial light Rollier's method of exposure to the direct sunlight in the Swiss mountains. The results in the thirty-two cases thus treated have been extremely encouraging. They include tuberculous processes in the knee, spine, hip-joints, etc., osteomyelitis, and two cases of chronic peritonitis. One girl of 6 had been operated on two years before for an extremely painful tuberculous process in one knee. She later developed tuberculous keratitis and the other knee became swollen and painful. She was then given a course of the artificial heliotherapy and there was no further pain aften ten exposures. By the end of three months the knee was apparently normal and the child had gained 900 gm. in weight.

49. **Landau's Color Reaction in Diagnosis of Syphilis.**—This simple color reaction was described recently in The Journal, Oct. 10, 1914, p. 1317. The reagent is a 1 per cent. solution of iodin in tetrachlormethane (carbon tetrachlorid). Golay's experience with 63 applications of the test has confirmed its reliability, he declares, and shown that it is more sensitive even than the Wassermann test, while the technic is extremely simple. It was positive in 41 cases, negative in 11; parallel Wassermann tests were positive in only 37 and negative in 26.

50. **Stenosis of the Pylorus with Hypertrophy in Infants.**—The infants were breast-fed in Exchaquet's five cases, and the persistent vomiting began during the first, second, third, sixth or eighth week after birth. There was no inherited nervous taint evident, except in one instance the mother was known to be nervous and to have had stomach trouble. One child seemed to be thriving at first, but then began to vomit, and the physician the third week stopped the breast feeding and put the child on Vichy water and gruel. The vomiting kept up for a month and then stopped and extreme dropsy developed, with subnormal temperature. The diagnosis was athrepsia with idiopathic edema. This diagnosis was correct, but the primary cause, the stenosis of the pylorus, was overlooked and also the secondary cause, namely, the feeding with a mineral water and starch gruel which directly induced the dropsy, fluids being retained to dilute the salt and other minerals being taken in excess. Change to a cream-albumin diet was followed by improvement for a week, but then the child died. Nothing abnormal was found at necropsy except the hypertrophied pylorus, which had enlarged until it was scarcely permeable for fluids.

The persisting vomiting, coming on late after a feeding, extremely copious and squirting with force, the waves of peristalsis in the stomach or its total rigid contraction, and palpation of a tumor in the pylorus region are the main signs of the trouble. A tumor was evident in only two of his five cases. Castor oil, Vichy water, etc., will not stop the vomiting until the child gets too weak to vomit. A rapid drop in the weight, 500 gm. in two days in one of his cases, and in one of Tixier's, aids in the diagnosis. In well-to-do circles, where the child can have careful attendance, medical treatment may be given a thorough trial, but among the poor, the indications for surgical treatment should be broadened. The operation should come within a day or two if there is a very great drop in weight, and not later than eight or ten days if there is no improvement under systematic medical treatment. Fredet, Scudder and Munro have successfully operated for it on children only 13 to 30 days old. Breast-fed infants should be allowed to nurse as much as they will, if they vomit afterward; the peristalsis should be soothed by moist heat to the region and a little opium or atropin by the rectum. This is Heubner's expectant method. For bottle-fed children, the food should be the most easily digested, buttermilk or sweetened skim milk, milk with malted gruel or milk with albumin and cream. The child should be fed with minute amounts at a time to ward off vomiting, and the stomach should be washed out to bring away any residue. The tendency to spasm should be combated by moist heat and rectal injection of valerian, opium or atropin. The general health should be sustained by subcutaneous and rectal injection of salt solution and nutrient enemas. When possible, it may be wise to supplement the above by stretching the pylorus by intubation according to Hess' technic.

### Archiv für Kinderheilkunde, Stuttgart

*LXIII, Nos. 5-6, pp. 321-488. Last indexed August 15, p. 612*

52 *The Parathyroid Glands. (Zur Kenntnis der Epithelkörperchen.) L. Thimm.
53 *Fluctuations in Gastric Secretion under Emotional Stress. (Psychogene Magensecretionsanomalien im Kindesalter.) W. Wegener.
54 Histologic Examination of the Musculature in Rachitic Children. M. Gutstein.
55 Comparative Study of Action of Inorganic and "Organic" Calcium-Phosphorus Preparations on the Metabolism in Recent and in Subsiding Rachitis. (Kalkphosphorpräparate.) E. Schloss.

52. **The Parathyroid Glands.**—Thimm examined the parathyroids in 100 cadavers of persons over 20 or under 2 and in sections from the throat of several fetuses, and of a large number of laboratory and zoological garden animals. Welsh's four types of parathyroids seem to correspond, he thinks, to declining glandular function, the last stage being accompanied by a colloidal secretion. The findings in this extensive material are described in detail, and especially the fetal and the atypical glands.

53. **Psychic Suppression of Gastric Secretion in Children.**—The psychogenous anomalies in gastric secretion to which Wegener refers are generally of the anachlorhydria type, but hyperchlorhydria is also encountered occasionally. There is generally an unstable nervous system and sometimes signs of the exudative diathesis. He remarks that stomach disturbances in general are unusually prevalent in his district (Mecklenburg). His patients at Rostock in describing their symptoms with almost every kind of affection invariably mention disturbance in the stomach as the main trouble. That the child refuses food is almost invariably the only symptom noticed and mentioned by the family, even when a febrile child with pneumonia or diphtheria is brought for treatment. It is now his routine practice to examine the stomach content after a test breakfast whenever there is complaint of loss of appetite and pain in the stomach. In 80 thus examined there was pronounced hyperacidity in 2 and anacidity in 17. One boy of 11 who had intense hyperacidity had been under treatment for some years for supra-orbital neuralgia, and had also astigmatism and enlarged tonsils, but no appreciable gastro-intestinal disturbances. In the other case the hyperacidity was accompanied with hypersecretion, pains and tenderness in the stomach region. The nervous origin of the secretory disturbance was evident from other signs of excessive irritability of the nervous system and also by the restoration of anachlorhydria to normal under administration of a few drops of hydrochloric acid supplementary to the impression made on the susceptible children by the introduction of the stomach tube and siphoning out of the stomach contents. Only one case proved refractory, and this was an only child of 5 whose mother was extremely neuropathic.

### Archiv für Verdauungs-Krankheiten, Berlin

*October, XX, No. 5, pp. 543-616*

56 Diagnosis and Treatment of Gastric and Duodenal Ulcers. M. Einhorn (New York).
57 *Dry Test for Occult Blood in the Stools. (Zum Nachweis okkulter Blutungen in den Fäzes.) A. Wagner.
58 Bismuth Passes into Bronchi through Perforation in Cancerous Esophagus. (Wismut im Bronchialbaum.) S. Frank.
59 *Putrefaction in the Intestines. (Klinische und experimentelle Ergebnisse über Darmfäulnis im Jahre 1913.) A. Rodella.
60 Physiologic and Therapeutic Action of Extract of Duodenal Mucosa: Sekretin. H. R. Harrower.

57. **Dry Test for Occult Blood in the Stools.**—Wagner calls attention to his simplification of the benzidin technic as extremely rapid, reliable and cleanly. A scrap of the stool is taken up on the end of a match and smeared thin on a slide. Then the usual Schlesinger-Holt-Adler reagent is poured over the slide, and in case there is blood present a blue tint develops promptly. The reagent is a knife-tip of benzidin on which is poured 2 c.c. of glacial acetic acid and 20 drops of a 3 per cent. solution of hydrogen peroxid. He calls this the dry benzidin or slide test, and says that with it there is no need to soil the fingers. The outcome is never dubious, as there is either no change to blue or it is pronounced. With a large proportion of blood the reaction occurs instantaneously.

59. **Putrefaction in the Intestines.**—In this second instalment of his report on his research in this line, Rodella asserts that his hundreds of experiments have conclusively demonstrated that putrefaction in the intestines is not so important a factor in morbidity as generally imagined. The putrefaction which is the work of ordinary saprophytic anaerobes must be regarded as a harmless process, never capable of generating pathologic products. This applies both to pure putrefaction, the work of anaerobes and the mixed process of decay. "Although putrefaction in the intestines is an entirely harmless process," he adds, "yet the gases and other irritating products generated may induce more or less serious disturbances. The harmless character of intestinal putrefaction, which was demonstrated anew in my experiments with intraperitoneal injection of guinea-pigs and rabbits, has also been rendered highly probable by the experience in recent military campaigns. Gunshot wounds of the abdomen with escape of intestine content into the abdominal cavity healed spontaneously without harm as a rule when they were left unmolested." The conception of auto-intoxication from bacterial putrefaction in the intestines is not sustained by his research. The products of putrefaction, however, facilitate infection, and hence they should be kept down as much as possible.

### Beiträge zur Klinik der Tuberkulose, Würzburg

*October 15, XXXII, No. 3, pp. 257-391*

61 *Is there a Mechanical Predisposition to Apical Disease? (Untersuchungen zur Hartschen Lehre von der mechanischen Disposition der Lungenspitzen zur tuberkulösen Phthise.) H. Ulrici.
62 *Tuberculin Treatment of Tuberculosis. (Zur Tuberkulin-Behandlung der Lungentuberkulose mit Kochs Neutuberkulin-Bazillenemulsion.) H. Klein.
63 *The Albumin Reaction in the Sputum. (Bedeutung der quantitativen Eiweissreaktion im Sputum tuberkuloser Individuen bezüglich der Diagnose und Prognose der Lungenerkrankung.) J.-H. Benzler.

61. **Is There a Mechanical Predisposition to Apical Disease?**—Ulrici devotes nearly fifty pages to arguments and data which disprove the assumption that the size and shape of the upper ribs and the greater or less ossification of the costal cartilages induce a predisposition to tuberculous apical processes. He gives eighteen views of the superior aperture in some of his seventy-four tuberculous patients under 30, and tabulates the details of examination of 141 persons in all.

62. **Tuberculin Treatment of Tuberculosis.**—Klein gives thirty pages of tabulated details in regard to 112 patients with pulmonary tuberculosis given a systematic course of tuberculin treatment. Slight, if any benefit was realized in the "open" cases, and in the others equally favorable results as those attained can be realized by diet and hygiene alone. The tuberculin did not prevent hemorrhages.

63. **The Albumin Reaction in the Sputum.**—Benzler examined the sputum in sixty-five cases repeatedly for albumin and found that the proportion declined as the patient improved and increased as the condition grew worse. The amount seemed to be independent of the presence and number of tubercle bacilli in the sputum, and it has nothing to do with occult blood. The albumin content sinks after an artificial pneumothorax has been induced and it can thus serve as an index for replenishing the gas.

### Jahrbuch für Kinderheilkunde, Berlin

*October, LXXX, No. 4, pp. 373-466*

64 Amount of Sugar in the Blood not an Index of the Rapidity of Absorption of Sugar. (Zuckerresorption und Blutzuckerspiegel.) G. Bergmark.
65 *Rupture of Tuberculous Tracheobronchial Glands into the Air Passages in Childhood. M. Paunz.
66 Physiology of the Tendon Reflexes in Infancy and Childhood. (Sehnenreflexe im Säuglings- und Kindesalter.) J. Vas.
67 Composition of the Blood and Constitution of the Child's Body in Relation to Nutrition and Weight. A. O. Karnitzky.

65. **Rupture of Tuberculous Glands Into Air Passages.**—Paunz reiterates that tuberculosis in children is most frequently localized in the tracheobronchial lymph-glands. It is almost always secondary, from a primary infection in the lungs. Sometimes the foci in the lungs are so small that they are overlooked, but they are there, showing that in the great majority of cases the infection takes place by inhalation. He discusses the cases of rupture of tuberculous glands into the trachea and bronchi that have been reported in literature, including four of his own previously published, and describes in detail four further cases of his. The symptoms of pressure on the air passages are cough and difficulty in breathing. After rupture takes place there are attacks of suffocation. There may also be unilateral dilatation of the veins of the neck and slight edema of the face from the pressure. In addition to the ordinary clinical examination for tuberculosis, Roentgen examination of the glands should be made. Another important aid in diagnosis is direct tracheobronchoscopy, but in children it is preferable to use this only as an introduction to treatment. The treatment in mild degrees of compression may be only the usual treatment of tuberculosis; sea air and heliotherapy are valuable adjuvants. Severer degrees of compression should be carefully watched on account of danger of rupture. After rupture has taken place tracheotomy should be performed at once, followed by tracheobronchoscopy from below. The caseous gland should be treated as a foreign body. The rupture at first is generally only a small one, so there is abundant time for operative treatment before suffocation is fatal or even dangerous. Among ten patients treated in this way seven have recovered and three have died. The discharge of the gland through perforation is often the last act in the spontaneous healing of tuberculosis, which is not at all unusual in children over 2 years of age, increasing with advancing age. Therefore the prognosis is not bad. Only two of these ten children showed signs of pulmonary tuberculosis later. If all cases of glandular tuberculosis were carefully followed the prognosis could be improved,

### Medizinische Klinik, Berlin

*October 18, X, No. 42, pp. 1581-1606*

68 Typhoid and Paratyphoid. N. Ortner. Concluded in No. 43.
69 Surgery in the Field. A. Köhler. Continued.
70 Psychoses in the Field. (Kriegspsychosen.) G. Buschan.
71 *Chronic Osteomyelitis. F. Rost.
72 Contraction of Certain Muscles Synchronous with the Heart Beat. (Herzsynchrone Muskelcontractionen.) E. Ruediger.
73 Suture of Tendons, Nerves, etc., in the Field. (Einige wichtige Ratschläge spezieller Art für die Wundbehandlung.) O. Nordmann.

71. **Chronic Osteomyelitis.**—In the course of this long thesis Rost states that he has succeeded in inducing a typical chronic osteomyelitis in rabbits by injecting cultures of staphylococci the virulence of which had been previously attenuated by heating. Experience with more than 200 clinical cases has demonstrated that the bactericidal properties of the serum, the opsonic index and the agglutination test have little practical value. The latter is such a sensitive reaction that any insignificant suppuration anywhere is liable to veer the reaction to positive. The antistaphylolysin reaction, on the other hand, is practical and reliable. This is based on the fact that pyogenic staphylococci produce a toxin which dissolves the red corpuscles of the rabbit. In the infected organism an antibody is generated which inhibits this dissolving action. This test differentiates tuberculous processes from ordinary osteomyelitis, as with tuberculosis there is little or none of the antitoxin generated, even when there is mixed infection. No other staphylococcus affection induces the production of so much antitoxin as osteomyelitis, and this explains why acute osteomyelitis so rarely recurs. It passes into a chronic stage with extensive production of granulation tissue. Osteomyelitis in adults is not so rare as generally supposed; it is often mistaken for a tuberculous process. In one such case the talus and in one the fifth metatarsal bone was the seat of the trouble; in a third the sternum. In one case everything seemed to indicate a sarcoma of the tibia, but an exploratory excision revealed only inflammatory tissue, and the second Roentgen picture a year later confirmed that all the trouble was osteomyelitis with a tendency to sclerosis in a man of 46, similar in every respect to the affection described by Garrè in the young. In one case the osteomyelitis was in the head of the femur. It developed abruptly with intense pains, but all signs of inflammation and tumor had disappeared by the end of the year although of course the dislocation still persists.

### Therapeutische Monatshefte, Berlin

*October, XXVIII, No. 10, pp. 641-672*

74 *Anesthetics. (Ueber schmerzstillende Mittel.) M. Kochmann.
75 *Serotherapy of Cholera in Greece. C. Savas.
76 *Vaccination Immunity to Small-Pox. (Eine Beobachtung zur Impffrage.) E. Apolant.
77 *Red-Light Treatment of Small-Pox. (Die Finsenbehandlung bei Pocken.) C. H. Würtzen.
78 Seasickness. (Zur Entstehung und Verhütung der Seekrankheit.) F. Koch.
79 *Course of Inunctions with Green Soap. (Systematische Einreibungen mit grüner Seife.) F. Külbs.

74. **Anesthetics.**—Kochmann writes from the Pharmacologic Institute of the University of Halle to give an oversight of the present status of prophylactic and curative analgesia. He warns that the high concentration of the drug used to inaugurate anesthesia must be reduced after a certain period or it becomes dangerous. This factor of the length of time the high concentration is given is liable to be disregarded when an apparatus is used. At the same time there are certain advantages in using an apparatus. His experimental work in this line has demonstrated, he says, that mixing chloroform and ether enhances the potency of each without increasing the toxicity. Damköhler (1913) claims that a mixture of 1 part chloroform to 6 or 7 parts ether enhances the potency fully 30 per cent. It is possible, also, that the injurious action of chloroform on the circulation is nullified by the ether. Kochmann says further that the addition of potassium sulphate to a solution of novocain or cocain enhances the potency by 75 per cent. His formula is 0.25 gm. novocain; 20 c.c. of a 2.3 per cent. solution of potassium sulphate and enough of a 0.9 per cent. solution of saline to make 100 c.c. To this he adds twelve drops of a 1 per thousand solution of epinephrin. The potassium sulphate has an opposite action with some of the other anesthetics. Gros insists that the free alkaloid base is what penetrates into the tissue from any local anesthetic, and hence the action can be enhanced by adding an alkali to the solution, preferably in the form of 0.25 gm. sodium bicarbonate added to 1 gm. novocain plus 0.5 gm. sodium chlorid, dissolved in 100 c.c. distilled water.

75. **Serotherapy of Cholera in Greece.**—Savas gives here minute details of the way in which cholera was stamped out in Greece last year. A previous account of it was published recently in The Journal, Aug. 22, 1914, p. 713.

76. **Vaccination Immunity to Small-Pox.**—Apolant relates that in a certain garrison with 120 men four had not been revaccinated since childhood. Two of these four developed small-pox and it was traced to an eating-house where there were two cases. All the men frequented the eating-house and

all had thus been exposed to contagion, but none contracted the disease except these two. The cases in the eating-house were in an infant that had not yet been vaccinated, and in the grandmother whose vaccination protection had evidently faded out. The child was saved from pitting in the face by compresses dipped in a weak solution of phenol.

77. **Phototherapy in Small-Pox.**—Würtzen insists that when small-pox patients are systematically and thoroughly sheltered against the chemical light rays—as in a Finsen red-light room or in a dark room—variola runs its entire course without suppuration, changing its character completely. He declares that wherever this has been done the finest results have been realized. He cites the literature on this subject of the red-light treatment of small-pox, including an article with this title in THE JOURNAL, July 17, 1909, p. 247.

79. **Therapeutic Inunctions with Green Soap.**—Külbs has applied green soap, with the same technic as for mercurial inunctions, in over 200 cases of various affections including nervous heart trouble, chronic bronchitis, emphysema, asthma, nervous dyspepsia and migraine—all affections in which revulsion is known to have a possible beneficial action on the local and general condition. There were no by-effects, no eczema or irritation of the skin while the benefit was surprising in some cases. It was most pronounced in the cardiac neuroses and migraine cases, but in the dyspepsia cases the appetite improved and the whole condition seemed materially benefited, as also in the respiratory affections. Asthma seemed less amenable; improvement was manifest only in three of ten cases. He gives a historical sketch of this method of treatment from Richter in 1846 to Hoffa's highly favorable report on 200 cases of tuberculous glands and Kausch's recent corroboratory report on its use in tuberculosis. He does not venture to explain the complex mechanism by which the favorable action is realized, but suggests that it may be analogous to that of air baths, sun baths and local hydrotherapeutic measures.

### Grèce Médicale, Athens

*October 15, XVI, Nos. 19 and 20, pp. 37-40*

80 *Out-Door Air in Typhoid. G. Psarafti.

80. **Typhoid Mild Among Refugees.**—Psarafti discusses the peculiar mildness and absence of complications in a small epidemic of typhoid at Samothrace during the last Balkan War. The cases were all in refugees living in tents or other shelters during a rainy season, amid privations of all kinds, the people ignorant of hygiene and depressed by fear and want. Everything was exactly the opposite of what is usually deemed indispensable in treatment of a case of typhoid; even milk was not to be obtained. But the tents were not far from the sea coast and he ascribes to the pure air and sea breeze the exceptionally mild course of the disease, and insists that this experience should warn of the necessity for pure air for typhoid patients in particular.

### Policlinico, Rome

*October 25, XXI, No. 43, pp. 1505-1536*

81 Improved Technic for Vaccine Therapy. (Un metodo di rapida valutazione del contenuto in germi dei vaccini bacterici—Considerazioni pratiche sulla vaccinazione alla Wright.) F. Valagussa.

*October Medical Section, No. 10, pp. 437-484*

82 Unilateral Spasm of Traumatic-Hysteric Origin. (Studio clinico sugli emispasmi di origine istero-traumatica.) P. Ciuffini.
83 Roentgenoscopic Study of the Sella Turcica in Relation to Pituitary Disease. (L'indagine radiologica della sella turcica in rapporto alle malattie dell'ipofisi.) L. Coleschi. Continued.

### Riforma Medica, Naples

*August 1, XXX, No. 31, pp. 841-868*

84 Morphin in Pediatric Practice and Operations. (La morfina nella terapia pediatrica con speciale riguardo alle sue applicazioni nella chirurgia infantile.) C. Oliva. Commenced in No. 30.

### Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

*July 25, LVIII—II, No. 4, pp. 241-308*

85 *Treatment of Dementia Praecox. N. J. Lemel.
86 Osteomalacia. W. M. van der Scheer.
87 Successful Removal of Tumor in Pituitary Gland. P. S. Klots.

*August 1, No. 5, pp. 309-380*

88 *Heliotherapy at the Seashore in Surgical Tuberculosis. (Zonbehandeling van chirurgische tuberculose aan zee.) M. P. van D. Andreae.
89 Improved Stethoscope. J. W. T. Lichtenblet.
90 Acute and Chronic Melancholia. (Depressieve Toestandsbeelden.) J. van der Torren.

*August 8, No. 6, pp. 381-428*

91 *Meltzer Insufflation in Internal Disease. (De Methode van Meltzer in de inwendige Kliniek.) A. A. H. van der Bergh and E. D. Wiersma.
92 Intravenous Injection of Concentrated Solutions of Neosalvarsan. J. van Assen.

85. **Thyroid Treatment of Dementia Praecox.**—Lemel remarks that when dementia praecox develops during puberty it seems self-evident that some disturbance in functioning of some organ or organs is responsible for it, and he is convinced that the thyroid gland can be incriminated in many cases and that the dementia may subside under thyroid treatment. This occurred in 11 of the 12 cases he here reports in detail. The improvement in 8 was most striking. Three of the patients were men from 17 to 24, the others girls of 19 to 21.

88. **Heliotherapy of Bone and Joint Tuberculosis at the Seashore.**—Andreae's experience with this at the Katwijk seaside sanitarium in Holland has been extremely favorable and free from deleterious by-effects.

91. **Intratracheal Insufflation.**—Van der Bergh and Wiersma know of very few instances in which the Meltzer and Auer method was applied in internal medicine, and they add another to the list. Their patient was a woman with a tumor in the cerebellum which evidently was injuring the respiration center as she gradually stopped breathing early one morning while in the hospital for consideration of operative treatment. As ordinary methods for artificial respiration were out of the question for permanent relief, and as at the end of an hour there seemed no hope of the woman's regaining spontaneously the power to breathe, intratracheal insufflation was applied, with prompt and striking benefit. It was kept up all day but toward evening the heart began to fail and the woman died at 7 p. m. This experience has demonstrated anew the advantages of intratracheal insufflation under certain conditions. No difficulty was experienced in this case in introducing the catheter into the larynx but if it should go astray in the esophagus the oxygen might injure the stomach lining. Others, including Meltzer, have warned of this danger.

### Russky Vrach, Petrograd

*June 13, XIII, No. 22, pp. 773-804*

93 Appendicitis in an Inguinal Hernia. V. R. Braizeff.
94 *The Clinical Value of the Pirquet Skin Tuberculin Reaction. V. I. Glinchikoff. Commenced in No. 21.
95 *Tubercle Bacilli in the Blood in Pulmonary Tuberculosis. V. N. Vinogradoff.
96 Action of Digestive Ferments on "Fish Poison." S. V. Konstansoff and E. O. Manoiloff.

*June 20, No. 23, pp. 805-836*

97 *Action of Poisons on the Vessels of the Liver. V. I. Berezin.
98 *Action of Poisons on the Vessels of Inflamed Tissues, and of Epinephrin in Peritonitis. D. A. Eskin.
99 *Diagnosis of Echinococcus Disease of the Liver. D. S. Serebriakoff.
100 *Action of Caisson-Work on the Blood. A. S. Solovtzova. Commenced in No. 13.

94. **Skin Tuberculin Reaction.**—Glinchikoff reports the results of extensive study of Pirquet's test in different diseases besides tuberculosis, pleurisy, pneumonia, typhoid, etc. Of the 40 tuberculous patients, 25 showed marked improvement of health, even recovery; and in these patients the skin reaction was intense. The Pirquet was very faint in the 10 progressive cases. In 5 stationary cases, the reaction was likewise stationary. The reaction is evidently in inverse proportion to the intensity and extent of the lesion in the lungs, and thus repeating the test at intervals may give an idea of the probable outcome in a given case. The same law proved to apply also in pleuritic patients, in typhoid, pneumonia, etc. In all acute infections the Pirquet was negative when the disease process was at its height and became pronounced with the recovery of the patient. Acute infections

give a stronger Pirquet than chronic disease, anemia, valvular heart lesions, disease of the liver, etc.

95. **Tubercle Bacilli in the Blood.**—Vinogradoff comes to the conclusion from examination of fifty tuberculous patients that the presence of virulent tubercle bacilli in the blood of patients with tuberculosis of the lungs or other organs is a phenomenon of rare occurrence and brief duration.

97. **Action of Poisons on the Vessels of the Liver.**—The frog or guinea-pig liver was isolated and flushed with Ringer-Locke's fluid passed through a pipet introduced into the abdominal vein (afferent) and posterior vena cava (efferent pipet). The portal vein, the hepatic artery and the common bile duct were ligated. Among the various chemicals tested, epinephrin, in a solution of 1 to 200,000 or 1,000,000 caused marked contraction of the hepatic vessels; beta-imidazolylethylamin (1 : 1,000,000) does not affect the vessels of the liver nor those of the periphery, but causes contraction of some vessels in guinea-pigs. Caffein (1 : 1,000) caused dilatation, as also pepton, while barium chlorid (1 : 1,000) did not act at all, or dilated the vessels in the frog, but in guinea-pigs it constricted them. Nicotin (1 : 1,000) induced contraction.

98. **Action of Poisons on the Vessels of Inflamed Tissues and of Epinephrin in Peritonitis.**—Eskin studied on the vessels of the normal or inflamed ears of rabbits the action of different substances including epinephrin, normal serum, serous effusion, caffein, cocain, and the toxins of cholera and of typhoid bacilli. Altogether forty-five experiments were made. He found that epinephrin acted on the vessels of an inflamed ear less than under normal conditions, frequently producing vascular dilatation. Caffein, normally dilating the vessels, causes a stronger vasodilatation in an inflamed ear. The reaction of epinephrin in artificially produced peritonitis is the same as in normal conditions, though it does not cause any marked constriction or any other action on the vessels of an inflamed mesentery or intestines. Serum (1 : 5,000) constricts normal vessels, but the action is less in case of inflammation. Cocain contracts the vessels of an inflamed ear less than those of a normal; weak caffein solutions (1 : 5,000 or 10,000) cause a stronger vasodilatation in an inflamed than in a normal ear. The toxins of different bacteria contract the vessels of both the inflamed and normal ear alike. Diluted exudates constrict the vessels of a normal ear, but do not influence an inflamed one.

99. **Diagnosis of Echinococcus Disease of the Liver.**—In two cases of alveolar echinococcus disease of the liver Serebriakoff did not find the usual clinical picture of this disease, namely, unusual hardness of the liver, regular enlargement and pain. To avoid blunders in diagnosis in such puzzling cases the blood should be examined for eosinophilia. It was pronounced in his two cases. Eosinophilia is due, in his opinion, to toxic influences produced by the echinococcus.

100. **Influence on the Blood of Working in Compressed Air.**—Solovtzova examined the blood of fifty-six caisson-workers. Their age was 20 to 40 years. Some were old, experienced caisson-workers, some were working in compressed air for the first time. The examination was usually six hours after the last meal. All of the men showed anemia in the form of decreased amount of hemoglobin and of the red corpuscles and frequently of the white. There was no parallelism between the low proportion of hemoglobin and of reds, as a considerable reduction in the hemoglobin percentage might be combined with a sudden increase in the number of erythrocytes. Microcytes would occasionally show; the polynuclear neutrophils showed a decrease, while the large lymphocytes and the eosinophils had increased. The reduction in the hemoglobin percentage and of the erythrocytes occurred with but an inconsiderable increase of the atmospheric pressure. In some of the men leukocytosis was evident. The blood returned to normal very slowly; even after an interval of two and a half weeks it was not always entirely normal. In those caisson-workers who had worked only two weeks, the blood became normal in a few days. As work in the caissons thus causes such serious blood changes, it is necessary to take all kinds of sanitary and hygienic precautions to guard the workingmen's health.

### Hospitalstidende, Copenhagen

*October 14, LVII, No. 41, pp. 1249-1272*

101 Cultivation of Spirochete of Syphilis. (Rendyrkning af Spirochæte pallida.) A. Kissmeyer.
102 The Medical Profession in Greenland. (Lægevæsenets Ordning i Grønland.) A. Bertelsen.

### Nordisches medizinisches Archiv, Stockholm

*XLVI, Surgical Section No. 3. Last indexed Jan. 31, p. 422*

103 *Operations to Close Gap in Skull. (Zur Deckung von Kranialdefekten.) O. Löfberg.
104 *Exclusion of the Bladder in Severe Tuberculosis of this Organ. (Exclusio vesicæ bei schwerer Blasentuberkulose.) E. Key.
105 Forking Urethra. (Fall von Bifurcatio urethrae.) T. Rietz.
106 Tumors of Greater Omentum. S. Johansson.
107 Fracture of the Wrist. (Zur Frage von den typischen Radiusfrakturen am Handgelenk und ihrer Behandlung.) P. Haglund and S. Hybbinette.
108 *Surgery of the Lungs. G. Ekehorn.

103. **To Close Gaps in the Skull.**—Löfberg reviews the different technics that have been applied for this purpose, including the use of a thin sheet cut from a cow's horn. This material was selected as being an epidermis substance which resists absorption unusually long although it in time is all absorbed. The regeneration of bone thus is able to keep pace with the absorption. Lindström and Lexer have had favorable experiences with horn, but Löfberg prefers an autoflap for the purpose. He reports excellent results in four cases of an extensive defect closed with a flap of periosteum and skin, taken from near by, or a strip from the internal lamina or with a sheet of bone and periosteum cut from the tibia. He mentions in conclusion Kleinschmidt's suggestion for a bone flap entirely covered with periosteum. This can be obtained by cutting with the bone flap enough extra periosteum to cover the other side of the bone.

104. **Severe Tuberculosis of the Bladder.**—Key says that the intensely painful subjective symptoms caused by the contraction of the bladder can be entirely arrested by diverting the course of the urine so that there will be nothing in the bladder to start it to contracting. The patient's life is not lengthened by the operation but he is spared torment by this exclusion of the bladder. The difference in the condition before and after was expressed by one patient as "the difference between hell and paradise." In the cases on record, the ureters were implanted in the bowel in 2 cases with the death of one patient. Permanent ureterostomy has been done in 3 cases with most gratifying results. Key contributes 2 cases to this group and extols the advantages of this technic. Nephrostomy was done in 6 cases, with one death. The drawback to nephrostomy is that it damages the kidney more or less. Ureterostomy is preferable if the ureters are still permeable.

108. **Surgery of the Lungs.**—Ekehorn's article is a discussion on the preferable method for regulating the atmospheric pressure during operations on the lungs; opinions are still divided as to the superior advantages of underpressure or overpressure.

### Ugeskrift for Læger, Copenhagen

*October 8, LXXVI, No. 41, pp. 1767-1800*

109 Connection between Meteorologic Conditions and Acute Febrile Diseases. (Undersøgelse af meteorologiske Kombinationers Forhold til visse akute, febrile, reumatiske, katarralske og infektiøse Sygdommes Genese.) H. Hansen.

*October 15, No. 42, pp. 1801-1836*

110 *Hematuria with Appendicitis. A. Nielsen.
111 Industrial Accident Insurance from Medical Standpoint. (Vor Ulykkesforsikringslovgivning og Lægerne.) V. L. Faber.

110. **Hematuria with Appendicitis.**—Nielsen has found records of 19 cases in which hematuria occurred apparently secondary to appendicitis, and in his own experience the microscope has shown blood corpuscles in the urine in a surprisingly large proportion of the cases. This occurred, namely, in 6 of 33 cases of chronic appendicitis and in 3 of 7 acute cases. The discovery of microscopic hematuria cannot be accepted, therefore, as an always reliable sign of a concrement in the kidney in dubious cases.

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# THE USE OF BOILED MILK IN INFANT-FEEDING*

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There are two distinct and entirely different reasons for boiling cow's milk during the first year of an infant's life: first, to destroy any harmful bacteria which the milk may contain, and by so doing to prevent disease; and second, to make the milk more digestible and to prevent or overcome any digestive disturbances, provided boiling has this effect. In this country the bacteriologic content of milk has attracted so much attention that we have not studied sufficiently the difference in the digestibility of boiled and unboiled milk, for we must study the problem entirely apart from the bacteriologic side.

All pediatrists are agreed that milk from healthy tuberculin-tested cows, and with a low bacterial content, is advisable for infant-feeding purposes. It is the general consensus of opinion in America that good milk need not be boiled, although some authorities are of the opinion that all milk fed to infants should be pasteurized. We are also agreed that when it is impossible to procure good milk, sickness can be avoided by pasteurization or boiling, and that one or the other is necessary when a good milk-supply is not available. The only question then, so far as the bacteriology of milk is concerned, is whether or not pasteurization or boiling of milk may be continued over a prolonged period without harmful results.

Perhaps an even more important phase of the question is whether the boiling of cow's milk so changes it that it is better borne by infants who have a low digestive capacity or who are suffering from actual digestive disturbances.

Our problem, then, divides itself into several subheads:

1. Does the prolonged use of boiled milk cause nutritional disorders, such as rickets, anemia, malnutrition, poor musculature or scurvy?
2. Does the change from unboiled to boiled milk cause digestive disturbances when fed to infants who have no difficulty in digesting unboiled milk?
3. Does the change from boiled milk to unboiled milk ever cause digestive disturbances?
4. Does boiled milk aid us in overcoming digestive disturbances such as intestinal indigestion with or without diarrhea or vomiting?
5. Does boiled milk cause constipation?
6. Is boiled milk as readily assimilated as unboiled milk, or is the nutritional value of milk lessened by boiling?

There are three ways of attacking these problems: first, laboratory experiments; second, animal experiments, and third, clinical observations on babies. There has been a great deal of work done and there is a vast amount of literature from the first and second points of view, but very little has been written on the clinical side of the question. Laboratory and animal experiments are very valuable, but the real test of any feeding problem is the actual results obtained in a series of babies who are carefully observed over a long period of time. Most of those who have written on this subject have concluded that actual clinical observations were necessary to determine the relative value and usefulness of boiled and unboiled milk in infant-feeding.

Some of the animal and test-tube experiments, although interesting and instructive, do not throw any real light on the practical problem of feeding. For instance, whether calves do as well on boiled cow's milk as they do on unboiled milk of their own species, and whether babies do as well on boiled human milk as unboiled milk of their own species cannot help us to decide the problems which I have enumerated above. At best the feeding of cow's milk to babies is an artificial procedure, and we must not allow such analogies to confuse us.

In approaching the subject from a clinical point of view, it is necessary that the babies on whom any feeding experiments are tried should have good care and the proper hygienic surroundings in order to be under the most favorable and natural circumstances. For this reason, it would be better not to take institution infants or those in the lower walks of life whose hygienic surroundings are poor. I have selected for my cases my own private patients and a few of the better class of dispensary patients whose intelligence can be relied on to carry out the directions ordered.

### THE QUESTION OF NUTRITIONAL DISTURBANCE

1. Does the prolonged use of boiled milk cause nutritional disorders, such as rickets, anemia, malnutrition, poor musculature or scurvy? At the very start we must realize that in this question we are hampered by tradition. We have all been taught and have heard it repeated so many timse that boiled milk was liable to cause constitutional disturbances, that it is difficult to put oneself into the position in which his mind is open. Where this theory originated I do not know, but surely there is no conclusive evidence found in the literature to prove that boiled milk does cause these disturbances. Morse, in a very thorough review

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* Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

of the literature on the subject, says that there is relatively little evidence on either side, although he quotes Finkelstein as saying that there was no evident difference in the results with raw and cooked milk in sixty well and fifty-three sick babies. Leopold did not find any evidence of rickets, anemia or malnutrition in fifty-four infants fed with Schloss milk over a long period.

I have among my records only a comparatively small series of patients who have been fed boiled milk over a long enough period of time to be of value. The reason for this is that I also have been hampered by the tradition that boiled milk was harmful to babies, and although most of my difficult feeding cases have at some time been given boiled milk for a period of a few days or weeks, I have stopped boiling the milk as soon as they were able to take care of it unboiled. These cases, therefore, are those in which there have been digestive disturbances as soon as the boiling of the milk was stopped for a few days, when the boiled milk was again promptly resumed on account of the digestion, or those that were doing so remarkably well on boiled-milk mixtures that I hesitated in making the change to unboiled milk.

INFANTS FED WITH BOILED MILK OVER A PROLONGED PERIOD

| Name | Age First under Observation, Months | Dates during which First Fed Boiled Milk | Length of Time, Months | Weight: When Boiled Milk Started | | Weight: When Boiled Milk Stopped | | Increased | | Previous Condition | Previous Feeding |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Lb. | Oz. | Lb. | Oz. | Lb. | Oz. | | |
| R. J. | 1½ | 11/17- 6/20 | 7 | 4 | 13 | 14 | .. | 9 | 3 | Emaciated, poor bony development | Breast and bottle |
| E. J. | 1½ | 11/17- 6/20 | 7 | 5 | 3 | 15 | 2 | 9 | 15 | Emaciated, poor bony development | Breast and bottle |
| L. Q. | 6 | 7/15- 1/23 | 6 | 15 | 6 | 18 | 12 | 3 | 6 | Good | Breast until 6 months |
| L. J. | 4 | 3/ 3- 9/ 8 | 6 | 7 | 9 | 15 | 2 | 7 | 9 | Emaciated | Eskay's Food and milk mixtures |
| A. R. | ¾ | 1/31- 5/24 | 4 | 4 | 5 | 10 | .. | 5 | 11 | Emaciated | Weak top milk mixtures |
| R. C. | 8 | 4/ 4- 8/20 | 4½ | 16 | 3 | 19 | 12 | 3 | 9 | Fair except petit mal attacks | Milk and gruel mixture. Malted milk |
| P. G. | 4 | 2/27- 8/ 7 | 5½ | 5 | 3 | 9 | 5 | 4 | 2 | Emaciated, vomiting | Various proprietary |
| P. P. | 1 | 9/10- 6/ 6 | 9 | 8 | 3 | 20 | 2 | 11 | 15 | Fair, lost 2 lb. since birth, 7 stools a day | Breast |
| P. S. | 1 | 8/25- 4/28 | 8 | 7 | 2 | 16 | 14 | 9 | 12 | Fairly well nourished, lost 2 lb. in weight | Breast |
| E. T. | ¾ | 1/19- 6/10 | 4½ | 6 | 4 | 11 | 5 | 5 | 1 | Good, but lost in weight | Top milk mixtures |
| G. R. | 4 | 5/15-11/ 9 | 5½ | 7 | 1 | 14 | 4 | 7 | 3 | Never gained in weight | Various proprietary |
| R. C. | 6 | 8/ 8- 2/10 | 6 | 10 | 8 | 21 | 2 | 10 | 10 | Emaciated | Condensed milk |
| H. U. | 2 | 4/17- 1/ 8 | 8½ | 7 | 4 | 14 | 10 | 7 | 6 | General condition poor, intestinal indigestion | Breast and boiled milk |
| S. R. | 1 | 9/10- 6/10 | 9 | 4 | 4 | 15 | 4 | 11 | .. | Premature, poorly developed and nourished | Breast |
| L. L. | 4 | 2/ 6- 6/13 | 4 | 9 | 14 | 16 | 10 | 6 | 2 | Fairly well nourished | Top milk mixtures |
| D. M. | 3 | 10/28- 4/25 | 6 | 6 | 6 | 17 | 7 | 11 | .. | Emaciated | Mellin's Food |
| J. Q. | 3 | 1/20- 8/27 | 7 | 10 | 3 | 18 | 4 | 8 | 1 | Excellent | Breast |

There are eighteen cases in this series, in all of which the patients received boiled milk for a period of from four to nine months, most of them for over six months during the most critical period of their feeding history. The mixtures used were simple milk dilutions, usually beginning with one-third milk and gradually increasing up to one-half milk, two-thirds milk or three-quarters milk. The carbohydrate used was either cane- or malt-sugar or malt-soup mixtures. In boiling the milk, the milk and water were first mixed together and brought rapidly to a boil, stirring constantly so that no scum formed on the top, and after it had come to the boiling point, it was allowed to boil actively for three minutes. It was then taken off the stove and put into the bottles for the day, and rapidly cooled.

Every one of these infants was carefully observed throughout this period, evidences of rickets and anemia being especially watched for. Most of them had a certain degree of malnutrition when they came under observation, and a few of them had poor bony development. Two of them, twins, had a marked craniotabes with non-union of the sutures when first seen at 6 weeks of age, which improved with noticeable rapidity so that at ten months the fontanel was normal in size, the sutures united and there was no remaining evidences of the craniotabes.

In the entire series not one developed rickets and all showed a marked improvement in nutrition and musculature, and with one exception they developed into normal, healthy infants. The condition of the skin, the hair, the color, the general alertness and sense of well-being were exceptionally good, all of which cannot be recorded in figures or be graphically shown as is so easily done with the weight chart. In other words, all but one of the series did remarkably well.

The case that did not do well was Case 13. This baby was difficult to feed throughout the entire period and had attacks of diarrhea when it was attempted to stop boiling the milk. He did not have any evidences of rickets, but gradually developed anemia with splenic enlargement. It seemed hardly fair to attribute this condition to the boiling of the milk because there were so many other considerations and the feeding itself was far from successful. This is the only case in the series, however, in which anemia developed, and also the only one in which there was malnutrition or poor musculature.

Scurvy did not develop in any. In all probability this was because orange juice was given daily throughout the period of boiling the milk. If this precaution is taken when boiled milk is given over any extended period of time, it would seem as though we might eliminate the question of scurvy. Since severe cases of scurvy can be overcome in a few days' time by administering orange juice, even though boiled milk is continued, it would be only logical to conclude that orange juice will prevent scurvy. Undoubtedly there is evidence in the literature that scurvy is produced by boiled milk feedings when orange juice is not given.

DIGESTIVE DISTURBANCES

2. Does the change from unboiled to boiled milk cause digestive disturbances when fed to infants who have no difficulty in digesting unboiled milk? It has been my custom in the last three years to use boiled milk when starting to feed infants on cow's milk for the first time, and although the majority had digestive disturbances or malnutrition, a certain number of cases were normal infants without digestive disturbances. Besides this, it is occasionally advisable to boil an infant's food for a journey or when out of town where the milk-supply cannot be relied on. In not a single instance have I ever seen this change from unboiled milk to boiled milk cause any gastric or intestinal indigestion. On the other hand, as stated below, boiled milk has repeatedly been used in infants who have digestive disturbances with the result that such disturbances were overcome. I do not know whether this would be true of top milks with high percentages of fat or not, because my experience in boiled milk is entirely limited to the use of simple dilutions of full milk or occasionally skimmed milk. Formerly in starting infants for the first time on cow's milk it was a frequent occurrence to see children with a normal digestion get up digestive disturbances, and on boiling the milk these disturbances would disappear. I have also, for experimental purposes, changed from unboiled to boiled milk in infants who were doing well on the unboiled milk, without causing digestive disturbances. This has, therefore, forced me to conclude that the change from unboiled milk to boiled milk does not cause indigestion, either vomiting or diarrhea or discomfort, which is contrary to the general consensus of opinion in this country.

3. Does the change from boiled milk to unboiled milk ever cause digestive disturbances? Further evidence that boiled milk is more digestible than unboiled milk is found in individual patients who have no digestive disturbances when given boiled-milk feedings; perhaps over a prolonged period, but who get up digestive disturbances when the boiling of the milk is stopped. As I have said, it has been my habit to boil the milk as a routine for intestinal indigestion and to continue boiling the milk for from two to four weeks after the digestive disturbances have been overcome, and then to change to the unboiled food. Within a few days or a week after this change is made, some infants will have stools which are normal in character except for a few large, tough, bean-like curds which appear in almost every stool, which seem to cause no discomfort or other symptoms. If the unboiled milk is continued, these curds may disappear and the infant goes on doing well without any further results of the change. Some infants will get up a rather severe intestinal indigestion and diarrhea either immediately after the change from boiled to unboiled milk or three or four days later. Many well infants with a normal digestive capacity stand the change very well; in fact, by far the majority of them do.

A few cases illustrating these points follow:

P. D., boy aged 1 month. Birth weight 6 pounds 2 ounces. Present weight 8 pounds 2 ounces. Temperature normal. Well nourished and developed. Previous food: Since birth fed under my directions on boiled-milk mixtures, gradually increased up to: milk, 16 ounces; water, 16 ounces; dextrimaltose, 1 ounce. Four ounces fed every three hours; seven feedings in twenty-four hours.

December 19, the boiling was stopped and for a period of five days tough, hard curds appeared in the stools, which became foul in odor, but most of the stool was fairly normal in appearance. December 24, the food was again boiled and the next day the curds disappeared from the stools and they became normal otherwise. The following day the food was again given unboiled and continued so for a period of nine days to January 4, during which time the curds were constantly seen in the stools, although they did not increase in number. January 4, the boiling of the milk put a stop to the curds and one dry crumbly stool results under the boiled milk feeding. The following day the unboiled milk was resumed, and the curds again appeared twenty-four hours after the milk was given unboiled. This continued for a period of one week, when they gradually disappeared from the stools without resorting to the boiling of the milk. Throughout this period (one month) there was a continuous gain in weight from 8 pounds 2 ounces up to 10 pounds 1 ounce, and the infant appeared perfectly well except for a little colic and crying part of the time when the curds were present in the stools.

From my observation it is very evident that infants who have been kept on boiled milks for a very long time are more easily affected when the boiling is stopped. Cases 1 and 2 (twins) of my boiled-milk series illustrate this point very nicely. They had been fed boiled milks since 6 weeks of age except on two different occasions, when it was given unboiled for a day or two at a time. On both of these occasions stopping the boiled milk caused digestive disturbances, which were soon overcome when the feedings were boiled again. For this reason the unboiled milk was not attempted again until they were 6 months of age, having been fed on boiled milk for nearly five months. They had been doing nicely in every way and were strong, healthy babies so that it did not seem necessary to continue the boiling of the milk any longer. April 5 the boiling was stopped, and on April 8, three days later, one of them developed a mild diarrhea. This one had always been a little more susceptible to any change in the food and a little more difficult to handle. April 10, five days after changing to the unboiled milk, the second one also developed diarrhea. For one week thereafter, both babies continued to receive the unboiled milk feedings. The stools gradually got worse until there were five or six mucous, curdy, watery stools a day with a great deal of restlessness and evident colic and a cessation of gain in weight, and since it was evident that they were doing very poorly and could not stand the unboiled milk, the boiled milk was resumed. It had proved to be a very severe intestinal indigestion and it was five days before the stools became normal again under the boiled-milk feeding.

In two other cases, giving only two feedings of unboiled milk a day, the rest being boiled, caused a diarrhea which stopped when the boiling of the entire feedings was resumed. After Case 9 had been fed boiled milk for one month, two feedings a day were given unboiled, September 22, the bowels then being constipated. Three or four days thereafter the stools showed a good deal of mucus and curds and the boiling was resumed with the usual result that the stools became normal again. A week later two feedings a day were again given unboiled, the rest being boiled, and again a diarrhea developed. The same experience was repeated in Case 14, after the boiled milk feedings had been used continuously for seven months.

It is impossible to prophesy whether the change from boiled to unboiled milk is going to cause digestive disturbances in an individual infant or not. Undoubtedly those infants who have been most difficult to feed and have had frequent attacks of intestinal indigestion are more liable to get up diarrhea when the boiling is stopped. The criticism naturally might be made that some or all of these diarrheas were due to an infection, but in the first place, the course and symptomatology is never that of an infectious diarrhea, as there is no rise of temperature or other evidences of toxemia. In the second place, certified milk was used, and every precaution taken in the proper icing of the milk, care of the bottles, nipples, etc., in many instances by a trained nurse who is thoroughly familiar with the dangers of milk infection.

A very interesting experience occurred some years ago during my summer service in the babies' wards of the New York Post-Graduate Hospital, when I was first working with boiled milk. There were thirty cases of various kinds of gastro-enteritis that were being bottle fed in the wards. I had been rather blindly giving boiled milk as a routine for two weeks with varying success, during which time not a single one of the infants had any tough, hard curds in the stools. A sweeping order was given to stop boiling the milk and in almost every instance the curds appeared. In three days another sweeping order was given to boil all the milks, and in from twenty-four to thirty-six hours the stools of all the babies were free of curds. This experience has since been repeated so frequently in so many of my cases that there cannot be any doubt that changing from boiled to unboiled milk is a cause of digestive disturbances.

4. Does boiled milk aid us in overcoming digestive disturbances, such as intestinal indigestion with or without diarrhea, or vomiting? There are so many different factors that enter into the treatment of the various digestive disturbances that one must be careful when he attributes his success in treating a single case or a series of cases, to any single one of these factors, such as the boiling of the milk. The intervals between the feedings, the quantity at a feeding, the caloric value of the food, the amount and kind of sugar used, the addition of starches or dextrinized starches, the dilution, the percentages of fat and protein, the kind of milk used, the proper preparation of the food, and carrying out of the directions, all play an important part in overcoming digestive disturbances. It may be assumed that intestinal or gastric indigestion cannot be influenced by any procedure when the details are not properly carried out.

It has been my custom to begin the treatment of almost all of my cases of simple intestinal indigestion (and this does not include cases of infectious gastro-enteritis), with a mixture of about one-third milk and two-thirds water boiled as described above. No starch or sugar or alkali is added to the mixture. The simplicity of this procedure and the almost universal application of it eliminates many complicating problems, and since it is almost always successful in overcoming the digestive disturbances in the proper class of cases, it is fairly easy to determine what part the boiling of the milk plays in the success of the treatment. In other words if, in a certain class of babies, the universal use of one-third milk and two-thirds water boiled will overcome the digestive disturbances, it is only necessary to use the same mixture, unboiled, in a series of the same class of cases to determine whether the boiling of the milk is, in part at least, responsible for the good results obtained. It is very evident from my experience that many cases of intestinal indigestion cannot be successfully treated with this mixture unboiled.

The following case, picked out at random, is typical of the series of cases which were treated with boiled-milk mixtures:

A. P., boy aged 4 months 2 weeks. Birth weight 9 pounds 8 ounces. Present weight 10 pounds 8 ounces. Temperature 98.6. Skin rough, very poorly nourished, milk malnutrition, good bony development. Previous food, 7 per cent. top milk, 13 ounces; water, 19 ounces; lactose, 7 teaspoonfuls; 4 ounces every three hours; seven feedings in twenty-four hours. Stools: Six or seven in twenty-four hours, green, watery, with mucus and curds. Appetite: Hungry. Sleep: Poor. Vomiting: None.

Treatment: Milk, 10 ounces boiled; water, 20 ounces boiled; no sugar; 4 ounces every three hours; seven feedings in twenty-four hours.

In three days there were two yellow, soft, homogeneous stools without mucus or curds, which remained normal thereafter, when the milk was increased and sugar added.

In fifty-two cases treated with this boiled-milk mixture the stools became normal in from two to five days. The ages varied from 3 weeks to 1 year. The stools varied from three to twenty per day, all of them showing evidences of indigestion and most of them containing mucus and curds. As many of these cases were treated in summer as in winter. The weights varied from 4 pounds 5 ounces to 19 pounds 4 ounces, the majority of them being small, emaciated, young infants. The previous feeding varied from simple barley gruel, which in some cases had been used for a prolonged period without overcoming the diarrhea, to the more complicated top milk and whey mixtures and the various proprietary foods. There were all grades of intestinal indigestion, but no acute infectious diarrheas are included in the group, as it would seem as though such cases have too many complicating elements to be of any value in deciding whether boiled milk is more easily digested than unboiled milk. However, it may be said in passing, if boiled milk is more easily digested than unboiled milk it would naturally follow that cases of acute infectious diarrhea which require milk feeding should receive the milk boiled.

The series of cases in which the unboiled milk was used in the same dilution is small, because of the poor results obtained, as it did not seem fair to the infants to allow them to continue with the unboiled milk since the stools did not improve under this treatment. A typical case treated with the unboiled milk is as follows:

L. L., girl aged 4 months. Weight, 9 pounds 14 ounces. Temperature, 98.6. Skin, smooth. Poorly nourished, good bony development. Previous food: Ten per cent. top milk, 5 ounces; water, 20 ounces; lime-water, 2 teaspoonfuls; milk-sugar, 4 teaspoonfuls. Stools: Three, loose, watery, with much mucus and curds. Vomiting: A great deal at every feeding. Appetite: Ravenous. Sleep: Poor.

Treatment: Milk, 10 ounces, unboiled; water, 20 ounces, unboiled; no sugar; 4 ounces every three hours; seven feedings in twenty-four hours.

At the end of a week the stools were not only not improved but were more numerous, and large, tough curds took the place of the soft, fatty ones. The food was then boiled and in three days more the stools became smooth, homogeneous, free of curds and mucus.

There were ten cases in this series which included the same kind of babies as in the boiled-milk series. In only two did the stools clear up without resorting to the boiled milk, and those were infants that had formerly been receiving extremely bad feeding, one a very high fat and the other very high sugar. In the other eight the diarrhea was allowed to go on for seven days in three cases, nine days in three cases, and twelve days in two cases, before the boiled-milk feedings were instituted. In all of these cases the stools became normal inside of five days after beginning the boiled milk.

These boiled-milk mixtures are particularly useful in the small, young, poorly nourished infants, who do not do well on an exclusive carbohydrate diet, such as is so frequently given for a few days before starting milk feedings. It is probably the experience of all of us that the older, well-nourished infants, say above 6 months of age, who have intestinal indigestion, are best treated with either an entire cessation of food for from twelve to twenty-four hours, or a starch diet such as the various gruels and perhaps bread pap. But the younger, smaller infants and those with malnutrition who are suffering from the lack of food do not do well with this treatment. It is not an uncommon experience to see infants of this class that have been fed barley-gruel for a period of a week or more with no improvement in the stools and with a marked loss in weight and strength.

It is not easy to determine the effect of boiled milk on the gastric digestion. Often severe vomiting was stopped or the severity much diminished when boiled-milk mixtures were given in simple dilutions. However, this generally occurred in infants who came under observation for the first time, and whose feeding had previously been more or less irrational. Besides that, the sugar is usually cut down in amount and many other proper changes are made. On the other hand, there are certain infants whose vomiting does not stop with the boiling of the milk.

I have certainly never seen vomiting caused by the change from unboiled to boiled milk, nor am I sure that I have seen it caused by the change from boiled to unboiled milk. Undoubtedly the large, tough curds that are seen in the stools of some infants fed with unboiled milk are originally formed in the stomach, and unboiled milk stays in the stomach longer than boiled milk, both of which facts Brennemann has shown.

### CONSTIPATION

5. Does boiled milk cause constipation? Constipation in the bottle-fed has so many different causes that it is difficult to prove what part the boiling of the milk plays in its etiology. In many of my patients who were constipated when the boiled milks were started, the constipation was overcome during the period that the boiled milk was fed. In others the constipation persisted while on boiled milk but was relieved when unboiled milk was given. Still others who were constipated on the boiled milk feeding were just as constipated after the feeding was changed to unboiled milk. None of the babies that received the malt-soup mixtures were constipated at any time while taking this food, which shows that even if constipation is caused by boiled milk and water mixtures, adding certain elements to the food will overcome the constipation in spite of the boiling. Infants who have diarrhea at the time that boiled milk is instituted often acquire a much welcomed constipation. The constipation is then usually overcome as sugar is added to the food, and the food is increased in quantity and strength.

Of the thirty-one babies that were constipated at some time while they were receiving boiled milk as a food, in nineteen the constipation was overcome before the food was changed to unboiled milk, in six the constipation was relieved by stopping the boiling and in six others the constipation persisted in spite of the change from boiled to unboiled milk.

It would seem that although constipation more frequently occurs in babies fed on boiled milk, in certain cases it may be overcome while the baby is fed on boiled milk, and stopping the boiling does not always stop the constipation.

### NUTRITIONAL VALUE

6. Is boiled milk as readily assimilated as unboiled milk, or is the nutritional value of milk lessened by boiling? This is a phase of the question that cannot be decided by clinical work. There is a certain loss of fat and protein when a scum is allowed to form on top, but if the milk is stirred constantly and brought to a boil rapidly this scum is not formed. It is my opinion that even when this detail is carried out, there is a small loss in the nutritional value of the milk. My only evidence, which is not at all conclusive, is based on the increase in infants' weight on stated amounts of boiled and unboiled milk.

### CONCLUSIONS

1. Clinical evidence of the comparative usefulness of boiled and unboiled milk in infant-feeding is of value and desirable.
2. The prolonged use of boiled milk if properly administered does not necessarily cause nutritional disorders such as rickets, anemia, malnutrition or poor musculature.
3. Scurvy may be avoided when boiled-milk feedings are given, by the administration of orange juice.
4. Boiled milk does not cause digestive disturbances in normal infants, and is, therefore, not more difficult to digest than unboiled milk.
5. Boiled milk aids us in overcoming digestive disturbances.
6. The change from boiled milk to unboiled milk may or may not cause digestive disturbances.
7. Boiled milk is probably more apt to cause constipation than unboiled milk, but in certain cases the constipation may be overcome while on boiled milk, although it is not always overcome when the boiling is stopped.
8. The evidence is not conclusive whether the value of the milk is lessened by boiling or not.

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## ABSTRACT OF DISCUSSION

Dr. Frank C. Neff, Kansas City: I think if one looks over his case-records of scurvy he will find it more or less difficult to determine just what sort of feeding has been responsible for this. I was interested in the report of Dr. Brennemann in which he stated that recovery ensued in a well-developed case of scurvy from the use of boiled milk; there was no other food and no other medication and it cleared up as quickly as scurvy often clears up under the administration of fruits. I have also seen cases of scurvy develop during the administration of raw milk. Such a case I saw last year. One is inclined to doubt that a moderate heating of milk has any relation to the production of scurvy.

Dr. L. T. Royster, Norfolk, Va.: I give percentage feedings as a routine, using cream, skimmed milk, water and carbohydrates. I also believe in using home modification when possible. We have in Norfolk good certified milk, also a laboratory. I have also a number of patients coming from the surrounding country for many miles, who cannot get either laboratory milk or certified milk, and in those cases I use home modification. The milk-supply being so doubtful, I never hesitate to boil the milk and have never seen any deleterious results therefrom. As a rule I use orange juice in those cases, but sometimes do not, and have never seen any bad symptoms, even in cases in which the orange juice was not used. I saw some of Dr. Leopold's cases last summer and followed them with much interest, and, having a number of institution patients myself, tried the treatment on them on my return. I got good results in the majority of cases. Some of them, especially when there was bad nutrition to start with, did not show as good results as a fairly normal child on normal feeding. Referring to the oft-discussed question of institution babies, one of the main reasons why institution babies do not do well is that they do not get as much individual care as a home baby. I believe whenever you go beyond four babies to a nurse in an institution you are on the ragged edge, and the further you get away from that, the poorer will the results be. In my own experience, when I have one nurse to four babies, I practically never have a case of institutionalism develop. I also believe that harm from boiled milk has been much overrated.

Dr. H. Lowenburg, Philadelphia: I have been using boiled milk for the last three years, usually in combination with flour, or old-fashioned flour-ball. My results have been according to Dr. Dennett's observations that it has an excellent effect on the stools, immediately causing disappearance of the curds, and change in color to golden yellow. My attention was called to an article in The Journal, Feb. 22, 1913, p. 575, by Brennemann, who did a lot of experimental work showing the effect of coagulants on the curd of boiled milk, and indicated clearly that these curds resembled human milk more than the unboiled milk. The possibility of scurvy has always interested me also. Every time I get a case of scurvy I cure the patient with raw milk, and I have never had a case of scurvy develop in my own work. That is probably due to the fact that all the children get beef broth and vegetable broth. I never use orange juice.

Dr. Charles Douglas, Detroit: As to boiled or pasteurized milk, from twelve to fifteen years ago I was a very strong advocate of raw milk. I talked it among my patients and used it, and I found, after doing so for a few years, that my results from boiled milk were much better. I would not think of going back to raw milk. Scurvy is so easily cured that I do not think it is worth talking about. If I see any suspicious symptoms I put in a little orange juice and get rid of scurvy in that way. With regard to the curds in raw milk, if the amount of raw milk is reduced 1 or 2 ounces in the day's feeding, the curds will disappear. The change to boiled or pasteurized milk impressed me that a child could not digest as much raw as boiled or pasteurized milk, as curds did not appear when the latter was given.

Dr. George Dow Scott, New York: I believe milk is changed through boiling. It seems to me that when the cow gives a natural food, boiling it is not only unnecessary but harmful. When we get a physiologic food from the cow it is only necessary for us to modify it in the raw state sufficiently so the child can take it. I see advantage over the old wine-whey, in Schloss' mixture. If raw milk is modified with the proper amount of fat protein and carbohydrate, the child will progress. The question of scurvy is always brought forward. Recently I read an article in New York quoting over 100 different authors on scurvy. I had to wake my audience up every little while because it was going to sleep listening to my numerous quotations. I think scurvy comes from a poor condition of the milk due to delay in handling and in getting it from the dairy to the consumer. That certainly has much to do with it. I do not agree with Dr. Douglas that scurvy can be cured in a few days. I think it is a long-drawn-out condition, and takes prolonged treatment to cure.

Dr. G. W. Graves, New York: I have seen no less than four severe cases of scurvy develop under boiled-milk feeding, in the hands of perfectly competent practitioners, and know that the condition has been most serious in the eyes of the families. The children have been quite ill and have suffered excruciating pain; and the anemia has been very marked. When boiled milk cannot be found to be the cause in such cases, pasteurized milk may be. ("Raw" milk is a term very frequently applied to pasteurized milk.) Boiled milk has a distinct value, but when cooked milk is used, it cannot be emphasized too strongly that orange juice, potato water, or some other antiscorbutic should be employed.

Dr. J. L. Morse, Boston: It does seem a great pity to speak of any rule or method of infant-feeding. There are just two reasons for boiling milk—one is that bacteria are in the milk, the other is that there is a disturbance of the casein digestion. We know that boiling the milk will kill bacteria and that it makes the digestion of casein easier. When we have casein indigestion, boiling is one way to correct it. I would rather feed babies continuously on raw milk than on boiled milk. As to whether boiled milk causes scurvy, the only statement we can make regarding the etiology of scurvy is that no one knows anything about it. We all have certain ideas. I have found that, during the last few years, the condition which has been more constantly present than any other in the feeding of the babies which I have seen with scurvy, is that the milk has been heated in some way. Yet I feed babies on both boiled and raw milk.

Dr. Roger H. Dennett, New York: I do not agree with Dr. Morse's last statement. I do not believe that, after an extensive use of boiled milk, anybody can possibly say the boiling of milk has no effect except in destroying bacteria and in overcoming protein indigestion. I have seen, for instance, an infant that has had a prolonged diarrhea treated perhaps for a week or two with barley gruel, which we all agree is a mistake. Inside of three days after feeding this child boiled-milk mixture the stools were back to normal for the first time. This infant was having three, four and up to seven loose, mucous stools a day, and inside of three days of the boiled-milk feeding, the stools became normal. This is not protein indigestion. As I have shown in my paper, the same results cannot be obtained with the same feedings when the milk is given raw. Babies will stand a higher protein better when the milk is boiled.

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# FRAGILITAS OSSIUM[*]

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In 1897 Dr. Griffith[1] was able to collect sixty-seven cases of "idiopathic osteopsathyrosis" in infancy and childhood. He included under this head all cases of multiple fractures occurring before birth, at birth and after birth, in which no cause for the bone fragility could be found. The German writers still use the term "osteogenesis imperfecta" for the cases found at birth, while the French call them *"dysplasie periostale;"* and both reserve "idiopathic osteopsathyrosis" for the condition of multiple fractures, of an unknown cause, occurring later in infancy and childhood. There can be little doubt now that these two conditions are identical, being but different stages of the same disease, as is shown by Axhausen,[2] Bamberg,[3] Frangenheim,[4] Hagenbach,[5] Hammond,[6] Hartmann,[7] Lipschütz,[8] Looser,[9] Matsuoka,[10] Porak and Durante,[11] M. B.

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[*] Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[*] Because of lack of space this article is abbreviated in The Journal by omission of tabular matter and accompanying references. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

[1] Griffith, J. P. Crozer: Am. Jour. Med. Sc., 1897, new series, cxiii, 426.

[2] Axhausen: Gedenkschrift für Rudolph von Leuthold, 1906, ii, 525; Deutsch. Ztschr. f. Chir., 1908, xcii, 42.

[3] Bamberg and Huldschinsky; Monatschr. f. Kinderh., 1911, x, 325.

[4] Frangenheim, Paul: Ergebn. d. Chir. u. Orthop., 1912, iv, 134.

[5] Hagenbach, E.: Osteogenesis imperfecta tarda, Chir. Habit. Schrift, Basel, 1911; Frankf. Ztschr. f. Path., 1910-11, vi, 398.

[6] Hammond, Roland: Am. Jour. Orthop. Surg.,. 1911-12, ix, 615.

[7] Hartmann: München. med. Wchnschr., 1911, lviii, 922; Deutsch. Ztschr. f. Chir., 1911, cxi, 383.

[8] Lipschütz, Alexander: Berl. klin. Wchnschr., 1908, xlv, 866; Wien. klin. Rundschau, 1911, xxv, 37, 55, 69, 87 and 105.

[9] Looser, E.: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1905-6, xv, 161.

[10] Matsuoki, M.: Deutsch. Ztschr. f. Chtir., 1909, xcviii, 407.

[11] Porak, C., and Durante, G.: Nouv. iconog. de la Salpétrière, 1905, xviii, 507.

Schmidt,[12] Schuchardt,[13] Sumita,[14] Ziegler[15] and others. The name originally given to this condition, together with "achondroplasia" ("chondrodystrophy foetalis"), was "congenital or fetal rickets." At that time "achondroplasia" had not yet been differentiated from "osteogenesis imperfecta." Birnbaum[16] noted but one case of "osteogenesis imperfecta" among 4,500 births in the Göttingen clinic, showing how very rare the condition is. Vrolik[17] first used the name "osteogenesis imperfecta;" Lobstein[18] called it "osteopsathyrosis"; Kundrat[19] called it "osteoporosis congenita"; Marchand[20] called it "osteomalacia congenita;" Klebs[21] and Hochsinger[22] used the term "fragilitas ossium." We prefer "fragilitas ossium" since it accentuates the chief clinical symptom of the disease.

We have used the term "fragilitas ossium" to include both types of cases, (1) the fetal type found either at birth or soon afterward, associated with imperfect bone formation and multiple fractures (imperfect osteogenesis or periosteal dysplasia), these cases commonly not surviving beyond the second year of life; and (2) the congenital type, found in infants and children, at birth or later, with fractures recurring often until puberty or even until adult life, associated with similar bone changes (idiopathic osteopsathyrosis), which children if well cared for, survive, but often in a badly crippled condition. Our extensive review of the literature has brought to light 126 cases since 1897. Like Dr. Griffith, we have rigorously excluded symptomatic cases (with three fractures or less) for which any cause could be discovered, such as secondary absorption due to rickets, osteomalacia, scurvy, or old age; osteomyelitis or tuberculosis of bones; syphilis, nervous affections, tumors, cysts, etc.

We report the following case from Dr. Griffith's service at the University Hospital. For permission to make this report we are indebted to Dr. Griffith; for the case-history, to Dr. M. B. Magoffin.

### CASE REPORT

*History.*—A girl, 3 years old, of Russian-Jewish parentage, was admitted March 25, 1913. She was breast-fed up to one year; since then she has been carefully fed. She never had much indigestion. There are three other children, living and well. There is no history of fracture on either side. Her only illness was whooping-cough during the winter of 1912-13. Her mother states that "she breaks her leg almost every time she tries to stand up." At 1½ years she broke her left femur; at 22 months, right femur; at 2 years, left femur; at 26 months, left femur; at 28 months, right femur; at 31 months, left femur, and on March 21, 1913, at 3 years, she fractured her left humerus. She had bumped into a door gently.

*Physical Examination.*—She is quite intelligent, noting everything about her, and very much spoiled. Though undersized, she is fairly well nourished; skin is warm and moist; musculature is good, except in legs. Head and face are broad, showing marked protruberance of the parietal bones, just above and in front of the ears. Both sclera are deep blue in color. Her ears, nose and mouth are apparently normal. There is no craniotabes. Her neck is short. The posterior cervical glands on the left side are markedly enlarged and hard. Thorax is pigeon-breasted, with prominent sternum. Expansion is good; both sides equal. The lungs are normal both to percussion and auscultation. The heart dulness extends from just outside the right edge of the sternum to the left midclavicular line and upward to the third rib. The apex beat, which is not visible, is palpable in the fifth interspace, in the midclavicular line. A soft blowing systolic murmur is audible; the second sound at the pulmonary area is accentuated. The rhythm is rather irregular and occasionally a beat is omitted. Her pulse is small, of moderate tension. The liver is palpable just below the costal margin. The spleen is not palpable. The inguinal glands are somewhat enlarged and hard, on both sides. There is considerable forward bowing of both femora, the evident result of the many fractures. Her left humerus is in plaster. Knee-jerks are normal on both sides. Examination of the blood showed erythrocytes 4,550,000, and leukocytes 10,200, with 48 per cent. polymorphonuclears, 1 per cent. mononuclears, 48 per cent. lymphocytes, and 3 per cent. eosinophils. Both von Pirquet and Wassermann reactions were negative.

Measurements, made with a pelvimeter (April 4, 1913), compared with those of a normal child then in the ward, were:

| | Our Case cm. | Normal Child cm. |
|---|---|---|
| Biparietal diameter | 14¾ | 14 |
| In front of ears (4 cm. below that above) | 15¼ | 12 |
| Occipitofrontal diameter | 16½ | 17½ |
| Nasal to base of occiput | 12 | 13½ |
| Between malars | 10½ | 11 |
| Root of nose to top of chin (mouth closed) | 9 | 9 |

| The measurements with a tape-line were: | Inches | Inches |
|---|---|---|
| Circumference of head at parietal eminence | 19⅞ | 20¼ |
| Occipital protruberance to base of nose | 12⅛ | 12⅝ |
| Neck | 8⅞ | 9½ |
| Circumference just above ears | 18⅞ | 19¼ |
| Half-circumference just above ears (posterior) | 9½ | 9⅝ |
| Half-circumference just above ears (anterior) | 9⅜ | 9⅝ |

Before a Roentgen-ray picture was taken she developed gonorrheal vulvovaginitis and was immediately sent to the Philadelphia General Hospital. Diligent search again led to her discovery six weeks ago, the family having moved three times. She is now even more spoiled than last year, and has broken each femur once in the past year, the left when 41 months old, the right at 45 months. She recovered rapidly each time and now manages to walk about a little, by holding on to chairs, etc. The family are constantly expecting her to break her legs again. There is more bowing of the femor and slight atrophy of the muscles of the legs. Her parents refuse to allow her to be removed to the hospital even for a Roentgen-ray photograph; in fact they refuse to allow her to be touched, she is so afraid of doctors. She looks quite anemic. To resume: Between the ages of 1½ and 4 years she has had nine fractures, breaking her left femur five times, right femur three times and left humerus once.

Dr. Griffith has also kindly given us notes of another case, which occurred in his private practice (1905-1906). This case appears in the table as No. 43. We have tabulated from the literature 124 cases, in addition to the 67 cases collected by Dr. Griffith in 1897, making 193 cases altogether. Besides, we learn that Dr. Walz showed a patient at the meeting of the Aerztlicher Verein, Stuttgart, on October 10, 1912,[23] but we have been unable to find any details of this case. Nor was it possible to procure a copy of the dissertation of Fridericia Gräfin von Geldern-Egmond (Zurich, 1897), in which another case is recorded.

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[12] Schmidt, M. B., in Aschoff, L.: Pathologische Anatomie, 1913, ii, 193.

[13] Schuchardt, K.: Deutsch. Chir., 1899, No. 28, p. 65.

[14] Sumita, Masao: Deutsch. Ztschr. f. Chir., 1910, cvii, 1.

[15] Ziegler, Ernst: Lehrbuch der speziellen pathologischen Anatomie, ii, 162.

[16] Birnbaum, Richard: Klinik der Missbildungen und kongenitalen Erkrankungen des Fötus, Berlin, 1909, p. 186.

[17] Vrolik: Tabulae ad illustrandam embryogenesin hominis et mammalium, Amsterdam, 1845.

[18] Lobstein: Traité d'anatomie pathologique, 1833, ii, 204.

[19] Kundrat, Hans, quoted by Paltauf: Der Zwergwuchs, Vienna, 1891.

[20] Marchand: Tagesblatt der 58 Sammlung deutscher Naturforscher und Aerzte, Strassburg, 1885, p. 422.

[21] Klebs: Arch. f. exper. Path. u. Pharmakol., 1874, ii; Handbuch der allgemeinen Pathologie, Jena, 1889, ii.

[22] Hochsinger, C.: Verhandl. d. Versamml. d. Gesellsch. f. Kinderh., deutsch. Naturf. u. Aerzte, 1908, lxxx, 337; Wien. klin. Wchnschr., 1908, xxi, 1614; Wien. med. Wchnschr., 1909, lix, 745.

[23] Walz: Deutsch. med. Wchnschr., 1913, xxxix, 45.

It will be noted that in eleven of these cases, how long the infant lived was not known at the time the case was reported. The age at death was recorded in twenty-four cases, the oldest having reached 22 months.

The sex of the 117 infants born alive was noted as male in 62 (53 per cent.); female in 37 (31 per cent.); not mentioned in 18. The first fracture occurred between birth and 3 years in 64 (73 per cent.); from 4 to 11 years in 11 (13.5 per cent.); while the last fracture occurred under 13 years in 34 (42 per cent.); between 13 and 21 years in 28 (34.5 per cent.); between 22 and 41 years in 5 (6 per cent.). In seven cases the time of the first fracture, in 15 the time of the last fracture was not mentioned. The latest fracture recorded occurred at the age of 41 years. The bones of the legs, especially the femora, were most frequently broken. In number the fractures varied from 4 to 106. The cause of the fractures was usually trivial, without force or injury.

In only eight cases (9.8 per cent.) was the condition known to have existed in either parent; while brothers or sisters suffered from fractures in 24 cases, (29.6 per cent.). Although Frangenheim[115] states that the majority of these infants are born dead or die soon after birth, our tables show 82 patients living (65 per cent.), 33 cases dead (26 per cent.), with the result unknown in 11 cases (9 per cent.). In 43 cases (52.5 per cent.) the condition was noted as decidedly crippled; in 32 (39 per cent.) the patients were not disabled, while in 7 cases they were too young to record any result. In six of these 32 patients the presence of dark blue sclera was noted. The association of dark blue sclera with brittle bones, as was observed in our case, has been commented on by Stephenson,[116] Harman,[117] Burrows,[118] Rolleston,[119] Conlon[120] and Cockayne[121].

### BONE CHANGES

The best description of the bone changes is given by Nichols.[122] "There is evident lack of formative power in the bone tissues. Instead of new bone being formed by normal osteoblasts on a cartilaginous matrix, the bone trabeculae are produced by calcification of the cartilage cells. Both layers of the periosteum are thickened, forming non-laminated or imperfectly laminated dense bone, with no Haversian canals, but large marrow spaces, in which there are few trabeculae. The marrow is abnormal, containing much connective tissue. The trabeculae are studded with flattened osteoblasts, but there is no evidence of osteoid tissue. The process of bone formation is checked and abnormal. Metaplasia of cartilage is much greater than normal, while bone deposition is much less. The formation of periosteal bone is abnormal and incomplete." Frangenheim[4 and 115] also notes the imperfect bone production, with increased absorption of the scanty bone trabeculae. The bone productibility of the periosteum is distinctly inhibited. That there is sparse bone proliferation with increased absorption of bone substance is mentioned by Scheib,[11] Helwig[17] and Harbitz.[51] Harbitz[51] notes that the bones contain much less calcium salts than normal. Maier[88] also noted the lack of calcium salts and the "concentric bone atrophy." He calls attention to the fact that while the long bones are bowed, there is no real shortening; they are much thinner and their structure is changed. Nathan[76] lays stress on the bowing of the long bones which are not truly shortened. M. B. Schmidt[12] believes that there is normal or somewhat delayed proliferation in the cartilage, with scanty bone production on the part of both marrow and periosteum; as a result, the bones are thin, porous and very fragile. Very few osteoblasts can be found in any part of the skeleton.

Ziegler[15] states that the marrow cavity enlarges and the bone becomes porous and fragile. Thus fractures result readily. Doering[107] and Rebbeling[66] believe that the productibility of the periosteum is increased and that dysplasia occurs through abnormal absorption on the periosteal surface of the bone. The marked atrophy in the thickness of the diaphyses which results, is commented on by Schuchardt,[13] Rebbeling,[66] O. Schmidt,[65] Looser[9] and Kaufmann.[123] Lange[91] believes the fragility to be due to the fact that while normal absorption goes on inside the compact substance, no periosteal layers are laid down outside, so that the cortical layer becomes thin, bends and finally fractures. Sumita[13] describes a functional inability of the periosteal osteoblasts, with normal enchondral preparatory processes. Michel[28] found such marked diminution in periosteal bone formation that the bones were merely shells of calcified bone spicules. Goldthwait, Painter and Osgood[124] note that the process of bone formation is everywhere checked and abnormal. Klotz[37] states that the faulty bone production is the result of imperfect metaplasia of the perichondrium into periosteum. He considers this due to lack of stimulus, or to some inhibiting force acting on the osteogenetic tissues. Hildebrandt[40] believes that some injurious substance circulating in the blood prevents the absorption of cartilage and the formation of bone substance.

The fractures, which occur in the diaphyses only (Maier[88]) depend on structural changes in the bone (von Recklinghausen[64]). Kardamatis[59] believes that these changes in the structural relations must explain the spontaniety of the fractures of the bone substance. Lindemann[44] considers the primary affection to be of the marrow, with secondary changes in the periosteum. He found small cell infiltrations most marked in the marrow cavity and blames these for the occurrence of the fractures. Frangenheim[4 and 115] also believes that the cause probably lies in the abnormal marrow, which is not able to produce normal functioning osteoblasts.

The only blood count which was unusual was reported by Maier,[88] giving an increase of eosinophil leukocytes up to 14 per cent. In our case the eosinophils were only 3 per cent.

The diagnosis is not difficult in cases of the imperfect osteogenesis type. There is a premature or full term fetus, either born dead or living less than two years, showing more or less imperfect cranial ossification (sometimes with a membranous cranium), apparently shortened, bowed extremities and multiple fractures, both old and recent. In cases of the idiopathic

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115. Frangenheim, Paul, in von Brun, P.: Neue Deutsche Chirurgie, 1913, x, 45.
116. Stephenson, Sydney: Ophthalmoscope, 1910, viii, 330.
117. Harman, N. Bishop: Ophthalmoscope, 1910, viii, 559.
118. Burrows, Harold: Brit. Med. Jour., 1911, ii, 16.
119. Rolleston, J. D.: Proc. Roy. Soc. Med. (Child. Sec.), 1911, iv, 96.
120. Conlon, F. A.: Boston Med. and Surg. Jour., 1913, clxix, 16.
121. Cockayne, E. A.: Ophthalmoscope, 1914, xii, 271.
122. Nichols, Edward H.: Keen's Surgery, ii, 51.
123. Kaufmann, Eduard: Lehrbuch der speziellen pathologischen Anatomie, 1911, ii, 663.
124. Goldthwait, J. E., Painter, C. F., and Osgood, R. B.: Diseases of the Bones and Joints, 1909, p. 505.

osteopsathyrosis type, the diagnosis is no more difficult, for multiple recurring fractures in infants and children, without explainable cause, could be due to nothing else.

The relationship between fragilitas ossium and achondroplasia is certainly close. According to Jansen[125] the short extremities in both conditions are due to compressibility of the scleroblastema by enhanced amnionic pressure and to vulnerability of the fast-growing cell groups. He believes that a small amnion must be formed in these cases. Cases of the imperfect osteogenesis type may resemble achondroplasia: in both instances the extremities appear shortened, the long bones bowed or curved, and the facial expression seems similar. But as Dieterle[38] notes, the primary changes in achondroplasia are in the cartilage, while in fragilitas ossium there is a functional disturbance of both periosteum and endosteum. Zurhelle[33] states that achondroplasia shows scanty growth of the cartilage cells and early cessation of enchondral ossification, while in fragilitas ossium there is functional inability of the periosteal osteoblasts, with resulting scanty bone production and normal or almost normal enchondral ossification. Hochsinger[126] explains that in achondroplasia the short limbs come from limitation of linear growth in the long bones; in fragilitas ossium from multiple fractures and bending of the shafts of the long bones as the result of a faulty process of ossification. Hartmann[7] calls attention to the value of the Roentgen ray in diagnosis, since it demonstrates the marked disappearance of bone substance in the lower extremities. Mourad[49] believes that the epiphyseal lines in the Roentgen-ray photographs make the diagnosis between fragilitas ossium and achondroplasia certain. This imperfect bone formation and the multiple fractures readily separate fragilitas ossium from achondroplasia.

Rickets and osteomalacia must also be differentiated from fragilitas ossium. Besides the bone changes, if fractures occur, they are few (less than three or four), and they occur with some injury. Rachitic changes have been noted during infancy in several of the cases of fragilitas ossium reported; but Roentgen ray and histological examinations later have excluded rickets. Hochsinger[22] reiterates the fact that fractures are rare in rachitis. Wieland[127] asserts the now general belief that there is no such condition as congenital rickets; while Escher,[128] in exhaustive investigations, was unable to find anything to make the diagnosis of congenital or fetal rachitis tenable. Reyher[129] considers it important not to let any case of rickets be included among the cases of fragilitas ossium.

Though cases of so-called "juvenile osteomalacia" have been reported by Axhausen,[2] Rees[37] and Anschütz,[93] careful observers have classified their cases as either fragilitas ossium or true rickets. Looser[9] called some of them cases of late rickets. But he is certain that no general disturbance of nutrition can cause fragilitas ossium. Scholz[89] thinks that it would look as though the cases of "juvenile osteomalacia" and fragilitas ossium were but different forms or stages of the same process. Schuchardt[13] defines osteomalacia as a lack of calcium in the finished bone, which is limited in its growth. The effects of softening are noted only in the diaphyses, which fact distinctly separates osteomalacia from rachitis. And the occurrence of few fractures, only rarely, and with serious injury, separates both rickets and osteomalacia from fragilitas ossium. Klose[90] says that "even if rickets or osteomalacia be considered the cause of fragilitas ossium, the question of the etiology of the high-grade fragility is not solved. Repeated fractures do not belong to either rickets or osteomalacia and we must see a special pathogenesis, etiology and anatomy in cases in which multiple fractures occur."

### PROGNOSIS

The prognosis is usually unfavorable. In spite of the best care fractures recur without much cause and over one-half of all patients remain badly crippled as a result. In 76.5 per cent. of our cases the last fracture occurred under 22 years of age, yet our records show fractures as late as 33, 38 and 41 years. While in 39 per cent. of our cases the result is given as fair, it should not be forgotten that reports of later conditions in these patients are not available; were they recorded, more badly crippled cases would undoubtedly be added to the list.

### TREATMENT

The treatment, outside of the local treatment for each fracture as it occurs, consists in attempting to prevent the recurrence of fractures. When infants, these children are carefully guarded on mattresses, and they are hardly permitted to move. Fresh air, careful hygiene and good food are of importance. Cod liver oil, phosphorus and calcium salts have all been given, but without much result. As the etiology remains undiscovered, no beneficial method of treatment has as yet been found. Undoubtedly the condition is congenital; it would seem probable, therefore, that some fault of metabolism in the pregnant woman is the cause of fragilitas ossium in her offspring.

## ABSTRACT OF DISCUSSION

Dr. E. A. Park, Baltimore: Will Dr. Ostheimer state why the name "osteogenesis imperfecta" would not be more appropriate than fragilitas ossium? Apparently the process is a specific one. There is a general activity of the osteoblasts throughout the bones, both at the junction of the cartilage and bone and in periosteal ossification. It seems to me osteogenesis imperfecta would be more proper. There is nothing in the term "fragilitas ossium" which implies a specific process. In the multiple fractures in rachitic bones, for instance, certainly a condition of fragilitas ossium obtains, but the picture in that condition is distinctly different from that which Dr. Ostheimer has described.

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**Pedagogy Among the Chronic Insane.**—E. F. Leonard, in the *Institution Quarterly* for September 30, reports an experience incident to his service on the staff of the Jacksonville (Ill.) State Hospital. An unusually obstinate patient was by degrees drawn out to take an interest in magazines and was one day found surrounded by a group of patients to whom he was reading and explaining an article. The reading circle grew and the hitherto morose patient's condition improved. He was persuaded to start a school among the other patients of his ward. The school was taken seriously by teacher and pupils (all patients); a library was instituted, a singing school and Sunday school started, and the ward, which had previously been somewhat violent and hard to interest even in a daily newspaper, gradually improved. The work was in progress for about four years, during all of which time the interest was sustained. The teacher patient was finally discharged from the hospital as recovered and is now earning a living for his family.

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125. Jansen, Murk: Achondroplasia; Its Nature and Cause, Leiden.
126. Hochsinger, C.: Centralbl. f. Kinderh., 1909, xiv, 43.
127. Wieland, Emil: Jahrb. f. Kinderh., 1908, lxvii, 675; ibid., 1909, lxx, 539.
128. Escher, C.: Jahrb. f. Kinderh., 1902, lvi, 613.
129. Reyher, P.: Ergebnisse der inneren Medizin und Kinderheilkunde, 1908, ii, 627.

# PREVENTIVE OTOLARYNGOLOGY*

BURT R. SHURLY, M.D.
DETROIT

We are suffering mentally, physically and financially from too many medical societies, too many new instruments and accessories and too many surgical operations with the name of the surgeon as the distinguishing pennant of the operation. It will soon be time to appoint a board of censors centrally located to which instruments and operations may be presented and which will approve those worthy of attention before the profession and public are subjected to so-called improvements.

The practitioner and specialist of this country is particularly distinguished for a keen uplifting interest in humanity, a broad sympathy and a devotion to the greater comfort and general welfare of the patient. It is still true, however, that the most noble and skilled exponent of our special art must pay homage and reverence to the greatest queen of all—Dame Nature; her ways of prevention, medication and cure must be ours.

The mind of the medical man in the last two decades has originated, elaborated, improvised and invented innumerable systems, methods and instruments to eliminate pathologic or other tissue from the nose, throat or ear, yet the pages of our literature on preventive methods of procedure in our specialty have been few indeed. The question of when not to operate may be uninteresting, but as a valuable consideration in the saving of life it is frequently as important in otolaryngology as in the surgery of the appendix.

It is unnecessary for us to follow the Mohammedan custom of daily chant, and open our office each day with a recital of the Hippocratic oath and ten laws of Dame Nature which must be obeyed, but it is fitting and proper that we should frequently ponder on the great and serious responsibilities of our calling. This applies especially to our overzealous radical colleagues who seem to consider surgery the only road to success. It takes a conscience, introspection, sympathy and a true sense of responsibility to realize that the limitations of one's individual surgical ability and training must be the guiding stars of decision and judgment. The value of any instrument, operation or method depends on proper selection and use.

Are we to ligate the carotid for tonsillar hemorrhage? Yes, if necessary; but if a brilliant and dexterous general surgeon is in an adjoining operating-room he should be called in as he can accomplish the work skilfully in half the time it would take a laryngologist. The old adage "An ounce of prevention is worth a pound of cure" applies to otolaryngology and may be resuscitated at this time with advantage. Prophylaxis is the text of the dentist as he merrily bores into the decayed tooth. We hear the pathologist assert that immunity and heredity explain the problem. Eugenics will reform the world, says the pediatrist. Sanitary science, hygiene and quarantine are the interesting themes of the internist.

The subject of preventive otolaryngology may be classified to include a system of observances that will offer the best protection or prevention to the individual or community of diseases of the nose, throat or ear.

Preventive medicine will not be appreciated by the laity or profession until a secretary of public health in the cabinet at Washington shall organize, develop and promote this subject with its special branches for the benefit of humanity.

The practical importance of the prevention of disease in the upper respiratory tract and the accessory channels of the ear grows on one as it is viewed from the biologic, sociologic, pathologic, or therapeutic point of view. Under the subclassification of protective otolaryngology it is possible to accomplish much of great practical value to the community at large.

Your Chairman of 1910, Dr. Jackson, has called attention to the necessity for compulsory labeling of poisons sold by grocers. There are many preparations of caustic alkali that have been accidentally taken by children, and many hundred cases of cicatricial esophagial stenosis must have occurred through laxity in making and enforcing laws regulating the sale of poisons. Our delegate should be instructed to investigate this matter and present another resolution on this subject to the House of Delegates if necessary.

The problem of noise and its deleterious effects on the auditory nerve, and the effect of dust on the upper air-tract can be modified by passage and enforcement of sane laws.

We should join heartily in the propaganda for medical and popular education and form a society of human animal welfare that will take precedence over that organized for the dog and the automobile. When the science of prevention fully arrives, every human machine will be examined semiannually and a careful record kept in card index form about every organ in the body including the nose, throat and ear.

The greatest sign of the times that operates for the prevention of disease is the gradual elimination of medical sects and the elevating of medical educational standards. The osteopathic, botano-eclectic or homeopathic otolaryngologist has been relegated to otolaryngologic Pompeii and is now metamorphosed into a broad, liberal-minded nose, throat and ear surgeon who can think as a pathologist, internist or therapeutist as the occasion requires.

It is a well-known fact that abuses to the metabolic functions, though expressed in the apparatus under our special observation, will affect others through the medium of the connecting branches of the sympathetic system. The neuroses, psychoses and other disturbances of the ductless glands and vasomotor system may be prevented only by the proper hereditary development of a stable vasomotor system with stable ductless glands. Proper environment, education, control of the nervous system and good immunity must be added factors.

The practical application of the laws of prevention concern us in a small measure at present as compared with the otolaryngologist of future decades. As infection is the all-important etiologic factor of acute and chronic pathologic change in the structures under consideration, the prevention of disease becomes a problem of great individual scientific interest in quarantine, sanitation, hygiene, immunity, heredity and sociology.

Can we prevent deafness, hypertrophic rhinitis, pathologic tonsils, adenoids or accessory sinus disease? How much are we interested in the study of insect carriers? Do we realize that the house-fly can carry active tuberculosis germs from the sputum and deposit active tuberculosis germs on our food? Are we keenly alert to the possible dangers to our community of the suppurating ear of the ex-scarlet fever patient, or from the throat or ear of the diphtheria carrier? Do we take cultures from acute infections?

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* Chairman's address, read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, June, 1914.

The prevention of disease of the accessory sinuses has become more difficult by the laws of evolution that made the postural change in man from a quadruped to a biped. Many unchangeable, etiologic factors of prenatal or postnatal structural origin make prevention difficult. Anthropology tells us that the modern Caucasian bears many marks of asymmetry or abnormal development that attend our higher civilization and departures from aboriginal conditions.

The medical inspection of schoolchildren has given the otolaryngologist a splendid field of statistical study and observation along the lines of prophylaxis. It would seem that the scientific fruit of this labor should be forthcoming in some future program.

What methods or theories have we evolved that will lessen the enormous number of pathologic tonsils and adenoids? We know that the nasopharynx and nasal passages, in infancy and childhood particularly, are the seat of constant histologic change. Under degenerative laws of disuse such as the olfactory sense, atypical structural integrity and lowered heredity and physical and moral standards, a direct tendency to pathologic change is encouraged. It is asserted by radicals, therefore, that as the adenoid is a menace and the gateway of infection, preventive measures demand in every case a thorough prophylactic operation in infancy. This ultraradicalism may be progressive and justifiable in the future, but watchful waiting in the absence of symptoms seems a more reasonable policy in the light of our present knowledge.

The faucial tonsil as an embryologic remnant deserves further research. Its function remains in the realm of speculation and theory and the immediate and remote effects of its infection are thoroughly and generally realized, yet the wanton destruction of any structure will bring a reaction. We must, therefore, temper our procedure with judgment and skill, and operate under the rules that we would apply to our own flesh and blood.

When devotion to medical research and education in our particular realm shall unravel the mysteries of infection and the artificial and biochemical production of immunity, when the internal secretions may be regulated at the will of the therapeutist, the otolaryngologist will assume his greater rôle in the broad field of endeavor of preventive medicine and therapeutics. Major nose, throat and ear surgery will remain exclusively for the man of surgical mind, training and ability.

As the millenium has not arrived we must work on in our field of special choice under the optimistic banner, "We will do the best we can."

32 Adams Avenue.

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**The Creative Mind.**—It is in the putting forth of the hypothesis that the true man of science shows the creative power which makes him and the poets brothers. His must be a sensitive soul, ready to vibrate to Nature's touches. Before the dull eye of the ordinary mind facts pass one after the other in long procession, but pass without effect, awakening nothing. In the eye of the man of genius, be he poet or man of science, the same facts light up an illumination, in the one of beauty, in the other of truth; each possesses a responsive imagination. Such had Bernard, and the responses which in his youth found expression in verses, in his maturer and trained mind took the form of scientific hypothesis.—Foster.

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# ACUTE INSULAR SCLEROSIS AND ITS CONCOMITANT VISUAL DISTURBANCES *

FOSTER KENNEDY, M.D., F.R.S. (EDIN.)
NEW YORK

Man does not live by bread alone, but also by catchwords: and, too often, faulty diagnoses come through the attempt to apply to many types of the same disease a hide-bound ritual, a uniform formulary, a triad or pentad of mechanical tests laid down in text-book after text-book as "classical" and thereby conclusive. Of no abnormal state can these strictures be more properly made than of the familiar and obscure entity introduced to the world by Charcot as *sclérose en plaque*.

The clinical picture of this condition with which the printed word has made us familiar is that of a chronic disease characterized by a spastic paraplegia, nystagmus, so-called scanning speech and intention tremor—which latter, by the way, is no tremor in any sense of the word but is rather a true motor ataxia of purely cerebellar origin. Such are the requirements demanded of the disease by undergraduates and the majority of practitioners; the dogmatic authorities often fail to point out the essential fact that these symptoms are in no way necessary for diagnosis, that they occur only in a certain number of cases and, usually, in these at but a very advanced stage, and that they are mainly dependent for their production on a disturbance of the ponto-cerebellar fibers—a more or less casual occurrence.

The diagnosis should depend on a consideration of the age of the patient, on the history of the disease, and on the grouping of the symptoms rather than on the presence or absence of individual abnormalities of function. These are probably the result of transient edematous phenomena occurring irregularly throughout the central nervous system.

The vagueness of many pathologic terms is studied and is necessitated by our ignorance of the precise processes on which depend the early symptomatology of this disease.

The sclerosed tissue is invariably in the immediate neighborhood of blood-vessels, and the first step in the morbid process is apparently a flooding of the nerve-cells and fibers with fluid exudate, the vessel wall having been weakened and rendered permeable by the agency of a toxin or virus as yet unknown. Only by the hypothesis that such an edema exists can we explain the rushing onset and the rapid remissions and recoveries of some of these cases. The occurrence of such processes can only be assumed, in that post-mortem examinations are possible in the majority of instances only after the disease has long become chronic.

The scattered islets of hypertrophic glia are of doubtful causation; and no exact proof is forthcoming as to whether they are the expression of a primarily parenchymatous disease or of an inflammatory process affecting in the main the interstitial tissue. The clinical course of the disease as exhibited by its remissions and intermissions, its transient amblyopias, transient paralyses and transient attacks of subjective sensory manifestations occurring in its incipiency, would point to an affection of the interstitial elements rather than to one of the parenchyma proper. A primary degeneration of the latter would be inexplicable in view of the frequent rapid cessation in progress and not rarely utter disappearance of symptoms of the greatest severity.

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The hypothesis of an interstitial inflammation set alight by a toxin emanating from the blood or lymph-stream and giving rise to local edema exerting mechanical pressure on the contiguous nerve-fibers, is required if we would properly interpret the phenomena of the disease and intelligently explain in particular those more acute types of which this paper particularly treats.

In two of my cases edemas especially affected the medulla, giving rise to a series of paralyses of cranial nerve nuclei, a picture rather resembling a basal meningitic condition. In two there was acute inflammation of the optic papillae; in the third were seen unequivocal signs of an antecedent retrobulbar neuritis, ocular phenomena sufficiently important to merit here some detailed discussion as to their significance.

The most frequent prodromal symptom of an incipient sclerotic change throughout the central nervous system is some transient disturbance of the function of vision. Broadly speaking, this may be of two kinds: first, a passing attack of diplopia due to a sudden edematous change usually in the neighborhood of the oculomotor nuclei; second, a mistiness or blurring of vision rarely bilateral and of a duration varying from a matter of seconds to, in infrequent instances, some thirty-six or forty-eight hours.

The optic nerve, being in direct continuity with the central nervous system, is vulnerable in proportion to the delicacy of its physiologic functions and anatomic structure, by the morbid states affecting both the central and peripheral nervous systems. Not only is it vulnerable in proportion to its delicacy, but the same statement applies to its constituent parts, for we find that failure of visual acuity first takes place in those parts of the fields subserved by the most highly specialized groups of fibers in the trunk—the macular bundles—with the result that visual failure, in almost all cases of retrobulbar neuritis, takes the form of a central or paracentral scotoma. When such a gap occurs in the field of vision, it is present at first only as a localized disturbance of the color sense, which however quickly becomes a loss of perception of form as well.

It is during the formation of such scotomata that the patient complains that objects are seen as through a mist or film, and that, when reading, the letters often seem at times to run together—symptoms doubtless explained by unequal functionating power in contiguous optic nerve-fibers resulting in unequal and confused perceptions. That insular sclerosis has a toxic origin is a hypothesis already put forward in this paper, and the likelihood of its truth is enhanced when we correlate the reactions of the optic nerve to poisons like wood alcohol and excessive tobacco with those found in the same structures in the course of disseminated sclerosis. It has been said above that fleeting attacks of intensely acute diplopia also constitute one of the earliest manifestations of the onset of this disease. Dependent on such diplopias frequently occur acute vertiginous seizures. Diplopia is the result of a sudden loss of parallelism in the axes of the eyeballs, the result of rapid weakening of one or more ocular muscles, with consequent overaction of the intact antagonists.

This loss of axial parallelism in extreme degree constitutes paralytic squint, a rare occurrence in multiple sclerosis in any but the most fulminating cases. In short, it may be said that the acuteness of the diplopia and the resultant vertigo is inversely as the degree of ocular axial divergence and ocular muscle weakness. This apparent paradox becomes clear when we remember the varying degrees of sensitiveness present in the different areas of the retina—the maculae being alone capable of receiving and transmitting acutely defined images, the paramacular areas being slightly less efficient, while images received by the retinal periphery are highly nebulous and vague.

When normal binocular parallelism obtains, images of an object directly looked at fall on the two maculae; when one eye is rotated inward—for example through an external rectus palsy — the image in that eye is received on the retinal margin and, being hazy, is readily ignored by the patient's consciousness, but if the palsy be so slight as to be objectively invisible, the image in the affected eye will fall just beside the macula, and will be so clearly cut as to defy suppression by the higher centers. A diplopia of distressing intensity accompanied by acute vertigo and physical disorientation will then have resulted in the earliest stages of multiple sclerosis and without apparently adequate cause.

Case 1.—W. H., man, aged 23, was admitted to the National Hospital for the Paralyzed and the Epileptic under the care of Dr. Gordon Holmes on April 21, 1909. His father had lately become insane; no other neuropathic family history. Married three years; one healthy child. Venereal disease and risk denied. Teetotaler. Ten cigarettes a day. Previous history good.

*Present Illness.*—In the third week of February, 1909, patient began to have difficulty in walking; he became rapidly worse, acutely dizzy—used to fall about as though drunk, direction inconstant. In his frequent attacks of vertigo he experienced no definite direction of the rotation of external objects; "everything was hazy and blurred." There were frequent acute attacks of diplopia. A week after onset had occasional retention of urine and some precipitant micturition. At the end of March dimness of vision began in the left eye and was steadily progressive. Five days before admission to hospital dimness of vision in the right eye began and progressed so rapidly that on April 21 the vision in that eye was less than that in the eye first involved. In this same period patient began to have weakness in his right arm and his right leg, of extremely rapid progression, so that when first seen he had but little movement in either limb. For some days before admission the toes of both feet felt dead "as though frost-bitten." Transient, acute diplopia accompanied by equally acute vertigo from hour to hour; some nausea and vomiting.

*Examination.*—The patient looked thin and weak. He was unable with the right eye to see a moving light. With the left eye the candle could be seen in the periphery of the field, but not at all in its center. The optic disks: right: edges blurred, except for a small portion, equal to about a fifth of the circumference of the disk at the outer margin. The veins and arteries showed little change in caliber. Edematous appearance spreading to the retina from the disk at upper inner and especially lower margins. Vessels at inner part slightly buried. The fundus most easily seen with a plus 2 D., the disk with a plus 5 D. lens. Left: disk rather pale, vessels normal, retina seen with plus 2 D.; no swelling. Coarse nystagmus present on looking to the right and to the left. Difficulty in looking to the left. Weakness of left sixth nerve. Pupils equal, brisk to light, but immediately redilate despite maintained illumination. Weakness of the left side of the face of nuclear type. Remaining cranial nerves: normal. Motor system: upper extremity: All movements present on the right side, but of enormously reduced power. On the left side, power fair, but reduced. No ataxia or tremor. No spasticity, but on the contrary much loss of muscular tone on both sides. Lower extremity: Right limb flaccid and very weak. Capable of being only slightly moved at each joint. No wasting. All movements of fair power on the left side. No gross sensory loss present. Reflexes: Upper extremity: Difficult to elicit, those on the left less than those on the right. Abdominal reflexes not lost, but reduced, the right being less than the left. Right knee-jerk sluggish; depressed but more brisk on the left side. Slight ill-sustained left ankle clonus. Plantars both of extensor type. No sphincter trouble. Patient unable to stand on account of both weakness and vertigo.

*Course.*—April 25: Much vomiting and nausea.

April 29: Power in the right arm very greatly improved. Incontinence of urine to-day.

May 1: Power is very considerable in the right arm, but the right grasp is almost nil. Likewise the power around the great joints in the right leg has returned, but patient is incapable of movement of the right toes. No paresthesias. Vision improving. Perception of light in the right eye; with the left he can now count fingers in the peripheral field.

May 2: General health as yesterday, but the right arm and leg are much worse. Movement at the right elbow abolished. Abduction at the right shoulder just possible of initiation. Movement in the right lower extremity this morning is abolished.

May 6: Some vomiting. Pupils as before. Left external rectus movement restored. Nystagmus present in all directions. Left facial weakness as before. Palate moves well on phonation, but the palatal reflex cannot be obtained, although the palate itself is not anesthetic. Upper extremity: movements at right shoulder and elbow have returned. Some spasticity now present in the right arm. Left arm movement good. All movements are present in the right leg, though they are much weakened. Left leg: good. Reflexes: Right upper extremity not obtained. Left upper extremity brisk. Abdominal reflexes absent on both sides. Knee-jerks: right, reduced. Left, fair. Ankle-jerks: right, absent; left, fair. Double extensor response. No anesthesia or analgesia. Joint and muscle-pain sense normal. No loss of appreciation of temperature.

May 10: Occasional nausea and weak vomiting, much hiccough. Diaphragm acts quite well. Pulse 61 per minute. Left sixth and seventh nerves to-day are both markedly involved.

The slowing of the pulse, the appearance of nausea and vomiting and the attacks of hiccoughing point to an involvement of the bulb which at this date gave us reason to suspect impending trouble. Paralysis of the sixth and seventh nerves, which had from the beginning been present, but fluctuant, became now almost complete: evidence of pontine involvement which was unmistakable.

May 14: Hiccoughing almost continuous. Patient has become emotionally unstable. Expresses all feelings by immoderate laughter. Speech has become scanning, ataxic and explosive.

May 18: General condition much worse. Right leg felt heavy on awakening this morning. Right arm as before. Articulation worse. Pulse 55. Nystagmus in all directions. Conjugate upward movement of the eyeball much limited as is also conjugate movement to the left.

According to the pathologic processes assumed at the beginning of this paper, the edema which for some weeks had been appearing locally at scattered points in the brain stem was now involving the region of the corpora quadragemina, with the result that the ocular conjugate movements were being seriously interfered with.

Vision: Counts fingers at 3 feet with the left eye. With the right, can distinguish a lamp if held in the peripheral field. Complete peripheral paralysis of the left side of the face. Palatal reflex abolished. Palatal sensation good. Right upper extremity almost completely paralyzed; spastic. Left upper extremity normal. Right lower extremity very weak; not spastic; tone poor. No deep reflexes obtained on the right side. Right abdominal reflex obtained; left absent. Plantar reflexes as before.

Sensation: Cotton touches everywhere felt. Pin-prick is felt as touch over the surface of the left foot and on the posterior and inner surface of the left leg. Temperature sense normal. Deep muscle-pain sense acute.

Sense of Position: No mistakes on the left side. Complete loss in the right fingers and in the right wrist. If the patient closes his eyes he is unable to point to his right hand with his left. He is unable to say where his right hand may be. Complete astereognosis in both hands.

May 20: Vomiting. Nasal quality of speech increased. Urgency and precipitancy of micturition.

May 25: The taking of the visual fields this morning by means of Bardsley's scotometer caused distress and vomiting. Conjugate movements of the eyes either to the right or left side are to-day absent. Downward movements fair and upward conjugate movements have improved and are accompanied by jelly-like nystagmus. Much difficulty in swallowing this morning. Right upper extremity: All movements at elbow, wrist, and finger-joints can be performed, though weakly. Right lower extremity weak. The muscles of the right arm and leg are flabby and toneless, but spasticity is felt when passive movements are carried out at the joints.

Sensation: Complete loss of sense of position in the right upper extremity and in the left foot and ankle. Deep muscle pain sense diminished in the left leg.

Reflexes: Upper extremity: reflexes present on the right. Abdominal reflexes absent. Knee-jerks and ankle-jerks exaggerated on both sides. Double ankle-clonus and double extensor plantar response.

May 24: Last night patient was incontinent of urine. Since then has dribbled continuously. He says he feels the water passing, but has no control over it. No rectal trouble.

May 30: Numbness and tingling felt in the left arm and hand. Flexion and extension very weak at the left wrist. Finger movements present, but feeble. All movement abolished at the left shoulder-joint. Marked weakness of all movements of the left leg. It is to be noticed that on the day preceding the involvement of the limbs of the left side, the left arm and leg were in good motor condition.

June 1: Condition much worse. Complete paralysis of all movements of the left arm and hand. At the right elbow slight power of flexion and extension still remains. The legs are completely paralyzed. The arm and the leg on the right side are spastic; those on the left flaccid.

Sensation: Complete loss of sense of position in the left arm and almost complete loss in the left leg. No loss to pin-prick. Complete loss to cotton touch in the left arm.

Reflexes: Right arm: reflexes present; left arm, absent. All abdominal reflexes present. Knee-jerks depressed, especially on the left side. Ill-sustained ankle-clonus on both sides. Double extensor response.

Complete paralysis of both the bladder and rectal sphincters.

There is no power of conjugate movement of the eyeballs either to the right or the left side. Upward movement almost nil. Downward movement also reduced in range. Nystagmus in direction of movement. Palate immobile. Voice almost unintelligible.

Electrical reactions: The muscles of the face, the anterior abdominal wall, and all four limbs tested with faradism and galvanism. All react overbriskly (a current incapable of producing contractions of my interosseal hand muscles caused wide-spread contractions in those of the patient and also in muscles considerably removed from the point of application). A strong faradic current barely felt anywhere except on the temples.

June 3: All movements to-day can be feebly performed by the hands, wrists, and elbows of both sides. Slight abduction possible at both shoulders. Retention of urine.

June 6: Power improving in all four limbs. Incontinent bladder and rectum. Pupils to-day are equal and have brisk reactions which are no longer of retrobulbic type. Conjugate movement of the eyeballs has reappeared and is rapidly improving in all directions. It is accompanied by gross nystagmoid jerking. All movements are present in both the upper and lower limbs; those on the left side are stronger than those on the right. Gross loss of sense of position in all four limbs. No other sensory change.

June 11: Rapidly improving.

July 3: Pupils normal. Conjugate movement of eyeballs almost complete. Convergence impossible. Palatal reflex normal. Markedly emotional. All movements are present in all four limbs which are, however, both spastic and ataxic. Sense of position absent in upper, and impaired in lower extremities. Reflexes as before.

August 25: Improving daily. Diplopia is now present in distant vision, consequent on marked return of visual acuity. Speech scanning, syllabic, and explosive. Emotional. Ataxia in all four limbs but more marked on the left than on the right side. To-day attempted to stand. Astereognosis in both hands. Sense of position absent in the right wrist and fingers; also in fingers of the left hand. Reflexes as before. No rectal incontinence now. Is incontinent of urine about once a week.

September 28: Improving daily. Walks the length of the ward without help. Very slightly ataxic. Sphincters normal. Beyond changes in the optic disk there is now no trace of any previous involvement of the cranial nerves.

I have purposely omitted detailed mention of the behavior of the optic nerves and the consequent fluctuations in visual acuity. In such a cloud of symptoms as was shown by this patient it would be difficult closely to follow the various changes found in the optic disks; for this reason they will now be described separately.

On admission, as has been said before, patient was unable with the right eye to see a moving light. With the left eye the candle could be seen in the periphery of the field. Optic disks: Right: doubtful blurring of the inner edge. Vessels normal. Left: a rather dead-looking pallor in the outer temporal quadrants.

May 3: Right: veins considerably distended. All edges are blurred with the exception of that on the outer side. Color normal. The pit is naturally somewhat small—there is some whitish tissue in it which is possibly developmental. Hypermetropia plus 2 D. Disk seen with plus 3 D. Left optic disk as before.

It is to be remembered here that five weeks previous to this examination there was almost complete loss of vision in the left eye, a condition now rapidly developing in the right eye as well.

It is to be presumed that an ophthalmoscopic examination of the left disk carried out at the end of February would have revealed a venous distention and a blurring of the disk edges similar to the phenomena seen in the right eye in May. The condition seen in the left disk was a result of a previous inflammatory state which later occurred in the right optic nerve as well. Two types of congestive phenomena may occur in the optic nerve—the papilloedema consequent on increased intracranial pressure, and that known as retrobulbar neuritis.

The first is a purely mechanical condition, in which cerebrospinal fluid is forced from the main reservoir of the ventricles and the intradural space down the vaginal sheaths to appear at the point of lowest resistance — the nerve-head, whence it is drained into the sclera at a rate which varies with the type of formation of the eyeball—more rapidly and more effectively in myopic than in hypermetropic eyes. The second condition, however, has to do, not with the water-jacket of the optic nerve, but with the fibers themselves. As indicated by its name, the morbid process takes place posterior to the globe, is a true inflammation, and its occurrence is accompanied from the beginning by rapid loss of function in the affected fibers which lie in the bony walls of the optic canal. This loss in visual acuity is produced at first by the deterioration in the macular bundle which has as its consequence a central scotoma. Owing to the rigidity of the environment of the nerves, a degree of pressure will be produced which will quickly interfere with function; and, for the same reason, the degree of fluid transudation in the nerve-head will be less than is found in the mechanical abnormality first mentioned. In the latter, loss of visual function occurs but late in the disease and takes the form of a gradually increasing concentric contraction in the fields due to an organization of the edema into connective tissue. It follows, therefore, that as, in the case of retrobulbar neuritis, fiber constriction is produced by fluid exudate, and, in pressure papillo-edema, by solid connective tissue, the chances of recovery from blindness due to the former are much superior to those from blindness due to the latter.

This power of recovery, after the total destruction of vision, was admirably shown in the case under consideration, and it may here be said that permanent loss of sight practically never occurs as a result of insular sclerosis, however acute may be the initial seizure.

May 7: All the edges of the right disk were blurred except a small portion at the outer margin equal to a fifth of the total circumference of the disk. The veins and arteries showed little change in caliber. Swelling has increased by plus 2 D. An edematous appearance is seen spreading to the retina from the disk at the upper, inner, and especially the lower margins. Inner vessels slightly buried. Left optic disk: pale and unswollen.

Three days later: Right: whiter in temporal quadrants, outer edge fairly clear, vessels very small. Left disk as before.

May 17: Right: Swelling reduced by 2 diopters. Color pale. Left as before. Patient can count fingers at a distance of 3 feet with the left eye, but with the right can only distinguish an electric lamp if it be held in the periphery of the field.

May 28: Right: edges visible, blurring only in the upper and inner margins. Swelling almost gone. Color pale. Arteries very small.

June 7: Right: disk clear-cut with the exception of a woolly patch on the inferior temporal edge.

July 23: Both disks pale. Can count fingers on both sides.

August 25: Visual acuity: Right 6/30, left 6/20.

September 28: Right 6/12, left 6/12.

Case 2.—My second case is that of a Russian Jewess, aged 26, whom I saw in consultation with Dr. Frederick Peterson and Dr. Held, in the latter part of February, 1912. She had been married five years and had two healthy children. No history of lues. The Wassermann test in the blood-serum was twice found to be negative.

*Present Illness.*—Previous to May, 1911, her health had always been perfect. In that month, after a steam bath, she noticed that her legs were weak; they both felt numb. These symptoms appeared rapidly—within half an hour they assumed definiteness—and progressed in severity for two days, during which time she was also dizzy and complained of much blurring of vision in both eyes, with occasional diplopia. This entire attack lasted two weeks, by the end of which all trace of ailment had quite disappeared, so that she was thought by many to have gone through a hysterical seizure. Her recovery was such as to allow her to take up with much vigor the management of her shop, on which for four months she expended much physical and mental work. Again she had a sudden attack of blurred vision, which ended in complete loss of sight for two or three days' time. No sooner had partial vision been restored than she noticed in the glass one morning that the right side of her face was flattened and immobile and that she could no longer wink with the right eye. In other words, she had developed a complete right facial palsy of peripheral type. On the day of this observation she again had diplopia, the cause for which was seen on, the same evening in a marked weakness of her right external rectus muscle. This situation was not maintained for long; her diplopia was replaced by another fleeting attack of blindness, during which she began to complain of numbness in the fingers of the left hand, which was in turn quickly followed by weakness and unsteadiness in both the extremities of the left side. This left-sided hemiplegia did not improve; it became more severe. Much diplopia and vertigo and frequent paresthesias in the fingers and toes of both sides were present, choking attacks made their appearance in January, 1912; in these respiration became slow and sighing, and the pulse dropped to between 45 and 50 a minute.

*Examination.*—The ocular fundi showed well-marked pallor in the temporal quadrants of both papillae—clear proof of the retrobulbar origin of the attacks of blindness. The physiologic pits were not filled in, nor was there any evidence of disturbance of retinal pigment. The pupils reacted briskly to light and on convergence but had poor muscular tonus. The right external rectus and the right side of the face were almost completely paralyzed. The left fifth nerve was affected, as shown by a deviation of the lower jaw to the left side on opening the mouth, and by a poor contraction of the left masseter as compared with its fellow on the right side. The soft palate was immobile; its reflex was absent but its sensitiveness was retained. The voice was very weak and was nasal in quality. There were regurgitations of fluid through the nose. Almost complete spastic paralysis of the left arm and leg. The right foot was dropped, owing to a flaccid palsy of the anterior tibial muscles. Patient was completely incontinent of both urine and feces. No sensory change could be made out, but this was perhaps owing to the impossibility of obtaining the patient's cooperation.

*Course.*—She succumbed to respiratory failure—a typical medullary death. Permission for necropsy was not obtained.

In this case the early symptoms pointed unmistakably to the pons as the main seat of the trouble; the possibility was considered of its nature being neoplastic rather than edematous and sclerotic, but that alternative was negatived by the ocular symptoms and especially by the ophthalmoscopic findings. The symptomatology was parallel with that in the first case and the issue would most probably have been similar had not the acuteness of the condition discounted the woman's resistance. To these two cases may be added a short account of a case that I saw in the service of Sir William Gowers.

Case 3.—A man, aged 22, Aug. 16, 1909, had diplopia, vertigo and dimness of vision in both eyes, which was progressive, so that on August 24 he could distinguish form only in the periphery of both visual fields. The pupils had marked retrobulbar reactions. Optic disks showed a low-grade swelling on both sides.

August 27: Pupillary reactions poorer and some limitation of conjugate ocular movement upward.

September 1: The light reflex, from being almost imperceptible, is now fair. Ocular movements almost normal again. Vision worse; patient now only able to perceive peripherally placed lights.

September 9: Patient can again recognize physician's hand.

September 24: Patient is able to count fingers at 3 feet distance with each eye; central scotomas maintained.

October 4: Numbness in the left leg; left-sided ankleclonus and left extensor plantar response. Optic disks, pale in outer quadrants. No swelling.

October 6: Retention of urine. Numbness in right hand.

October 11: Rapid onset of spasticity in both lower extremities.

October 13: Complete bladder and rectal incontinence. Vision: Right, 1/36; left, 1/60.

October 14: Numbness in both hands.

November: Weakness in right arm. Central scotoma in each eye. Complete paraplegia with sphincter palsy.

Repeated examinations of the cerebrospinal fluid failed to show any abnormality. This with a negative history served to exclude cerebrospinal lues.

In all these cases there were marked fluctuations in the severity of the symptoms; in none could the clinical picture be said to correspond with the textbook descriptions of the disease; but the symptom grouping and the variability of progress in each case left no room for doubt as to the correctness of the diagnoses.

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## ABSTRACT OF DISCUSSION

Dr. George A. Moleen, Denver: It is to be noted that the cases reported by Dr. Kennedy were drawn from the country in which multiple sclerosis is most frequent. Our German friends would have us believe that many of these cases are really cases of syringomyelia and are not seen in this country so frequently. We generally hold that with such degenerative processes as multiple sclerosis characterizes we find retrobulbar atrophy more frequently. I am glad to hear suggested an explanation of the papilledema, even a primary hyperemia or a primary sero-edema, however localized. The majority of cases of multiple sclerosis which one sees here shows limited fundus changes, and yet I do not believe that they are searched for with the care which their importance demands. I do not believe I have ever seen a case of edema in multiple sclerosis. Dr. Prentiss and I, in the National Hospital, discussed the question whether it was the rule to find edematous changes in the papilla in association with diseases of a purely degenerative character with a generally negative inclination. Dr. Kennedy's findings are interesting if based only on clinical evidence. As I understand it, there was no necropsy in these cases. It would be very interesting to know, as a departure from the idols which we hold with regard to degenerative diseases, whether or not there was, in association with those symptoms, a possible neoplasm, or at least something which we believe to be at the basis of most conditions of papilledema, that is, increase of intracranial pressure.

Dr. Peter Bassoe, Chicago: Will Dr. Kennedy state the frequency with which optic neuritis occurs in the early stages of disseminated sclerosis? I am inclined to think that there is a stage of optic neuritis in many of these cases before the familiar pallor of the disks sets in. I recall a case of a young woman with no physical signs of organic disease who suddenly became blind in one eye. There was a distinct hyperemia of the disk, but an able ophthalmologist stated that it was not necessarily beyond physiologic limits. The patient was treated for hysteric blindness and recovered her sight, but a year or so later she developed the ordinary signs of disseminated sclerosis. In another case which I examined only post mortem I found typical lesions of disseminated sclerosis including marked changes in the optic chiasm and optic nerves. There was a history that an ophthalmologist had found a choked disk at a very early stage.

Dr. William W. Graves, St. Louis: Has Dr. Kennedy in his recent study of the literature found many cases of multiple sclerosis in which the optic nerves were involved to the extent of complete atrophy?

Dr. Foster Kennedy, New York: Dr. Moleen suggests that these cases might possibly be neoplastic. This possibility, as indicated in the paper, was considered at the time. In Case 1 the patient went through a series of events which came out extraordinarily quickly, each phenomenon appearing in a way that is not usual in neoplasms. Further, his recovery from all those acute symptoms was almost complete. From being in a state practically dead, he recovered to a very considerable degree of efficiency. The fact that he lived and that his symptoms disappeared, would seem to do away with the possibility of neoplasm. The patient in Case 2 died. The only direct evidence we had that this was not neoplasm of the pons was the fact that the woman had very marked pallor in each disk; a retrobulbar condition which could not be explained by a pontine tumor. In Case 3 the man's symptoms began as a retrobulbar neuritis with scotomas, progressed to bilateral paresthesia in the hands and ended with a well-marked middorsal lesion in the spine. Dr. Bassoe asked concerning the frequency of optic neuritis in sclerosis. At some stage of the process, retrobulbar neurtis has been present in most cases to some degree; but practically every case of advanced disseminated sclerosis shows a varying degree of pallor of the disks. That can only be brought about by degeneration of the macular bundle, and that degeneration is produced by an area of edema in the course of the optic nerve. This is true optic neuritis, and while Uhtoff says that 50 per cent. of the cases of disseminated sclerosis show optic neuritis, I wonder if he does not mean that in half of the cases of disseminated sclerosis is found temporal papillary pallor. Answering Dr. Graves' question as to the production of permanent blindness in disseminated sclerosis, owing to lack of time I was silent on that question. I state in the paper, however, that the first patient's visual progress, his complete blindness and the recovery of his sight afterward to a very considerable degree, is only a quantitative variation of the progress that I am accustomed to look for in severe cases of this disease. I think one may lay it down as a fact that permanent bilateral blindness does not occur as a result of disseminated sclerosis.

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# DIFFERENTIAL DIAGNOSIS OF NEPHROLITHIASIS AND RENAL TUBERCULOSIS BY ROENTGENOGRAPHY*

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The differential diagnosis of renal tuberculosis and lithiasis is, at present, in the great majority of cases easily accomplished by the trained urologist. The positive evidence obtained from a good roentgenogram establishes at once the diagnosis of calculus, and if in a cachectic individual with suspicious lung-symptoms a protracted and distressing pyuria exists, the diagnosis of renal tuberculosis can be ventured, though tubercle bacilli may not be traceable in the bladder-urine. Thus a correct recognition of both pathologic conditions is, in many instances, feasible by the general practitioner who has taken the pains to familiarize himself with the routine technic of modern urologic diagnostic methods.

Roentgenography is at present justly recognized as the most important means of diagnosing renal calculus, and a satisfactory kidney-plate demonstrating one or more characteristic calculus shadows is now, especially since the more general use of the compression diaphragm, feasible even at the hands of the country practitioner. The risk, besides that, of overlooking or not recognizing concrement shadows can be considerably reduced by the repeated roentgenographic examination of patients with suspicious symptoms of the upper urinary tract.

It is, therefore not surprising that indications for operative procedures in alleged renal lithiasis are, in many quarters, based solely on positive plate-findings. That this must often lead to disappointment and failure is apparent from the fact that, according to a recent review on the value of roentgenography for the diagnosis of urologic lesions, from Immelmann's laboratory[1] thirty-two possibilities of erroneous plate interpretation exist, by which the roentgenographic stone diagnosis is rendered unsafe at the hands of the uncritical and inexperienced observer.

## PREVIOUS LITERATURE

While thus the diagnostic importance of roentgenography seems to be over-estimated as regards nephrolithiasis, its value for the recognition of renal tuberculosis, in the absence of clinical or laboratory evidence, is not yet sufficiently appreciated. The literature contains but scant data on the Roentgen diagnosis of tuberculous kidney conditions. Casper[2] and Forsell[3] were able to recognize on the plate tuberculous parenchymatous changes (cavities); a mottled appearance of the kidney shadow is according to Hoffmann[4] and Holland,[5] characteristic of tuberculosis, and irregularities in the density and contours of the kidney shadow are considered by Cole[6] as well as by Proust and Infroid[7] as significant of inflammatory tuberculous foci. An abnormally large kidney shadow may, according to Arthur Hoffmann[8] be characteristic of tuberculosis. More important, because of definitely practical value, is the Roentgen diagnosis of calcified tuberculous foci within the renal shadow. These calcifications, the smallest of which may cast perceptible shadows on the plate, are, according to Burchard,[9] generally located in the lateral portions of the kidney and have only rarely been found in the region of the pelvis or calices. By their location on the plate as well as by their indefinite contours they can, as pointed out by the same author in his exhaustive review on this subject, readily be differentiated from calculus-shadows. Von Lichtenberg and Dietlen[10] consider pyelography of definite value in the local diagnosis of renal tuberculosis as permitting of an exact anatomic orientation on the character and extension of the destructive process of renal parenchyma. An important contribution to the Roentgen diagnosis of renal tuberculosis was lately presented by Söderlund,[11] who reports three cases with characteristic plate-findings, from which alone he was able to make a correct local diagnosis which was afterward verified at the operation.

## TUBERCULOUS PUTTY-KIDNEY

A critical review of the literature concerning the plate diagnosis of renal tuberculosis forces on us the conclusion that its real and practical value lies in its differential diagnostic aspect with regard to nephrolithiasis. The importance of a correct differential diagnosis is the more obvious since, not infrequently, the other clinical methods of examination either cannot be applied or fail to yield diagnostic evidence. In these cases plate-findings may be of the utmost diagnostic importance as the only means of disclosing the seat, extension and character of the lesion. As regards the roentgenographic differentiation of tuberculous calcifications from lithiasis, the partial or total so-called putty-kidney (*Kittniere* of the Germans) presents such definite and characteristic plate-features, that on its basis alone a correct diagnosis may be feasible. Through the kindness of Dr. H. M. Sherman of San Francisco, to whom I herewith wish to express my thanks, I am able to present a beautiful roentgenographic specimen of a total putty-kidney, which is the more instructive from a differential-diagnostic standpoint, since it combines the classical features of roentgenographic tuberculosis and lithiasis (Fig. 1).

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Rubaschow, S.: Ztschr. f. urolog. Chir., 1913, p. 465.
2. Casper: Wien. med. Wchnschr., 1911, No. 37.
3. Forsell: Fortschr. a. d. Geb. d. Roentgenstrahl, xiii, 51.
4. Hoffmann: Zentralbl. f. Roentgenstrahl., 1911, Nos. 1 and 2.
5. Holland: Arch. Roentgen Ray, January, 1911.
6. Cole: New York Med. Jour., lxxxvii, 774.
7. Proust and Infroid: Paris Société anatomique, 1909.
8. Hoffmann, Arthur: Zentralbl. f. Chir., xxxvii, No. 51.
9. Burchard: Fortschr. a. d. Geb. d. Roentgenstrahl., xx, 281.
10. Von Lichtenberg and Dietlen: Mitt. a. d. Grenzgeb. d. Med. u. Chir., xxiii, No. 11.
11. Söderlund: Fol. Urolog., vii, 75.

The illustration represents the roentgenogram of the right kidney and ureter of a man of 38, who in 1907 came under Dr. Sherman's observation at St. Luke's Hospital, San Francisco, with a history of pyuria and frequent and painful micturition of twenty years' duration. A roentgenogram of the right kidney region demonstrated a huge shadow of unusually intense density and of the size and shape of an enlarged kidney shadow, and a less dense well-defined characteristic calculus shadow impacted in the ureter about 4 cm. below the upper shadow. The right kidney and upper part of the ureter was removed. The wound healed properly and the patient's symptoms gradually abated so that at his discharge from the hospital four months later, he was passing urine but seven or eight times in twenty-four hours. The removed kidney showed marked caseation. The ureteral calculus was 2 cm. long.

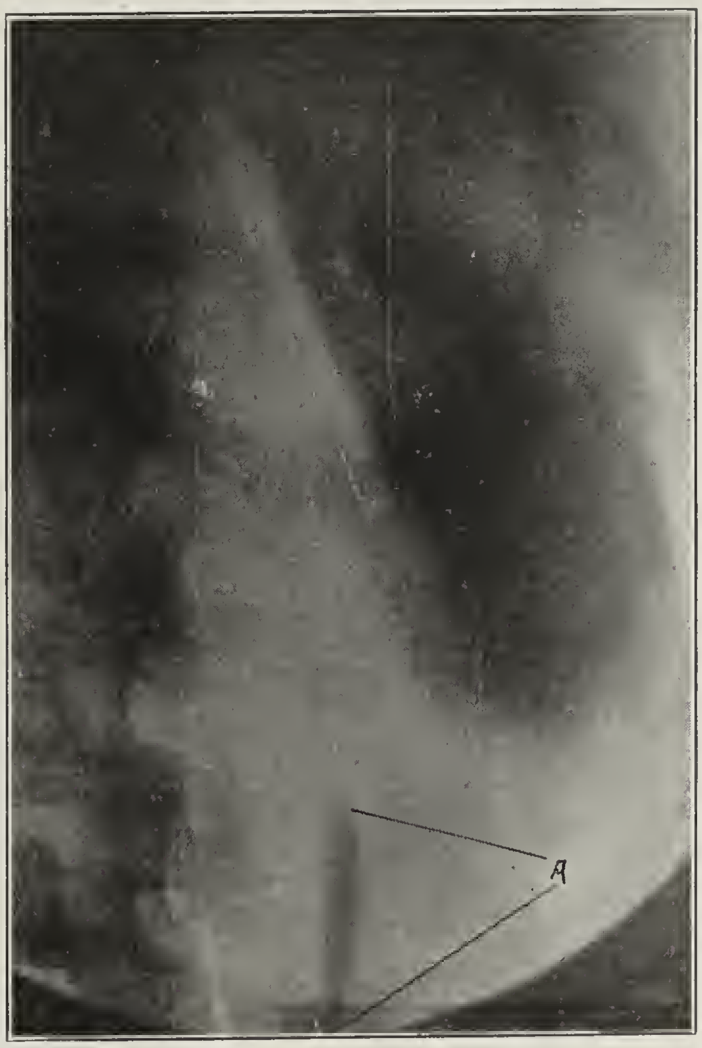

Fig. 1.—Tuberculous putty-kidney. Calculus in ureter at *A*.

I can find the record of only a few similar observations in the literature. The first case of a roentgenographically recognized partial putty-kidney was reported by Forsell and Josefsson[12] in 1908. Two years later Hürter[13] published the first plate of a total putty-kidney, in which the diagnosis of marked tuberculous calcifications of the right kidney and ureter was afterward verified at the post-mortem examination, when the parenchyma of the right kidney was found to be replaced by large cavities filled with cheesy material. Quite recently two cases of total putty-kidney in which the operative indications were based solely on roentgenographic findings afterward proved to be correct at the operation, were reported by Söderlund.[11]

The plate represented by Figure 1 permits of a correct diagnosis through the marked difference in density between the two shadows. The lower oblong, equally dense, and well-defined shadow is, obviously, the photograph of a calculus. The upper denser and, on account of its ragged edges, somewhat irregular shadow, shows an unequal intensity of density suggestive of being cast by disorganized and incrustated material and not by homogeneous concrement substance. The plate is, therefore, a unique specimen of total tuberculous putty-kidney, combining the skiagraphic features of tuberculosis and lithiasis and thus demonstrating, at a glance, the value of roentgenography for the differential diagnosis of both conditions.

### SCATTERED CALCIFIED FOCI

While though, in this instance, the diagnosis could be fairly well read from the plate, there are cases recorded in the literature with shadows on the plate resembling concrement-shadows, the differentiation of which from tuberculosis, in the absence of other clinical and bacteriologic evidence, is either very difficult or actually impossible. Occasionally patients enter the hospital with symptoms pointing to lithiasis and demanding immediate action, where in the interpretation of shadows on the kidney-plate the possibility of an existing tuberculosis should always be borne in mind. The following observation will serve to illustrate the point:

In the earlier part of 1908 I was summoned to a man of 41, whom I found in deep uremic coma. Complete anuria; bladder empty; high temperature; rapid and compressible pulse, kidneys not palpable. No data on the previous history could be ascertained. A tentative diagnosis of calculous anuria was made which appeared to be obvious, when two concrement shadows were noticeable on the plate of the left kidney-region (Fig. 2).

The patient was rushed to the hospital where the left kidney, on exposure, was found to be considerably enlarged, containing a pus-cavity at its upper pole, while in the center of the organ two small cavities filled with cheesy material were found. The kidney was, therefore, removed. The patient died the next day without voiding urine or regaining consciousness. The right kidney was found, at the post-mortem examination, to be small, presenting the typical picture of tuberculous atrophy. Renal function, in all probability, had been maintained by the left kidney, the enlargement of which was, obviously, due to compensation.

While the diagnostic error in this case was excusable, on account of the absence of other clinical evidence, a critical perusal of the plate-findings, done with the caution, at present considered indispensable in the interpretation of concrement shadows, might have aroused doubts in the diagnosis. The striking difference in the density, the demarcation and shape of both shadows points to the existence of different shadow-casting substances, which is not characteristic of lithiasis. Particularly the dimness and spotted appearance of the lower shadow with its indefinite edges would to-day, in the hands of the experienced observer, lead to the rejection of the stone diagnosis.

It is very doubtful, however, whether the positive diagnosis of tuberculosis could be made on the basis of these plate findings. The correct interpretation of suggestive concrement shadows is very difficult even in the presence of more or less characteristic features pointing to tuberculosis. When these are absent, though, the resemblance of tuberculous foci to calculi shadows is so striking that a correct plate diagnosis is well-nigh impossible, as in the following observation:

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[12] Forsell and Josefsson: Hygiea, 1912.
[13] Hürter: Ztschr. f. Roentgenkunde, 1910, No. 11.

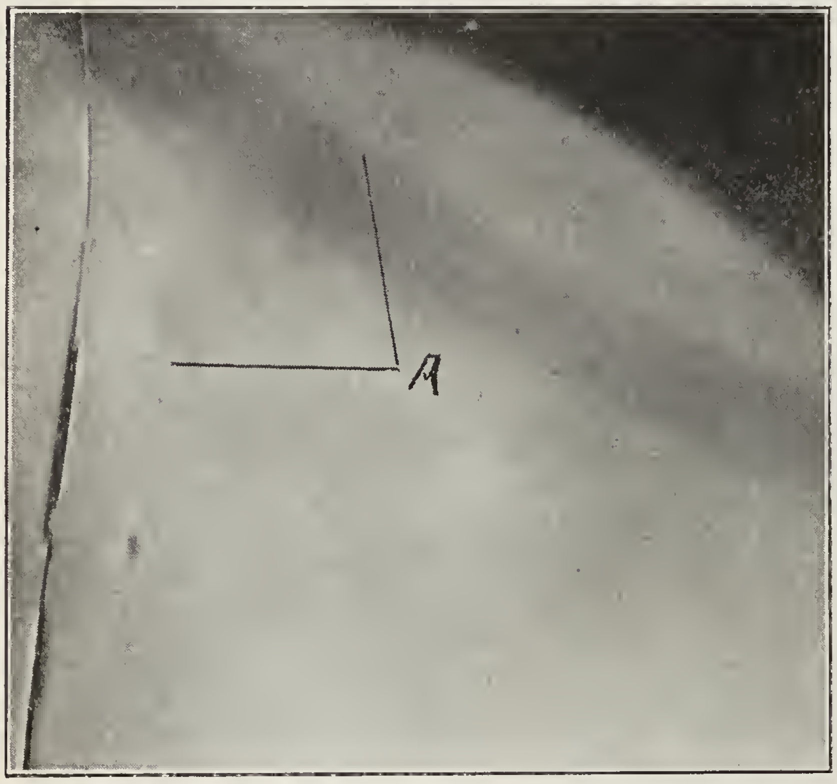

Fig. 2.—Calcified tuberculous foci at *A*.

A stout woman of 44, of excellent physique, had suffered for the last eighteen months from attacks of typical right-sided kidney colic and frequent and painful micturition. Repeated urinalyses demonstrated a moderate amount of pus and blood and no tubercle bacilli. At the hospital the physical examination, including kidney palpation, proved negative. Cystoscopy showed a perfectly normal bladder, except for a moderate cystitis coli, and no abnormality in appearance and spurt of either ureter. The urine of the right side was slightly cloudy and contained, microscopically, pus and blood in moderate amounts, while the secretion of the left kidney was normal in appearance and microscopically. The various functional tests showed good values on both sides, in fact a slight but uniform superiority of function of the suspected right kidney (sugar after phloridzin 1.2 on the right against 1.0 on the left side, etc.). No tubercle bacilli in right renal secretion. Repeated roentgenographic exposures including a pyelogram (Fig. 3) showed on the right side two small round and well-defined shadows, which were interpreted as calculus shadows.

The exposed right kidney presented, near its lower pole, two small cavities filled with a gritty, caseous material. The removed kidney showed, in the region of its pelvis, granulation and cicatricial tissue in which tubercle bacilli with giant-cells were present (chronic tuberculosis).

The diagnostic difficulties encountered in this case were unusual. Strong arguments against tuberculosis were the negative cystoscopic findings and, particularly, the functional integrity of the suspected kidney. According to Wildholz,[14] probably the best authority on tuberculosis of the genito-urinary tract to-day, the most unimpeachable evidence of the existence of renal tuberculosis is presented by a perceptible deterioration of function of the suspected organ. Thus, in the absence of reliable clinical evidence, the plate-findings, pointing to lithiasis, became of decisive diagnostic importance. The only clue to the diagnostic problem lay in the correct interpretation of the pyelographic plate (Fig. 3), disclosing hazy and irregular contours of all calices, which findings in the experience of von Lichtenberg and Dietlen[10] are characteristic of renal tuberculosis.

### COMMENT ON DIFFERENTIAL DIAGNOSIS

From our present meager knowledge of the differential diagnostic aspect of plate shadows it appears that, in a great many instances, a correct roentgenographic differentiation between renal tuberculosis and lithiasis is not feasible. This is particularly true of one or more small and circumscribed shadows cast by scattered foci of tuberculous caseation. Such shadows look so much like stone-shadows, as for instance, in the case reported by Menhauser from Israel's clinic,[15] that a correct local diagnosis, on the sole basis of plate-findings, is utterly impossible. Only the tuberculous putty-kidney presents sufficiently characteristic roentgenographic features as to permit of a correct local diagnosis.

I am convinced from my own observation that pyelography may occasionally be of definite differential diagnostic value. This method, though, is too risky a procedure in renal tuberculosis to become a routine measure in doubtful cases.

Another source of error may arise from the possibility that a shadow seen on the renal plate is cast by an object outside the kidney. The shadow on the plate presented in Figure 4 is cast by a tuberculous lymph-gland removed from a patient who had suffered from typical attacks of left-sided stone-colic.

While, thus, the differential diagnosis of nephrolithiasis and renal tuberculosis by roentgenography alone is in most instances difficult and often impossible, it is, nevertheless, capable of yielding better results with growing experience in the interpretation of suspicious shadows. It is obviously true that in order to diagnose a certain lesion one has to consider the probability of its existence. If, therefore, in the presence of one or more alleged concrement shadows on the plate, the probability of tuberculosis will always

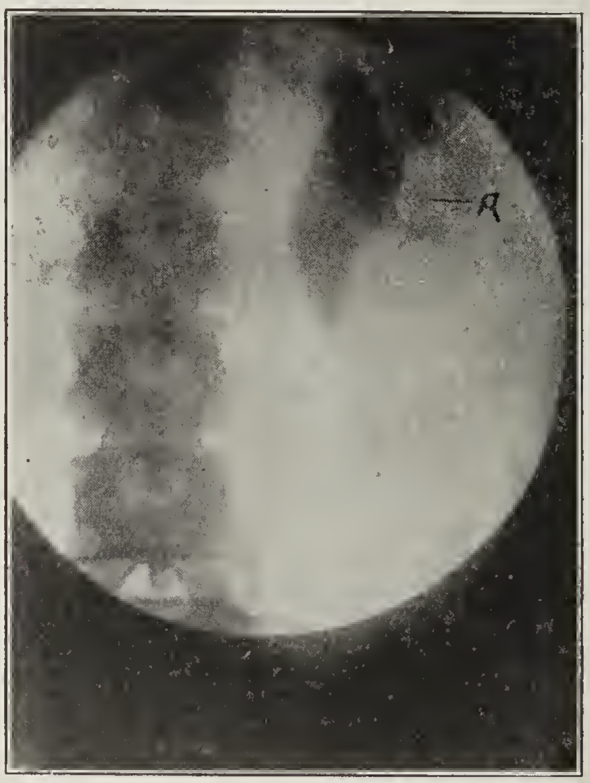

Fig. 3.—Pyelogram of tuberculous kidney. Note irregular contour of calices. Shadow of tuberculous caseation at *A*.

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[14] Wildholz: Ztschr. f. urolog. Chir., i, 552.

[15] Menhauser: Fol. urolog. iv, No. 5; see Tafel vi, Fig. 4.

be borne in mind, the occurrence of diagnostic errors will in time be materially reduced.

### CONCLUSIONS

1. Roentgenography may be of definite value in the local diagnosis of renal tuberculosis when other clinical methods fail.

2. The differential diagnosis of nephrolithiasis and nephrophthisis, by roentgenography alone is feasible in the presence of marked tuberculous renal caseation (tuberculous putty-kidney).

3. It is difficult or perhaps impossible in the presence of one or more concrement shadows cast by calcified tuberculous foci within the renal parenchyma.

4. A careful and judicious interpretation of concrement shadows is imperative in order to avoid diagnostic errors of serious consequence.

999 Sutter Street.

### ABSTRACT OF DISCUSSION

Dr. W. M. Spitzer, Denver: None of us relies implicitly on the roentgenograms, but the more we can develop our technic and the more we can rely on the roentgenograms, the more keen our diagnosis will be. This, of course, is an argument for pyelography. We will eventually, I am sure, when sufficient work has been done, be able to diagnose from the shape of the calices and the kidney pelvis, as well as from the size of the kidney pelvis, various lesions. As to the differential diagnosis between a stone and a caseous mass in the kidney, I do not know that that can always be made. I do not think that the density counts very much. There are dense stones that do not show at all on the roentgenogram, whereas, on the other hand, there are masses of caseous material which show quite distinctly. Still, the closer attention we pay to the study of our roentgenograms, the greater aid we are going to have in making our diagnoses.

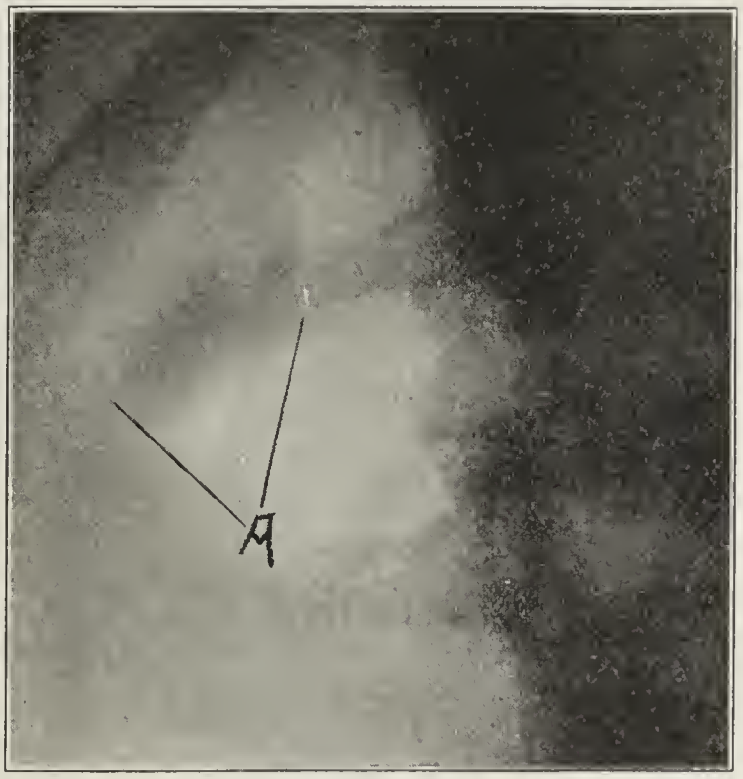

Fig. 4.—Tuberculous lymph-glands at *A*.

Dr. Martin Krotoszyner, San Francisco: Though the differential diagnosis in this instance was materially aided by pyelography, this method should, if possible, not be applied in suspected renal tuberculosis, where it is considered by good authority to be particularly dangerous.

**Destruction of Mosquito Larvae by Fish.**—In the Gambia the destruction of mosquito larvae by fish is systematically carried out. A constant reserve of fish is maintained at the sea end of one of the drains even in dry season, and as occasion demands some are transferred to other drains, private wells, etc. More and more private individuals are having their wells stocked with fish. This it proves a more efficient prophylaxis than well-covers, which, however thorough in themselves, must of necessity be frequently removed. Fish from the sea introduced into comparatively fresh water are some time in adapting themselves to it, but after a day or two become brisk again and destroy larvae with avidity. Whether it is this change that temporarily upsets them, or the pangs of hunger eventually asserting themselves, though some fish would not touch larvae on their first day in captivity, all fish eat them greedily from the second day onward.

# THE OPERATIVE TREATMENT OF TUMORS OF THE TESTICLE

## WITH THE REPORT OF THIRTY CASES TREATED BY ORCHIDECTOMY*

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BALTIMORE

A well-recognized principle in the surgical treatment of malignancy is to excise widely the local growth, to make a clean dissection of all the lymphatics which drain the area and to remove the primary chain of glands into which these lymphatic vessels empty. The mortality-rate from cancer has progressively decreased with the adoption of these more and more radical methods of attack. Simple castration has been long and almost universally the treatment for malignant disease of the testes, and the majority of these patients have been seen to die of metastases which primarily involve the preaortic lymph-nodes into which the lymph-channels of the testicle drain. The radical principle which is theoretically so rational has not been generally applied to the surgery of the testicle for obvious anatomic and other reasons. Surgeons have been restrained both by the great operative difficulties and by a general belief in the futility of such an extensive procedure.

The purpose of this study is to determine from a review of the literature and an analysis of the cases of the Johns Hopkins Hospital the true value of castration and to compare this with the results that have followed the use of the radical operation in the forty-odd cases reported in the literature. Such an analysis has never been made and should give an excellent opportunity of determining the significance of preoperative duration and rapidity of growth of the tumor to the onset of glandular metastases and the significance of such metastases with respect to a choice between the two methods of operative treatment. The particular object is to find out if the radical operation is ever justified, and if so, under what conditions.

### HISTORICAL

The study of testicular tumors has been chiefly confined in the past to pathologic considerations. From this point of view these tumors are of unusual interest as they show cells and tissues of almost every conceivable variety. The subject was in hopeless riot until the appearance in 1906 of the masterly pathologic and clinical study of 100 cases by Chevassu[1] which simplified the classification to practically only two types of tumor of almost equal frequency, namely, the seminome or seminal epithelioma and the mixed tumor or teratoma. In 1911 Ewing gave the first convincing and lucid explanation of these tumors, grouping them all into the one great class of teratoma or derivatives. Pure-celled fibroma, leiomyoma and adenoma do rarely occur as do primary lymphosarcoma and spindle-cell sarcoma, which latter are of very uncertain origin and all are so infrequent as to be of no clinical importance. All so-called alveolar, perivascular and other forms of sarcomas are not sarcoma at all but are of epithelial and of teratomatous origin. These findings have since been confirmed by Wilson and others, so that clinically all primary new growths of the testicle are teratomatous in origin and of two main types, either pure round-cell embryonal carcinoma or simple or complex teratoma.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Chevassu, Maurice: Tumeurs du testicule, thesis, Paris, 1906.

The published mortality results following orchidectomy for teratoma testes are very scanty and for the most part very unsatisfactory. Kober[2] in 1899 in an analysis of 113 cases collected from the literature found an ultimate mortality of about 80 per cent. with a three-year time limit. Chevassu[3] gave an 81 per cent. mortality with a four-year time limit. Codman and Sheldon[4] reported this year 41.07 per cent. cures in a series of sixty-four cases. The average time of those living is given as nine years, with extremes of two and twenty-eight years. The number of patients living less than four years is not stated. All cases are considered as malignant out of deference to Ewing's views.[5] The pathologic reports of the Massachusetts General Hospital for the last forty years have been accepted without a personal study, and seventeen of the cases had merely a clinical diagnosis of malignancy and no pathologic report.

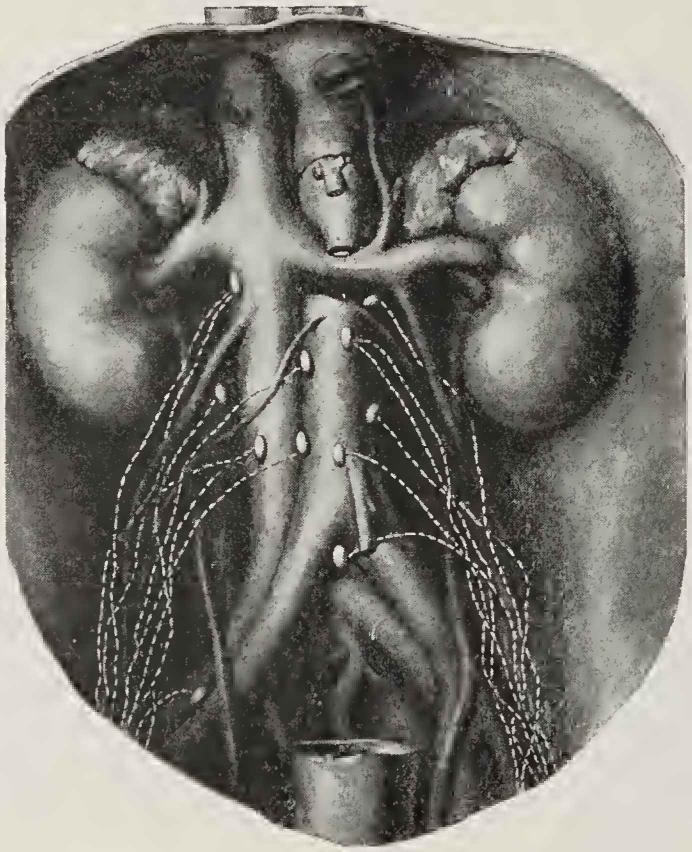

Fig. 1.—Primary lymph-nodes of the testicles. (From Spalteholtz and dissections.)

The general knowledge of a high mortality-rate and the feeling of incompleteness by simple orchidectomy have led surgeons to attempt more radical methods of treatment. Stimson[6] in 1897 advocated a high excision of the cord and removal of the inguinal glands. Villar[7] in 1901 extended the inguinal incision and with his patient in the Trendelenburg position was enabled to strip up the peritoneum for a short space and to remove the spermatic vessels higher up and also the lymphatics of the iliac fossa. Similar operations have been variously performed, but the results show no improvement over simple castration and for the reason that they do not attack the primary lymphatics of the testicle.

The primary lymph-glands into which the lymphatic channels of the testicle drain were first established by the experimental work of Most[8] in 1899. The topography of this system through additional researches of Cuneo,[9] Jamieson and Dodson[10] and others is now definitely known. The first nodes reached by the lymph-flow from the testicles number four to five on each side (Fig. 1). Those for the right testes lie in the loose adipose tissue on the vena cava, sometimes between it and the aorta, for the left, on or by the side of the aorta. Not infrequently a gland is found in the region where the ureter crosses the iliac, and occasionally there is a gland at the bifurcation of the aorta. The glandular zone is generally limited above by the renal pedicle and below by the bifurcation of the aorta. Secondary glands lie along the internal and external iliac vessels and deeply between and beneath the vena cava and the aorta. Most found no barrier between the testicle and the thoracic duct except these lumbar nodes, which are an imperfect guard, as he was able to send the injecting fluid all the way up from the testicle to the subclavian vein, which may be the route followed in general metastases. These anatomic relations have been sufficiently confirmed by post-mortem and clinical findings, which have also shown the imperfect and limited drainage capacity of these primary nodes. Secondary glandular metastases very quickly occur and general invasion of other organs is not uncommon. The only hope, therefore, from a radical operation would be the removal of the primary nodes before secondary involvement has occurred to the deeper glands whose anatomic position is such as to render their removal out of the question.

Unsuccessful attempts have been made by Kocher, von Bergemann and others to remove abdominal metastases, and it is now universally recognized by surgeons that operative intervention is contra-indicated in every case in which involvement of the lumbar glands can be determined clinically. Roberts of Philadelphia was the first to undertake (in 1901) the removal of the lumbar lymph-nodes in a case in which clinically they were not involved. He elected a median abdominal incision, opened the peritoneum, encountered insurmountable difficulties, and his patient died in a few days from peritonitis. His misfortune has seemed to discourage all other American surgeons, as none has since undertaken the removal of this gland area. Gregoire[11] of Paris in April, 1905, following an experience in the removal of the lumbar glands for tumor of the kidney, was led to undertake a radical procedure for teratoma testes by an almost identical extraperitoneal method of approach. The first case proved inoperable, but in August of the same year Cuneo successfully performed the operation and removed four enlarged lumbar glands, one of which showed teratomatous invasion, and the man remained well and without recurrence for three years, when he was lost from observation. The operation with slight modifications has been performed forty-one times in France, four times in England and once in Italy. The evidence in favor of an operation which is apparently so extensive will necessarily have to be very convincing before its general adoption.

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[2] Kober, G. M.: Sarcoma of Testicle, Conclusions based upon 114 cases, Am. Jour. Med. Sc., 1899, cxvii, 535.

[3] Chevassu, M.: Deux cas d'epitheliome du testicule traités par la castration et l'ablation des ganglions lombo-aortiques, Bull. e. mém. Soc. de chir., Paris, 1910, xxxvi, 236; Le traitement chirurgical des cancers du testicle, Rev. de chir., 1910, xli, 628, 886; Med. d. accid. du travail, Paris, 1910, viii, 628, 887; Le diagnostic clinique des cancers du testicule, Presse méd., 1910, xviii, 363.

[4] Codman and Sheldon: Prognosis of Sarcoma of the Testicle, Boston Med. and Surg. Jour., 1914, clxx, 261.

[5] Ewing, J.: Teratoma Testes, Proc. N. Y. Path. Soc., 1909-1910, New Series, ix, 83; Teratoma Testes and Its Derivatives, Surg., Gynec. and Obst., 1911, xii, 230.

[6] Stimson, J. C.: A New Operation for Malignant Disease of the Testicle: The Necessity of a More Extensive Operation than Castration for Carcinoma, Sarcoma, etc., of the Testicle, Med. Rec., New York, 1897, lii, 623; N. Albany Med. Herald, 1897, xvii, 537.

[7] Villar, F.: Methode rationelle pour pratiquer la castration dans les cas de tumeurs du testicule, Ann. Soc. de med. de. Gard, 1902, lxxxi, 183; Cancer de testicule et kyste du cordon; castration large après section de la paroi anterieure du canal inguinale, Mém. et Bull. Soc. de med. et chir. de Bordeaux (1902) 1903, p. 295.

[8] Most: Ueber die Lymphgefässe und Lymphdrüssen des Hodens, Arch. f. Anat. u. Entwcklngsgesch., 1899, p. 113.

[9] Cuneo, B.: Note sur les lymphatiques du testicule, Bull. et mém. Soc. anat. de Paris, 1901, lxxvi, 105.

[10] Jamieson and Dodson: The Lymphatics of the Testicle, Lancet, London, 1910, i, 493.

It will be of value first, in view of the few and for the most part unsatisfactory statistics on the subject, to add additional data in regard to what may be justly expected of simple castration in the treatment of malignant disease of the testicle.

### ANALYSIS OF CASES IN THE JOHNS HOPKINS HOSPITAL

The present study is based on a series of thirty-two patients, twenty-five of which were admitted to the Johns Hopkins Hospital — two of these were not treated — and in seven operation was performed outside and the specimens sent to the laboratory of Dr. Joseph C. Bloodgood for diagnosis.

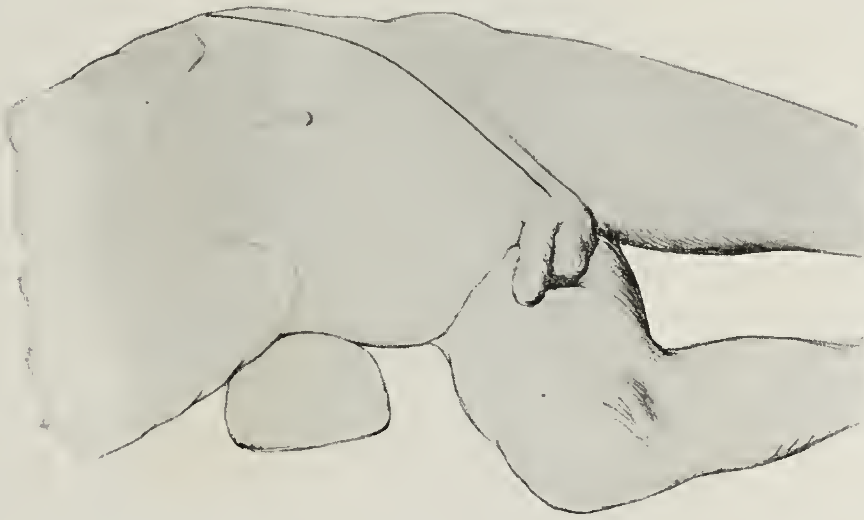

Fig. 2.—Dorsolateral position and line of incision for radical operation.

Seven of the tumors occurred in undescended testicles, which fact supports the accepted view that malignancy is relatively more common in cryptorchids than in normal men.

The ages ranged between 24 and 67 years, with an average of 39 years (age not stated in three). Eight of the patients were under 30.

In eleven of the cases some injury preceded the onset of the disease, but owing to the almost universal occurrence of injury of this kind in all men, it is difficult to place its significance.

The duration of the disease from the time it was first noticed until orchidectomy was done varied from one month to twenty years. The onset is questionable in the cases giving a long duration. In these cases there is commonly a history of injury followed by enlargement which would remain stationary or gradually increase for a time and a few weeks or months before admission would show a sudden and rapid growth with possibly pain or discomfort. The true onset of malignancy cannot be stated. The four cases of the series in which the patients are still alive had a preoperative duration of four months, two years, six years and twenty years, respectively, and of the two latter cases which give the longest duration of the series one patient was kicked in the scrotum with gradual enlargement for the six years following and the other had had gradual enlargement since childhood. The duration, therefore, gives no clinical indication of the character or degree of malignancy.

The pathologic material has been personally examined in twenty-two of the cases. Parts of all of these showed a picture typical of these testicular tumors and not duplicated by any other tumor; in the presence of characteristic large round cells in a lymphoid or fibrous stroma. In ten of the cases in addition to these typical areas of carcinoma cells there were found, either alone or in association, areas of cartilage or of cystic, glandular, myxomatous, fibromuscular or embryonic connective tissues, which places them in the group of teratomas. The round cells of the simple-cell tumors were in all cases larger than lymphoid cells, and the round-cell picture in the two types of tumors was absolutely identical. In the majority of the tumors in which cartilage was found it was present in small areas and might easily be overgrown by the more active carcinoma-cells, and this may have occurred in these pure-cell tumors. It is very possible also that areas of mixed-cell types may have been overlooked, as serial sections were made in no case. In six of the ten cases in which no material was available for study, a previous microscopic diagnosis of alveolar or round-cell sarcoma had been made. In view of the fact that the previous diagnosis of the twelve pure round-cell tumors and of three of the mixed tumors had been some form of sarcoma, it is to be supposed that these six cases were either teratomas or a one-sided development of a teratoma. These findings only confirm those of Ewing, namely, that clinically all malignant tumors of the testicle are teratomatous in origin.

There were a number of cases with the clinical diagnosis of malignancy in which the removed testicles, on subsequent microscopic examination, proved to be the seat of a syphilitic orchitis.

Metastases were clinically present at the time of the operation in four of the patients, all of whom died of carcinomatosis. Owing to the deep position of glandular metastases and their non-recognition until they have attained a considerable size, it is not possible to establish any clinical relation between the onset of such metastases and the duration of the disease, concerning which there is almost always also some doubt. Seventeen patients had retroperitoneal glandular metastases at death. In eight death is mentioned as due to general carcinomatosis, and presumably lumbar metastases were present. Necropsies were performed in three cases, lumbar metastases found in all, nodules in the liver in all and in the lungs in two.

The ultimate result is known in twenty-four cases, of which twenty patients are dead and four living. Of the eighteen cases in which the result is known and the specimens have been examined, nine are pure round-cell carcinomas and nine are teratomas. Of the former group two patients are alive, twelve and thirteen years, and none of the seven patients that are dead lived over two years. Of the latter group all are dead except one patient, who is now alive for only sixteen months. One patient lived for three years, another for nine years and seven months. This case is most unusual with a history of injury forty years before the onset of tumor which preceded orchidectomy by three years. A letter from the patient six years later (1906) stated that he was well, and a letter from his wife this summer states that he died of "abdominal cancer," March 3, 1910, nine years and seven months after castration. These facts indicate that the mixed type of tumors are more malignant, though possibly of a slower form of growth, than the pure-cell carcinomas, although, since all tumors are teratomatous in origin, such a differentiation is more or less arbitrary.

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[11] Gregoire, R.: Considerations sur l'état des ganglions dans le cancer du testicule, Arch. gen. de chir., 1908, ii, 1; Obs. in thesis of Chevassu, 1906, 182; in Rev. de Chir., 1910, xli, 648, 654, 656.

The result in the four cases in which the material was not available for study but in which a previous diagnosis of sarcoma had been made gives one living now almost twelve years, and three deaths, one, two and eight years, respectively, after castration. The latter case is another remarkable instance of the long duration of life that is possible after castration for teratoma testes with ultimate death from cancer metastases. It is that of a cryptorchid who three years following double castration, at which time both testicles were found to be the seat of "sarcoma," began to have abdominal symptoms, but lumbar glands were not palpable until after six years, and death did not occur until eight years after the operation. Bloodgood places the time limit for cure in cancer of the breast at eight years, and it would seem that the limit of four years as placed by Chevassu, while only exceptionally exceeded, is not an absolutely safe period in cancer of the testes. One of Chevassu's own patients died a full four years after operation; but, as Andrews formulates it:

> The risk of recurrence in malignant growths increases as the square of the time of growth; or, conversely, the risk of recurrence diminishes in the ratio of the square root of the time after incidence.

With one exception in which death resulted a few days after operation from pulmonary embolus, all of the patients, so far as can be determined, died of cancer. Excluding this one case of embolus and the four cases in which metastases were already present at the time of operation, the series shows a cure from castration in only 15 per cent. of the cases, a high mortality-rate of 85 per cent.

ANALYSIS OF CASES TREATED BY RADICAL OPERATION

The records of forty-four attempts radically to remove the primary preaortic lymph area in treating testicular tumors have been collected from the literature. Gregoire furnishes information regarding two additional and unpublished cases. This material offers an excellent opportunity because of the exposure at operation to determine the relation of the duration, size, rapidity of growth and the character of the tumor to the onset of the glandular metastases and their early location. Inasmuch as thirty-two of the operations were performed before 1911, there has been sufficient time to allow of a comparison of the results with those following castration. Several French theses have been written on the subject (Calin,[12] Beckerich,[13] Moscarenhas[14]), but in none of these are the cases analyzed to show the operative or ultimate mortality, the relative number of cases which had at the time of the operation early metastases and the proportion of these in which these metastases, although not possible of recognition clinically, were so extensive as to be inoperable.

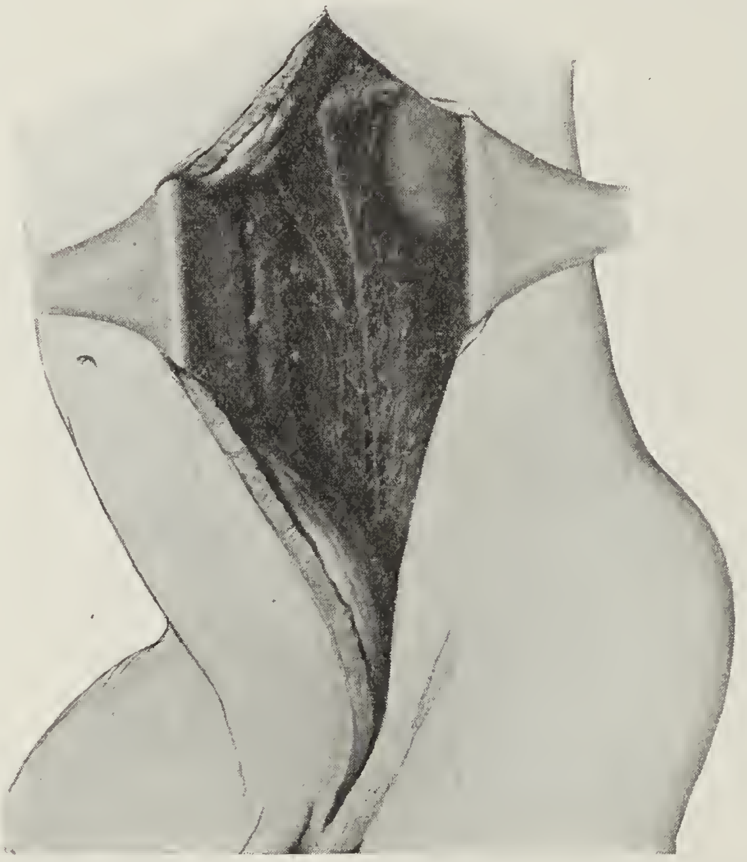

Fig. 3.—Peritoneum stripped back showing lymph area to be removed.

The technic of the operation from a study of the descriptions of the various operators and from personal dissections from which the accompanying drawings have been made is briefly as follows: The operation is usually performed in two stages, inguinal and abdominal. The first stage is that of ordinary castration and it is extremely important that the testicle be carefully examined at this time and the diagnosis definitely confirmed before proceeding to the extensive abdominal part of the operation. The fact that over 7 per cent. of the few cases so far subjected to the radical method of treatment were found on subsequent examination of the specimens to have had a syphilitic orchitis shows the importance of this preliminary study.

For the second stage of the operation the position of the patient is of considerable importance. It should be a bent dorsolateral one with the patient turned partly on his back and resting on a pad under the costal margin with shoulder and hip on the table. This raises the spine to conform to the line of the incision and allows a good exposure of the deep abdominal vessels (Fig. 2). The skin incision is extended from the upper end of the inguinal cut parallel to Poupart's ligament, curving upward in the axillary line at about 4 cm. below the anterior superior spine of the ilium to end at the costal margin. In fat, thick-bellied men, the upper end of the incision may be extended along the rib margin either anteriorly (Gregoire, Fredet[15]) or posteriorly (Cuneo). The muscle-fibers and fascia are divided in a line with the skin incision down to the peritoneum, which is gently stripped back so as to expose the lower pole of the kidney and the psoas muscle. A choice is given the operator between starting above at the renal pedicle and working down or beginning below in the inguinal ring and stripping the cord and vessels up toward the lumbar region. The former method of attack appears more rational, and in the dissections by traction on the spermatic vessels at the external ring was easily accomplished. Figure 3 indicates the exposure of the lumbar field and Figure 4 the appearance after the lumbar and iliac fossae have been stripped. In cleaning the anterior surface of the aorta the inferior mesenteric artery must be protected. The spermatic vessels and the ureter usually remain attached to the peritoneum when it is stripped up in the iliac fossa, and this region should be carefully cleaned as metastases often occur where the ureter crosses the iliac vessels. The dissection should also be carried up so as to include the region about the bifurcation of the aorta. The vas deferens is readily located and divided as it leaves the internal ring. The clean removal of the vascular and lymphatic layer as outlined is far superior to the palpation and individual removal of single glands, as is sometimes described. The operation for right-sided involvement offers greater difficulties in that the area to be cleaned covers the vena cava. Good and sufficient drainage should be established owing to the large lymph area removed.

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[12] Calin, Paul: Du Traitement chirurgical du cancer du testicule, (extirpation des ganglions ilio-lombaires), Lyons, 1911, 74, p. 8.

[13] Beckerich, Louis-Achille: De l'ablation des ganglions lombo-aortiques comme complément a la castration pour néoplasme testiculaire, Nancy, L. Bertrand, 1911.

[14] Moscarenhas, C. O.: Contribution a l'étude du traitement du cancer du testicule, Paris, 1912.

[15] Fredet, Pierre: Obs. in Bull. soc. chir., 1910, 245, and Rev. de Chir., 1910, xli, 661.

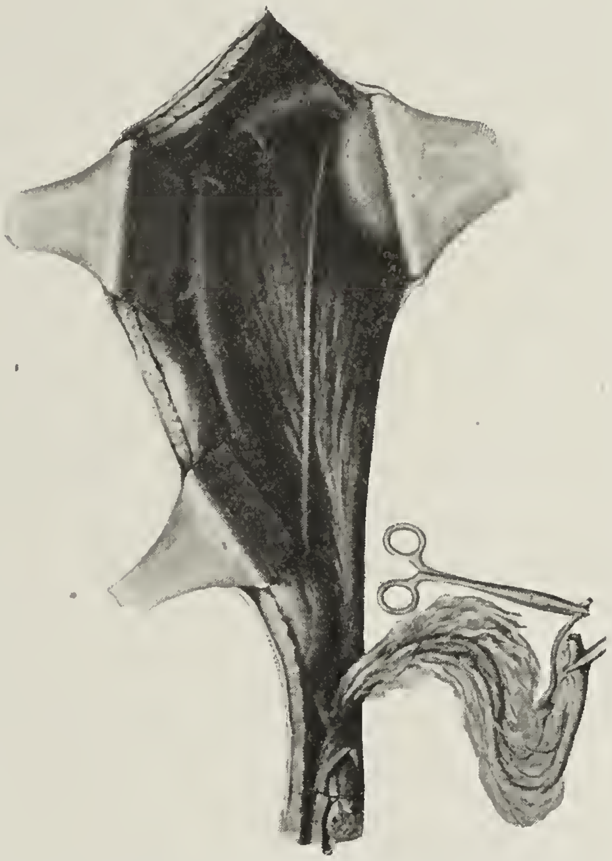
Fig. 4.—Lumbar and iliac fossae stripped clean of glands and fascia with the spermatic vessels down to inguinal ring. Vas deferens entering pelvis at point where it is divided.

From the accounts of those who have performed the operation it presents neither the difficulties nor gravity that would be expected. The patients apparently stand the operation well and show no evidence of shock, and the convalescence is relatively short. The long incision is objectionable because of the danger of hernia and of the division of numerous nerves. The tenth, eleventh and twelfth dorsal nerves are always cut, and usually the lower branch of the genitocrural. Partial paralysis of the abdominal muscles results and difficulty with the bowels is encountered during convalescence. Chevassu has shown by faradic and galvanic tests that this paralysis is only temporary. There have been no fatalities from postoperative hemorrhage or other complication as a result of injury to the large abdominal vessels. Five of the patients died of postoperative complications, three of pneumonia and two of peritonitis, an operative mortality of 11 per cent., which, considering the newness and nature of the operation, is surprisingly low.

With the exception of two cases (André,[16] Georgesco and Savesco,[17] Case 2) there was no clinical evidence of lumbar metastases before operation. Three of the cases (Cuneo, Case 2, Marion, Mercadé) were mistakes in diagnosis, the testicles in each being found on subsequent examination to be the seat of a syphilitic orchitis. Of the forty-two remaining patients, twenty are living, nine for over two years; four for over four years, the longest for four years and ten months, the shortest for one month. The average time since operation on the twenty patients who are reported alive is one year and eight months. Sixteen, or 41 per cent., have died of cancer, all within one year except two, one of whom (Gregoire, Case 1) died thirty-one months and the other (Chevassu, Case 2) four years after operation.

The duration of the disease before operation varied between two months and twelve years, with an average of fourteen months. Twenty-one of the cases had a duration under one year, and twelve of these under six months. Only three cases had a duration of over three years. While lumbar glands were palpable in only two cases before operation, twenty-two, or over 50 per cent., of the cases showed cancer invasion of the lumbar nodes that were removed at operation, and in eleven of these the involvement of the gland area was so extensive as to be inoperable. In eight of the cases in which numerous lumbar glands were removed, these on subsequent microscopic examination in no case showed cancer invasion. In three cases no lumbar glands at all were found at operation. The twenty-two cases with malignant involvement of the lumbar nodes removed at operation had a preoperative duration of from two months to twelve years or, omitting the case with a duration of twelve years, which is the longest in the series and questionable, an average of fifteen months. On the other hand, the eleven cases in which no lumbar involvement was found had a preoperative duration of from three months to fifteen months, with an average of eight months. This indicates that the preoperative duration has considerable significance with respect to the onset of glandular metastases. The significance, however, cannot be definitely determined, as many cases of short duration are seen to have extensive metastases, whereas cases of an apparently long existence may have no metastases. The chances, nevertheless, of metastases not having occurred, are greatly in favor of a case with comparatively short duration. All of the eleven patients in whom the glandular involvement was so extensive as to render its complete removal impossible are dead, except two who had been observed for only one month at the last report. Of the other fourteen patients with glandular involvement but in which the gland area supposedly was completely removed at operation, seven are living, one died of pneumonia seven days after operation, and six died of cancer recurrence.

Of the eight patients with clean glandular removal but in which no involvement could be found, five are living, and three died of cancer. Two of the three patients in whom no glands at all were found are dead. Of the six cases in which no mention is made of glands, two patients are dead, one and twelve months, respectively, after operation; three are living, one, twelve and forty-eight months, respectively, and the result in one, presumably alive, is not mentioned.

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[16] André: Cancer du testicule avec extirpation des ganglions lombo-aortique, Revue méd. de l'est., 1912, xliv, 420.

[17] Georgesco, G., and Savesco, V.: Etude anatomique et chirurgicale sur trois cas de cancer du testicule, Jour. de Chir. de Bucarest, April, 1914, iv-vi, 226.

Obviously all cures in those patients who had cancer involvement of the lumbar glands that were removed at operation will be directly due to the radical procedure, and just as obviously the radical procedure will be able to cure in only those early cases in which the invasion has not spread beyond the primary lymph zone. Simple castration will be of no benefit in either case, and will cure in only those very early cases in which the disease is confined to the testicle proper. Of the six patients living who had glandular metastases removed, one, in whom two of the glands removed at operation showed marked invasion, is now alive and well almost five years since the removal of these glands, three other patients are alive and with no evidence of recurrence for almost three years from the time malignant lumbar glands were removed, and the two other patients were alive after operation eight and one months, respectively, at the time of the last report.

### SUMMARY AND CONCLUSIONS

1. Orchidectomy will cure from 15 to 20 per cent. of teratoma testes. Obviously a cure is possible only when the testicle is removed before the onset of glandular or other metastases.

2. A cure cannot be assured until nine years after operation, although the danger of recurrence after four years is very small (only three cases reported) and progressively diminishes.

3. Cancer of the testicle metastasizes in practically every case first and primarily to a limited zone of lumbar lymph-nodes which lie on the aorta for the left testicle and on the vena cava for the right, between the bifurcation of these vessels and the renal pedicle. Communication between these two groups and to deeper or more distant glands occurs only secondarily.

4. Involvement of these primary lymph-nodes may occur early or late, and the preoperative duration of the tumor in the testicle, its rapidity of growth or its size give no definite clinical indication of the onset or extent of such metastases, but the probabilities increase the longer the duration and the more rapid the growth.

5. Pathologic differentiation of tumors of the testes into embryonal carcinomas and mixed-cell types is more or less arbitrary as both are teratomatous in origin; but the former appears to be definitely less likely to metastasize, although more rapid in its growth. There are fewer cures among the cases of teratoma, although these give the longest duration before death.

6. The primary lymph-nodes are a very imperfect guard against secondary invasion, and metastases to other gland areas by way of efferent lymph-channels or by blood-vessels to thoracic or abdominal organs may occur early. Surgical treatment is of no avail after these secondary metastases have occurred. The only hope, therefore, in a radical operation is the removal of the testicle with its primary lymph área before the disease has spread beyond this zone.

7. The experience of various surgeons in a total of forty-six cases has demonstrated in suitable cases the feasibility and technical ease of the radical operation with a combined surgical mortality in all cases of only 11 per cent.

8. Radical operation should never be undertaken when lumbar metastases are recognizable clinically, and is applicable only in the fairly early cases in which the disease is apparently limited. Owing to the deep position of the glands, these cases cannot always be differentiated before operation, so that every case, in which clinically there is no invasion, is suitable for radical treatment. The operation should never be performed until after the diagnosis is confirmed.

9. Sufficient time has not elapsed and the cases are so scattered that it has not been possible to get the ultimate result in all of the patients treated radically. Forty-six per cent. are alive, one for five years; one for four years; five for almost three years; two for over two years and eleven for one year or less. There is a probable cure in at least four cases which had lumbar glands invaded with cancer at the time of the operation. Simple castration could not have benefited any of these cases, and their cure is directly attributable to the early and clean removal of the affected lymph area.

10. In conclusion, therefore, it may be stated that the early removal of the testicle with its primary lymph zone is the rational method of surgical treatment of teratoma testes, but the extensive nature of the operation and the fact that almost one-third of the cases thus treated were found to be inoperable warrants a very careful selection of suitable cases.

I wish to acknowledge thanks to Dr. W. S. Halstead for the privilege of using the material of his surgical clinic, to Dr. J. C. Bloodgood for the valuable material of the surgical pathologic laboratory, and to Drs. Gregoire, Pringle, Chevassu, Marion and others for data in regard to cases operated on, and particularly to Dr. Hugh H. Young for his generous kindness in furnishing financial and advisory assistance and for the use of the material of the genito-urinary clinic.

## ABSTRACT OF DISCUSSION

Dr. Hugh Young, Baltimore: Dr. Hinman has thoroughly studied all our pathologic records, and I think has made all of us realize that we shall have to change our text-books and do a far more radical procedure than in the past. On account of such work as Dr. Hinman's we are compelled to note a series of bad results that we did not realize were occurring.

Dr. Frederick W. Robbins, Detroit: I wondered while I listened to Dr. Hinman's paper if he had entirely forgotten the work of Coley in connection with his serum in these cases. About five or six years ago I reported a case that shows, as I believe, the result of the use of the double injection of the erysipelas and prodigiosus bacilli. A man had a very rapidly growing tumor of the testicle, probably a teratoma, although at the time I thought it was a sarcoma, which I removed without any very extensive dissection. The tumor was about as large as my fist. That the tumor was malignant I think is proved from the fact that within ten days after it was removed another growth was formed as large as my fist. I then dissected out, very carefully, the contents of the scrotum, and without opening the internal abdominal ring went up as high as I could to get everything out, and the wound looked perfectly clean. Inside of ten days the growth was again forming so that you could see it increase in size every day. I began the injection of the double bacillus. Within two days the growth had stopped and then gradually disappeared. He was under treatment about three weeks, getting a reaction at every injection. I began with a small dose and increased the dosage. The first injection caused elevation of temperature to about 103, as I remember it, but gradually it required a larger and larger injection to get a reaction, until in about two weeks the maximum dose was given. The growth entirely disappeared. The other day I heard from him, and he is reported to be perfectly well. We should not forget that there are such cases as I have had and as Coley has reported, which are wonderfully helped and probably cured by the double bacillus injection.

Dr. Edward L. Keyes, Jr., New York: In two cases I have endeavored to follow out practically the technic suggested by Dr. Hinman of clearing up the space between the ureter and the aorta as far as the kidney, and in both instances I have found the veins implicated in the disease, extending to and beyond the kidney. In one case there was a large mass of secondary glandular involvement even above the kidney, and in the other there was simply a venous involvement up to the kidney. Several other patients I have seen die from metastasis extending so rapidly after the disease once got started and of such wide distribution that it seemed to me that, taken in connection with the known fact that the veins of the pelvis and abdomen are frequently involved in the growth, the metastases occur by the vascular instead of the lymphatic route in the large majority of cases. If that is the case, I question whether an extensive dissection is going to help us revise our mortality statistics. I fancy the real thing is to get at the cases early, before vascular metastases have occurred and not to pinch the vessels when you are examining them.

Dr. M. Krotoszyner, San Francisco: In connection with Dr. Keyes' remarks, I believe that the salvation of our patients does not lie so much in the radical operation as in the early diagnosis. I do not think there is any condition in the genito-urinary tract so difficult to diagnose as enlargements of the scrotum involving the testicle. It is in these cases that the Wassermann reaction has complicated the diagnostic difficulties. Any physician who has seen many of those doubtful tumors will admit that three large conditions loom up right from the start—tuberculosis, tumor and syphilis—and he will not be willing to put the patient on the operating-table before he has at least satisfied himself that a diagnosis of syphilis can be excluded. I have seen cases in which the Wassermann was slightly or even strongly positive and in which afterwards the diagnosis of primary carcinoma of the testicle was verified pathologically. What are we going to do? In one case three months had been lost by this means, not only in my hands, but in the hands of my predecessors. I think a means ought to be established by which we are enabled as early as possible to make the diagnosis. I think then the result of our operative procedures will be better.

Dr. Frank Hinman, Baltimore: With regard to Dr. Keyes' statement concerning vascular and glandular involvement, forty-six of these cases, I think, gave a very clear indication as to the first metastasis of these tumors. In twenty-two cases the lymphatic glands were first involved at the time of operation. In eleven of these twenty-two cases the disease was so extensive as to render them inoperable. This fact, however, I think does not detract from the object of the radical operation, because four of these patients were apparently cured. An early diagnosis, of course, is the all-important thing in the treatment, but it has been shown that castration will only cure from 20 to 50 per cent. of these cases, and the radical operation, from a surgical point of view, is perfectly feasible and technically not difficult. So that in every case the lymphatic region should be explored. There certainly will be a small proportion of patients who will be cured by the radical operation who otherwise would certainly die.

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**"Idiopathic" Insomnia.**—Insomnia is a symptom always; it is never a disease. In many text-books there is a reference to "idiopathic insomnia." That is the insomnia described by the ignorant man. We are all ignorant on this subject, and the best thing is to admit our ignorance, rather than trying to satisfy our consciences by describing it as idiopathic, or putting a long title to it or classifying it, and concluding that all is well.—H. Crichton Miller, *Medical Press and Circular.*

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# DIVERTICULA OF THE URINARY BLADDER

## WITH REPORT OF CASES *

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The increasing literature regarding diverticula of the urinary bladder and the frequent reports of cases which are now appearing indicate, in my opinion, not that this condition is occurring more frequently than formerly, but that it is now being more accurately diagnosed and that its treatment is now yielding more satisfactory results. Very complete reviews of the literature on this subject have been made by Fischer[1] and by Lerche,[2] who show that opinions regarding the exact etiology of diverticula still vary. Some writers believe that diverticula are always congenital while others contend that they are acquired, the point of differentiation being the presence or absence of muscular fibers in the walls of the sac forming the diverticulum. If muscular fibers be present it still is considered by many that the diverticulum is of congenital origin. If, however, the sac be formed only of mucous membrane, that is considered evidence that the diverticulum is acquired. It has been shown recently, however, that in practically all cases some muscular fibers are found in the sac wall, though they often are very much attenuated.

It seems to me, however, from the clinical aspects of the cases that have come under my observation and are here reported, that these diverticula were acquired, and the argument, which also applies for most diverticula, is: 1. They scarcely ever are found in the very young, but for the most part in persons past middle life, a time at which obstruction to urinary outlet most frequently occurs. Necropsies on children do not show this condition, or at least its presence is not mentioned in most post-mortem records. Such anomalies as hour-glass or double bladder which are occasionally reported at post-mortem findings in children are generally associated with double urethras or multiple ureters and other abnormalities and should not be considered identical with true clinical diverticula. 2. They very seldom occur in women, the ratio being about one to ten. 3. In most cases the bladder wall is much thickened, a condition present in most cases indicating obstruction to the urinary outlet, which produces more or less retention. In the one case of a woman in my own series a urethral caruncle was present which caused her so much pain that she refrained from voiding as much as possible and never completely emptied her bladder.

Even Englisch, as quoted by Fischer, believes that the so-called congenital diverticula are "based on the presence of some obstacle to the outflow of urine, in consequence of which the weak points of the muscular arrangement of the bladder give way. These obstacles may be produced by inflammatory conditions of the bladder or urethra during intra-uterine life but which have healed up, leaving no vestiges after birth."

That there probably is some congenital condition of the bladder wall which under certain conditions, such, for example, as obstruction and overdistention for a long time, will produce a diverticulum, is true without a doubt, but the opinion that these diverticula exist as such from early childhood does not seem to me to be tenable.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Fischer: Congenital Diverticula of the Bladder, Surg., Gynec. and Obst., 1910, x, 156.

[2] Lerche: The Surgical Treatment of Diverticula of the Urinary Bladder, with Report of a Case and a New Device for Facilitating the Operation, Ann. Surg., 1912, lv, 285.

While it would be of very great interest to know definitely whether all diverticula are congenital or all are acquired, or whether a certain number are congenital and others asquired, it is not of as much importance as to know how to diagnose the condition and how best to treat it, and it is to the diagnosis and the treatment therefore that I specially wish to invite your discussion.

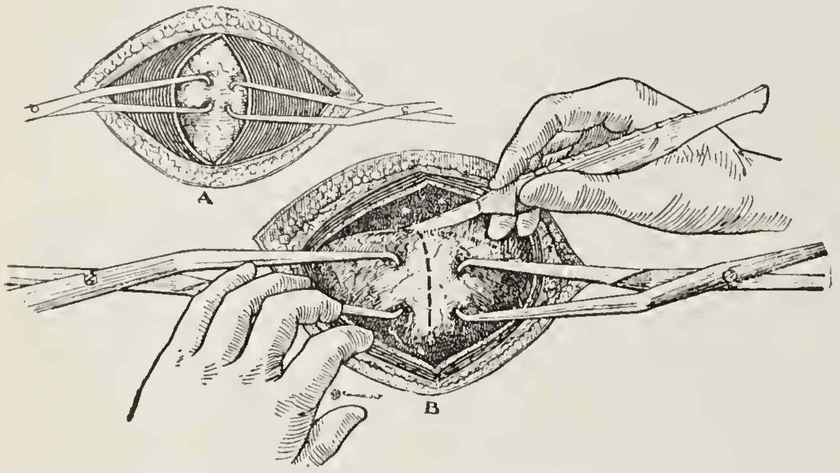

Fig. 1.—*A*, separation of muscles, bringing the bladder up with curved forceps; *B*, dissecting the bladder free from the peritoneum.

DIAGNOSIS

The presence of diverticula can nearly always be determined by the cystoscope in the hands of a person who is experienced in its use, but may be easily overlooked by the inexperienced. The diverticulum opening is sometimes so very small that it looks like a mere dark speck in the field. This apparently insignificant speck, however, may be the opening of a very large diverticulum. If the presence of a diverticulum is evident or is suspected, the diagnosis may be made certain and the size and exact location of the sac determined by the aid of collargol and the Roentgen ray. A posterior sac may be overlooked by an anterior-posterior picture, but it can generally be detected by taking a picture at an angle. This seems to me a more exact method than to measure the size of the sac with a ureteral catheter.

SYMPTOMS

Frequent urination induced by the constant presence of residual urine in the sac is the most common symptom. In most cases the frequent urination and the failure to empty the bladder completely do not cause any special annoyance until infection and cystitis develop, when the patient seeks advice because of the painful symptoms of these conditions. Catheterization may not result in the withdrawal of much urine, for the catheter may not enter the orifice of the diverticulum. If the diverticulum be infected, the urine, even after repeated irrigations, is cloudy and in a great many cases is very fetid.

If the diverticulum be very large, a definite tumor may be detected by rectal or vaginal examination, or even by abdominal palpation. Hematuria frequently occurs also.

TREATMENT

If the opening of the diverticulum be small and the sac large as is frequently the case and if infection be present, palliative treatment is of no avail, for as it is impossible to cleanse the diverticulum thoroughly the infection cannot be checked. Unless radical measures be taken the infection will in all probability ascend, and will produce secondary and often fatal renal involvements.

Many kinds of operative treatment have been advised, but the radical treatment for complete removal of the sac did not have much success until comparatively recent time because the removal of the sac was difficult, and complications and unfavorable results often followed. In his report in 1912 Lerche collected but fourteen cases and to this list appended one of his own in which diverticula had been treated by excision; to his list may now be added cases reported by Cabot, Chute, Bergener, Bryan, Marion, Beer, Lower and others. In most cases excision has been followed by permanent good results. To a large extent, of course, the success of excision depends on the technic. In my own earlier cases I divided the bladder down to the diverticulum, separated the attachment to the bladder and then tried dissecting the sac away from its surrounding tissues. On account of the collapsed sac this method proved very unsatisfactory in two cases, and I had a definite recurrence in one in which it was evident that the entire mucous membrane had not been removed.

In two cases in which the diverticula were rather shallow I everted the sacs and brought them up into the bladder and excised and closed over the attachment with chromic catgut.

As diverticula are often situated near the ureteral orifices so that not infrequently the ureters empty into them, they must either be resected and transplanted or else dissected out by the ingenious flap method described by Young.

The method of removal which I have found the most satisfactory and which I believe is applicable to practically all cases is to convert the sac into a solid tumor by the method described incidentally in a case reported by Cabot[3] in 1912. In general the method described by Lerche in his report of using a small rubber bag inserted into the diverticulum and then inflated, answers the same purpose, but is not so easily done.

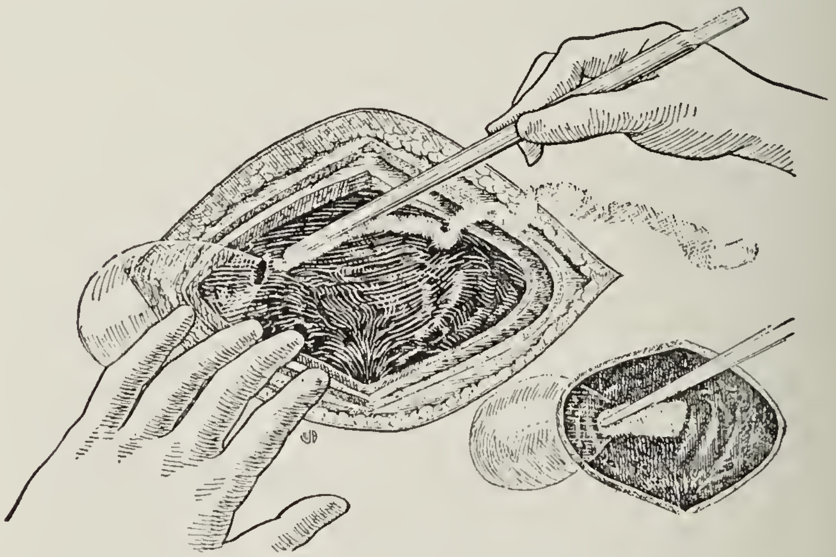

Fig. 2.— Packing the diverticulum with gauze.

In three of the cases which I shall report I first packed the sacs tightly with narrow strips of gauze and was then able to remove them completely without the slightest difficulty. In one case the tumor was quite large. In another the diverticulum was much smaller. In the third case there were four separate and distinct diverticula, three of which were easily removed after they had been packed tightly with gauze, while the fourth was removed by bringing the sac up through the bladder. In these three cases the convalescence was uninterrupted and in two there have been splendid functional results, but in the third there is still some residual urine which I believe to be due to a prostate which I did not completely remove at the time, although I did remove a projecting lobe which seemed to obstruct the urethra. In three out of five cases of men in each of which I particularly noted the urethral outlet there was distinct evidence of obstruction by small projecting lobes of the prostate, and in the other two the lateral lobes of the prostates were enlarged.

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[3] Cabot: Tr. Am. Assn. Gen.-Urin. Surg., 1912, vii, 62.

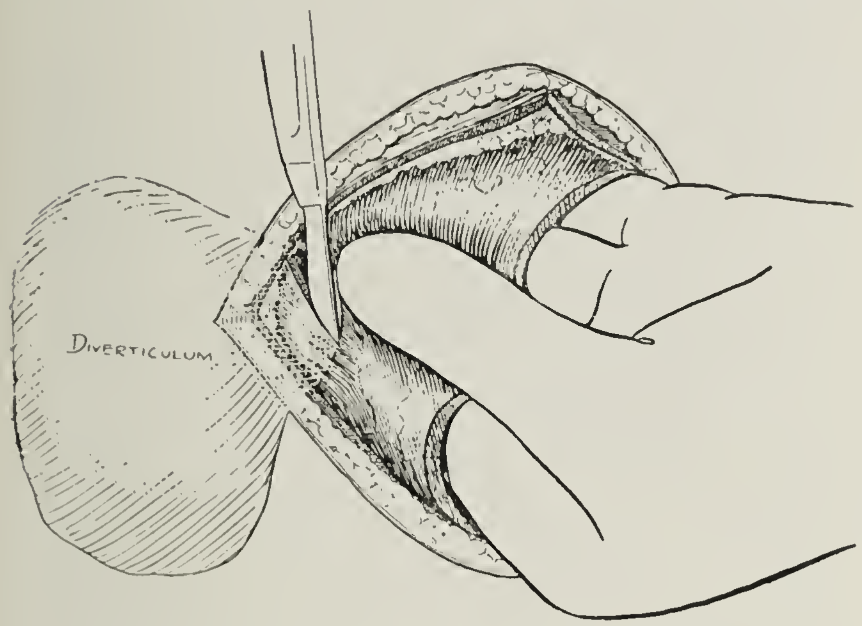

Fig. 3.—Division of the attachment of the diverticulum.

I have already referred to the case of the woman whose urethra was partially obstructed by a caruncle. In the late cases that have come under my observation I was able to determine the size and location of the diverticula by the use of collargol and roentgenoscopy. In three cases I was able to get postoperative pictures. These show the entire absence of the diverticula which are visible in the preoperative pictures.

By using collargol and the Roentgen ray for diagnosis, and by comparing the preoperative and postoperative pictures, we are able to draw very definite conclusions regarding the value of excision in these cases.

In those cases in which excision seems to be impossible, the method which has recently been suggested and so practically applied by Squier[4] is well worth a trial. He advises that a large communication be established between the bladder and the diverticulum by the use of clamps and sutures after the manner of a gastro-enterostomy.

In two cases I tried to make the diverticulum a part of the bladder cavity by dilating the orifice, but this procedure was unsuccessful in each instance as contracture followed. One patient was operated on a second time, and the other still has trouble.

### TECHNIC OF OPERATION

In all the cases in which I have removed the diverticula by the method of first converting them into solid tumors, the following method was used:

1. Nitrous oxid-oxygen anesthesia with local infiltration of novocain.
2. Transverse incision through skin and fascia.
3. Infiltration of muscles. Separation of muscles and bringing the bladder up with curved forceps, and then dissecting the bladder free from the peritoneum (Fig. 1, *A* and *B*).
4. Packing the diverticula tightly (Fig. 2).

Then with the fingers inside the bladder, the index-finger in the opening of the diverticulum and the thumb on the outside, the attachment to the bladder is exposed and divided (Fig. 3).

The bladder is then retracted away from the diverticulum, traction is made on the tumor and it is dissected free from the surrounding tissue (Fig. 4).

With some of the tumors this last step was not necessary—the tumor could be brought up first and the dissection from the attachment of the bladder made secondly.

### REPORT OF CASES

I wish to append herewith report of seven cases, in six of which operation was performed for the removal of the diverticula. Two other cases which I have seen are not classified herewith because I did not determine the depth or size of the diverticula, and the openings that were visible may have been but shallow depressions; but the cases cited are those which had a definite well-marked and demonstrable sac. Six of these were men and one a woman, the oldest was aged 78 and the youngest 43, average age 59. In every case there could be demonstrated an obstruction to the urethral outlet. The diverticula were single in four cases and multiple in three. The largest number in any one case was four. In one case I first did the operation of enlarging the diverticulum opening. This not giving relief, I later resected the diverticulum and drained through the perineum.

Case 1.—Man aged 49, a letter carrier, referred by Dr. Wheeland. Complaint was bladder trouble. Family history had no bearing on the case. The patient had specific urethritis when 44—five years previous. Denies any luetic infection. Two years ago began to have difficult urination. Lost 10 to 15 pounds in the last year or two. No other symptoms besides the ones mentioned above. Has catheterized himself since February, 1909.

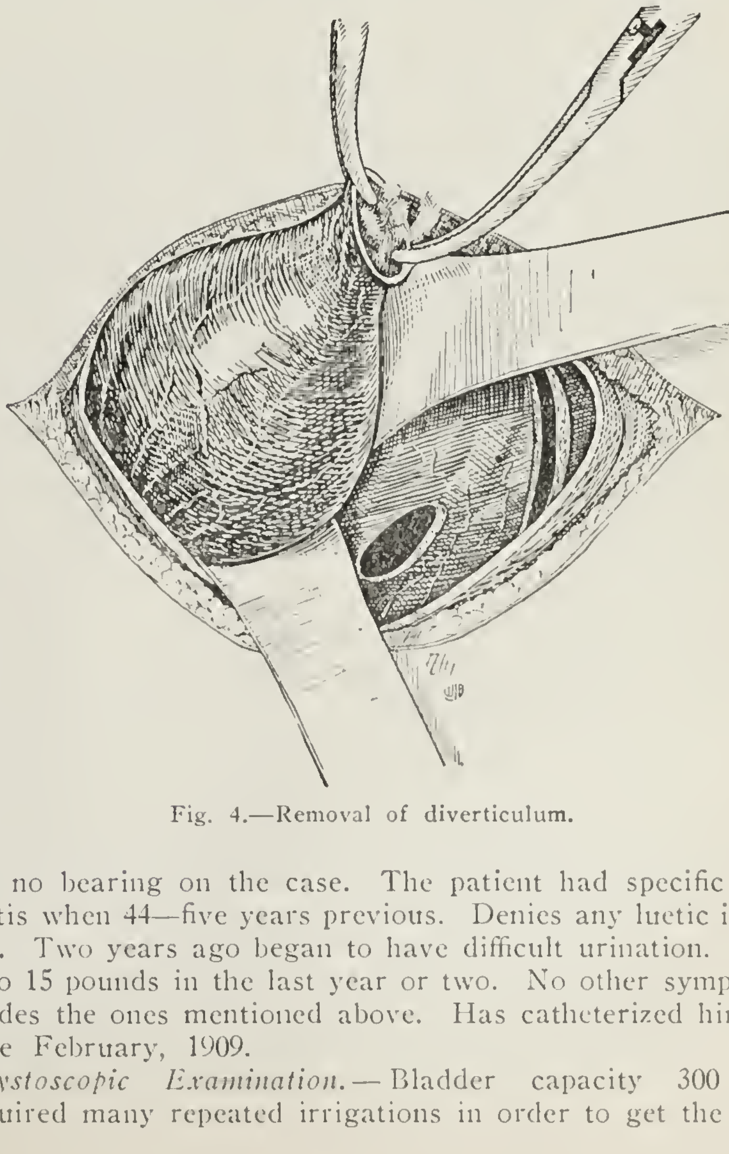

Fig. 4.—Removal of diverticulum.

*Cystoscopic Examination.*—Bladder capacity 300 c.c. Required many repeated irrigations in order to get the fluid sufficiently clear for observation. Situated on the bottom of the bladder near the left ureteral orifice is a large opening of a diverticulum from which, with the finger in the rectum, very cloudy solution could be expressed.

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[4] Squier: New York Med. Jour., 1914, xcix, 1026.

*Operation.*—Diverticulum was full of foul-smelling fluid. The opening was dilated. An attempt was made to remove the diverticulum from within the bladder, but this was not successful. A temporary drain was put in the bladder and the diverticulum irrigated through the tube. After being irrigated for several weeks the patient was able to void without much difficulty, but could not completely empty the bladder. He left the hospital very much improved. He returned again six months later.

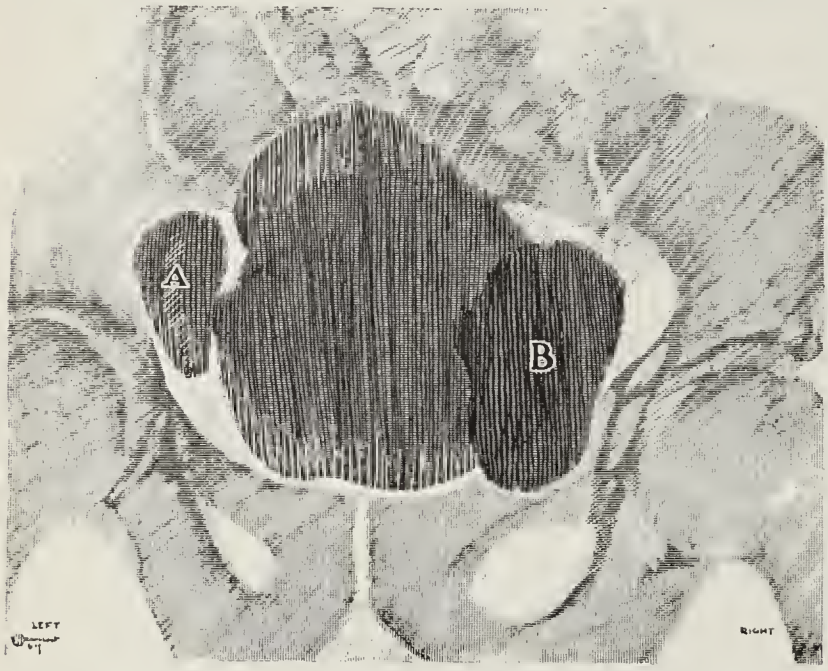

Fig. 5.—Outlines of diverticula (Case 4) as shown by Roentgen ray.

*Second Operation.*—Suprapubic incision as before. Bladder opened and divided down to the opening of the diverticulum. The diverticulum was cut away from its attachment to the bladder and an attempt made to dissect it out. This was only partially successful. An opening was made from this cavity through the perineum and a drainage tube inserted. It required six weeks for the perineal wound to heal, the suprapubic wound in the meantime having closed. Patient was very much relieved for a considerable time, but later began to have the same symptoms again. Cystoscopic examination two years later revealed bladder capacity of 300 c.c. Ureteral orifices plainly seen and in the region of the original opening of the diverticulum is another opening. Undoubtedly a reformed diverticulum the size of which I could not determine; as no picture was taken with collargol, exact size is not known. The patient has promised to return for further observation and treatment.

Case 2.—Man, aged 58, commission merchant, came under my observation through the courtesy of Dr. Garnhart. Principal complaint was pain in the region of the bladder and difficulty in urination. For the past eight or nine years he had slight burning on micturition. One year ago pain was very severe. Had great difficulty in starting the flow and could pass only a few drops. Pain subsided at the end of urination. After having sounds passed, which caused slight hemorrhage, he was obliged to use a catheter for several weeks, and for some time afterward the attacks would come on when he had been exposed to cold, necessitating the use of the catheter. Urine became very putrid, cloudy and foul smelling. A physician catheterized him daily and washed out the bladder. When a desire to urinate came on he had extreme pain.

Roentgenoscopy of kidney and bladder was negative; catheterization drew from 8 to 10 ounces of urine. Cystoscopic examination shows a very greatly inflamed bladder with an opening of a diverticulum situated on right side near right ureteral orifice.

*Operation.*—Median incision, bladder exposed and incised in a longitudinal direction. The opening of the diverticulum was seen at the base just to the right of the median line. The opening was quite small and on pressure a very turbid fluid was seen to exude. Judging from the amount of fluid emptied from the diverticulum, it seemed to me as though the diverticulum was about half the size of the bladder. The opening of the diverticulum, which admitted only a small sound, was dilated and an attempt made to invert the sac. This we were unable to do. The opening of the diverticulum was then enlarged to the width of about 2 inches. On account of patient's condition being bad, further effort at resection was not made. Rubber drain inserted down to the diverticulum. Closure of fascia with interrupted chromicized catgut and the skin with silkworm-gut.

After bladder was opened the prostate was found to be somewhat enlarged, which was thought to act as an obstruction, but prostatectomy was not done because of the condition of the patient. He made an uninterrupted recovery. At the end of two weeks wound was healed and catheter removed. Patient was able to void urine very comfortably for a short time; then suprapubic wound reopened and discharged for a number of weeks. The patient now feels quite comfortable, the severe irritation which he formerly had has disappeared and by daily irrigations he is able to keep the bladder in very good condition. He has gained in weight and his general condition is much improved, but he still has to depend on the catheter.

I did not inject collargol or take a picture and consequently cannot show the exact size of the diverticulum; but at the time of operation the diverticulum was explored with finger and found to be very deep.

Case 3.—Man, aged 43, married, merchant, complains of difficult urination. Family and personal history unimportant. Neisser infection twenty-five years ago. Denies lues. Urethral stricture for about fifteen years. About one and one-half years ago present trouble began; difficult urination. Had trouble in starting stream. At times there have been intervals when he would be very much better, then there would be a great amount of pain. He would usually be relieved by taking hot sitz-baths, and would pass the urine much more easily. Kept on getting worse and at times there would be a great amount of pus present in the urine. Collargol and roentgenoscopy revealed a diverticulum just posterior to the trigonum on the right side.

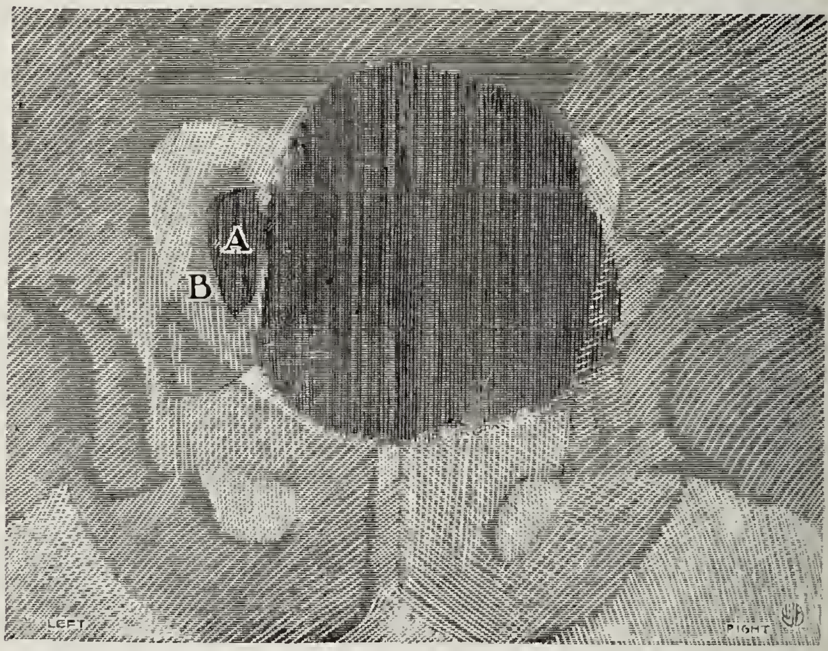

Fig. 6.—Diverticula (*A, B*) as shown by Roentgen ray (Case 5).

*Operation.*—Under nitrous oxid and novocain a transverse incision was made, fascia dissected up, muscles infiltrated with novocain, bladder exposed and incised. Bladder wall very much thickened. Mucosa much inflamed, and at the bottom of the bladder could be seen a thick white pus welling up into the opening of the diverticulum. The edge of the diverticulum was caught up with curved hooks and the whole base of the bladder lifted. Then a hemostat was introduced into the diverticulum and the diverticulum invaginated without very much difficulty, cut off and the opening closed. The bladder wound closed with chromicized catgut. On inspecting the urethral orifice to discover the cause of his retention a small protruding middle lobe was seen extending 1 cm. into the bladder. This was found to act as a valve over the urethral outlet and was removed. The opening of the bladder was closed with chromicized catgut. Catheter inserted into the urethra and allowed to remain. Primary union. Patient left hospital in good condition and recently reported that he is free from his old symptoms and feeling splendid.

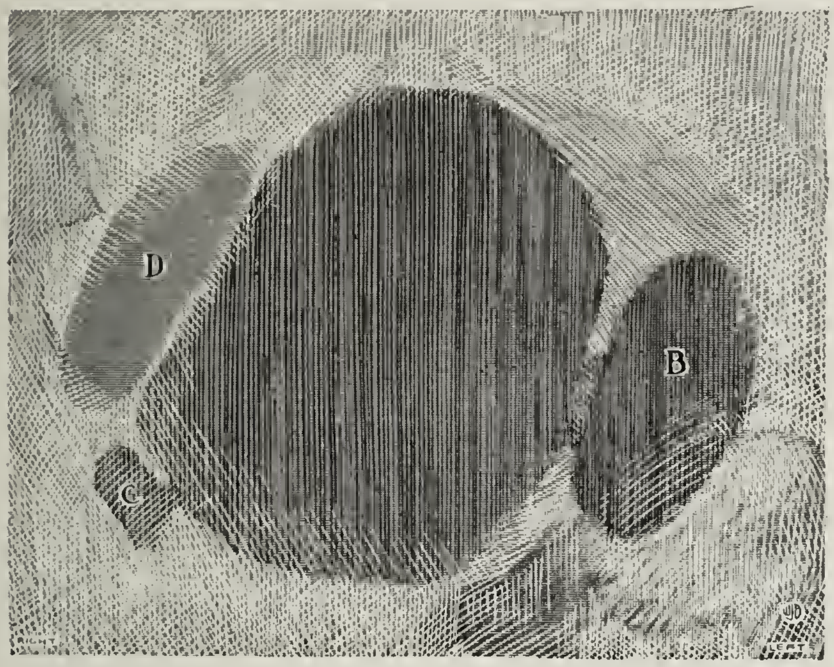

Fig. 7.—Diverticula (*B*, *C*, *D*) as shown by Roentgen ray (Case 5).

Case 4.—Farmer, aged 78, entered hospital, October, 1913, because of painful and frequent urination. Family history has no bearing on present trouble.

*Cystoscopic Examination.*—Required repeated washings to admit of observation. About 200 c.c. of boracic-acid solution injected into the bladder. Introduction of the cystoscope easy. On the right side near the ureteral orifice is an opening from which cloudy fluid escapes. This is undoubtedly the opening of a diverticulum. He was sent from the cystoscopic room to the Roentgen-ray room for roentgenoscopy after collargol had been injected into the bladder. A very large diverticulum situated posteriorly, and a smaller one situated laterally, were revealed (Fig. 5). He has an enlarged prostate, but because of his age and feeble condition, and with past experience with diverticula I decided that the risk was too great and the outcome too uncertain, so he was allowed to return home. No report has been received from him since.

Case 5.—Man, aged 54. Complaint, bladder trouble. Family history unimportant. No venereal history. About five years ago had a sound passed because of some irritation at the neck of the bladder. Since then he has had more or less difficulty in voiding urine. Has rather frequent desire to void and is unable to empty the bladder completely. Urine has become very cloudy and foul smelling.

*Cystoscopic Examination.*—Bladder capacity 300 c.c.; bladder mucosa very much inflamed—both lobes of prostate enlarged—bladder much trabeculated, and several dark openings from which turbid fluid escaped could be seen. Bladder was injected with collargol and a roentgenogram taken anteriorly, posteriorly and at an angle. The pictures show the presence of four separate pouches (Figs. 6 and 7).

*Operation.*—Nitrous oxid and novocain. Transverse incision. Fascia divided transversely, muscles separated, bladder exposed and opened. Openings of the diverticulum were readily seen. Small strips of plain gauze were packed into the openings on the left side, converting the sacs into semisolid tumors. They were then dissected down on from the outside of the bladder and were easily detected as tumors attached to the bladder wall. They were excised at the attachment of the bladder and openings closed with No. 00 chromic catgut. A smaller one on the right side was treated in the same way. A similar one near the median line was invaginated and removed through the bladder without packing. Opening closed. On examining the internal urethral orifice a middle lobe of the prostate was seen projecting and was removed. The bladder opening then closed and catheter inserted into the bladder for drainage.

Patient made an uneventful recovery and left the hospital in three weeks' time. A postoperative roentgenoscopy revealed complete absence of the tumors present in the first picture.

Report from patient a short time ago shows that the urine is quite clear although he does not quite empty the bladder. Probably more of the prostatic obstruction should have been removed.

Case 6.—Man, aged 59, machinist. Complaint, painful and difficult urination. Family history unimportant. Previous to present illness has had no difficulty or frequency. Never any history of renal colic. No hematuria. Had a Neisser infection about thirty years ago. Patient first noticed frequency, difficulty and diminished stream five months ago. Previous to this time was perfectly well. Says he does not know the cause of the frequency. Has had no chill or fever. Six weeks ago had to be catheterized. Has not voided voluntarily since. Never has had any incontinence.

*Cystoscopic Examination.* — Bladder capacity 300 c.c. Required considerable washing to clear up the solution sufficiently to make an observation. Bladder very much trabeculated; at the right side a little above the ureteral orifice is a small opening which is the entrance to a diverticulum. Collargol injection and roentgenoscopy revealed presence of large diverticulum in the posterior part of the bladder (Fig. 8).

*Operation.*—Nitrous oxid and novocain. Transverse incision. Fascia dissected up, muscles separated. Bladder exposed and opened. Flexible retractors inside of bladder; small opening in the bottom of the bladder was plainly seen. From this exuded some dark fluid undoubtedly part of the collargol. The opening was packed with narrow strips of gauze, in all about seven yards. The tumor then formed was exposed from the outside of the bladder. It could not be easily brought up. After having exposed the attachment to the bladder it was divided, the bladder pulled aside and with forceps on the neck of the tumor, traction was made on it and by careful dissection it was freed from its surroundings. After the attachment was divided it was found that the right ureter had been involved and had been divided.

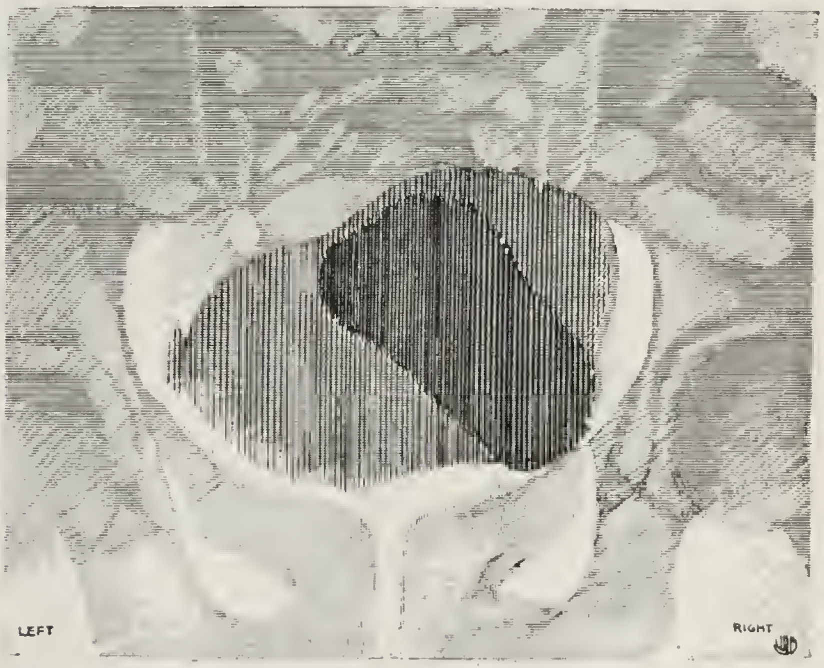

Fig. 8.—Large diverticulum in the posterior part of the bladder (Case 6) as shown by Roentgen ray.

Catgut was placed around the ureter after the tumor was removed and it was transplanted into the bladder through the opening from which the diverticulum had been severed. Prostate was quite large and bulged into the bladder cavity. As this was considered to be the cause of the diverticulum, prostatectomy was done. Prostate was easily removed; middle lobe was quite large. The mucous membrane over the cavity from which the prostate had been removed was pressed down with small narrow strips of gauze. Catheter allowed to remain in through the urethra, and the bladder wound left open. Small rubber cigarette drain was placed outside of the bladder in the cavity from which the diverticulum had been removed. This diverticulum was quite large.

Postoperative roentgenoscopy with collargol revealed no evidence of any former tumor. Patient made an uninterrupted recovery and has been entirely well since. Able to empty bladder easily and completely.

Case 7.—Woman, aged 74. Complaint, frequent and painful urination. Family history is unimportant. Personal history, general health only fairly good. Pneumonia at 68. For years she has had extreme annoyance during urination because of a very painful caruncle of the urethra. This had been removed, and while relieved of most of the annoyance which she previously had, she still had frequency of urination and pus in the urine. She has had autogenous vaccine treatment.

*Cystoscopic Examination.*—This disclosed a small opening on right side of bladder above ureter. Roentgenoscopy with collargol showed a well-defined diverticulum on right side of bladder.

*Operation.*—Nitrous oxid and novocain. Transverse incision; fascia divided transversely and dissected free. Muscles separated, bladder exposed and incised. Interior of the bladder exposed with a smooth flexible retractor and the opening of the diverticulum plainly seen. Through this into the diverticulum were inserted narrow strips of gauze sufficient in amount to pack the diverticulum very tightly. Then with fingers inside of the bladder and tip of the index-finger at the entrance of the diverticulum the bladder was pulled aside, the adjoining tissues dissected free and the neck of the diverticulum exposed. Without any difficulty I was able to dissect around this, bringing it up; as it was a well formed semisolid tumor now, it was easily removed from its bladder attachment. The opening in the bladder was closed with No. 00 chromicized catgut, both from within and outside the bladder.

Patient made an uninterrupted recovery and recently reported that she is entirely well. Postoperative collargol picture shows no evidence of former tumor.

1021 Prospect Avenue.

## ABSTRACT OF DISCUSSION

Dr. Martin Krotoszyner, San Francisco: The diagnosis of diverticulum of the bladder may occasionally be very difficult, even in the hands of the trained cystoscopist. I recently observed a man of 57 who entered the hospital with a severe pyuria which I at first interpreted to be due to involvement of the so-called middle lobe of the prostate. For two or three weeks it was impossible to obtain a clear picture of the bladder, in spite of repeated cystoscopic sittings, on account of the fact that invariably the almost clear bladder fluid suddenly became cloudy. I suspected the pyuria to be due to a pyonephrotic focus until this suspicion was removed by successful bilateral ureteral catheterization. Finally, after a great deal of laborious work, it was possible to clear up the bladder to such an extent that a large diverticulum could be seen, situated about 1 or 2 cm. below and to the left of the right ureter.

Dr. George Smith, Boston: Has Dr. Lower had any of these cases which have not shown much residual urine? Has he met any diverticula in which the mouth was so small that the contents would not come out on catheterizing the bladder?

Dr. William E. Lower, Cleveland: In reply to the question of Dr. Smith, in only one case was the orifice so small and the muscular contraction about the opening so strong that the contents could not be emptied by catheterization. This is a condition that must be borne in mind, and especially if we depend on the amount of residual urine as a diagnostic factor.

# ACUTE PARENCHYMATOUS GLOSSITIS *

VIRGIL LOEB, A.B., M.D., D.D.S.
ST. LOUIS

The basis of this paper is a case of acute parenchymatous glossitis which I reported superficially in a paper entitled "Unusual Cases in Oral Surgery," read before the St. Louis Dental Society during May, 1911.

In connection with the detailed report of the case which I now propose to give, I desire to enter into a brief discussion of the disease and the literature relating to it. Butlin, in his book on "Diseases of the Tongue" says:

> Acute inflammation of the tongue is admitted by all observers to be a rare disease. Even the largest hospitals in this country [England] do not, in most years, record a single instance. Yet the history of the disease may be written with tolerable accuracy, for the very rarity of acute glossitis has led to the publication of a goodly number of cases in medical literature.

From the reports of cases which I have been able to review, acute parenchymatous glossitis has been spoken of as acute glossitis, idiopathic glossitis, phlegmonous glossitis, deep glossitis and interstitial glossitis.

Baldwin[1] describes a case which he had observed, under the title "Interstitial Glossitis," and Wagner[2] reports a case using the term "Idiopathic Glossitis." Saenz[3] and Dupérier[4] each speak of the disease as *Glossité profonde* rather than as *Glossité parenchymateuse.*

The disease is noticed most often during the winter months and attacks males more frequently than females. It occurs chiefly between the ages of 20 and 40, though Bennett,[5] in reporting a study of the literature from 1816 to 1906, states that cases have been reported at 9 months and 80 years of age.

Among the etiologic factors relating to acute parenchymatous glossitis, exposure to cold and dampness together with a lowered general resistance seem to be the most potent. Infectious diseases also play an important rôle. Weis[6] described a case which followed the desquamation of scarlet fever. Sabrazes, Bonnes and Parsat[7] report a case in a man whose children had had scarlatina just previous to his illness and they thought the patient may have had a scarlatinal throat. No specific germ has been isolated, though streptococci and staphylococci have been found.

Predisposing causes are injuries to the tongue from carious teeth, faulty dental work, tooth-picks, splinters of wood and other foreign bodies. Gerhard[8] adds as further causes the action of corrosive substances, hot liquids and the stings of insects.

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* Read before the Section on Stomatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Baldwin: Cincinnati Med. Jour., 1896, ii, 143.

[2] Wagner: Med. Rec. New York, 1893, xliv, 523.

[3] Saenz: Contribution à l'étude de la plossiti profonde aiguë, Montpellier, 1906.

[4] Dupérier: Thèse de Paris, 1906-07.

[5] Bennett: Washington Med. Ann., 1906-07, v, 267.

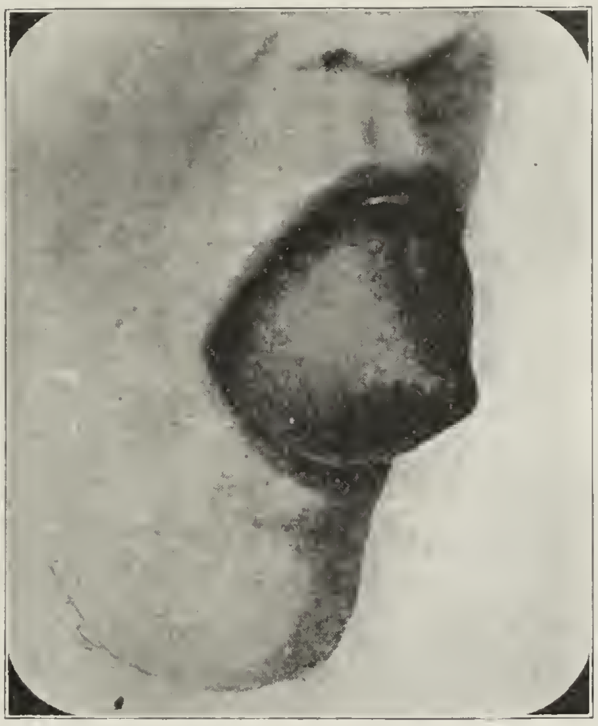
[6] Weis: Loire méd., 1908, xxvii, 366.

[7] Sabrazes, Bonnes and Parsat: Presse méd., 1906, xiv, 303.

Sore throat often precedes an attack as in cases described by Washburn[9] and Green.[10]

The disease is usually ushered in by pain which is located in the tongue but often in no specific area. This pain comes on suddenly and increases gradually in severity. Accompanying it, though not always immediately, there develops a swelling of the tongue which increases rapidly until the organ fills the entire oral cavity, and often protrudes outside the mouth. In some cases designated as hemiglossitis, the swelling is limited to one side, usually the left. Bennett[5] found from a study of 145 cases that in 85 the entire tongue was involved. In 36 the glossitis was limited to one-half of the tongue, and of this number 20 cases were on the left side. Thomas[11] reports one case of hemiglossitis and Duckworth[12] and Copland[13] each report four. In the majority of these the left side was involved. Coincident with the swelling there is a rise of temperature with a corresponding pulse and salivation. The tongue is covered with a dark brownish fur on the dorsum and is tense, dry and hot. Deglutition is impossible and breathing very difficult. There is extreme discomfort and the facial expression is one of great anxiety. The cervical glands are usually palpable.

Butlin[14] says the diagnosis of acute parenchymatous glossitis "is generally so easy that it seems almost unnecessary to speak of it." He states, however, that it is at times difficult to differentiate from acute edematous swelling due to salivary calculus and other affections of the floor of the mouth. Bennett adds acute ranula and herpes of the mouth, lips, tongue or pharynx as diseases from which it should be diagnosticated.



Dr. Loeb's case of acute parenchymatous glossitis.

The pathology is simply that of an acute violent inflammation. Thebaud[15] says there is a violent injection and swelling of the lymph-vessels chiefly in the muscular structure of the tongue.

The prognosis of acute parenchymatous glossitis should be guarded, on account of the complications which may arise in all cases. Bennett, however, states that of 145 cases which he reviewed, only four ended fatally or less than 3 per cent. Recovery may be by resolution, or suppuration may develop. In some cases gangrene takes place, which renders the outcome very grave.

The treatment should be immediate and surgical. Deep longitude incisions along the dorsum of the tongue on either side of the median line seem to be generally accepted as the best procedure. Sonbeyrau[16] recommends a median incision. Saenz[3] after a study of eight cases, states that since glossitis often ends spontaneously, it is prudent to await this, provided no alarming complications develop. Dupérier[4] also reports eight cases, but recommends immediate deep longitudinal incisions.

If suppuration has developed, free drainage must be obtained. Thebaud[15] reports seventeen cases and in his conclusion states that when a deep abscess develops at the base of the tongue which cannot be reached by the oral route the same must be attacked from without.

In cases which develop gangrene, cauterization should be used. In addition to the purely surgical treatment, antiseptic mouth-washes should be used freely, together with constant cold applications to the tongue. Pain should be allayed by the use of morphin, etc.

### REPORT OF CASE

Patient W. O. A., white, married, aged 50, traveling salesman by occupation, consulted me first Nov. 9, 1910. Patient gave the following history:

Eleven days ago while in the South he began to notice pain in his tongue. He could locate it at no definite point but said it seemed to be in the substance of the organ. The only cause which he could give was that he was in the habit of whittling pine sticks and sticking the splinters in his mouth. He thought he had scratched the under surface of his tongue with one of these splinters. He also had been chewing some fresh perique tobacco. The pain became steadily more intense, especially on the right side, and was more noticeable when swallowing. He remained in the South for several days under treatment, but obtained no relief.

The patient was a well-built, robust man, color good, with facial appearance one of extreme uneasiness. Physical examination, negative. Personal history, negative. Denied syphilis.

Examination of his mouth revealed a somewhat inflamed mucous membrane and several carious teeth. The tongue was apparently not swollen, nor was it especially inflamed. There was a small abrasion which was healing on the right side, but otherwise it was apparently normal. One gland in the right anterior cervical region was slightly enlarged. Temperature normal. The patient was extremely nervous. He said he had taken practically no nourishment for three days. On pressure over the right side of the tongue, far back near the base, the patient complained of excruciating pain.

The patient was sent to a hospital and cold applications to the throat and tongue ordered. Aspirin, 5 grains, was given every three hours. That night the patient slept fairly well and felt somewhat relieved the following morning. An examination of his urine at that time showed some albumin, hyaline and granular casts and a few pus cells.

The relief which the patient had had continued only until the afternoon of the second day in the hospital, November 10. The pain then returned in increased severity. Large doses of aspirin were given and veronal in 5-grain doses, with little relief.

November 12, for the first time, a slight edema around the orifice of the right Wharton duct was noticed. There was still no swelling of the tongue. That afternoon a neurologic examination was made by Dr. S. I. Schwab, but nothing which might be responsible for the pain was found.

By November 13, a most spectacular change had taken place in the tongue. It had become swollen until it practically filled the entire mouth cavity. It protruded from the mouth, was very dry and hot. Temperature 100 F. The patient was semiconscious, breathing very heavily. Nourishment was given by nasal tube and water by rectum. A blood-count was made showing 12,478 leukocytes. Urine examination showed a large amount of albumin, hyaline and granular casts and a few blood and pus cells.

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[8] Gerhard: Codex Medicus, Philadelphia, 1896-97, iii, 42.
[9] Washburn: Med. Rec., New York, 1896, l, 172.
[10] Green: Med. and Surg. Rep., Philadelphia, 1891, lxv, 333.
[11] Thomas: Marseille méd., 1905, xlii, 512.
[12] Duckworth: Liverpool Med. Chir. Jour., 1883, iii, 195.
[13] Copland: Dict. of Med., iii, 1077.
[14] Butlin: Diseases of the Tongue, 1900, p. 69.
[15] Thebaud: Paris Thèses, 1893-94.
[16] Sonbeyrau: Montpellier méd., 1902, ii, 687.

A consultation was held with Dr. P. Y. Tupper and an immediate operation determined on.

After anesthetizing the tongue with local applications of cocain, I introduced an aspirating needle for the purpose of determining whether or not an abscess was present, and also for the purpose of reducing the pressure by local bleeding. I aspirated ten times in as many different places, and at different depths, but found no pus present. The bleeding was profuse. The patient was put to bed and continuous ice-cold irrigation was applied to the tongue. Nasal and rectal feeding were continued.

Patient had a most uncomfortable night, with severe pain, which was relieved only by a large dose of morphin. Patient felt better by morning. From this time he began to improve. The temperature rose to 101, dropping gradually, and except for acute exacerbations of short duration the pain became less intense. Within four days the tongue had become reduced to such a size that the patient could talk fairly audibly and could swallow without great discomfort. Most of the pain from now on was due to ulcerations on either side of the tongue, caused by pressure against lower right and left carious molars.

From this time until the patient left the hospital, a period of two weeks, the treatment consisted of cold applications to the tongue and applications of argyrol in 25 per cent. solution, to the ulcerated areas. After leaving the hospital the patient gained strength rapidly and on Jan. 3, 1911, was pronounced entirely well. He was treated by Dr. J. S. Myer for his acute nephritis, from which he also recovered.

537 North Grand Avenue.

## ABSTRACT OF DISCUSSION

Dr. Gordon New, Rochester, Minn.: About three weeks ago I saw a case almost as extensive as this, following an abscess at the root of a third molar tooth. The patient recovered, however, after drainage in the submaxillary region. Other than this I believe there is nothing to record about the case.

Dr. F. B. Moorehead, Chicago: It is difficult at times, if not impossible, to make a differential diagnosis between parenchymatous and interstitial inflammatory conditions excepting, of course, microscopically. A boy of 17 was sent to us with a history of acute abscess from the lower incisor tooth. The tooth had been extracted some ten days previously, and following the extraction an extensive swelling had developed, more in the floor of the mouth than in the tongue, which had the appearance of a typical Ludwig's angina. The swelling went backward and the patient had difficulty in swallowing; the tongue began to enlarge and completely filled the mouth. The swelling in the lower part of the mouth and tongue made tracheotomy necessary. The pain was very severe, temperature 102.

Dr. Theodore Blum, New York: What was the infection from which this came?

Dr. Moorehead: A simple alveolar abscess, I imagine. I did not see the case until the original focus had cleared up, the patient coming to me with a mass of induration on the floor of the mouth.

Dr. Blum: Was a roentgenogram taken?

Dr. Moorehead: Yes, but it showed nothing except the empty socket from which the tooth had been removed. There was no other bone involvement.

Dr. M. I. Schamberg, New York: The cases of glossitis that we come in contact with are usually secondary to other disturbances, as stated by Dr. Moorehead. The description of the case which Dr. Moorehead has given us is identical with a case which recently came under my care, in which the suppurative site was in the submaxillary region and had extended to the tongue, so that the tongue showed a certain amount of the extension of the inflammation. Another patient was sent to me as a case of glossitis showing evidence of swelling in the tongue in which the physician in charge suspected a specific origin. The history of the case as obtained from the patient showed no history of an initial lesion. The patient was married, his wife had borne several children and there had been no miscarriages. On examination I determined, with some difficulty, a slight ulcerated spot on the lateral aspect of the tongue in relation with two or three molar teeth. This they attempted to explain because of the swollen tongue coming in contact with roughened teeth. I was, however, suspicious that the case was malignant and took a fairly good section from that portion of the tongue and sent it to one of the best pathologists in New York. The report came back that it was not malignant. In spite of this I persisted in the view that it was malignant and that we had not reached the tissue showing the typical pathologic changes. The case passed out of my hands at that time because the physician called in some one else for a Wassermann. A positive Wassermann was found and the case was treated with salvarsan. There was an improvement, and I was also informed subsequently that the lesion that was removed from the tongue was malignant. It is important in these carcinomas of the tongue to remember that they are often deep seated and that the removal of superficial tissue will not determine it. I thought I had gone well into this ulcerated region and that I had obtained some of the involved tissue, but the diagnosis was made absolute by the pathologic finding after the removal of the tongue.

These tongue cases are exceedingly malignant and the only salvation is to see them as early as possible. In another case there was a slight ulceration on the side of the tongue which attracted attention. The patient was sent to a physician who diagnosed it as an initial lesion of syphilis and treated the patient for chancre. When the patient came to me the tongue was well indurated beyond the median line. I advocated the removal of the tongue, but the patient would not consent to the operation and went to an untimely death six months later. The only chance in these cases is to make an early diagnosis and they should be looked on with grave suspicion, particularly cases of glossitis that do not show suppurative lesions or in which the blood-count does not indicate the presence of disease in the system.

Dr. A. H. Levings, Milwaukee, Wis: So far as my experience goes, practically all of these cases are due to infection. It may be either streptococcic or staphylococcic. The point of infection we may not be able to determine, but it is usually some scratch or abrasion as from a roughened tooth, or it may be the sting of an insect. I have never seen a case of parenchymatous glossitis that I thought I could not differentiate from carcinoma. Dr. Loeb's treatment of the case I think was excellent; either make numerous punctures or make a free incision, the idea being to deplete the tissues, cause free hemorrhage, and get rid of the infection.

Dr. Virgil Loeb, St. Louis: I had intended to make a deep incision, but finding no pus present and getting satisfactory results by aspiration, there was no occasion for such a procedure. In differentiating from any malignant disease of the tongue, I examined the patient thoroughly before the swelling developed and there was no sign of induration.

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**Public Health and Personal Hygiene.**—Public health is made up of units, personal health is public health, personal hygiene is public hygiene. If perfect health on the part of the farmer is considered, he will not allow milk to be dirty, allow pollution to get into the well or brook or stream. If you are working for public health you are working for personal hygiene, individual, clean, sanitary living and if each individual would follow that out public-health problems would be largely solved. Health doctors to be successful must expect to train the individuals they come in contact with in the laws of personal hygiene.—W. H. Sawyer, *Journal Michigan State Medical Society.*

# A STUDY OF THE BACTERIOLOGY OF ALVEOLAR ABSCESS AND INFECTED ROOT CANALS*

THOMAS L. GILMER, M.D., and A. M. MOODY
CHICAGO

Since Billings, Rosenow and other internists have found the mouth a prolific primary focus of infection, fraught with secondary manifestations of grave consequence, it has been thought desirable that a closer study of the bacteriology of alveolar abscess, both acute and chronic, as well as the infectious material found in pulp chambers and root canals, should be made.

The impression generally entertained that alveolar abscess, both acute and chronic, is due to the *Staphylococcus albus* and *aureus*, seems from our study not well founded. We have received this accredited opinion, not from written statements, but from questions put to those whom we knew had had such experience in the observation and treatment of alveolar abscess, and their answers have been expressed as before indicated.

One looks in vain for statements in books which treat of alveolar abscess of opinions on the bacteriology of this disease. The subject has been thought either of too small consequence to warrant discussion, or too difficult of solution. We recognize that abscesses of the jaws are by no means the only mouth conditions to which joint, heart and other lesions may be attributed, but we have made our study of the bacteriology of tooth infections partly because so little attention has been given it and because we were able to gather from such foci specimens with less liability of contamination, than from pyorrhea alveolaris pockets, for instance. The mouth, even in health, affords a great flora, both of pathogenic and non-pathogenic bacteria, therefore great care and painstaking was necessary in the collection of material which would be uncontaminated.

In gathering specimens from acute alveolar abscess the field to be incised was made as nearly aseptic as possible by thorough washing with 50 per cent. alcohol, and as soon as the incision was made a sterile pipet was introduced deeply into the abscess and the pus collected. The pipet was then sealed and sent to the laboratory.

In the chronic infections, abscesses without sinuses were selected and similar precautions observed for the collection of specimens. In others, the pus was collected direct from the pulp canals of teeth having no cavities of decay; the tooth being thoroughly washed with alcohol after the application of the rubber dam, then drilled through into the pulp chamber with a drill, and as the pus welled up from the canals it was received in the pipet. In others, the pus was collected from the apices of freshly extracted teeth which had been removed under careful aseptic precautions. The specimens from septic root-canals were gathered from teeth recently removed. In order to expose the root-canals the teeth were enveloped in sterile gauze and placed between the jaws of a vise and crushed, others were flamed and the roots then split with sterile bone-cutting forceps. These methods exposed the pulp-chambers and root-canals from which the specimens were obtained. In some of the teeth thus examined there was found pulp-tissue partly gangrenous and partly alive, in others only necrotic elements of the pulp, the pulps in some having been dead for a long period of time, as indicated by the presence of old imperfect root-canal fillings.

The presence of bacteria of various kinds within the structures of the teeth and the tissues adjacent to them was demonstrated many years ago by Miller (Micro-organisms of the Human Mouth) and others. From our work it would seem that we are now able to classify the more important organisms which correspond in many respects to descriptions and photomicrographs of bacteria of the dental structures appearing in the literature as early as 1881. Our conclusions are arrived at from some forty odd bacteriologic examinations, which it has been our privilege to make of material from acute, subacute and chronic or latent infections of the jaw and teeth. There were sixteen acute alveolar abscesses, eighteen subacute or chronic abscesses and eight teeth with diseased root-canals from which material was received for bacteriologic examination.

In the main there has been a great similarity in the results obtained. We believe that to obtain such constant results as we have, the same technic should be employed. That technic is the following:

After receiving the material to be examined, collected in the manner described above, it is smeared on the surface of blood-agar or ascites-dextrose-agar slants. One tube is placed under anaerobic conditions by the addition of pyrogallic acid and a few drops of sodium hydroxid to the tube after the cotton plug has been pushed in about one-third the distance from the top. The tube is then plugged with a plain cork and sealed with paraffin. The other inoculated tube is kept under aerobic conditions and both are placed in the incubator at 37 C. (98.6 F.).

Within twenty-four hours one will usually see a fine granular growth over the surface of the aerobic blood-agar slant. If one examines this closer the growth is seen as fine greenish colonies. The water of condensation contains chains of these organisms which are usually Gram-positive. There may also be a similar growth in the anaerobic tube but one cannot distinguish the green color. At the end of forty-eight hours, however, there is quite a change in the appearance of the anaerobic growth; it is very luxuriant, grayish-white in color and the colonies have a great tendency to fuse. On opening this tube one notices immediately a very offensive odor.

The above hurried gross description of the cultures will hold for the great majority of the specimens from the chronic infections examined. The variations are due to the predominance of one or other of the principal organisms present, and to whether or not the material cultured has been contaminated with unimportant bacteria from the mouth. The bacteriologic results in our series of acute abscesses differed mainly in the aerobic findings. In these there were varying degrees of hemolysis of the blood.

From the microscopic examination for further identification of the organisms in question, we found the predominating organism to be a streptococcus. We have obtained many graded variations from a hemolytic streptococcus with a wide zone of hemolysis in the acute abscesses, to a *Streptococcus viridans* in the chronic, and just recently one in which a *Streptococcus mucosus* was the predominating organism. These organisms, particularly the green-producing streptococci will in many instances grow as well anaerobically as they will aerobically.

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* Read before the Section on Stomatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* From the Laboratory of St. Luke's Hospital.

The anaerobic cultures which do contain streptococci are rarely pure. Some contain *Bacillus fusiformis* in varying numbers. A few of these tubes, however, have practically pure cultures of fusiform bacilli.

The above results are what we have learned to expect, but there are many other organisms which occur with these. Aerobically we occasionally obtained isolated colonies of *Staphylococcus aureus* or *albus, Micrococcus catarrhalis,* and some unidentified saprophytic organisms. In two instances a diphtheroid bacillus has been found which grows under both aerobic and anaerobic conditions.

Anaerobically, in old cultures, we have seen in material from three different abscesses a black pigment-producing organism. This organism is slow growing and does not usually appear for about five days. We do not believe that it is of any importance in these infections.

In three of the chronic cases from which material was examined the patients were treated with autogenous vaccines with strikingly beneficial results. The vaccines were made from the cultures of both the aerobic and anaerobic organisms, and were given in graded doses at five-day intervals.

These were chronic suppurations, following that class of acute infections of the mandible characterized by much brawny swelling, persisting over a week or more with little or no indications of pointing. The pus discharge continued with no seeming diminution for several weeks after the acute symptoms had subsided. In each instance the pus flow stopped promptly on the use of the vaccine treatment.

Those who have made extensive observations of the tendency of acute attacks of alveolar abscess recognize that they occur epidemically. Whether the epidemics of streptococcus nose and throat infections follow or occur simultaneously with epidemics of alveolar abscess is a question both of interest and importance. We have not sufficient data to warrant a definite statement relative to the subject, however, since we have found in both infections the same bacteria; and as both occur epidemically it may be discovered that there is a very definite relationship between the two infections.

It seems reasonable to suppose that the presence of the streptococcus of nose and throat infections may easily cause simultaneous or secondary infections in the jaws, the organisms reaching the apices of the roots through cavities of decay in the teeth, or through the circulatory channels.

Since the discovery of a positive relationship between tonsil infections and secondary manifestations in other organs and parts, tonsils have been removed wholesale, in some instances on slight provocation. Their removal has, we fear, become with some almost a fad. A similar fad is growing up relative to the removal of teeth, since the discovery that jaw abscesses and pyorrhea alveolaris are equally as potent foci for secondary infections as are the tonsils. Some physicians are rather indiscriminately sending their patients to the extraction specialist, requiring removal of several or all of the teeth, supposing them to be a factor in some lesion, when their removal is not always justified. A roentgenogram, if properly made, is infallible, and can be absolutely relied on providing its interpretation is correct, but an improper exposure may lead one, if inexperienced, to mistake a part of the maxillary sinus for an abscess at the end of the roots of the second bicuspid or first molar. Other errors from incorrect readings may lead to similar wrong conclusions.

Some jaw abscesses may be cured by treatment through the tooth's root, still others by surgical interference, other than by extraction. Pus appearing at the free margins of the gums does not always indicate the so-called pyorrhea alveolaris. It may be due to lime deposits, the removal of which permits a speedy return of the gums to health. The diagnosis of this class of pathologic conditions of the mouth requires special study and an educated technic.

People's Gas Building—St. Luke's Hospital.

# MOUTH INFECTION AS A SOURCE OF SYSTEMIC DISEASE *

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The subject assigned is "Mouth Infection as a Source of Systemic Disease." I shall confine my remarks to infection of the jaws (alveolar infection) as related to systemic disease. Many radiographic films of the jaws have been made from patients in our clinic at Rush Medical College and the Presbyterian Hospital suffering from chronic arthritis. One film shows an alveolar abscess occurring in a patient with Hodgkin's disease. These films as a means of recognition of alveolar infection are not new to members of this section, but this method of examination of alveolar disease is not sufficiently utilized by dentists and physicians generally. It should be used, for by no other method may one know the exact condition of the alveoli and roots of the teeth. Alveolar infection and abscesses may be primary and due to unhygienic conditions of the mouth and I am sure it is often intensified and prolonged by irrational dentistry—teeth with infected pulp crowned or improperly filled. General malnutrition (scurvy, etc.) may cause mouth infection and alveolar disease. But whether primary or secondary, alveolar focal infection may be the dominant factor in the production of systemic disease, of which malignant endocarditis (*Streptococcus viridans*), chronic arthritis and myositis are examples. From the infected alveoli and tooth canals we have made bacterial cultures. The dominant organisms belong to the streptococcus-pneumococcus group. I would refer you to the brilliant results of the investigation of our colaborer, Dr. E. C. Rosenow, on the mutation of cultural and pathogenic characteristics of this group of bacteria. In addition staphylococci, a fusiform bacillus, the *Bacillus aerogenes capsulatus,* and various saprophytic organisms are found. The streptococcus-pneumococcus group apparently comprise the important pathogenic bacteria related to systemic disease. In five patients suffering from Hodgkin's disease, an alveolar abscess has culturally yielded the diphtheroid bacillus, which is found in the enlarged lymph-glands in that disease. We also know that systemic actinomycosis may arise from alveolar infection due to the ray fungus.

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Systemic disease due to a focus of infection anywhere, is probably always hematogenous. The study of the infected tissues of experimentally inoculated animals and the infected muscles, joint tissues, lymph-nodes proximal to infected joints, nodes on tendons, etc., of patients, yield specific bacteria, and histologically there is found embolism of the small and terminal blood-vessels. Local hemorrhage and endo-arterial proliferation result in interstitial overgrowth, cartilaginous, osseous, vegetative and other morbid anatomical changes, dependent on the character of the tissue infected.

Partial or complete ischemia of the tissues due to the embolism is an important factor in the production of the morbid anatomic changes. Oxhausen of Berlin has produced, in animals, aseptic osteochondritis resembling arthritis deformans, by ligating the arteries supplying the joint tissues. These principles are, I think, susceptible of proof, that a chronic alveolar infection, and chronic foci in other regions also, may cause systemic disease by hematogenous bacterial emboli, which infect and at the same time deprive the tissues of nourishment. Local infection of muscles, joint tissues, etc., and lessened blood-supply result in the peculiar morbid anatomy of the respective tissues.

To investigate and manage these patients requires team work of the clinical and laboratory workers. The clinician must carefully examine the patient, exhausting every detail in the personal history. The skill of the dentist, the nose and throat specialist, the gynecologist, the genito-urinary expert and others may be necessary to locate the foci of infection. The focus must be destroyed. Tissues and exudates of foci should be carefully examined and bacterial cultures made. Vaccines of the dominant bacteria may be made for subsequent use.

With the source of the infection removed, the attempt should be made to increase the defenses of the body against the systemic infection. This involves a long and tedious period in the chronic joint infections and also in some other systemic diseases of focal origin. Rest, both mental and physical, is essential. Good, wholesome food, pure air, optimistic surroundings and, if necessary, restorative tonics of iron and other drugs. Pain must be palliated by simple drugs like the salicylates. After a time passive exercise and later active graduated exercise must be followed to aid in the restoration of local circulation and to hasten restoration of the morbid changes of the tissues. Autogenous vaccines may be used in the attempt to improve the defenses of the body. In chronic arthritis, with the circulation of the infected tissues obstructed embolically, antibodies in the blood stream, even if augmented by vaccines, would have but little effect locally. In the later stages of chronic arthritis when the local circulation has been so improved that the tissues are flooded with blood, vaccines will be of undoubted value. Patients may, however, be cured of chronic arthritis by the other measures named without the use of vaccines.

To recognize the character of this class of systemic disease and to manage successfully the patient, the physician must have absolute control. This implies hospital care where team work of the staff may insure qualified clinical and laboratory workers.

# MOUTH INFECTION AS A SOURCE OF SYSTEMIC DISEASE *

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It has taken a long time for the general public to appreciate the full rôle of infection in the production of death, while even in the medical profession, more has come from the study of infections in the prevention of disease than in increasing the means of cure of disease, great as have been the results of treatment.

Since all animal life depends on some other form of cell life, vegetable or animal, it seems but the part of all life to carry on this process of germinative development and maturity. It is only the resistance of healthy cells that prevents the inroads of the myriads of ever-present bacteria and animal parasites which are striving to get a foothold that they may in turn carry on their life work. Disease, then, is an inflammatory process from infection and the efforts at repair. It may also be chronic from the failure of cell life through lack of defense, from defective nutrition and advancing age.

We still speak more or less lightly of the so-called diseases of childhood, and the time is not far past when mothers took their children to be exposed to whooping cough, mumps, etc. To-day the intelligent woman knows that it is not necessary that the vitality of the child should be jeopardized by such preventable diseases, and that when they occur it is through carelessness, neglect or ignorance on the part of some one.

A comparatively small number of infections occur through wounds of the cutaneous surface. Many of those affecting the special organs are incurred through direct or indirect contact, as those of the eye and of the genito-urinary system. They may make most serious inroads on the general health. Infections which produce the greatest number of diseases enter the system by way of the alimentary and respiratory tracts. Somewhere in the line, then, of the alimentary and respiratory tracts and in the excretory ducts of the body lie the sources of the entrance of organisms which terminate life in the majority of instances. The great importance of the well-known diseases of the nasal passages with their sinuses, the lymphoid tissue of the pharynx, including the tonsils, and the diseases of gums and teeth, which have been given prominence by the dental profession during the last three years, is now more generally appreciated.

The mouth is the harbor of many varieties of bacteria which are constantly taken into the stomach during the process of eating. We have long looked on the acids of the stomach as destructive to such bacteria, but Smithies, in a microscopic examination of gastric extracts from 2,406 different individuals with "stomach complaint" (dyspepsia, indigestion and the like), showed that irrespective of the degree of acidity of such gastric extracts, bacteria were present in 87 per cent. Morphologically cocci and diplococci were present in 83 per cent.; short and long rods (often of the colon group) in 58 per cent.; typical streptococci and staphylococci in 17 per cent. and *Leptothrix buccalis* in 24 per cent. In fifty-four cultural studies of saliva from "dyspeptic" patients, streptococci and staphylococci were demonstrated in over 80 per cent., bacilli in 66 per cent. and *Leptothrix*

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*buccalis* in more than 14 per cent. Comparing these figures, it would appear that the common forms of pus-producing organisms (streptococci and staphylococci) have their proliferation retarded in gastric juice, but that bacilli (often of the colon group) as well as *Leptothrix buccalis* thrive in the stomach.

Bacteria of various forms live in the small intestine, or at least pass through it or into the blood stream by way of the mucous membrane. They exist in such great numbers in the large bowel that, whether living or dead, they constitute a considerable bulk of the dejecta. During the last few years some important points have been added to our knowledge of bacteria. Living germ life in the blood, or bacteremia, occurs in all infectious diseases. According to their number and virulence, the blood responds in slight or extreme degree to the symptoms, general and local, constituting the disease.

We have long known that bacteria were specified in type and action in all diseases in which we have been able to identify a specific germ. Rosenow has done a great work in showing that changes in environment may so change bacteria that specific action varies. The appearance of the bacteria is also unlike that of the original cell. In the blood stream these various forms, once they enter it, are selective in choosing their location, thereby developing specific local disease. The old "idiopathic" osteomyelitis of the child we now know may follow a short time after a specific tonsillitis. Pyorrhea, tonsillitis or sinus disease may be the source of an infection which we call rheumatism. Root abscesses and pus pockets connecting with them are often the source of acute and chronic rheumatism. The nasal sinuses and chronic mouth and throat infections develop anaphylaxis from the constant poisoning, and their results are shown in hay fevers, asthmas, urticarias, etc. Rosenow's work is going far to show that ulcerations of the stomach are conditions in which the mucosa is attacked from behind through the blood stream by bacteria which live in the blood and have a selective affinity for these particular areas. Septic bile which, in the majority of instances, is caused by infection is carried to the liver through the portal circulation. It creates such changes in the bile that it fails to activate the pancreatic and duodenal secretion, thus making various phases of indigestion, with qualitative rather than quantitative food trouble. Lower down we have the appendix with its lymphoid tissue which approximates in character that of the tonsil. Here the acid types of bacteria have the same opportunity, could they but enter the blood stream, of making erosions of the gastric mucosa as the specific form which is found in the mouth. We may here note that acid-secreting or acid-bathed surfaces are very subject to cancerous change, while alkaline-bathed surfaces are much less liable to be involved. Saliva is neutral or slightly alkaline in health, yet less than 20 per cent. of people have healthy mouths. The infected mouth shows a tendency to the acid reaction and it is through this acid change that we have an additional danger in cell degeneration, of malignant type, from chronic irritation.

The stomach is the most common location of all cancers, while the alkaline small intestine is rarely subject to cancer and the duodenum is most resistant to it. The large bowel again reverts to an acid reaction and is very subject to cancer. So also is the bladder. These structures with acid secretion are of more recent development than are many tissues of animal life, several of them being classed as organs of convenience, which fact renders them possibly less resistant.

Certainly enough is known concerning infections and their mode of entrance, that the infected and diseased mouth and respiratory tract must be looked on as most serious menaces. Much may be done by more general and effective school inspection. The present generation of children will understand and demand protection for their children in time. The first teeth should be watched, that the second be not permitted to erupt irregularly, causing deformities. Jaws should be spread that the teeth may meet and the high arched palate, diminishing nasal breathing, thereby reduced. Tonsils and adenoids should be looked after, thus preventing ear and mastoid diseases, rheumatism, endocarditis, etc. In chronic and recurring diseases, a search must be made to establish positively the nonparticipation of each of the several sources of infection.

The physicians engaged in this line of observation require fully as much training in the rudiments of dentistry as the dentist does in the signs of infectious diseases. While we have leaders in all professions, through the energy of their kinetic glands, the big stick which leads to our advancement is in the hands of the progressive and educated public who are constantly demanding more of their dentists, of the medical profession, and of the state in protecting them against preventable diseases.

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# MOUTH INFECTION AS A SOURCE OF SYSTEMIC DISEASE *

E. C. ROSENOW, M.D.
CHICAGO

Cultures from emulsified tissues in various systemic disorders, such as the adjacent lymphatic glands draining the involved joints in arthritis deformans, in acute articular rheumatism, and the lymph-glands in Hodgkin's disease, have yielded interesting results. One striking thing in connection with some of the more chronic infections is that the character of the micro-organisms found in the lesion may be quite different from the character of the micro-organisms in the focus of infection at the same time. This, however, does not minimize the importance of the focus of infection in any way. The organisms found in the tissues may have undergone change. This fact should be borne in mind whenever autogenous vaccines are to be used. The poor results in some cases of arthritis, for example, following the use of autogenous vaccines prepared from the tonsils or other presumable focus, may be due to the fact that the organisms present in the focus at the particular time when the cultures were made were not like those actually infecting the tissues. And if so, the vaccine would fail to contain the proper antigen.

While the most common location of the focus in various infections is probably in the head, and hence the great opportunity for you, it may be located elsewhere. Thus in two cases of typical rheumatism we succeeded in isolating the *Streptococcus rheumaticus* from the stool; in one from an infected ingrowing toe-nail, and in another case from the wound in the thumb following a crushing injury.

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* Address before Section on Stomatology, American Medical Association, Atlantic City, June 24, 1914, in a symposium on Mouth Infection.

The abscesses or bony changes found about the roots of teeth in various systemic diseases, especially in cases of chronic arthritis, may or may not be primary, but if found the condition should be corrected, because vaccine or other treatment largely fails so long as there exists an active focus of infection, as shown, particularly by Billings. My study on the effect of varying degrees of oxygen tension on the members of the streptococcus group, together with other facts, makes it likely that it is in the focus of infection that changes in virulence occur and the different affinities for various structures are acquired. In other words, the focus of infection is to be looked on not only as the place of entrance of the bacteria, but also the place where the organisms acquire the peculiar property necessary to infect. In the light of our present knowledge the argument that infections in the mouth are so common in individuals in apparent health, does not minimize their importance. These or other foci are so common in patients suffering from arthritis, neuritis, appendicitis, ulcer of the stomach and cholecystitis, goiter, etc., and so rare in individuals who have had superb health for years, that their direct etiologic rôle can scarcely be questioned.

Regarding autogenous vaccines, our ideas need to be revised somewhat in view of the fact that the vaccines administered are usually prepared from streptococci in the focus and which may or may not be the causative organism. The instances in which good results are obtained are probably those in which the focus harbored the causative organism and the vaccine prepared from it. The instances in which poor results are obtained may be due to the fact that the vaccine does not contain the proper antigen.

With regard to the foci: What are they, where are they, and what organisms are usually present? Probably the most common location of the focus or source of infection is the mouth. The tooth socket has a structure similar to that of the joints, and a blind abscess at the apex of a tooth may have no more significance than the lesion in the joint. While it is proper to remove the teeth that are abscessed in a case of that kind, we should not expect that that is necessarily the source of the trouble, but must look still further.

In connection with acute infections, the acute arthritis that we see in rheumatism, a few cases may be of interest. In the first case the patient had gone through the search for foci of infection; his tonsils had been removed, the teeth examined, and a thorough physical examination made. The patient had had repeated attacks of rheumatism which continued for years, and usually occurred in the fall. He came to me in the midst of one of these attacks and on examination I was unable to find any focus of infection that would account for the trouble. This particular attack followed some intestinal disturbance. On three occasions I was able to isolate from the intestinal tract a streptococcus which when injected into animals produced rheumatism. This attack cleared up and I immunized the patient for a long time with the vaccine prepared from the streptococcus from his stool in the hope that some unknown focus in the intestinal tract might clear up.

This patient went south, and while in the South he had some trouble with his teeth. He saw a dentist and the dentist happened to be a man who knew something about the work that Dr. Morehead and Dr. Gilmer are doing in regard to the teeth, and he found an abscessed tooth and pockets of pyorrhea. When he came back I examined the mouth carefully and found no evidence of infection until along the surface of the gums I raised the tissues and found pus pockets. There was not even inflammation on the surfaces, but with a probe I obtained pus from the pockets around the teeth from which I made a culture and produced rheumatism in an animal. The pyorrhea probably had existed for years. This illustrates how difficult it is to locate the focus.

Another case in which the focus of infection was entirely overlooked was that of a young lad who had an acute attack of rheumatism with endocarditis and pericarditis so serious that it was thought he would die. I was asked to see the patient, with some idea, I think, of giving a vaccine. On examination I found that the boy's thumb had been crushed off in an accident ten days before the rheumatism began. I obtained from a necrotic area remaining a culture of a streptococcus like that of rheumatism, and when injected into animals it produced rheumatism readily.

It will be seen that the question of the focus of infection is a matter not only for the stomatologist or the dentist, but for the general practitioner, the surgeon; every branch of medicine needs to be taken into consideration to run the matter down and find the focus from which the organism gains entrance to the body.

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# PERIDENTAL INFECTION AS A CAUSATIVE FACTOR IN NERVOUS DISEASES *

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The presence of pus in a body cavity has long been considered a finding of the utmost importance, of even grave significance, to which an almost innumerable number of symptoms may be attributed. Until recently, however, the existence of pus around the teeth has been lightly regarded and often rejected as a possible cause of serious systematic disorder. The delay in appreciation of the importance of the presence of infection about the teeth is, doubtless, largely due to the familiarity of the physician with the condition in patients whose symptoms seem too remote from the mouth to have any connection with it. Then, too, it cannot be denied that there are persons suffering from pyorrhea alveolaris in whom it has remained a purely local process.

The results of peridental infection would certainly be more disastrous were it not for two fortunate factors of safety, the one, anatomic, the other physiologic. The former is the fact that the pus usually has free drainage into the mouth. The latter factor is the establishment by the body tissues of various degrees of immunity against a continuous bacterial intoxication, for example, from *Bacillus coli communis.* Just as the colon bacillus sometimes overpowers the individual's resistance and produces a general intoxication, a localized collection of pus or septicemia, so may the bacterial flora of the mouth subdue the body resistance

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and originate an abscess, produce a general intoxication, or entering the blood-stream, may establish a new center of growth in another region of the body.

We may well ask is the alveolar pus pocket the depot of origin of brain abscess in those cases the origin of which has been unexplained, in which there has been no abrasion of the skin and no aural or mastoid infection? A purulent process in the posterior urethra, in the vagina or in the tonsil is considered ample source for any arthritis, neuritis or endocarditis which may subsequently develop. Are we not then justified in considering a septic condition around the teeth a source of various disturbed states of health, no other cause existing? Especially is this probable when the correction of the local oral condition is followed by alleviation of the general symptoms. The proof of the responsibility of oral sepsis for certain diseases of the nervous system rests on no other evidence than that just expressed — when the dental condition is corrected the manifestation of disturbance in the nervous system disappears.

Peridental infection is by no means limited to the clinic patient, it is often found in those who have taken the utmost care of their teeth. In these cases the dental work has been faulty and the real status is only revealed by a roentgenogram of the jaw. Crowns and bridge-work are peculiarly liable to have incarcerated pockets of pus.

There seems to be no portion of the nervous system for which the subtle toxin of peridental infection has a predilection. Probably the most common symptom is paresthesia in the fingers and toes—a "pins and needles" sensation—a symptom common to other chronic intoxications. For a considerable period it has been observed that a bad condition of the teeth may be responsible for adjacent disorders, such as otalgia and tic douloureux, but the observation that stubborn neuritis of the sciatic or other nerve trunk or of the brachial plexus sometimes disappears after cleaning out the alveolar disease is of comparatively recent date. The continual swallowing and absorption of pus is undoubtedly the cause of disorders of digestion, headache and finally an anemic condition almost cachectic. This depleted, exhausted state may often be associated with a melancholic state. It seems a far cry from mouth infection to mental disease, but when one witnesses profound depression clear up following the drainage of several alveolar pus-pockets, one is persuaded that the chronic intoxication, the result of absorption from the pent-up infectious process, was an etiologic factor.

Cases of pachymeningitis within the cranium have been attributed by reliable men to peridental infection. Doubtless, also, the peridental membrane has been the portal of entry for infection, causing various forms of arthritis the etiology of which has been obscure. From a variety of disorders the result of peridental infection I have selected four of diverse character whose improvement, following a cleaning up of the dental condition, was rather striking.

Case 1.—Cardiac arhythmia associated with angina: The patient, a surveyor, aged 46, married, temperate in the use of stimulants and tobacco, began to be annoyed in August, 1912, with thumping of his heart at night. These attacks would awaken him out of a sound sleep, would last a few minutes and disappear. At first they occurred about every fortnight, but by December, 1912, the attacks of cardiac thumping were not only occurring every twenty-four hours, but were occurring in the daytime as well as at night. In addition to the disagreeable pounding of the heart, pain had appeared. The pain at first crossed to the right side of the chest, but later into the left axilla and up the back of the head. This was accompanied by a feeling of anxiety and dread and compulsory immobility. In one attack consciousness almost failed. The only other illnesses the patient had ever had were lead poisoning in 1898 and "typhoid-pneumonia" in 1899. From these he had recovered completely and had enjoyed excellent health until this present illness. Syphilis was denied and the Wassermann reaction was negative. Neither clinically nor by Roentgen ray could anything pathologic be demonstrated in the mediastinum. The heart was of normal size and location. Accompanying the systolic sound was a subdued blowing murmur, and the pulmonic second sound was slightly accentuated. When not in an attack his pulse was regular and rhythmic, 70 per minute, and the systolic blood-pressure was 125 mm. Hg. He exhibited a coarse static manual tremor said to be familial. Examination of the blood, urine and gastric contents revealed nothing abnormal. A slight pyorrhea about the teeth was noticed but was thought insufficient to cause such grave symptoms. He was put on general hygienic and tonic measures and discharged. I was not fortunate enough to see him in an attack. Three months later the patient returned having made very little improvement. Roentgenograms of the jaws were then made and disclosed no less than three pockets of pus about the roots of the teeth. These were opened, drained and treated, and since that time, a period of practically six months, he has been entirely free from cardiac palpitation and its associated angina. Quite recently he writes, "I haven't had a shadow of trouble in the region of my heart."

Case 2.—Persistent periarthritis: A man, aged 46, of good health and temperate habits, free from venereal infection, developed two years previously moderate swelling of the tissues around the middle joint of the right finger. It became painful on movement and any trauma made it worse. Use of the joint, for example, playing golf, also aggravated it, but cessation of vigorous use didn't cure it. He had never been a sufferer from sore throat and was not otherwise rheumatic. He took the "cures" at Aix-le-Bains and Carlsbad without noticeable benefit to the joint. In February, 1914, he noticed some tenderness of a premolar tooth. Examination revealed a slight discharge of pus from the adjacent gum. The tooth was drawn and found to be abscessed at the root. Within a fortnight the periarthritis began to disappear and two months later there was no trace of it.

Case 3.—The commonest symptoms following absorption from peridental infection: A woman, aged 54, complained of "pins and needles" sensation in her hands and feet, pain and tenderness in the muscles of the back and calves, and considerable mental irritability. On examination she was found to be fairly well preserved for her years. Her heart was slightly enlarged in both diameters; pulse 84; blood-pressure 120; auscultation negative. In all the muscles of the back, particularly those above the spine of the scapula, were points tender on pressure; also various points in the intercostal spaces were tender on pressure, especially the left border of cardiac dulness. Squeezing the muscles of the arms and calves caused considerable pain. There was no definite nerve-trunk tenderness. Besides this the physical examination showed nothing of significance except a profound pyorrhea alveolaris.

After a week of eliminative and tonic measures, during which no improvement was evident, she was advised to have the dental condition remedied. A dentist extracted several carious roots and cleaned up the pyorrhea around the better preserved teeth. Within two weeks her gums looked comparatively healthy. Coincident with the improvement in her oral condition the tender points in her muscles and the paresthesia in the hands and feet diminished. Eliminative methods were continued for another three weeks, at the end of which time her muscles were in a comparatively normal state.

Case 4.—Presenting a picture of an agitated depression in which the presence of alveolar pyorrhea of long standing was evidently an important exciting factor, but not, perhaps, the primary cause:

The patient, a woman, aged 59, well preserved and of more than average mentality. She sprang from a long-lived non-nervous stock; she had passed through the climacterian twelve years before without unusual disturbance. During the past three years she had sustained a series of shocks with great fortitude and for the time being without telling effect on her nervous system. Three years previous she lost her father, a year later her mother died. During the week of her mother's death she had had a nasal operation performed. Soon after this, financial losses occurred which were the cause of considerable worry. The patient continued in reasonably good health for over a year, that is, until six months previous to entering the hospital. At that time she went to a fashionable sanatorium, more as a pleasure resort than for treatment. While there she began to have attacks of dizziness. A physician told her she was suffering from mild heart-disease and prescribed Nauheim baths. After she had taken eleven baths the present "nervous breakdown" began.

When first seen the patient was greatly depressed and nearly always in a state of agitation, pacing the floor restlessly and recalling the loss of her mother as the greatest disaster in her life and weeping bitterly during every conversation. She said she was convinced she would not recover. At other times she spoke in a mournful tone without being able to give the exact cause of her depression.

Physical examination was entirely negative, except for a pulse of 100 and the condition of her teeth. Heart was of normal size and without pathologic sound. The stool when examined proved normal, except for slight evidence of catarrhal colitis. Blood examination showed hemoglobin 78 per cent.; red blood-cells, 4,869,000; white blood-cells, 6,500; differential showed mild increase in the lymphocytes; the urine was normal. A test breakfast showed diminution in the hydrochloric acid content. A serum Wassermann was negative, and the spinal fluid was normal in every respect.

After a week of tonic measures without noticeable improvement it was decided to subject the patient to the ordeal of having her dental condition improved. A roentgenogram of the jaw showed two abscessed roots under crowned teeth and a collection of pus beneath a faulty bridge.

The bridge-work was removed and abscesses drained. During the following week the cloud began to lift, and she began to have moments of better humor and saw some possibility of looking at the brighter side of things. The patient was then sent to the country for two weeks from which she returned in a comparatively happy state of mind. She arranged to take some hydrotherapy treatment at the hospital, but a few days later decided to go visiting instead.

The message of this paper is that the obvious is too often disregarded in searching for some profound cause. The discovery of a purulent process similar to that frequently seen in the mouth in other regions of the body would be sufficient ground for the hasty summons of the surgeon. A full appreciation of the possible dangers from infection around the teeth should lead us into council with the dentist. This is in no sense a criticism of the dental profession, but rather a plea for the closer cooperation of the medical man and the dentist. After an expert dentist has properly cleaned up alveolar pyorrhea or abscess, we find vaccines, as a usual thing, unnecessary.

37 West Fifty-Fourth Street.

## ABSTRACT OF DISCUSSION OF SYMPOSIUM ON MOUTH INFECTIONS

Dr. Arthur D. Black, Chicago: One phase of this subject, of interest to both dentist and physician, which has not received the consideration that it should, concerns the pathologic changes that take place in the tissues which are involved in the establishment of these foci in the mouth. We have in the mouth two groups of chronic foci, the chronic alveolar abscess and the so-called pyorrhea pocket, both of which involve a single tissue—the peridental membrane—which is the important factor in establishing the chronicity of both groups of cases. As a result of the involvement of the peridental membrane, either at the apex of the root or beginning at the gingival margin, there is a suppurative destruction of the attachment of the tissue to the cementum covering the root of the tooth. As a part of this process the cementoblasts, which overlie the surface of the cementum within the peridental membrane, are also destroyed. These are the only cells which could cause reattachment of that tissue. Soon after detachment, the fibers of the peridental membrane, which passed from the cementum of the detached area to the bone, disappear, and a little later the bone to which they were attached is absorbed. Thus all of the specialized elements necessary to the connection of root with bone are lost, and we cannot have reattachment of this tissue to the cementum of the root. This is shown very clearly by the roentgenogram in both groups of cases. Careful examination of these will show a line down the side of and close against the root, which is practically always in advance of destruction of the tissue elsewhere, showing clearly that this disease has begun at the junction of the peridental membrane and the cementum. There is a progressive involvement of peridental membrane and bone, making the whole area about a given tooth funnel-shaped. Within the past few years I have cut away the tissue forming these pockets from the roots of teeth for microscopic examination. In one case I removed the tooth, peridental membrane and a section of the alveolar process and overlying gum tissue all in one piece, and had sections made for study. These sections show that the above mentioned changes take place and that detachments are permanent. Therefore pockets remain about such teeth and the overlying tissue is subject to frequent reinfection. We should not, therefore, expect vaccines to have any more than temporary effect on the local focus, because we have a condition here in which the physiologic possibility of repair is gone. The dental treatment indicated is the elimination of the focus in the case of the alveolar abscess by resecting the denuded root end, or the extraction of the tooth. If it is a pocket alongside the root, exposed to the fluids of the mouth, the tooth must be extracted, or palliative treatment employed which will be effective against reinfections.

Dr. M. I. Schamberg, New York: Dr. Billings gave a clear and concise description of the mode by which infections of the mouth reach these parts, and I was disappointed that he did not, even cursorily, touch on the possibility of a septic endocarditis, and likewise of producing secondary infections about the body other than those that apply to arthritis deformans. I, with many others, have been observing these conditions for a number of years. Our findings have been largely clinical up to within possibly a year or two, since which time, through the cooperation of the laboratory and the medical diagnostician and interns, we have been able conclusively to prove that the mouth is a prolific source of primary infection, bringing about serious sequellae. It is equally important that we remember that the absence in the roentgenogram of the dark area is not essential to the conviction of a particular tooth as the cause of these secondary troubles. Only recently in a case in which we were anxious to find the bacterium producing the effect on the patient's general health, a tooth was removed which showed an incomplete root-canal filling with no apical disturbance whatever. On crushing off, under aseptic conditions, the tip of this tooth, from the putrescent material in the apical end of the canal we were able to grow a pure culture of *Streptococcus viridans.* Likewise, in a case of rheumatoid arthritis of fourteen years standing, the patient, who was unable to walk, was brought in with a history of a thorough survey of the mouth for any possible etiologic factor in that region. I finally found among the few remaining teeth a tooth that had been comfortable through all these years, but the roentgenogram showed a slight area about the end. We removed the tooth and from it produced a pure culture of *Streptococcus viridans.* In this case the history of the work done on the teeth recorded that it had been treated some sixteen years previously, which was two years prior to the onset of her articular trouble. The technic described by Dr. Gilmer in taking the pus from the mouth is probably a satisfactory one. I have, at the Post Graduate Medical School in New York, been swabbing the gum tissue on the teeth with a strong tincture of iodin, and then by means of a sterile swab have taken the pus exuding from the fistula. The efficiency of this method is shown in a case in which we were searching for an organism. After two or three attempts we had absolutely no growth of the organism, so that in this rather filthy mouth we were enabled, through the swabbing of the parts with iodin, to bring no contamination from the mouth. In this case there was a copious discharge of pus which produced no organism whatever, though we used, of course, every medium used at present for the growth of these organisms. These observations together with those already given I am sure will encourage many of us who have not applied ourself to the study of these infections about the teeth, to cooperate more with the interns toward the eradication of these systemic diseases.

Dr. W. A. Price, Cleveland: What is a dangerous infection of the mouth? Is the roentgenogram a reliable means of diagnosis or not? I think Dr. Gilmer used the term "invaluable" provided the roentgenogram was properly taken and interpreted. The roentgenogram is simply the recording of relative densities, and relative densities do not show infections of the cellular tissue of the bone. We may also have an infection without an area of lesser density as occurs frequently in necrotic bone. It is frequently necessary to have a roentgenogram to show an area of absorption by its lesser density, but, on the other hand, it does not follow that there is an infected condition because the roentgenogram shows an area of relative lesser density. We are confronted with this problem: Patients will present themselves to members of the dental profession with roentgenograms made by physicians with the demand that we extract everything that shows an area of resorption. If we object, what shall be our reason for not extracting? Immediately our profession must come to the point where we can answer these questions intelligently, and I know of no other way to meet the situation than to make exhaustive studies and thus obtain sufficient knowledge of these cases to establish means for their differentiation and correct diagnosis. The results of our studies so far on this phase of the subject strongly suggest that the field of pathogenic culturing may be a great deal smaller part of the area of infection than we have thus far suspected; that our active culture may be in the cellular tissue, about the apical end, or adjoining a pyorrhea pocket, and perhaps in a very limited area. Is it possible for a vaccine to be effective when we do not use instrumentation, or extraction or otherwise obliterate the focus of infection? Dr. Emerson, Dean of the Medical Department of the University of Indiana, made the statement in effect recently, that, in such a case, no vaccine ever did or would do any good. That is his point of view, and another is that established by the history of clinical cases in which no other treatment than vaccines were used and which as emphatically indicates the affirmative to some observers. We must recognize, therefore, that this is an open question, because men of such prominence and ability would not make such deductions without some good evidence; so let us attack these problems with new energy and from every angle that can add new light, for only incomplete truths contradict.

Dr. F. B. Moorehead, Chicago: The dentist should keep three things in mind. First, the work of Rosenow in the transmutation of the streptococcus and also the pathogenicity of the streptococcus at different grades of virulency. By animal passage he changes the affinity of the organisms for certain tissues. In this way lesions of the joints, mucosa of stomach and duodenum, heart, etc., are produced in animals. The mouth is a field in which this group is most frequently found. Secondly, when tissue changes have taken place to a certain extent there is little hope of repair. When the cartilage is destroyed the most that can be hoped for is the prevention of any further changes. Hence, the importance of the removal of these foci early, before serious tissue changes have taken place. Thirdly, the placing of the mouth in a state of health without the ruthless destruction of teeth. While it may be wrong to extract some teeth it is not so wrong as to keep some teeth in some patients' mouths. It is far better to take out teeth than to sacrifice the comfort and usefulness of the patient. One must weigh the value of the teeth over against the health and the usefulness of the patient to society; that is the problem we have to face. When teeth may be saved with safety to the patient they should, of course, be saved.

Dr. John S. Marshall, Berkeley, Cal.: Dr. Billings was the first general practitioner that I know of to appreciate the fact that suppurative conditions of the mouth might be the cause of general septic conditions of various kinds in the body. He will probably remember that as far back as 1886 he sent several children to me who had enlarged cervical glands for which he could not account, with the request that I examine these children and see if I could find any diseased conditions in their mouths. I did find molars in every one of these cases with devitalized pulps and abscesses at the root. The extraction of these teeth in a short time cleared up all the inflammation in the cervical glands. I feel that this should go on record because that was a good many years ago.

Dr. V. P. Blair, St. Louis: Does Dr. Gilmer consider it necessary to curet and disinfect the cavity after the removal of a tooth with a septic area at the apex?

Dr. G. V. I. Brown, Milwaukee, Wis.: Dr. Billings and Dr. Rosenow have not only revolutionized the practice of dentistry, but they have revolutionized the practice of medicine, and the essential feature of the work, as Dr. Moorehead reminded us, lies in the transmutation of these micro-organisms. Our old standards are lost and we are facing entirely new conditions in the matter of technic whereby these bacteria can be studied, and that was the strong point in Dr. Gilmer's paper. This question of technic is a difficult one, as everybody knows who has tried it. My friend Dr. Yates, in Milwaukee, has isolated micro-organisms in connection with Hodgkin's disease and is doing extensive work with Dr. Bunting in that direction. I have recently exhibited a patient for the purpose of calling attention to some of these features. The roentgenograms show, in the hand and finger joints and various other places, evidence of arthritis. The patient had pyorrhea and she has obviously a diseased sinus. She has been treated several times with bacterial products and we are now directing treatment to relieve the sinus, and the difficulty is to know how to do it. We believe, of course, that serum treatment in a case like that would not do that patient any good. The question of definite prevention and the necessity for further study of the efficiency of vaccine, which I think we are agreed is limited, are brought out in the papers of Drs. Billings and Gilmer.

Dr. W. O. Bridges, Omaha, Neb.: The work of Dr. Rosenow and Dr. Billings and their coworkers in the line of the relation between the foci of infection and general disease has stimulated the medical profession the world over with reference to the determination of the foci of infection in cases that have heretofore not been looked on as anything but general disease represented by general infection. It has been my privilege in the last few weeks to come across some cases illustrative of these points that are impressive. I have studied for the last year the relationship between bacterial infection from the mouth and the serious anemias which we see—some pernicious and some secondary of a high type—and I have been struck with the influence of treatment directed toward these mouth infections. I have in mind two cases of secondary anemia in which the blood count showed fifteen hundred thousand red cells, and in which the patients had steadily gone down hill; so emaciated that they could hardly get about, and who had been through the regulation treatment for anemia with no results. Examination of the mouth indicated pyorrhea, with almost every tooth left in the mouth loose. All bad teeth were removed and mouth washes instituted and the treatment for anemia carried out. The results were perfectly astonishing. One patient, when he returned five months later for further operation, showed a blood count of four million red cells and was free from every tendency to anemia.

Another young man had gone six weeks with serious symptoms of general infection represented by chills and fevers, serious suggestion of malarial fever, but a diagnosis was made of septic endocarditis. It was impossible to find any indication or ordinary physical manifestation. We looked thoroughly for the focus of infection but found nothing except that in the throat the tonsils seemed to be unhealthy. I suggested that a throat specialist be consulted. The specialist discovered an abscess. The cavity was irrigated and the temperature went to normal in twenty-four hours; the patient had no further chills or fever and finally recovered. It has been my privilege occasionally to see lesions about the mouth which did not respond to treatment, in which cases the Wassermann test proved positive and the patient, put on salvarsan, recovered.

These cases illustrate the opinion, I think, that the mouth furnishes a large proportion of infection which we overlook. We in general practice find a large proportion of people who never saw a tooth brush; who do not know anything about the care of the mouth. If these cases were considered by the physician with reference to inspection of the mouth more generally, more patients would be referred to the dentist and have carried out mouth sanitation in the proper way.

Dr. Henry W. Frauenthal, New York: We have made it a routine practice by means of a dentist connected with the institution to have all the teeth examined, and it has been remarkable to see how many chronic joint conditions are benefited by cleaning the teeth. I think one of the most common sources of infection has been in poorly built bridges and caps, work done indifferently, in cases in which infection existed. On removing the caps we find infection existing. A number of these cases have been shown in the New York Dental Clinic. A patient on my service had been treated for rheumatism in several institutions previous to admission to the hospital without any benefit whatever. Her pain was so acute that she attempted to commit suicide twice, having been informed that her condition was chronic, and would never improve, but on the contrary, would gradually grow worse. Owing to the condition of her gums, I made a diagnosis of joint condition due to septic pyorrhea alveolaris and with no other treatment but the correction of the mouth infection, as done by Dr. Harry A. Goldberg, an arthritis involving both knees, left ankle, right wrist and elbow, cleared up in ten days, and at the end of three weeks the patient was discharged cured. Her temperature varied from 98 to 102 F., with a corresponding pulse. This condition extending over a period of nine months, responded to treatment in ten days.

Dr. T. W. Corwin, Newark, N. J.: In regard to the search for the foci of infection, two points may be of interest. For instance, the appearance of the tonsils may be quite normal, but if the routine practice is adopted of making pressure on the tonsils with some instrument, frequently one will find an exudation from the crypts of matter which may be worth while investigating. Another simple procedure that I believe will prove valuable in many cases, and especially those in which there is a manifestation of anemia, is, whether it is necessary to make an observation of the temperature or not, to put the clinical thermometer under the tongue; before reading the temperature, if you will pass the end of the thermometer under your nose, frequently you will discover a fetid smell. Perhaps these two little points may be of assistance when searching for the focus of infection.

Dr. W. H. Mercur, Pittsburgh: I read a paper not long ago by Dr. Morris Manges of New York on the "Mouth as a Means of Diagnosis." I have met but few men who have read it; it is certainly most appropriate to the present discussion. In this article he shows how easy it is to examine the mouth and how hard it is to examine the stomach and other organs that we give so much attention to. In this article I think he speaks of eighteen different diseases which can be absolutely diagnosed from inspection of the mouth alone.

Dr. J. A. Pettit, Portland, Ore.: I have put on record a number of cases which have come through our service, illustrative of the salient points brought out here. Many of us have had experiences in this connection, which are similar in the gross, but vary in minor details. We are undoubtedly entering on a new era of therapeutics, medically as well as surgically. This subject is undoubtedly in the early stage of development; what the next few years will bring forth is hard to tell. Instead of bending our efforts to the relief of the ravages of infection, we are searching for the sources of infection and reaching out with the use of vaccines and other remedies to overcome them. This is the broad field of therapeutics of the coming day. Preventive medicine is gradually extending out and overshadowing the former field of materia medica and drug therapeutics. Heretofore, remedies have been applied for the relief of conditions which we are now able to prevent. In the face of all the admirable and life-saving work done by medical research and study, it is disgusting to be compelled to listen in dignified silence to the malevolence of ignorance displayed by various cults, and at the same time observe them taking advantage of the very life-saving procedures which the medical profession has discovered and devised.

Dr. Frank Billings, Chicago: In my address I did not go into the details of every variety of disease that seems to be related to focal infection, but rather tried to give the principles of it. I think we should not use the word "cause" too much in relation to the focus of infection of a systemic disease. We should not, even with the focus before us, say that that focus is the absolute cause. I think we will have to use the expression that it is the predominating etiologic factor because there are so many other factors to be taken into account. None of us, it does not matter what our position in the profession may be, is capable of passing judgment on all things, and for that reason we have at the Rush Medical College clinic endeavored to encourage what we call team-work. I, myself, never pass on a special infection except when it is related to something that I think I am a better judge of than the other men. For instance, Dr. Moorehead is asked to pass judgment on the mouth, so far as the jaws are concerned, and I make him responsible. The best men in their lines, men who are teachers in the college, I ask to give judgment about an infection of the sinus or tonsil. Sometimes we call surgeons in with reference to some infection in the abdomen or elsewhere that I think may add to my own knowledge of the condition before we proceed to do anything. I do not pretend to-day to carry out the technic in bacteriology. We have such men as Drs. Rosenow, D. J. Davis, H. K. Nicoll, Gaarde and other bacteriologists, working at the problems. We must all get together. The oral surgeon has no right to diagnose a systemic condition of the patient and say outright that the mouth is related to it; he should have the family physician cooperating with him before he reaches that point. Nor should the family physician nor the one having general management of the patient order teeth out without the definite advice of the oral surgeon who is capable of giving it. I believe there is much in that principle that there is a focus of infection that is the predominating factor in many systemic diseases. This is perhaps expressed more commonly in arthritis of the chronic type than in any other disease that we can mention, but it is in many. Besides arthritis, we have traced this same hematogenous infection with its embolic occlusion of the end artery as the cause of cholecystitis. Hyperplasia in the thyroid gland, which occurs commonly in rheumatism, is associated with infection of the tonsils. The hyperplasia disappears with all of the clinical phenomena with the cessation of the tonsillitis. Also in hemorrhagic nephritis, the streptococcus obtained from that producing tonsillitis, causes hemorrhagic nephritis in the animal, etc. So that the application of the principle is much wider than the average practitioner thinks.

Dr. Thomas Gilmer, Chicago: To find the cause of a condition and locate its origin is all-important, but we must go further back than this. Infections in the mouth are due, in the great majority of cases, to improper hygiene. We all recognize the uncleanly condition found in nine-tenths of the mouths which come under our professional care, although the patient may be otherwise scrupulously clean. I venture to say that if we should examine the mouths of the physicians in attendance in the various sections here to-day, few would be found clean, or even approximating a hygienic condition. It is well to cure our patients when they become diseased, but it is far better to prevent disease by teaching the people the importance of the care of their mouths, that they may not suffer from disease primarily brought about by lack of care of the teeth. Dr. Blair asked if I considered it important to curet and disinfect bone cavities after the removal of a tooth with a septic apex. As a rule I should answer in the negative. The curettement depends, of course, on the stage of the infection and the area involved. Chronic abscesses may be profitably curetted in some cases, but in the acute cases it should never be done. In acute cases I am doubtful about the use of antiseptics. I think it would be just as well to use simply a normal salt solution. Antiseptics, if strong enough to destroy bacteria, would prove detrimental to the tissues; besides we cannot penetrate the tissues with an antiseptic so far as the bacteria have gone. Is it not true that by curettement we cause a greater traumatism which renders the tissues more liable to greater infection?

# SOME IMPORTANT PHASES OF RAILWAY SANITATION *

A. E. CAMPBELL, M.D.
Health Officer Illinois Central Railroad
CHICAGO

The steamship and the railway are making the world one country. Produce is now carried from Australia to England, a distance of 11,000 miles, at less cost than was required a hundred years ago to carry goods from one end of the British Isles to the other. The construction of our transcontinental railway systems soon after our Civil War, the projection of great railway systems in Russia and continental Europe in 1873, the opening of the Suez canal in 1869 and the Panama canal in 1914, made all civilized nations near neighbors.

There were carried on the Great lakes last year 7,000,000 people. The Chicago City Railway handles 3,000,000 persons each day. The suburban lines of Chicago handled 44,347,680 persons in the year 1913. The Illinois Central Railroad handles on an average 40,757 persons on her suburban lines each day, or 14,876,300 persons each year. This requires a vast amount of care and responsibility. The railroads leaving Chicago each employ from 45,000 to 74,000 people and the care and working conditions of this army of men should be supervised by an intelligent man. He should have supervision over the ventilation of trains, the condition of the diners, the cleanliness of the depots and toilets, as well as the ventilation of waiting-rooms, the condition of all eating-houses along the line, the condition of shops and yard-offices, repair tracks, construction crews and a hundred other duties which are sure to come before him. I can assure all railroads that such a man will have all he can attend to and will be well worth what he costs many times over.

## THE TRAIN

The ventilation of trains or at least of the day coach is not a difficult problem if one or two points are kept in mind. A train rushing against a strong wind causes the air to pass through a train horizontally—hence, if there are openings in the end of the coach the air will pass through, as I have repeatedly proved. All end doors of all coaches should therefore have adjustable sash and the sash in the rear door should always be open. Every coach should have a thermometer and the temperature should be kept at a certain figure. The steel coach is coming more and more into use on account of its safety, and in the South this coach becomes very hot. I have found that the temperature in the center of this coach is from 2 to 4 degrees higher than in the ends and as the electric fans are in the ends they are cooling the part of the coach that is cooler anyway. There should be two oscillating fans in the center of the coach, but if four fans consume too much electricity, three English paddle fans should be installed 15 feet apart. This will distribute the air more evenly.

Spitting on trains is so reprehensible that I believe a slip should be issued by all railroads and used in the state through which they run as follows: "In view of the authority vested in the State Board of Health you are liable to a fine of $25 for spitting, sneezing or coughing on trains without taking the precautions mentioned on this slip." On the back of the slip instructions should be given where to spit and how to cough and sneeze with the handkerchief before the face. Railroads do not like to displease their patrons and state boards should assist and issue these in the name and by the authority of the state board and thus help to stop this disgusting practice on trains.

All coaches should have separate apartments for water and ice. I see ice handled so carelessly—slid along a platform over tobacco spit and other unmentionable filth, laborers taking up the ice with their bare hands and dumping it into the drinking-water—that I have very firm convictions on this point. I do not believe it is wise to have ice in the water in our dining service, mainly because of the methods of handling the ice. Then, again, this ice is handled by a cheap class of laborers who are not overly clean and tidy and I hope all railroads will abandon the placing of ice in the drinking water on trains or on diners.

There should be a folding washbowl near the pantry in all diners, but I strongly object to a toilet in a diner, as no person would care to have odor from a toilet come to his nostrils while eating. All waiters should be instructed to wash their hands before serving food and this would be a good rule to follow in all railroad lunch rooms. It is not very appetizing to see a waitress fix her hair and pick her nose and then without washing her hands hand a piece of pie or come with her finger in the glass of milk. It is because these very matters have come under my observation that I speak of them.

The carriage of tuberculous people on trains has caused much comment and in some states attempts at legislation. We cannot deny that there is a degree of danger, but no more than from many other diseases. There is no denying the fact that diseases are transmitted from person to person and usually can be traced to excretions thrown off from the infected mouth and nose. Indeed we are all more or less exposed to this wide-spread infection at some time or other in our lives. From the best authority we can find we fail to gather information that a person traveling on a train or steamboat reasonably well ventilated would contract consumption, even though there is consumption among his fellow passengers. There is absolutely no evidence proving such incidence of infection. Yet there may be individual cases which may point to such a possibility; but they do not prove

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

it. Other evidence, however, leads us to suspect that the journey on the passenger coach has little or nothing to do with it. The chief physician of a great sanitarium for tuberculosis told me that it would be impossible for the common carrier to segregate those cases, as there were thousands seemingly well or healthy individuals who excrete tubercle bacilli in abundance. Indeed, I believe it would be well for common carriers to have literature on tuberculosis, or it might be well for state boards to have literature telling how the tuberculous patient should behave to protect himself and the public. For instance, the following rules might be circulated.

### INSTRUCTIONS TO TUBERCULOUS PATIENTS

The tuberculous patient must consider his own welfare as well as the welfare of those about him.

1. He should be in the fresh air as much as possible night and day.
2. He should be cheerful, look on the bright side of life.
3. He should eat only nourishing food—meat, vegetables, bread, buttermilk, cream, eggs.
4. He should avoid style, dress to suit the changes in the weather, always carry an overcoat and two or three handkerchiefs.
5. He should keep his nose, mouth and hands clean.
6. He should take at least nine hours of sleep at night, and if possible a nap in the afternoon.

### SOME THINGS THE TUBERCULOUS PATIENT SHOULD NOT DO

1. He should not mingle in large crowds of people or be where there is dust or smoke.
2. He should not take tobacco or alcohol in any form.
3. He should not cough needlessly, but only when he feels he must expectorate.
4. He should not work when feeling ill.
5. He should never swallow his sputum, as it may cause tuberculosis of the bowels.

### SOME THINGS THE TUBERCULOUS PATIENT SHOULD NOT DO, FOR THE WELFARE OF OTHERS

1. He should not spit anywhere except in vessels for that purpose or in paper napkins, which should always be burned.
2. He should not cough or sneeze without covering mouth and nose with handkerchief.
3. He should not kiss any person.
4. He should not eat or drink from dishes that may be used by others.
5. He should not sleep in the same bed with another person.
6. If riding on a train he should always take a state room or a berth in the rear end of the car and have cuspidors and paper near him and expectorate only in them.

I believe something like this should be carried by all common carriers and I feel confident state boards could aid common carriers very materially by having something like this in such public places as the waiting-rooms of depots, etc. It would be well for state boards to distribute some literature to this class so that if they travel they can be informed of the precautions they are expected to take.

Tipping on trains and on Pullman sleepers has gone so far that it has become a menace to the traveling public. There are many hotels and many more restaurants which forbid tipping. One of the leading hotels in St. Louis prohibits tipping. The McKinley electric lines through Illinois prohibit tipping on all their trains and it is time for all railroads and the Pullman people to get away from it. It is undignified and un-American and the quicker we stamp it out of this country the more we will dignify ourselves in the eyes of foreign nations.

I quote from the Washington *Post* to the effect that a young man paid three thousand dollars a year to his employer and hired several clerks and became rich in a short time. This shows how insidious a vice this is becoming. Not a man who is a member of any organization but condemns this vicious practice in the strongest terms, and railroads and the Pullman companies as well as all other corporations should bid adieu to this undignified practice.

The "butcher" or fruit vender on trains, with dirty hands and dirty linen, is a nuisance to many passengers and I believe often disseminates disease. One of our surgeons told me of a fruit vender he was treating for a specific disease, who came from the toilet room without washing his hands, handled and sold fruit to a woman with a young child. In the course of a few days the child was brought to the surgeon with a very sore eye which proved to be a gonorrheal ophthalmia. Not only should fruit venders be urged to wash their hands and keep clean but they should be examined regularly as well as all dining-car employees.

### THE TRACK

There is much agitation over track pollution by interstate carriers and although I have watched for the number using the toilet I was unable to determine how much fecal matter was discharged. I therefore selected the part of our road having the heaviest travel through the central part of Illinois. Starting at Centralia at 9 a. m., with buckets under all hoppers and traveling 275 miles with 564 passengers there were three bowel movements and much urine. Returning at 10:30 a. m., the same distance, with 645 passengers there were but two bowel movements and much urine. Next, the train from Chicago to St. Louis was taken. This train leaving at 10:05 a. m. with 193 passengers, arrived at St. Louis at 6:45 p. m. There were no bowel movements but much urine. Returning, a distance of 300 miles with 394 passengers, arriving in Chicago in eight hours, there were no bowel movements and very little urine. There is no doubt but there is much urine thrown off, but the constant jarring of the coaches inhibits the peristaltic action of the bowels in the vast majority of traveling people. The secretary of one of the boards of the Northwest told me that he has traveled from Winnipeg to New York and return without a bowel movement. Urine as it leaves the body is said to be aseptic and providing typhoid germs are thus thrown off, sand or gravel is not the soil in which they can long survive, and there must be a relation between the seed and the soil. It is not wholly the one or the other with which we have to deal as practical men. It is the combination and the interaction between the two. I have also made a careful inspection of our main track over which our through trains pass between the hours of 9 and 12—the hours when bowel movements are most likely to occur. In company sometimes with state or city health officers and railway officials we failed to find any evidence of human excrement and the railroad official explained that the constant fanning of the long freight and passenger trains dried out all human excrement. We did see an unusual amount of cattle manure, however, and as it is said that cow manure contains the colon bacilli, this matter should be seriously considered, for cattle are just as likely to drop their excrement directly into the water. It is no more dangerous for cattle to drop this on the track than beyond the fence by the right of way, but from an esthetic point of view it would be well for railroads to prevent as far as possible the dropping of this occasional movement on the sidewalks of cities and villages and I believe a false trap could be attached to the bottom of all hoppers or there could be a lock put on the flush bar or handle so that this could be flushed at points where there was no danger of sidewalk pollution. I am very sure this can be done. At some points where our sleepers stand over night there should be a bucket under all hoppers and the toilets left unlocked for the convenience of the passengers. Cattle pens along the line should be kept clean and whitewashed.

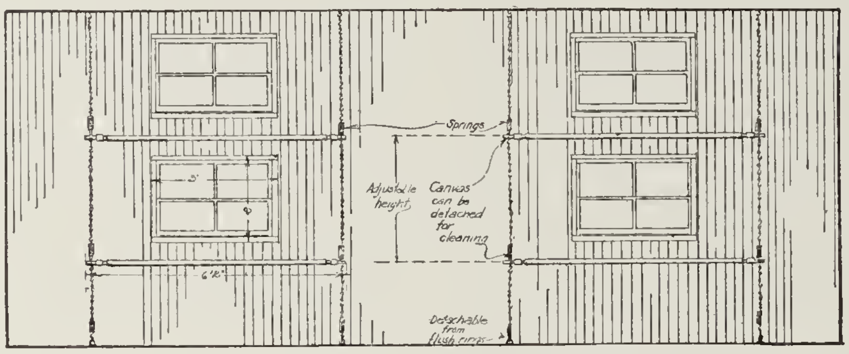
Springs
3'
Adjustable height
Canvas can be detached for cleaning
6'2"
Detachable from flush rings

Fig. 1.—Elevation of interior side of box car showing arrangement of sanitary canvas beds.

## CONSTRUCTION AND SURVEYING CREWS

I have on two former occasions called attention to this class of work and it seems that very few railroads and scarcely any state boards in this country have taken cognizance of this important part of sanitary work. When I called attention to this phase of the work—three hundred men throwing their excretions everywhere along the track while at work—I was curtly asked if three hundred was any worse than sixty passengers dropping their excretions on the right of way, when in reality not four persons drop their excretions in a journey of 300 miles. I have seen so much of this that I again call attention to it and have laid down some rules that should be followed. I have also designated the equipment that all camp cars should carry, as I often find them with no lime, no kerosene, nothing to destroy bedbugs or body-lice. Often small-pox breaks out among this class of laborers. Often gonorrhea is prevalent and it is important that separate towels should be provided for the men. I strongly recommend that these instructions be given to those in charge of camp cars:

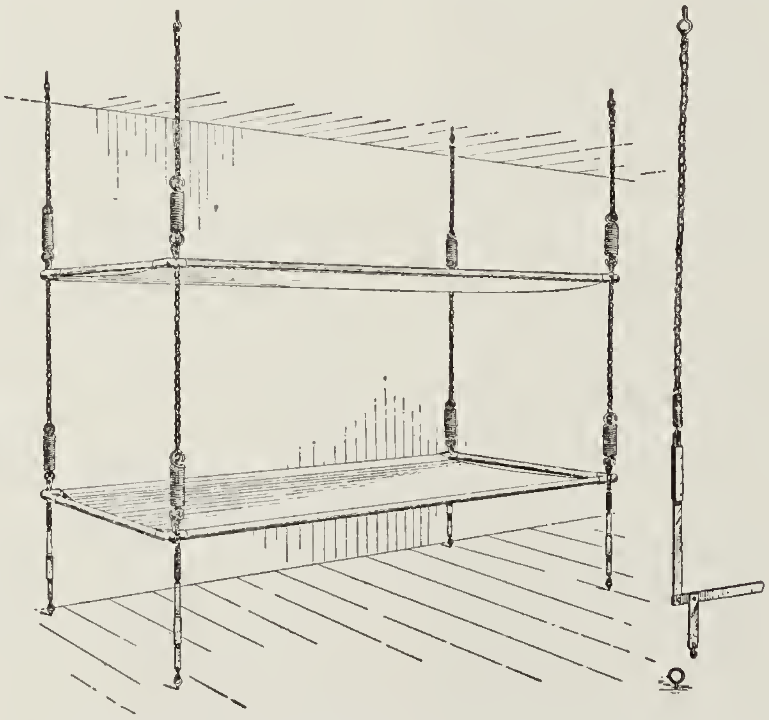

Fig. 2.—Sanitary canvas beds. Our company installed a large number of these beds in all our camp cars. They can be taken down and sunned and aired; combine simplicity with cleanliness; the canvas can be easily removed and washed.

### INSTRUCTIONS TO BE GIVEN TO THOSE IN CHARGE OF CAMP CARS

1. See that all cars are properly screened and ventilated.
2. See that all cars have the following equipment: a portable toilet; a barrel of lime; one-half barrel of powdered sabadilla; 5 gallons of kerosene; one covered garbage can; 50 pounds of sal soda; one 14-inch rattan scrub broom; soft soap; wash pans; towels and a fly-swatter for each car, and 1,000 3-grain quinin capsules. Vaccinate all men.
3. Assign a man three hours each day to scrub kitchen and dining-room, and all sleeping-rooms every other day, to air all bedding, to ventilate all sleeping-rooms, scrub and lime all closets, and to see that fresh water is provided for all the workingmen. If in a low marshy region 3 grains of quinin should be given twice daily.
4. See that but eight men are assigned to a car and that all cars have sanitary beds.
5. See that all garbage is destroyed or gotten rid of each day.
6. When building a privy dig a vault 5 feet deep and 2 feet wide and as long as needed, then put 6 inches of unslacked lime in the bottom and cover deposits daily with lime.

The privy vault at small railway stations is a necessity and if it has fallen into disrepute it is because of neglect. I am confident that it is far superior to Stiles' bucket as it is much easier to cover the excretions in a vault already made than to make a vault and then cover it afer carrying this offensive mass for some distance. Dr. Smith in his *Air and Rain,* says:

> If soil affects the atmosphere how does it happen that it is such an excellent disinfectant? Substances are purified in the air to the same extent, and in the same time as in the soil. The great amount of surface presented by the porous soil is mainly the cause of the rapid reaction, but the acid humates and probably other substances act chemically. There are modes of oxidizing in the air beyond the power of ordinary oxygen; one of these is by means of nitrogen oxids and another by ozone. But even these require great time and space. If we throw sulphureted hydrogen water or its compound with ammonia on a few inches of soil it passes through, oxidized in a few minutes. We can obtain such action in the air only in great volume although in the end the work done may be better for its purpose. It is, however, possible to overload even the porous soils which oxidize the most rapidly; that is, it is possible in a given case to have more organic matter than admits of oxidation in a certain time and putrefaction is the first result.

Now if soil is used freely, say three times as much soil as excreta, this putrefaction will soon disappear and, indeed, may be prevented as I have repeatedly demonstrated. The plan we have adopted and which I can recommend is to dig a vault 5 feet deep, then put 6 inches of pure unslacked chlorid of lime in the bottom. Save all the earth removed from the vault and add this each day or twice a week, and when the vault is full use this as a fertilizer. There will not be a particle of odor and except a few streaks through the soil one could not tell it from the ordinary soil. I have had section men dig down over a privy vault three months or more after it was abandoned and we could not tell it from ordinary soil. This, however, was exposed to heavy rains. If this soil is used as fertilizer it should not be used in gardens for one year at least.

The care of the excreta of fifty men at our shops and small terminals where there is no sewerage is another matter, however, and I am using an incinerator, and in some places where there is a pump engine boiler the excreta can easily be burnt in this. If not, then a castaway engine grate can be used by having it raised 12 inches from the ground, building a hot fire under it, throwing kindling wet with kerosene on this grate and adding the excreta and some tar to keep down odor. It is surprising how effectually tar will keep down odor. I have also used creosoted pile heads, which keep down odor very well. This is a method which all railroads can easily use and should use as a safe measure. There are always a lot of odds and ends to be burned at all shops and these could be used at this time.

We have a great amount of trouble at our stations by having our toilets abused by people who are not patrons of the railroad. If state boards and the public health service could insist that all municipalities have public toilets as they should, railroads would not have so much trouble with theirs. We often get notice from a health officer that we must install a privy at a certain place when it is used almost exclusively by citizens of the town who never patronize the road. Why should not these public officials get after municipalities which have such an army of worthless people to provide toilets for them? Other countries have them and state boards should insist that all large municipalities have public toilets.

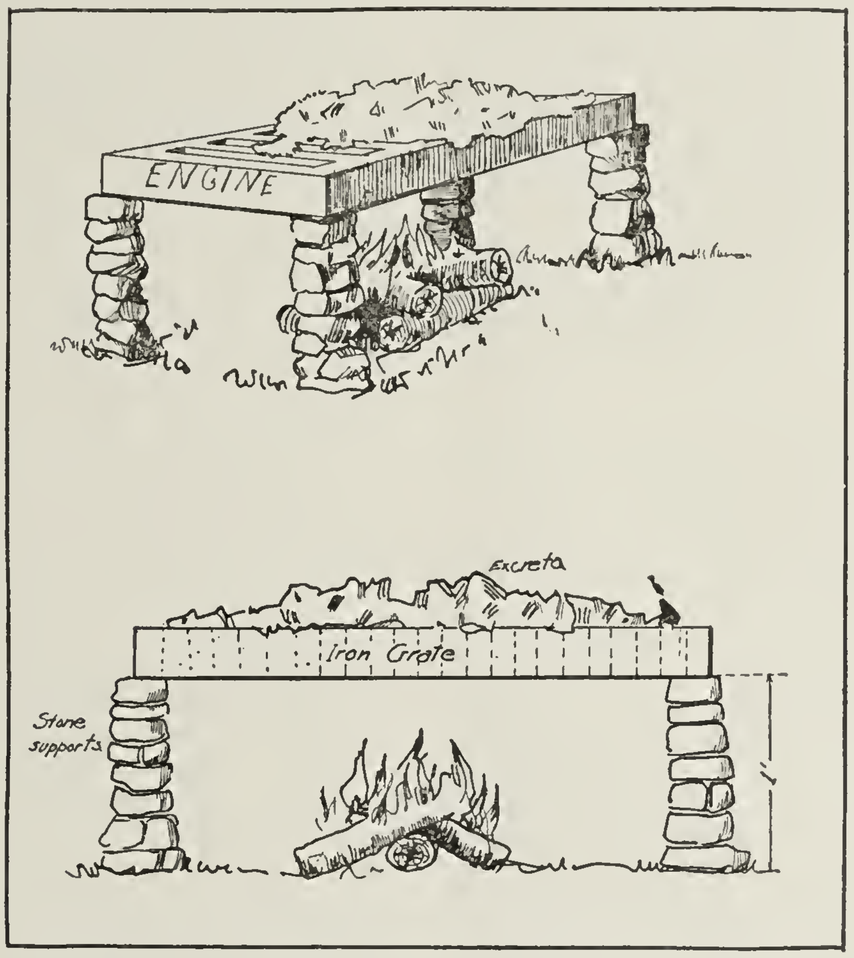

Fig. 3.—A method of disposing of excreta by incineration.

THE SHOPS

When the railroad shops are built in a swamp, as they usually are, proper drainage should be provided and drinking-water looked for at once. This drinking-water should not be taken from the tank, as I have frequently found, until the source of such water is ascertained. There should be ventilators over the forges in the blacksmith shop and the master mechanic's office should be so located that smoke and gas from the engines would not come near it. Indeed, all general offices should be so located that gas and smoke would not be offensive. I have firm convictions on this point. It would seem more accurate and perhaps wiser to deal with the human being as if he were a machine, with his efficiency as measured by his output, and endeavor to find what the conditions are which lower his efficiency. Sir Thomas Oliver in his masterly address on "Dust and Fumes, Foes of Industrial Life," pointed out the human and economic aspect of the work in which we are engaged. Indeed, it is estimated that nearly 70,000 wage-earners perish every year from industrial tuberculosis and that by factory inspection and effective methods for the prevention and removal of dust and gas fully one-half of these lives could be saved. This is not speculative, and abundant evidence can be produced that gas and smoke and fumes of gas are detrimental to the public health as well as lowering to the efficiency—either impairing it temporarily or tending to impair it permanently. I can also testify to the fact that this gas from engines prevents the proper ventilation of offices, and since such statements are true I urge all railroads to have their offices in the country. Our company has 50 acres 15 miles from Central Station and why would it not be wise to build offices at this place with outside porches, swimming pool, abundant shower-baths and a large park for general games at the noon hour? Not a man reading these lines but will say that such a step would increase the efficiency of the working force and be a credit to the management.

Noise would also be avoided; indeed, the blowing of whistles and constant ringing of bells when the train is standing still is a nuisance and is prohibited by many municipalities. M. Emile Gautier declares Paris is becomming uninhabitable because of noise. Every pulsation and noise, he explains, causes nervous shock, comparable to a blow with a hammer, and is felt throughout the entire cerebral mass. These shocks are liable to cause or to create serious trouble. Experts who have studied the noises of Paris and their effects on the nerves and brain matter are convinced that the modern malady of neurasthenia is directly attributable to the riot of sounds by which we are daily assailed. No other explanation is needed for the growing number of nervous disorders. The pledge given Mrs. Rice by a little child in her campaign against unnecessary noise is wise and should be practiced by all trainmen—"I promise not to play near or around a hospital, when I do pass I will keep my mouth shut tight, because there are many invalids there, nor will I make myself a perfect nuisance."

## ABSTRACT OF DISCUSSION

**Dr. A. M. Harvey**, Chicago: Certain corporations have had medical health departments for over a quarter of a century, and the appointment of such an officer is becoming quite universal among the large corporations. About a month ago in an investigation among the larger industries of the United States, I received something like thirty replies to my inquiry which covered several questions: "Do you maintain a health department?" "Do you examine men physically?" "If you do maintain a health department, is it in control of a physician, and what voice does he have in the management?" Of the replies received from corporations that were fairly representative of the industries in our country, and probably employed several hundreds of thousands of men, about 70 per cent. of the answers showed that they examined, physically, all applicants for work before employing them. That simply indicates the interest that corporations as employers of labor are taking in the health problem. The importance of medical supervision of health in industry is also emphasized by recent legislation in several states whereby it is made mandatory in certain trades and occupations, and by sanitary regulations imposed on employers in general. Among the advantages claimed for corporate or private medical health departments are: 1. Safeguarding the health of employees from the dangers of those seeking employment who may be afflicted with dangerous or infectious diseases. 2. The assurance of a fairly good working force from the beginning, by the physical examination of applicants. 3. Affording employees opportunity for early consultation, before an ailment has become established, thereby giving them the best chance for a cure. Employees are prohibited from returning to work before convalescence is well advanced, thus insuring a permanent cure. Employees in hazardous positions by reason of physical infirmities are placed in positions of security. Loss of time on account of sickness is lessened. Sanitary conditions of shops and offices, and favorable working conditions and environments are insured by personal inspection by sanitary experts. Prevention of disease, like the prevention of accidents, insures a more efficient working force. The health department in a corporation increases the efficiency and earning power of the men. Judged by the great amount of money that has been expended in this direction by several large corporations, notably the Crane Company, the International Harvester, and the United States Steel and their subsidiary corporations, the health department pays; and the housing and living conditions have also been improved. A wonderful change can be brought about by a health officer who has the confidence of the corporations; but much yet must be done. The great work at present is to improve the living and housing conditions of the employees.

Dr. J. W. Kerr, Washington, D. C.: Dr. Campbell mentions a number of problems that are of interest to the traveling public. The term "car sanitation" is somewhat indefinite. It must, of necessity, include more than the sanitation of the cars, just as industrial hygiene must include more than sanitation of shops; for instance, the economic and sanitary conditions in the homes of laborers. It is important for us to approach these problems without prejudice. From the point of view of comfort and convenience, generally, the railroads of our country are in advance of the people who travel on them. I had occasion, recently, to compare the sanitation of our cars with those of foreign countries. A standing order in the Treasury Department requires any medical officer of the Public Health Service who travels under official orders, as soon as he returns to his station, to submit a report on the sanitary condition of the trains occupied. This report is immediately forwarded to the Secretary of the Treasury, and is then returned to the Bureau, and any criticism contained in the report is brought to the attention of the railroad company, if it is severe enough to warrant such action. Under this order I made an inspection of a train on the Baltimore and Ohio Railroad, running from Washington to New York. Like inspections were made in Europe of trains operated over state and privately owned railroads. On the American train there were no common towels, and liquid soap was furnished in every car. The toilets were clean, and locked up while crossing waterways. In other respects this train was in good sanitary condition, and the railroad stations at both terminals were also in good condition. Many of the trains occupied on the continent, on the other hand, with the exception of the train from Cherbourg to Paris, were abominable; and some of them were state-owned, state-operated roads. This experience is cited as evidence that the railroad companies of America are trying to meet reasonable requests of the traveling public, and they are approaching these problems from a practical point of view. I think they want to improve conditions. One of the subjects needing careful study is the influence on health of gases in tunnels. Within the year a number of samples of gases have been collected by the Public Health Service from tunnels used by coal-burning engines and electrically operated engines, respectively. The results of the analyses have been tabulated and are now in press. Studies are also being continued, of the extent of the migration of tuberculous persons in interstate traffic. There are about five or six areas to which tuberculous persons from all sections of the country travel for changes of climate. We know nothing, however, of the volume of this travel; and we know very little of its effect on the public health. The regulation of it is difficult; and for that reason probably has not been as fully studied as it ought to be.

Dr. John W. S. McCullough, Toronto, Ont.: Railway sanitation is a serious problem in our country because railway construction is active there. Dr. Campbell referred, however, to other carriers; and that allows me to speak of the pollution of the waters of the Great Lakes separating Canada from the United States. Last year, at the instance of the international joint commission, our board of health, in conjunction with the United States Public Health Service and some state boards of health bordering on these waters, made an extensive examination of the waters of the Great Lakes and connecting rivers. This investigation, which lasted from April to November and is perhaps the largest undertaking of a similar character ever completed by any of the countries of the world, demonstrated that while the lakes themselves are practically pure, the connecting rivers and portions of these lakes are dangerous to those who travel on them. When the enormous commercial and passenger traffic on the Great Lakes is recollected and also that the incidence of typhoid fever in the towns on the Great Lakes is the largest found in any part of these countries the dangers to the traveling public on these lakes is of deep concern. It was demonstrated that St. Mary's River, St. Clair, Detroit, Niagara and St. Lawrence rivers were badly polluted; in fact, there are portions of the Detroit River which are so polluted as to be unfit for use after the most careful purification. None of the water of the St. Clair, St. Mary's, Niagara or Detroit rivers is fit for use without purification. From the mouth of the Niagara River the pollution is carried out into Lake Ontario for a distance of from 10 to 16 miles. Lake Ontario, in the line of boat traffic from Niagara to Toronto, is only 30 miles wide, hence this pollution travels across the international boundary; and in the line of this large traffic it is impossible to secure a pure supply of water for these boats without taking it from some source other than from the lake itself. I hope all will study this report and the significance of this boat pollution of the international waters on our traveling public. We have required a great many Canadian steamboats to take their water-supply from the middle of the lake in large tanks, and also to treat it by means of calcium hypochlorite.

Dr. G. H. Sumner, Des Moines, Iowa: Dr. Campbell has given us some excellent plans for the railroads to follow; but, on the other hand, it seems to me that state boards can give the public some instruction relative to the way that they should travel. Education is nothing more nor less than a bundle of habits; and Dr. Hurty has well said that you cannot hope to redeem the adult, but you may train the child. Therefore, it seems to me, that we should issue short tracts of instruction to the public relative to their habits in travel. I rode on a Chicago Great Western train not long ago. The car was filled with people and the ventilation was poor. In one portion of the car was a woman and several children. I won't attempt to describe the condition of those children, but the odors in that car were extremely unbearable. Two train officials, complained to concerning the bad air conditions, failed to perceive any need for increased ventilation. When I reached Des Moines I reported the occurrence to the railroad commissioners and received a courteous letter from them. I believe, with Dr. Hurty, we had better begin again to teach the younger generation how to keep clean, and then to help the railroad companies in their efforts to better the conditions of travel.

Dr. W. H. Sanders, Montgomery, Ala.: Dr. Campbell is undoubtedly doing a great work in his field; and I am glad to say that the corporations very generally are upholding work of this kind. One of the largest corporations in the country, with its headquarters in my state (Alabama), has within the last two years organized quite as systematic a medical force for the purpose of looking after the health conditions prevailing among their employees as may be found in any of our states; and from visits to the grounds occupied by this corporation I see very great improvement. This work will spread among the corporations all over the country. Dr. Campbell's paper should be sent to all of the large corporations in the country. I want to emphasize that the people need educating on sanitary lines as much as the managers of corporations. In formulating rules applying to railroad sanitation in my state I have made them applicable to the traveling public quite as much as to the employees. If people traveling on trains are ignorant of what is reasonably decent and clean, they ought to be required to learn.

Dr. Charles C. Browning, Los Angeles, Cal.: Some work has just been completed by Surgeon Carrington of the U. S. Public Health Service in California south of San Francisco and in Arizona, concerning the influence of the movement of tuberculous patients on themselves and the traveling public. A great deal said with regard to the danger from the tuberculous patient doubtless is true; much is founded on sentiment and not on scientific data. Surgeon Carrington has spent several years in the Southwest and has been doing very thorough work in our particular section. I presume that the report will be available through the Department of Public Health.

Dr. W. C. Rucker, Washington, D. C.: The question of railway sanitation is a question of sanitation. When you have said that, you have said all. The sanitation of a vehicle is not different from the sanitation of a house. It is merely that of a house on wheels. The attempt to surround railway sanitation with something mysterious, something which stands off by itself, is wrong. The attempt to make the railroad companies and the other transportation interests of this country the goat whenever it comes to anything sanitary is equally wrong. In enforcing the interstate quarantine regulations I have dealt with a large number of railroads; and there has never been an order, a suggestion or a comment made to those common carriers by the U. S. Public Health Service which has not been acted on favorably and immediately. The railway companies, as has been said, in their sanitary methods are in advance of the people living along the right of way. Furthermore, when they are asked to furnish an example to people living along the right of way, they are invariably willing so to do. I do not believe that much education is necessary with regard to the railway interests of this country. I do agree that we should educate the general public how to travel on railroad trains; and, in order to do that, we must educate them how to live in houses. Not until people realize that cleanliness is our great bulwark against disease, whether it be in the home, the train or the ship, will they keep their environment clean. A speaker at the surgeon-general's conference the other day put the thing very aptly. He said that regulations had been made excluding from trains the common towel, that the common drinking-cup had been abolished, and that it would not be very long until the common brush and comb were taken from the train. He said, after that the next thing will be to abolish from trains the common hog.

Dr. Charles J. Hastings, Toronto, Ont.: I would emphasize the importance of better safeguarding in transportation by water. Dr. McCullough has already drawn attention to this in his reference to the work being done by the international joint commission. We have had an excellent demonstration in Toronto of the necessity for prompt action along these lines. In 1911 we found that a large percentage of our cases of typhoid in the summer months was traceable to the boats that cross our international waters. On investigation we found that the water used was all more or less contaminated with sewage. When the order was first issued to the company to abate this nuisance forthwith, they treated it with a certain amount of indifference. I then wrote them that their boats would be tied up at the docks on their return if they did not give ample evidence that their crew and passengers were to be properly and efficiently safeguarded; this resulted in prompt action on their part. They are only permitted to take water from the center of the lake; they have installed tanks of sufficient capacity to meet their requirements for the balance of their trips. Most of these boats have been so equipped as to meet these requirements and, consequently, this source of danger has been practically eliminated. Hundreds of thousands travel annually over the international waters extending from Duluth to the mouth of the St. Lawrence, into which, by our primitive methods, we are pouring millions of tons of sewage every day.

Dr. M. P. Ravenel, Columbia, Mo.: A very excellent paper by Dr. J. O. Cobb of the Public Health Service appeared in The Journal of the American Medical Association several years ago calling attention to the fact that whether or not steamships on the Great Lakes took their water from the center of the lake, they got a certain amount of sewage into their water tanks, because the pipe through which the water is drawn opens out through the bottom of the ship, and when standing in port this pipe is filled with sewage. When the pumps are started to fill the tanks with water this sewage is first sucked up.

Dr. N. F. Campbell, Chicago: One word about education. The railroad I am connected with issues a magazine—fifteen or twenty thousand copies a month—and we have an article on sanitation in that magazine. I don't believe that water-coolers can be kept clean by cleaning them out every two weeks. They ought to be cleaned out at the end of every run. You will always find them dirty then. I have had a good deal of trouble with dumps. Railroads have a lot of waste material, and they throw it all into one place as filling material. This causes all kinds of trouble, and I have concluded that they should not do that without taking extra care about it.

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# LOCAL ANESTHESIA IN THE PREVENTION OF AFTER-PAIN AND SHOCK

ARTHUR E. HERTZLER, M.D.
KANSAS CITY, MO.

Immediately after a major operation under local anesthesia one is impressed by the well-being of the patient and by the diminished after-pain as compared with similar operations under narcosis. The inference that we have here the solution of the problems of after-pain and shock is easily made; but unfortunately most surgeons come to realize that these problems are not simple ones, and that local anesthesia is not alone adequate to solve them.

## I. AFTER-PAIN

After operations patients begin to feel pain at various periods, depending on the anesthetic used and on such other considerations as normal differences in the regions operated on, the state of tissue at the site, and the attitude of the individual toward discomfort and pain. The duration of anesthesia by an agent used locally can be determined approximately by experiment, but in an operation such data cannot be entirely trusted because of the variable factors mentioned above.

Generally speaking, we may consider that anesthetics interrupt the propagation or perception of painful impressions, and that the amount of painful impressions originated does not vary no matter what agent is used. If local anesthesia lasts an hour or two, the total after-pain is reduced by that much. In the case of ether anesthesia, the time between the infliction of the first wound and the return of consciousness deducts from the total after-pain. In many of the published observations on after-pain, a fallacy to the discredit of ether anesthesia has been introduced from the fact that most operators use a preliminary dose of morphin with local anesthesia, but not with general. The effect of this narcotic may last after local anesthesia has worn off, but does not interfere with the clear consciousness of the patient that he has withstood the operation. For this comfortable state of mind, the local anesthesia is likely to get the credit. On the other hand, when the ether patient who has had no morphin awakens, his befuddled brain is impressed with pain impressions from the operated region. His sensitiveness is heightened, his orientation confused, and his vocabulary loosened.

If one compares a long series of patients who have been operated on for the same malady, some with local, some with general anesthesia and all with a preliminary injection of morphin, with a like series in which morphin has not been used, one finds that the difference between local and general anesthesia as to the amount of after-pain is not very great. If, now, a similar series of comparisons be made with novocain and gas, with and without morphin, one has a fair basis for comparing the different methods. Ether patients complain the most, but between gas and novocain patients there is not much difference when the duration of the novocain anesthesia is considered.

Patients who have been operated on at one time under ether anesthesia and subsequently for a similar operation under local anesthesia—as, for instance, when operated first on one side and then on the other for hernia, or for block dissections of the neck — when asked to compare the methods, declare invariably in favor of local anesthesia because they escape the ether. The difference in after-pain is seldom mentioned. In a few cases only, such as about the anus, and in the fingers and toes, is after-pain a prominent feature. If one places the two methods in this way approximately on equal grounds, one loses much of his enthusiasm for local anesthesia as a preventive of after-pain.

In considering after-pain with local anesthesia, one must consider the hyperesthesia which often occurs about the insensitive region. As I have previously pointed out elsewhere, this is an extreme hyperesthesia to touch which often lasts for days and is difficult to estimate or to control. Irritation by the end of a suture or from the sliding of a dressing may cause acute pain. Such pains are usually disregarded by the operator because he fails to comprehend them or to measure their importance. After experiments on myself I have more than once, when the bedclothes gently stroked an hyperesthetic area, sat up in bed and delivered eloquent remarks on the folly of self-experimentations. These things have received scant recognition in the literature, but they sometimes play an important part in the discomfort of the patient and must be added to the sum total of after-pain in operations under local anesthesia.

These remarks apply especially when novocain in combination with epinephrin is the local anesthetic used, because of its evanescence. There are some cases in which local anesthesia may be used with confidence to prevent after-pain. Quinin, when properly used with full consideration for the possible hyperesthetic zones, is of great value on account of the duration of its effect. In major amputations, infiltration of the exposed nerves with quinin and urea hydrochlorid relieves after-pain and its consequences with certainty. In the incision of inflamed areas on the extremities, such as felons, blocking with quinin will control the after-pain for a long time. In general it may be stated that, when all nerves leading to a part can be infiltrated with a lasting anesthetic, pain may be controlled. In regions in which nerve anastomosis is free, as about the anus, the pain is as likely to be increased as decreased by the anesthetic unless definite rules are observed. In operations for hemorrhoids, for instance, infiltration of a ring about the individual pile may be followed by exquisite pain, while infiltration directly into the pile itself will be usually followed by prolonged anesthesia. The reason for this is plain. The prolonged effect of quinin is due to the granular fibrin deposited about the nerve-endings and fibrils. Therefore, when a ring is injected about a pile, the skin is anesthetized for a long period only where there is a deposition of fibrin. The area within is anesthetized for a brief period only and when this brief period is ended hyperesthesia replaces the anesthesia, and if a ligature or suture has been placed in such an area, exquisite after-pain is the result. Sacral blocking with quinin in operations on the anoperineal region serves in most instances as an effective means of controlling postoperative pain for a long period. It is possible that such prolonged blocking of the nerves may affect the healing of the tissues.

Ford Rogers first used quinin and urea hydrochlorid purely for the control of after-pain, by injecting very painful areas during major operations under ether. For instance, if hemorrhoids are operated on at the end of an operation for other disorders, the pile is directly injected with quinin. In this way the prolonged after-pain is controlled. In major operations, generally, the nerves can be injected before they are severed. In order that such injections shall relieve the after-pain, however, they must be done with the same care and in the same manner as though the operation were being done under local anesthesia.

The greatest service of local anesthesia in the prevention of after-pain has been in teaching the operator which tissues are painful. After-pain usually results from the incision in the skin, which produces a burning or stinging sensation lasting some hours, and from the ligation of sensitive parts, which produces an intense burning or throbbing pain lasting from twenty-four to seventy-two hours. If, therefore, one avoids placing constrictions about painful tissues, there will be relatively little pain. This applies to stitching of such viscera as the gall-bladder, folding of round ligaments, ligation of nerves and particularly tight suturing of skin.

Fortunately, tissues that require firm suturing are insensitive and sensitive tissues do not require firm suturing. Fascia has no nerves, and if in the course of an operation requiring the opening of the abdomen the prefascial fatty tissue is elevated, the fascia proper is without pain. The parietal peritoneum must be coapted with the greatest gentleness, with fine sutures, using just sufficient force to bring it into contact. The fascia, when freed from the nerve-bearing fatty layer, may be sutured together firmly and under such tension as will relieve the strain on the peritoneal sutures. This line of sutures is the only one of consequence in securing firm union, a fact abundantly attested to in the various operations for hernia. If vessels requiring ligation have been severed the accompanying nerves must not be included in the ligature. The importance of this can be best studied in ligating the superficial branches of the deep epigastric vessels in operations for hernia. If the vessels are picked up before they are cut they may be ligated without pain. This cannot be done with a heavy forceps, but with delicate instruments small vessels may be readily picked up without any surrounding nerve-containing tissue. Even slight constriction of nerves becomes painful when the effect of the anesthetic passes off.

From the foregoing it would seem that by the use of quinin and urea hydrochlorid, after-pain could be controlled with certainty. Unfortunately, this drug by its mode of action brings with it its own limitations. The prolonged anesthesia is due to the deposition of granular fibrin (often erroneously referred to as edema). Anesthesia lasts until this fibrin is absorbed. The amount of fibrin formed depends on the strength of the solution, the length of time it acts, and the character of the tissues injected. Moderate injection of the skin produces a prolonged certain anesthesia. An excess produces a retardation of the healing of the wound. In loose tissue, as of the neck and preperitoneum and in muscle, exudate is excessive, and an indurated mass results which may disturb the line of suture. In the peritoneum and in the neck the thickened masses may cause the patient some apprehension, and about the anus they give an uncomfortable feeling of fulness. It is only in conditions in which prompt healing is not imperative that quinin can be used to secure its fullest effect as an agent to control after-pain. These conditions are found in anal operations and in the opening of abscesses, particularly appendiceal, pleural and pulmonary. The control of pain is perfect in nerves exposed during the course of operations. Experience alone enables the operator to approximate the effect he desires to produce. Imperfect as it is, however, quinin alone at the present time offers any hope for the control of after-pain.

With this, I believe, rests the problem of after-pain. Local anesthesia may teach us to perfect our technic so that after-pain is reduced to a minimum, but it cannot prevent it. The cheerful squirting of a few syringefuls of local anesthetic solution in the neighborhood of a carelessly handled wound is entirely futile. The skilled operator who by study or intuition has learned delicacy of manipulation is able to decrease greatly the after-discomfort incident to the operation. Local anesthesia contributes to well-being after operation, not chiefly by preventing after-pain at the seat of operation, but by eliminating the effects of ether. Schlesinger is no doubt speaking from experience when he expresses the opinion that we are just beginning our studies of the use of local anesthesia in the amelioration of after-pain.

### II. SHOCK

The use of local anesthetics prevents the transmission of impulses to the brain during the time of operation and for a variable period afterward. What effect the transmission of the pain during the operation may have on the subsequent well-being of the patient is not easy to estimate. Intense after-pain, as after unskilful ligation of hemorrhoids, or tight sutures in other sensitive tissues, may produce intense pain for prolonged periods, but shock does not follow. On the other hand, shock may follow operations on regions not particularly sensitive.

The kind and source of the pain must, therefore, be a factor in the production of shock; but because of the close association of the various types of nerves the importance of painful impulses in the production of shock is not definitely known. We do not know what shock is; we know only something of the conditions under which it occurs. It is difficult, therefore, to estimate the value of local anesthesia in the prevention of shock. Besides inhibiting pain the anesthetic may inhibit afferent impulses which are not perceived as pain, but which produce the state we call shock. If this be true local anesthesia might be a factor in the prevention of shock or might even prevent it entirely.

Enthusiasts have, in fact, stated that with local anesthesia there is no shock. This is not true, and as the experience of the enthusiastic advocate of local anesthesia increases, his statements become more conservative. There can be no doubt that shock is diminished, but whether this is due to the merits of local anesthesia or to relief from the ill effect of general anesthesia is still a question. If big operations are done under local anesthesia, even when there is no pain, one can now and then feel his patient wilt under him. This may occur without the patient suffering pain or mental agitation or loss of blood, and when intoxication from the anesthetic used is not likely.

This may be best observed in block dissections of the neck for carcinoma of the lip and tongue. A case in point may be cited. The patient (man aged 56) came to the table perfectly calm. The operation proceeded without pain. Everything was being removed but the common and internal carotid, the sympathetic and vagus. As efforts were being made to get a ligature on the jugular high up, the patient began to lie flatter on the table. When asked if he was feeling it, he replied, "No, not a bit," but came back with the question, "Are you about through?" Is he receiving impulses from the field of operation not interpreted in terms of pain? Is it a feeling of anxious apprehension and if so would gas at this point save him? Anticipation of this state by the use of gas in the latter stages of the operation does not prevent the collapse. I believe his apprehension is due to impulses he got which were not fully blocked off—perhaps a tugging on the jugular within the skull. At least it occurs in individuals who deny that they experienced either pain or fear.

The occurrence of shock is a rare thing outside of traumatic accidents (whether or not produced by surgeons). When shock does occur in the hands of a competent operator it affects patients suffering from metabolic disturbances or from lesions which make extensive traumatism necessary, such as deeply seated adherent tumors, the removal of which is attended by injury to sensitive tissue. Of course it is difficult to estimate accurately the mental state of the patient. We can only judge by what he tells us and by what we can see. Patients who do not admit pain and seem to suffer no mental agitation sometimes return to bed weary and in perspiration. It has always seemed to me that the removal of tissues abundantly supplied by sympathetic nerves is more apt to be followed by this condition which we may call mild shock. In laparotomies under local anesthesia, explorations about the duodenum and gall-bladder or pressure on the kidney often make the patient look pale and weaken. When asked if it is causing pain he replies, "No, but it makes me feel sick." Unfortunately, regions most abundantly supplied by sympathetic nerves have not as yet been successfully blocked with local anesthetics and it is useless to speculate on what would happen if we could. True, many operators have attempted blocking of the rami communicantes, but with uncertain success. We are compelled to admit, therefore, that with respect to the shock-potent regions near the solar and sacral plexuses we have as yet no information which will enable us to determine how much could be done to prevent shock if we could block them off.

In desperate operations in which shock is to be expected, we are forced to resort to general anesthesia at least for that portion most likely to produce shock, namely that portion concerned with irritation of sympathetic nerves.

In the prevention of shock local anesthesia stands in much the same relation that it does in the control of after-pain. It eliminates the ether. Ether is not only unpleasant to the patient, but it injures and in some instances endangers him. No attempt will be made here to study the chemical effects of ether. I may say, in passing, that it is a lipoid solvent and dissolves out the cement substance between the cells to which it has access. These changes resemble those due to physical fatigue and perhaps to stimulation through the nerves. The profession is slow to convict a recognized procedure of danger or deficiency until it is sure it can get along without it. It is questionable if we should have discovered chloroform liver necrosis if we had not had ether. My own studies on the chemical effect of ether on living tissue convince me that ether is capable of harm to a degree second only to chloroform. In the vast majority we operate on patients under local anesthesia in order to save the discomforts of ether; in some instances we employ it to avoid the dangers of ether. We use local anesthesia, therefore, because it adds to the comfort and safety of the patient—both of which are attained chiefly by the elimination of ether.

Local anesthesia fails us in the essential steps in those operations which are attended by shock. Apprehension for the operation has much to do with the resistance of the patient, we admit, and hence, with the result of the operation. Sometimes, back of all that causes both apprehension and resistance, there is such a factor as constitutional disease. The effect of fear may be eliminated in some patients by local anesthesia, but it is eliminated in a greater number by the assurance that they need not go to sleep. It is the fear of that sleep that injures the patient. Nothing does so much to tranquilize a patient as the assurance that ether will not be necessary. In the desperate cases we cannot give this assurance, but it helps somewhat to say that we will go as far as we can and then give a little gas (and then ether *voce dulci*). In this way we shorten or avoid the ether, which is the essential thing. Also we must be gentle and considerate in our demeanor and in our operative technic.

Too little attention has been paid to the preparation of the patient. A case in point may illustrate this. An exceedingly nervous patient with a goiter was told that it could be removed under local anesthesia. She became much agitated and declared that she wanted to hear nothing of local anesthesia. She wanted to be asleep and know nothing about it. The anesthesia was not mentioned again. She was put to bed and told to let me know when she was ready for the operation. She was placed on bromids and after five days informed me that she was sufficiently rested to have the operation the following day. She was given 10 grains of veronal in the evening. When visited in the morning she declared she felt fine. She received morphin 1/8 grain, atropin 1/150 grain. After she was placed on the table she was told that local anesthesia would be proceeded with. She made no comment and there was not a particle of trouble with the operation.

Many who believe they are following the anoci-association method of Dr. Crile content themselves with a little aimless squirting of local anesthetic into the patient's skin and a little more into a perfectly nerveless fascia. They begin the operation before the anesthetic has had time to act. They overlook the skill and gentleness and the avoidance of ether which the originator brings to the method. The imitator is perhaps not alone to blame, for Dr. Crile himself evinces a greater faith and achieves better results than anyone else who is experienced with local anesthetics. After several years' study of the action of quinin both clinically and histochemically I am unable to understand Dr. Crile's faith. What quinin will achieve in the peritoneal fascia, aside from making the healing of the peritoneum uncertain, was not ascertained by my experiments. Without giving details of technic he states in describing his operation for thyroidectomy: "Before the wound is closed the entire raw field is infiltrated in every part with quinin and urea hydrochlorid." The raw field, in so far as infiltration is permissible (excluding the trachea, vessels and vagus nerve), is composed largely of muscle. This tissue causes no after-pain and when infiltrated with quinin exudes a reddish fluid which does not coagulate and tends to prevent wound-healing for a long time. These facts have caused me to avoid the use of quinin in thyroidectomies.

All this is looking only at the simpler phases. In those operations in which shock is likely to follow, local blocking has as yet offered nothing. The nerve distribution to the viscera is such that a deposit of anesthetic solution in their vicinity is uncertain and in the presence of adhesions and inflammatory exudates an effect on the nerves is out of question. In those instances in which it is applicable, a wait of from fifteen to twenty minutes is required before the action is complete. This delay is not without moment. True, Dr. Crile seeks to hasten its action by pressing on the area infiltrated, which, theoretically, should delay its action.

When operating with local anesthesia while the patient is asleep with gas, the operator is unable to determine whether or not the tissue is anesthetized. Bloodgood has called attention to this point. Unless the infiltration is perfect it misses its point. The gas is to serve only to prevent the patient from knowing that he is being operated on.

Dr. Crile, in speaking of the elimination of shock, admits that the patient does not always escape a dangerous depression. If, however, this depression results fatally it makes little difference whether or not there are changes in the brain-cells. By emphasizing the changes in the brain-cells, Crile removes from the term "shock" its purely clinical meaning, and substitutes an unproved histologic hypothesis. We know, as yet, too little about the termination of the nerves transmitting pain to be sure that changes found in a given nerve-cell are due to such transmitted stimuli.

Nor has an unquestionable proof of the relation of nerve-cell changes to the clinical picture called shock, yet been advanced. Local anesthesia to date has eliminated shock from those operations which can be done under its influence. In the larger operations, however, except those about the neck for carcinoma and in carcinoma of the rectum, it has not, as yet, been fully successful. In many operations, by reducing the period of anesthesia, it has reduced the tax on the patient's resistance. In the grave abdominal operations it has, so far, contributed but little. The visceral nerves, when irritated by inflammation or by the invasion of new growths, are exceedingly sensitive, and no safe method has yet been devised to prevent the transmission of these impulses to the brain. In these cases all that local anesthesia can do is to make the abdominal wall insensitive, and it seems likely that this is but a small factor in the production of shock. The prevention of shock in these cases must depend on the deftness of the operator, and his ability to judge conditions correctly in order that he may manage them with the least traumatism, in the shortest time, with the least loss of blood.

Rialto Building.

# DISCOVERY OF BACTERIUM TULARENSE IN WILD RABBITS AND THE DANGER OF ITS TRANSFER TO MAN

PRELIMINARY NOTE *

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We wish to record our recent demonstration of *Bacterium tularense* in a fatal epizootic among wild rabbits, and to emphasize again the fact that this disease is probably widely distributed among rodents and probably transferred to man more frequently than heretofore recorded. We have demonstrated this virus in two severe cases of conjunctivitis accompanied by lymphadenitis, high fever and marked prostration. The first case of human infection has already been reported by us.[1] This case came under the care of Dr. Derrick T. Vail[2] of Cincinnati, who has reported the details of the clinical course of this case. The second case is still under the care of Dr. Robert Sattler of Cincinnati, and will be reported by him.

McCoy and Chapin first described the disease in the California ground squirrel. Naturally we have been anxious to find the source of human infection in this locality. Through the kindly cooperation of Dr. J. H. Landis, Health Officer of Cincinnati, we have been able to do so. Dr. Landis heard that rabbits were dying in large numbers in the neighborhood of Vevay, Ind. (Switzerland County). Two men were sent down, November 12, to investigate the rumor. They could not find any evidence of extensive mortality among rabbits, but they shot three and found two dead on the M. farm about 6 miles from Vevay. These were dissected, November 13, and both of those found dead were proved to be infected with *B. tularense.*

Rabbit 1.—The external appearances were normal, excepting for the presence of many fly larvae in the nose and mouth and on the skin. None of these had penetrated the tissues, so it is presumable that the rabbit was found soon after it died. On dissection the subcutaneous tissues showed some injection.

There were many small irregular areas of hemorrhage into the skin covering the posterior aspect of the hind legs and rumps. The cervical glands were congested and firm on section. The spleen was a deep blue-black and about four times the normal size and speckled all over with minute whitish foci of necrosis. The liver was congested and also showed numerous foci of necrosis. The lungs appeared normal excepting for a few patchy areas of consolidation of a deep brownish-red. The peritoneal cavity was full of a hemoglobin-tinged serous exudate.

Smears from the spleen stained with anilin (Hoffman's violet) showed numerous irregular, coccoid, encapsulated bodies resembling the involution forms of *B. tularense.*

Guinea-Pig 1 inoculated subcutaneously with an emulsion of the spleen of Rabbit 1 was chloroformed when dying on the third day thereafter. It showed the typical lesions which have been described by McCoy and Chapin, and by us.[1] *B. tularense* was isolated from the spleen of this guinea-pig on a slant of coagulated egg-yolk, while no growth appeared on control slants of plain nutrient agar and rabbit's blood agar.

Rabbit 2.—This animal showed marked post-mortem decomposition and was badly fly-blown. However, minute whitish foci of necrosis could be made out on the soft enlarged spleen and on the liver. An enlarged axillary gland was emulsified and injected subcutaneously into Guinea-Pig 3. This pig died in three and a half days, showing the typical lesions of infection with *B. tularense.*

We are anxious to help physicians in the discovery of further cases in man. It may be that physicians in country districts who have not the facilities for bacteriologic study may be willing to send us material from severe cases of conjunctivitis or lymphadenitis in man. These may well prove to be cases of this disease when there is a history of having shot or handled rabbits, squirrels or ground squirrels. A cotton swab, soaked in such exudations as can be reached, mailed to us by special delivery and accompanied by a note concerning the nature of the case will be reported on as soon as possible.

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**Conservation in Evolution.**—Organisms have evolved by a trial and error method; they experiment organically, instinctively, and intelligently; above all, perhaps, in the mysterious antenatal life of the germ cells they experiment in self-expression—just as water vapour does in snowflakes, but far more subtly. What are called variations and mutations in biological language are the organism's experiments in self-expression, and these are the raw materials of progress. The organism proves all things, but the other side is that it holds fast that which is good. Great gains once made are not held lightly. Species become extinct and races perish, but important organic inventions are carried on by some collateral lineage. It was probably some ribbon worm that first manufactured hemoglobin—the all-important red pigment of the blood. Many backboneless animals of higher degree on different lines of evolution have not got it, but the invention was too good to lose; and everyone knows that it was retained on collateral lines, and that all backboned animals from fishes onward have red blood. Or again, the most primitive and in a way most puzzling kind of locomotion is that of the ameba gliding in the pond. Is it not a most suggestive fact that our health from day to day and the development of our nervous system are absolutely dependent on this self-same ameboid movement?—J. Arthur Thomson, *Brit. Med. Jour.*

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* From the Laboratory of the Cincinnati Hospital.

[1] Wherry, W. B., and Lamb, B. H.: Jour. Infect. Dis., 1914, xv, 331.

[2] Vail, D. T.: Ophth. Rec., October, 1914.

# Therapeutics

## PREVENTION IS GREATER THAN CURE

*(Continued from page 1953)*

### X

### MEDICAL INSPECTION OF SCHOOLCHILDREN

The importance of this subject is evident when it is estimated that 70 per cent. of deaths in the United States are due to contagion, that the vast majority of such contagion originates in schools and that, annually, about 11,000 die of scarlet fever, about 10,000 of whooping-cough, and about 9,000 of measles.

Some considerations in the prevention of disease acquired in school are as follows:

It is estimated that each pupil should have 15 square feet of floor space and 200 cubic feet of air space. Each schoolroom should be about 30 feet long, 25 feet wide, and 13 feet high, and should accommodate not more than fifty children. Allport states that the temperature should be about 68° F., and the humidity between 60 and 70. The thermometer should hang where it will tell the truth, and the best region with this object in view is on a bracket on the inner wall about 4 feet from the floor.

The sanitary measures require proper plumbing, proper drinking facilities, proper towels, sterilization of pencils, books, etc., and antiseptic cleaning of schoolrooms. Safety requires good fire escapes and fire drills.

Medical inspection was started systematically in Belgium, and is now being gradually adopted by many of the European countries and by a large number of the cities of the United States. Perhaps more than 500 of our cities now require medical inspection. Such inspection has been shown to be a necessity and not a luxury. It has been shown that contagious diseases are more prevalent during the months when schools are in session than when there is vacation; therefore if civic and state governments compel the attendance of children at school, they are bound not to subject the pupils to an increased danger of disease and death. Hence medical inspection should be required by state laws, and about half of the states have already passed such laws. It should not be left to the petty decision of towns or cities, although the larger cities have long been pioneers in this work.

This article will not attempt to deal with the question of salaries or the best method of managing the work cooperatively with the boards of health and school boards. The medical inspectors should be selected for their ability and interest in such work, and should be paid adequately. Also, they should not be subject to removal by political changes, if their work is satisfactory.

The results of the inspection for contagion or infection should be noted on a filing card, which record should be filed separately from the cards previously described in the "physical examination," although a cross-reference on the physical examination card should be made. Later, on this contagious card, there should be noted the results of treatment and the outcome of the case.

It is not suggested or advised that there be two sets of medical men examining and inspecting in schools, but it is urged that the two kinds of work are distinct, that the latter, medical inspection, is essential, and that as much of the former, physical examinations, should be undertaken as is possible. The work can be, at least in small districts, splendidly combined.

The same care should be exercised by the medical inspector not to overstep his rights, but to refer all cases back to the parents and the family physician, as was urged in the physical examination discussion. The trained nurse of each school or each district should follow up each case of infection sufficiently to determine that the child is being properly cared for, and that the infection of others is prevented. In all cases in which a complete examination is desirable the consent of the parents should be obtained beforehand. In all cases where any examinations of girls are made, the trained nurse should be present. A private examining room in each school will facilitate and minimize the objection to such examinations.

### A FEW SUGGESTIONS FOR THE MEDICAL INSPECTOR

1. The medical inspector should note the vaccination mark (present, absent, character).
2. He should note skin eruptions.
3. He should look for evidence of body or head lice.
4. He should be on the lookout for trachoma (which in some regions is of frequent occurrence).
5. The inspector should make a careful examination of every child found by the teacher or trained nurse with eruption, sore throat, a suspicious cough, or fever.
6. He should examine all other children who are in immediate contact with the one who is ill or is found to have a contagious disease.
7. He should examine all other children who live in the same house as the one affected and who are attending school.
8. He should cooperate with the board of health to determine when a cured child should return, and when suspects should be subjected to, and when they should be released from quarantine.
9. When there is no physical examination of all children in a school as previously outlined, the inspector should make as much of an examination of apparently unhealthy children as possible. The important objects to be determined are: the condition of the teeth, nose, throat, eyes, ears, spine, feet, ankles, glands, heart, lungs, nutrition, mental condition, etc.

### NUTRITION

Medical inspection should really be medical supervision at least with the aid of the trained nurse, and a great problem of child health and of prevention of disease is that of nutrition. Underfed children are in goodly numbers, as shown by such statistics as are available, and for such the question of the diet at home is important, especially the breakfast. The homes and diet of all ill-nourished children should be investigated by the trained nurse. The value of the school luncheon is unquestionable; however, its advisability must be determined by each community, but the actually underfed children must in some manner be provided with good food. There is no possible excuse for compelling a child to study who is receiving insufficient food.

### EYES

A very large percentage of children of school age are found to have defective eyes. Such defects being discovered, how many receive the proper glasses, and then how many keep their glasses properly adjusted, and how many have reexamination as often as they should (such examination should be once a year) to determine the changes that will occur? It is readily seen that the eye question is a serious one.

As many children as possible, who have been found to have defective eyes and eye-strain, should be sent by their parents to oculists of repute, and the danger of consulting opticians and so-called optometrists and department store eye clerks should be explained on a printed slip issued by the board of health or the school board. This paper should also urge that the child have spectacles with large sized lenses and rigid, light weight, inexpensive frames. There is no other method to equip an astigmatic eye properly, especially in children. All other frames, for a child, are a delusion and a snare. If a family can afford it, "dress up" gold or gold-filled frames may be had as an extra pair. Each child with glasses should have a good case for them, and in all rough games the glasses should be taken off and deposited in these cases and the cases placed in a safe spot. This detail may seem superfluous, but it is all-important.

If the visiting nurse ascertains that the parents are unable to pay for a skilled oculist's examination, or for the lenses, then the child should be sent to a regularly appointed oculist who receives a small salary for such services. Later the prescription for glasses should be taken to a regularly appointed optician or one of several who have contracted at minimum rates for such cases. Dispensary service for determining the correct refraction of a child's eyes for his life work is unsatisfactory and generally unavoidably bad. A child had better have no glasses at all than to have incorrect ones. Neither should it be expected that the oculist can devote time and science, unpaid, to such a nerve-tiring work as determining the proper glasses for children. They are willing to do emergency and eye disease work for the poor gratis, but eye refraction work should be paid for. Why should a community demand that a child go to school and then demand that some member of the community, without pay, make the child fit to go to school? On the other hand, the correction of eye-strain in children not only causes them to learn with more ease, but prevents eye defects that may mean untold suffering for years after. The migraine sufferers will certify to the correctness of this statement.

### TOBACCO: ALCOHOL

There is no question that during the teaching of school hygiene, during the study of physiology in school, and during the brief description of the action of, and the antidotes to, the more common poisons, the baneful effects of tobacco and alcohol should be honestly shown. It is of no more advantage to disseminate lies in regard to these narcotics and habit-forming substances than to teach any other branch of knowledge incorrectly. The truth is bad enough.

It is inexcusable for parents to give young children alcohol, but it is not wise to teach children that because their parents occasionally partake of a glass of beer or wine, they are condemned to perdition physically and morally. The higher standards of communities and the proper supervision of all places that sell liquor that is to be drunk on the premises will soon make overdrinking unusual except in the diseased. The moderate use of alcohol by adults must for some time be a matter for individual decision. Youth and those under age should not take alcohol in any form, not even tinctures or caffein stimulants at the soda-water fountains.

Much more serious for the many among our young boys and young men is the overuse of tobacco. Where one young man uses alcohol perhaps twenty use tobacco. Cigaret smoking in young boys is tolerated in some preparatory schools, and even in some public high schools. In fact, a large number of young men under 21 years of age smoke excessively and to their detriment mentally and physically.

The symptoms and signs of oversmoking, the impaired chest and lung development, the impaired heart action, the impaired nutrition, injured nerves and weakened muscles are all matters of medical knowledge. These vary only in degree in young boys who overuse tobacco, and are all more or less in evidence sooner or later. Emphatically, growing boys should not be allowed to smoke, even if their fathers and teachers do.

*(To be continued)*

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## New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

**ANTIRABIC VACCINE** (See N. N. R., 1914, p. 269).
Laboratory of W. T. McDougall, Kansas City, Kan.

*Pasteur Antirabic Vaccine.*—The virus is prepared according to the method of the Hygienic Laboratory, Washington, D. C. An amount of the dried cord, sufficient for one dose, is emulsified in 50 per cent. glycerin accompanied by a syringe containing sterile physiologic salt solution for further dilution at the time of administration. A dose is sent daily by mail in a vacuum container. The treatment consists of twenty-one or twenty-five doses, according to the severity of the wound.

**SOLUTION PITUITARY EXTRACT.**—An aqueous sterile solution of a purified extract of the posterior (infundibular) lobe of the pituitary gland of the ox, sterilized by addition of camphor water and 0.5 per cent. of boric acid. Each cubic centimeter is assayed to correspond in strength to 0.2 Gm. of the fresh posterior lobe.

*Actions and Uses.*—Solution pituitary extract stimulates the unstriped muscle, especially affecting the arteries, spleen, uterus and intestinal muscles.

Pituitary extract is used (by hypodermic or intramuscular injection) mainly to stimulate the uterine contractions in labor. It is also employed in pareses of the intestines and bladder, especially postoperative. It has been tried as a circulatory stimulant and diuretic but is probably of little if any use for these purposes.

This remedy should not be injected during the first stage of labor, because if the os uteri is not fully open the energetic contractions may cause a rupture of the uterus.

*Dosage.*—The average adult dose is 1 Cc.

Manufactured by H. K. Mulford Co., Philadelphia. No U. S. patent or trade-mark.

*Ampules Solution Pituitary Extract.*—Each ampule contains solution pituitary extract 1 Cc.

Fresh posterior lobes of the pituitary gland of the ox are ground, dried, defatted, extracted with acidulated water, purified by heating to coagulate inactive protein matter, and the solution so obtained assayed by the isolated uterus method (*Jour. Am. Pharm. Assn.*, June, 1914, p. 808). After adjustment to proper strength it is sealed in ampules and sterilized by heat.

Solution pituitary extract is an almost colorless liquid having a faint odor of camphor.

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SATURDAY, DECEMBER 5, 1914

## VOLUNTARY ACCELERATION OF THE PULSE-RATE

It is doubtless true in the case of most persons that they are unable to render many of their important physiologic functions subject to the action of the will. The performances of the alimentary tract proceed without our knowledge and independent of any volition on our part. The heart carries on its duties in the maintenance of the circulation with persistent efficiency and without interruption. The contraction of the cardiac organ is modified by impulses that come to it from within and without; but these regulatory impressions are rarely the direct product of the human will.

There are persons, though they seem to be exceptional and few in number, who can exercise a voluntary regulation of the heart-beat. Tarchanoff,[1] in 1885, observed a medical student who could alter his pulse-rate at will. He found that men with this faculty had generally an exceptional control over their skeletal muscles; for example, they could bend the third joint of a finger independently of the other joints, or contract the platysma muscle, or certain individual groups of the muscles of the arm and neck. In the case observed by Pease,[2] the subject could voluntarily accelerate his pulse-rate as much as twenty-seven beats per minute and likewise exhibit the control over other muscle groups just referred to.

It is, of course, a well-known fact that the cardioregulatory centers can be affected by stimulation of afferent nerves, and can be influenced experimentally from the cerebrum or by the action of the blood on the centers. The frequency of the pulse can be altered by psychic and emotional states. Thus in many persons it may be slowed by directing attention to the contemplation of painful subjects. The mere physical examination on the part of a physician may give rise to a familiar acceleration of the pulse. In the case of an individual counting his own pulse its frequency may even become diminished. In conditions of hypnotism, the pulse-rate has been observed to change markedly under the influence of suggestion. All such instances, however, belong in quite a different category from the direct voluntary acceleration of the heart-beat in man to which we have particularly referred.

What is probably the most carefully recorded illustration of this anomalous behavior has been described by Koehler, a student in the physiologic institute at Strassburg, who is able to increase his pulse-rate as much as twenty beats per minute by the impulse of his will.[3] He remarks that the mere concentration of his attention on the activity of the heart is not of itself sufficient to produce the acceleration. The mere "will" to increase the pulse-rate must be accompanied by an indescribable mental effort which is comparable with that whereby we provoke a contraction of our voluntary musculature—a voluntary effort, it might be designated. In order to accomplish the feat it is essential, in Koehler's case, to avoid the distractions which noises, unusual sights and similar stimuli playing on the sense organs may create. Although he can almost invariably succeed in evoking the acceleration, he is utterly unable to induce a slowing of the pulse-rate by an act of will. In his case there is reported to be a lack of the peculiar temperament or neuromuscular make-up which has been described for others. During the voluntary acceleration of the heart-beat no unusual physiologic or mental peculiarities appear. There is no blushing or sweating which might suggest a greatly altered vasomotor response. Only when extreme effort to accelerate is attempted do special muscle groups show any subjection to the peculiar voluntary control. At these unusual moments of most intense "willing," slight shivering or trembling of muscles in the neck or arms may be exhibited. A striking phenomenon is the evident dilation of the pupils. A sensation of indefinable discomfort and intrathoracic pressure makes itself felt; but practice in the voluntary acceleration — a performance against which Tarchanoff uttered a warning on account of its supposed danger—makes these symptoms less emphasized.

The mere description of an unusual physiologic or anatomic phenomenon has a restricted value unless it can serve in some way to enrich our knowledge of normal or abnormal function. A careful clinical examination of Koehler by Wenckebach of Strassburg failed to disclose any unusual condition of the heart at any time. There were no irregularities of the beat or changes in the working capacity of the heart. The acceleration of the pulse was always accompanied by changes in respiration and increased blood-pressure, but the latter is not to be looked on as a cause of the acceleration. Indeed, a primary rise in blood-pressure is much more likely to result in a decrease in pulse-rate, as a general rule.

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[1] Tarchanoff: Arch. f. d. ges. Physiol., 1885, xxxv, 109. There are also earlier cases on record.

[2] Pease: Boston Med. and Surg. Jour., 1889, cxx, 525. Another case was observed by Van der Velde: Arch. f. d. ges. Physiol., 1897, lxvi, 232.

[3] Koehler, M.: Ueber die willkürliche Beschleunigung des Herzschlages beim Menschen, Arch. f. d. ges. Physiol., 1914, clviii, 579.

All of the cases of rapid heart action of other than reflex origin raise the question of the immediate cause of the acceleration. Is it due to a diminution of the tonic activity usually exerted by the inhibitory vagi over the heart, or is it attributable to a direct action on the centers of the accelerator nerves? The earliest careful investigator[1] of the phenomenon of increase in heart-rate in man drew the conclusion that the voluntary acceleration was due to the accelerator nerves. In an exhaustive study of the acceleration of the mammalian heart, Reid Hunt[4] came to the conclusion that the evidence for this view is entirely inconclusive. He is inclined to think that the weight of the evidence is rather in favor of the existence of a diminished tonus of the vagi in these cases. According to Hunt, the most important function of the accelerators appears to be connected with their tonic activity; and almost all cases of rapid heart action seem to be due to a diminution of the tonic activity of the cardio-inhibitory center. Koehler, on the other hand, is inclined to place the emphasis on the participation of accelerator nerves, the stimulation of which he looks on as the essential factor in the genesis of voluntary rapid heart action. The contributory influence of a diminished vagus activity is admitted.

## THE FLIGHT OF FLIES

One of the problems that has arisen in connection with the part played by insects as carriers of disease[1] concerns the distance which they may be able to travel from one locality to another. This has frequently been considered in this country in connection with mosquitoes which are responsible for the prevalence of malaria. With their breeding-places known, it has become desirable in some cases to ascertain what the range of their activities might be in respect to the territory which can be covered by insects so small as are the blood-sucking *Diptera*. It has been learned in this connection that some of the mosquitoes which inhabit salt marshes near the seacoast may be found inland at a distance as great as three miles.

Far less appears to be known with regard to the migrations of the common house-fly, *Musca domestica*, an insect that has been charged with responsibility for the spread of typhoid fever and other infectious diseases. A series of studies conducted in Cambridge, England, on the range of the flight of flies of this species has been made the subject of a report to the Local Government Board on Public Health and Medical Subjects.[2] Upward of 25,000 flies were liberated, under various meteorologic conditions, from the medical buildings at Cambridge. Of these insects, colored for identification, 191 were recovered at one or other of about fifty observation stations employed for their recovery. The results showed that house-flies tend to travel either against or across the wind. The actual direction followed may be determined either directly and by the action of the wind, or indirectly owing to the flies being attracted by any odors it may convey from a source of food. A point in favor of this supposition is the nature of the station at which flies were recovered after they had traveled any distance. These comprised a butcher's shop, public houses and a restaurant, all of which gave off odors that are notoriously attractive to flies. The chief conditions favoring the dispersal of flies are fine weather and a warm temperature. The nature of the locality is another considerable factor, because in towns flies do not travel as far as in open country, probably due to the food and shelter afforded by the houses. With regard to the altitude of the point of liberation, flies set free from the roof tended to disperse slightly better than those liberated from the ground, but the differences are not very considerable. It has been observed, with regard to the vertical flight of the house-fly, that it may mount almost directly upward to a height of forty-five feet or more. The time of day appears to influence the dispersal of the insects, as, apparently, when set free in the afternoon they do not scatter so well as when liberated in the morning.

The maximum flight observed in the thickly housed localities in Cambridge was about a quarter of a mile. In one case, where a part of the distance was across open fenland, a flight of 770 yards was noted. In experiments conducted in Cook County, Illinois, by S. A. Forbes, flies were trapped and, after being sprayed with a chemical solution for recognition, were liberated from a hospital in that district. They too were recovered at distances ranging up to a quarter of a mile from the point of liberation.[3] It appears most likely that the distance flies may travel to reach dwellings is controlled by circumstances. Almost any reasonable distance may be covered by the fly under compulsion to reach food and shelter.

It has been stated that house-flies, like other insects, exhibit color preferences. Thus it is reported that a French observer, having noticed that flies did not rest on walls covered with blue paper, blue-washed the walls of his milk house and found that insects did not visit them. A recent statistical study of the behavior of the insects in this respect has failed to bring evidence that the flies display any marked color preference.[4] Therefore it seems unlikely that the adoption of any particular color for walls will have any effect on the numbers of flies entering.

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[4] Hunt, Reid: Direct and Reflex Acceleration of the Mammalian Heart with Some Observations on the Relations of the Inhibitory and Accelerator Nerves, Am. Jour. Physiol., 1899, ii, 369.

[1] Flies as Carriers of Disease, editorial, The Journal A. M. A., Nov. 7, 1914, p. 1647.

[2] Report to the Local Government Board on Public Health and Medical Subjects, 1913, New Subject Series, No. 85, pp. 20-41. This is reprinted by Hindley, E., and Merriman, G.: The Range of Flight of Musca Domestica, Jour. Hyg., 1914, xiv, 23.

[3] Howard, L. O.: The House Fly, New York, F. A. Stokes Company, 1911, p. 56.

[4] Hindle, E.: Note on the Colour-Preference of Flies, Jour. Hyg., 1914, xiv, 46.

## MEDICAL HISTORY IN THE MEDICAL CURRICULUM

At a meeting of the Königsberg Society of Scientific Medicine, May 18, Prof. Egbert Braatz,[1] who holds the chair of surgery in the Königsberg Faculty, indulged in sundry well-timed lucubrations on the decline of historical studies in medical education. As we can better understand the function of an organ if we know its embryology, which knowledge has, in itself, a history of its own, so, he points out, the real significance of many ideas and expressions current in modern medicine would be more clearly apprehended if we understood their remote origins. Not only does the interest in the history of medicine vanish day by day, he laments, but the swarm of teachers of the earlier type, who taught the subject as a distinct discipline, has also entirely disappeared. The reason is that the older universities taught the universal relationship of all the sciences, so that an old-time professor, who took nearly all medical knowledge for his province, usually "holding down" several chairs at once, was naturally in position to study and write on medical history. Nowadays medical science is split up into a large number of separate disciplines and specialties, to master any one of which is a sufficient life study for the average individual man. Hence, the specialist knows only the history of his specialty and seldom goes outside it. Furthermore, Braatz argues, the young student cannot, in the nature of things, have any interest in the history of a subject so vast that, on taking his degree, he has only just begun to learn it. It is idle to set final examinations in medical history when no adequate instruction can be given without impinging on studies of more immediate and practical moment. To obviate this, Braatz prefaces his own lectures with a sketch of the actual state of knowledge of the subject in hand, in order to close with its history. To this end, especially striking themes are always chosen. In some of the discourses introductory to the semester, a short general historical introduction is given. As an example of the practical value of his method, Braatz cites one of his lectures, "On the Treatment of Mammary Tumors," in which the ebb and flow of the different theories bearing on the unsolvable cancer problem through the ages is considered.

In discussing Braatz' paper, Prof. Carl Kaiserling, director of the Pathological Institute, states that the author opens an old wound, painful to all. Instruction in medical history is usually confided not to a specialist in the subject, but to a docent in some other branch, such as pathologic anatomy. To teach such a subject as pathology in all its theoretical and practical bearings is all that a modern professor can do. Who has time to study medical history as a modern should know it? It seems right and proper that our "historical sense" should be concentrated on the modern aspects of any subject. Who can even engage to keep up with the modern literature, when there are almost as many periodicals as days in the year? Historical interest in a subject can be aroused only when the latter has been thoroughly mastered in its present aspects. Hence, the study has to be postponed until the end of the student's course, or even after he has entered on the practical business of his life. The young student would undoubtedly be hindered by the introduction of prosy historical lectures at the beginning of his course. Kaiserling approves of Braatz' method, because by it, the instructor intertwines historical matter with his special subject.[2] Much of this might be connected with etymology, the bugbear of the beginner, only, alas, there are teachers as well as students who know no Greek. In further discussion of the paper, Professor Kisskalt opines that the history of epidemiology, as relating to the unsolved problems connected with the appearance and disappearance of infectious diseases, would be of a special interest, as also the history of errors in medicine. Professor Friedreich, of the University Clinic, testifies that he has aroused enthusiasm in his students by bringing historical matter directly into his clinical demonstrations.

We cannot too warmly commend the foregoing as the best method of teaching medical history in the student's curriculum. The history of ancient medicine is a dull subject in itself; the modern period, from the work of Vesalius and Harvey on, is the most inspiring, as Kaiserling hints, and long-winded lectures, by no matter what authority, would only crowd the medical course still further with material which could not be assimilated.

Probably the best lectures of the kind delivered in this country were those of the late Dr. J. S. Billings on medical history in relation to medical education, which were delivered at the Johns Hopkins University in connection with the proposed building of its hospital and the formation of its medical school. Yet neither these lectures nor those subsequently delivered by Billings at the Lowell Institute were considered worthy of publication by their author, probably because they dealt with material "gone stale," even though viewed from a special angle. But the seed thus sown did bear fruit. At the Johns Hopkins Hospital, Osler and the other professors carried "historical medicine" directly into the clinics, much in the manner which Braatz has adopted and described. And this way of familiarizing the student with the rudiments of the subject might easily be followed by the anatomist, the embryologist, the otologist, the professors of hygiene and medical jurisprudence, and other teachers in the different specialties.

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[1] Braatz, Egbert: Deutsch. med. Wchnschr., 1914, xl, 1879.

[2] In seiner Spezialwissenschaft historische Einflechtungen macht.

## THE FAT CONTENT OF THE BLOOD

Judging by the attention which is being devoted of late to the quantitative aspects of the blood, we may look forward with considerable confidence to a better understanding, in the near future, of the economy of the nutrients in their exchanges between the circulating medium and the body tissues. Some of the constituents of the blood have already been the subject of extensive investigation, notably the sugar and the nonprotein nitrogenous substances regarding which we have offered comments from time to time.[1] The sugar-content of the blood is coming to rank with other more familiar quantitative constants like the percentage of hemoglobin or the number of corpuscles, as an index of the existence of pathologic conditions in the metabolism of the body. Urea estimations and other ways of determining such non-protein nitrogen as is furnished by amino-acids in the circulation are being studied in relation to the efficiency of the kidneys as organs of elimination.

Surprisingly little has developed with respect to a different group of blood constituents, the fats, which are quite as common, if not actually as indispensable, as sugar in the nutritional performances of the organism. Lipemia — characterized by an exceptional amount of fat in the blood — is familiar to most physicians as something occurring during fat absorption, when the blood-plasma becomes milky with fat. It is a phenomenon likewise frequently present in severe diabetes.[2] Whereas, however, it is not uncommon to refer to hyperglycemia or hypoglycemia, to uricacidemia, to uremia, etc., somewhat familiarly, attention has only recently been directed to the probable importance of variations in the character and amount of the fatty constituents of the blood. Even the "constants" with respect thereto are scarcely known with any degree of either accuracy or adequacy.

Equipped with a novel method of investigation, based on nephelometry, Dr. W. R. Bloor, recently appointed to the staff of the Harvard Medical School from the laboratories of biological chemistry of Washington University at St. Louis, has approached the problems of the fat-content of the blood under approximately normal conditions.[3] Obviously, we need to understand the variations that may be expected therein before it will be profitable to engage in any elaborate consideration of the perversions that occur or their pathologic meaning. Perhaps the most significant feature of these newest studies is the fact that the fat-content of the blood of dogs is shown to be quite constant both for the individual and the species. The average figure for what may be called the fat-content of the blood under normal conditions, taken at varied times on samples collected twenty-four hours after the last feeding, was 0.6 per cent. The average variation of any animal from the average for all was only 7 per cent.; the greatest variation, 14 per cent. This plainly indicates that there is an efficient regulation. Bloor concludes that this constancy of fat values in the blood of dogs gives sufficient reason to expect a similar constancy in the normal blood-fat value of human beings, and indicates that blood-fat determinations would give valuable diagnostic information in certain conditions.

Feeding fat in the ordinary way caused an increase in the fat-content of the blood beginning in about one hour after feeding and reaching a maximum in about six hours. When the thoracic duct was tied there was no increase in blood-fat after fat-feeding. This does not necessarily prove that no absorption was taking place, but only that if any fat was entering the blood-stream by channels other than the lymphatics, it was being removed as rapidly as it entered.

In connection with recent attempts at the intravenous feeding of fats in the form of the fine emulsion furnished by egg-yolk,[4] it is interesting to learn that the fat in certain types of emulsions may disappear rapidly from the circulation after it is introduced directly into the blood-stream. Why there should be wide variations in their behavior is not yet clear. The point of chief import, we conclude, is the possibility of a rapid removal of even undigested fat to the storage or other depots concerned in fat metabolism.

It has long been understood that the amount of fat in the blood may be somewhat increased in fasting, because the fat is taken up from the fat deposits and carried to the various organs by the blood. The experiment has not always tallied with the theory, however. From Bloor's investigations it is not unreasonable to explain the differences hitherto observed—sometimes a high and again a low blood-fat content in starvation—by the relative availability of the stored fat and especially the fat in the temporary storehouses on the one hand and the rate of utilization on the other. For example, an animal which did not ordinarily show any increase in blood-fat in fasting, was made to exhibit the usual curve of increase of blood-fat in fasting by stuffing with fat-food for a week before the fast. Bloor's results thus plainly indicate that when food is withheld, the increase in blood-fat depends on the nutritional condition of the animal. Narcotics may also have a pronounced effect on the blood-fat content; but that is a topic which demands more study.

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[1] The Sugar Content of Human Blood, editorial, The Journal A. M. A., April 4, 1913, p. 1228; Blood-Sugar in Diabetes, Current Comment, ibid., Aug. 9, 1913, p. 418; Variations in the Content of Sugar in the Blood, editorial, ibid., Jan. 10, 1914, p. 131; The Amino-Acids in the Blood, Current Comment, ibid., Feb. 21, 1914, p. 621; The Absolute and Percentile Amounts of Sugar in the Blood, editorial, ibid., Sept. 19, 1914, p. 1036.

[2] An Explanation of Lipemia, editorial, The Journal A. M. A., Oct. 3, 1914, p. 1208.

[3] Bloor, W. R.: A Method for the Determination of Fat in Small Amounts of Blood, Jour. Biol. Chem., 1914, xvii, 384; Studies on Blood-Fat. I. Variations in the Fat-Content of the Blood under Approximately Normal Conditions, ibid., 1914, xix, 1.

[4] Schott: Deutsch. Arch. f. klin. Med., 1913, cxii, 403.

## RURAL SANITATION

In 1909 the Commission on Country Life reported that "the farm should be the most healthful place in which to live, and there are numberless farmhouses, especially of the farm-owner class, that possess most excellent modern sanitary conveniences. Still it is a fact that there are also numberless other farmhouses, especially of the tenant class, and even numerous rural schoolhouses, that do not have the rudiments of sanitary arrangement. Health conditions in many parts of the open country, therefore, are in urgent need of betterment."

The problem of rural sanitation calls for consideration from two points of view: that of the possible danger of objectionable surroundings and unhygienic practices to the individual on the farm and his immediate neighbors; and that of the menace which insanitary farm conditions may present indirectly to urban communities. The sanitary relation of the farm to the city involves almost entirely the possibility of the spread of actual infection from country to city through milk, meat, vegetables and other farm products. A few years ago it was not uncommon for farmers to meet with a spirit of resistance any suggestion of hygienic improvements which were planned to diminish the danger of the farm as a starting point for the spread of disease. At times there has actually been aggressive opposition to proposed regulations the object of which was defensible from every unbiased point of view. The milk industry could furnish many instances in recent times of actual refusal on the part of farm communities to supply an essential food to the market under conditions that to-day are everywhere accepted as rational and necessary.

A few years ago the apparent indifference of the rural community to the needs of the urban population dependent on the farm for a healthful food supply could be excused on the basis of ignorance. To-day there is no excuse for apathy toward the teachings of modern sanitation. The campaign of education that is being waged throughout the United States by all manner of forces—municipal, state and national—by agencies connected with the Public Health Service, the Department of Agriculture, the experiment stations, the state universities, boards of health, civic organizations and the public press ought to win its way into every rural home that has any ties whatever with civilized communities.

The better understanding of the farmer's unavoidable responsibility toward his distant fellow citizen has in turn reacted to advantage in respect to his own environment. As a recent writer has expressed it: Fortunately with the general advance in rural standards of living in recent years there has come about a considerable awakening of interest among farmers and representatives of rural communities along these lines, as well as among the public as a whole. Modern methods of communication and travel have to a great extent brought the rural districts into closer relationship with the towns and cities. The farmer learns of the improved general health and reduction in the death rate resulting from the decrease of the ravages of contagious disease, which has been brought about through the introduction of such preventive measures as a sanitary water supply, proper methods for the disposal of sewage and garbage, and mosquito and fly extermination, and wishes to avail himself of these benefits.[1]

The country medical practitioner well realizes the futile idealism of much that emanates from an urban desk. Sometimes the most elementary sanitary conditions offer puzzling problems when the expense and feasibility of the proposed remedies are carefully studied. Too often the city reformer forgets the enforced monotony of diet, the lack of recreation and the excessive hours of work which farm conditions may entail in some sections and at certain seasons. There are social as well as economic forces involved in farm life. The reform of rural sanitation, which is undeniably called for in some parts of the United States, must not overlook the personal element so strong in the country dweller. With the exigencies of the situation kept in mind the campaign for improvement in rural sanitation is likely, in the words of a recent writer, to do much to make farm life at once more profitable, more healthful and more attractive, and by so doing contribute to safeguard the food supply, and therefore the health and the efficiency of the nation.

# Current Comment

## FUNCTIONS OF A CITY HOSPITAL

A pamphlet issued by the Department of Public Welfare of the City of Cleveland deals with the history, functions and possibilities of the Cleveland City Hospital. The following statement indicates that those in charge of this hospital have a clear conception of the invaluable service to the public which can be rendered by a great municipal hospital if properly conducted: "A municipal hospital is an institution of organized society provided by a city to care for the sick. It is but a medical means to a social end, and this end — public welfare — must never be forgotten. The modern hospital has outgrown the narrow field of boarding and treating sick people, and the time has come when a proper city hospital can no longer passively receive the sick from the community at large, without regard for the reason why they became sick, use them chiefly as material and often discharge them without the slightest interest in their convalescence and rehabilitation in wholesome living and working conditions. Hospitals more than any other social agency accumulate the evidence against the dangers to life in the community, dangers from contagion, from ways of living and from industry, and they must feel the responsibility to study this evidence and become leaders in the progress of prophylactic medicine. The idle convalescent is of no more value in a community than the bedridden and scarcely less expensive to support. It is not only charity and social service, but also sound economy for a city to supervise convalescence; to make it such that the patient can return to his work the sooner. A city hospital of to-day must continue to give to a community scientific care for its sick and must afford opportunities both for scientific investigation and for the education of physicians, nurses and orderlies. But above all, it must, through its social service work and through cooperation with all other community social agencies, give a watchfulness over public health and results that will result in more days of life, work and happiness to its citizens."

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[1] Editorial, Expt. Sta. Rec., 1914, xxx, 701.

## DO "PATENT MEDICINE" INTERESTS CONTROL THE PRESS?

Most of our readers are familiar with the "Great American Fraud" articles by Samuel Hopkins Adams that appeared in *Collier's* a few years ago. In preparing the matter for the "Great American Fraud," Mr. Adams visited "patent medicine" factories, got in touch with nostrum promoters — and their dupes — and in various ways investigated the subject with the utmost thoroughness. In connection with that series there were one or two articles showing the sinister control that the "patent medicine" interests exercised over the press of the country. The notorious "red clause" in advertising contracts, by which the "patent medicine" makers hoped to enlist the aid of the newspapers as unpaid lobbyists against any proposed health legislation that might interfere with the sale of nostrums — this is history. That the "patent medicine" interests still exercise a baneful control over the press is evident from the facts brought out in a letter from Mr. Adams published in this issue.[1] In his latest novel, "The Clarion," Mr. Adams has put in vivid and gripping form the information he has gained as a newspaper man, and his wide and yet detailed knowledge of quackery and the "patent medicine" business. It is not necessary here to give a synopsis of "The Clarion"; this was done when the book was reviewed recently.[2] It is sufficient to remind our readers that the novel deals with the problems that beset a newspaper that tries to be honest with its patrons. The chief character in "The Clarion" is a "patent medicine" manufacturer, one "Dr. Surtaine," whose nostrum "Certina" brought him wealth and power. Readers familiar with the history of contemporary quackery will recognize in Surtaine a composite picture of several individuals who have amassed wealth through the sale of worthless, fraudulent or dangerous nostrums. If one wished to clothe the intangible, to particularize the general, to materialize the immaterial, he could, as fancy led him, recognize in Mr. Adams' hypothetical nostrum "Certina," such products as "Swamp Root," "Peruna," or a score of others. It is evident from Mr. Adams' letter that the newspapers and book-store proprietors of Binghamton, N. Y., have materialized "Dr. Surtaine's" preparation in the notorious fraud, "Swamp Root." Such might have been expected. But it is a little disheartening to those who were hoping against hope that the newspapers were throwing off the yoke of the "patent medicine" makers, to find that there are still newspapers so recreant to their public trust as to refuse to advertise a novel because it may throw an unpleasant light into the dark places of a local industry.

## FURTHER "PATENT MEDICINE" INFLUENCE

In connection with the instance cited above we give another example of the power wielded by the "patent medicine" interests. The story runs that a traveling exhibit sent out by a state board of health contained, among other material, some educational posters on the "patent medicine" evil. One of the placards exposed the fraudulence of a "patent medicine" manufactured and having a large sale in that section of the country through which the exhibit was going. Soon after the traveling exhibit had left the town in which this particular medicine was made, the official in charge of the exhibit received a telegram from a railroad official of another state requesting that the particular exhibit in question be removed from the car because it reflected adversely on a certain one of the railroad's patrons. As the request practically amounted to a demand, the exhibit objected to was removed. This particular incident we may take up in greater detail at some future time; at present it is referred to only to show that the influence wielded by those who have made their millions out of the great American fraud is as real as it is malevolent.

## BARE WALLS AND MONOTONY

The bare white walls of the modern sanitary hospital have a certain monotony which, in many instances, forms a dull and dreary aspect to the sick person who must lie for the larger part of every day and find nothing else in his horizon. Brayton[1] refers to a patient who, when he left the hospital, said: "Sister, tell the next patient who occupies this room that there are 391 fleurs-de-lis in the decoration on the wall." Another patient reported to his friends that his room was well aired by two large windows, that there were three fly-specks on the big white walls, and the brass door knob was most interesting. In Indianapolis two units of the City Hospital, known as Burdsal units in honor of the founder, have been decorated so adequately that the foregoing criticism does not apply. Some of the best artists — men and women of national fame — have collaborated in the work. Mr. William Forsythe is general director of the decoration program, and is personally decorating one of the wards for the children. In the children's dining room Mr. Otto Stark has portrayed a "festival of toys." In one of the corridors of the children's wards Mr. Carl Graf has illustrated the story of Cinderella. Mr. Weyman Adams, a well-known portrait painter, has included twenty-four portraits of Indianapolis children placed medallion-like in panels between the windows. In the sun parlor the best-known children stories have been depicted in colors by Mr. Clifton Wheeler. In the women's wards work is being done by Mr. T. C. Steele, Mr. J. Otis Adams, Mrs. J. E. Bundy, Mr. William E. Scott and Miss Dorothy Morlin; corridors and panels are being made by Mr. Martinius Anderson and Mr. G. Gaus. A large bronze fountain is being made by Mrs. Myra Richards for the roof garden playground, and a bronze tablet, commemoratory to the donor, by Miss Helene Hibben. A visiting artist, looking over the walls already covered, remarked that there were only two buildings in this country that these decorations recalled, one of them the Boston Public Library, the other, the Congressional Library. The idea, while not wholly unique, has here been carried out with a quality and completeness probably not equaled elsewhere. As Brayton quotes, "These beautiful and peaceful decorations 'may minister to a mind diseased and pluck from memory a rooted sorrow.'" The achievement is worthy of being widely copied if other communities can enlist a similar cooperation of artists.

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[1] Page 2062.

[2] See The Journal, Oct. 10, 1914, p. 1316.

[1] Brayton: Indianapolis Med. Jour., 1914, xvii, 497.

## THE SIGNS OF DEATH FROM FREEZING

It is not clearly understood how severe cold causes death. A variety of causes have been assumed to be at work — accumulation of carbonic acid, paralysis of the vasomotor centers, loss of heat, accumulation of blood in the heart, anemia of the brain, destruction of red corpuscles — all of which tends to show that we really do not know anything definite as to the precise cause. The signs of death caused by exposure to cold are also poorly understood. This is especially unfortunate in view of the fact that in all northern countries cases of death from freezing frequently present themselves for investigation. In Russia, for instance, at least several hundred persons die each year from the immediate effects of severe cold, and in the Medicolegal Institute in Moscow about 2.5 per cent. of all post-mortem examinations concern deaths from freezing. Recently Krjukoff[1] has published the results obtained from a study of the Moscow material with a reference to the signs of death from freezing, and he finds that in 40 per cent. of the cases the presence of swollen and glistening bluish-red or bright scarlet-red spots in the skin of the ears, hands or feet were present and that such spots are reliable signs of the action of cold on the living skin. Cerebral and pulmonary hyperemia and edema were frequently found, and the heart commonly was overfilled with blood; but these appearances were not distinctive. Hemorrhagic erosions were found in the stomach in 72 per cent. Krjukoff regards the absence of glycogen and sugar in the liver as a good sign of death from freezing, particularly valuable because both these substances are present in the liver in acute alcoholism.

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[1] Krjukoff, Alex., Vierteljahresschr. f. gerichtl. Med., January, 1914.

# Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

## ALABAMA

**Personal.**—Dr. Wesley Earl Drennen, Birmingham, has sailed for Europe.——Dr. George H. Fonde, Mobile, has been appointed a trustee of the Alabama-Bryce Hospital for the Insane, Tuscaloosa.

**Fire in Infirmary.**—Fire at the infirmary of Drs. Luther L. and Robert S. Hill, Montgomery, November 7, caused serious damage, and necessitated the removal of all patients from the building. This was accomplished without casualty.

**Tick Eradication.**—Dr. J. A. Kiernan is working on this task for the federal government. Hale, Marengo and Henry counties voted for tick eradication in the last election. Wilcox County is to furnish funds for tick eradication work. Limestone County has entered into a contract with the federal government to assist in tick eradication beginning Feb. 15, 1915. The Alabama Live Stock Sanitary Association has also entered into a tick eradication contract.

**Malarial Survey.**—Surgeon Rudolph H. von Ezdorf, U. S. P. H. S., has recently been transferred from Mobile to New Orleans and delivered an address at a meeting of the Mobile County Medical Society on "Malarial Survey," in which he outlined the ways in which surveys are made by the public health service in the various cities affected by malarial mosquitoes. A resolution, commending the faithful work of Dr. von Ezdorf during the four years of his stay in Mobile, was adopted by a rising vote.

## CALIFORNIA

**Want Another Tuberculosis Hospital.**—The committee on public health of the San Francisco Medical Society has recommended to the supervisors that the present tuberculosis hospital be used for bed cases only, and the city requires a sanatorium for ambulatory and hopeful cases of tuberculosis.

**Personal.**—Dr. Frank J. Bailey, Red Bluff, has been elected coroner and public administrator of Tehama County.—Dr. Howard Somers, San Francisco, has returned from Europe. ——Dr. Edward E. Dowdle has resigned as resident physician at the Oakland Emergency Hospital and will locate in Hayward.

## FLORIDA

**State Laboratory Opened.** — The State Bacteriological Laboratory at Tallahassee was opened last week.

**State Colony for Epileptics.**—A campaign for the establishment of a state colony for epileptics in Florida was started in August last, by a series of popular articles which appeared in the Jacksonville *Times Union* in the form of an appeal to the State Board of Charities and Corrections and the charitable and philanthropic people of the state.

## ILLINOIS

**Life Memberships Conferred.**—At the forty-first annual meeting of the North Central Illinois Medical Society held in Wenona, December 1 and 2, certificates of life membership were conferred on Dr. George Allen Dicus, Streator, president of the association; Dr. Thomas H. Trainor, Aurora, and Dr. Thomas W. Burrows, Ottawa.

**Personal.**—Dr. Enos S. Spindel, Springfield, has been appointed a member of the State Board of Health, vice Dr. James J. Hassett, McLeansboro, deceased.——Dr. Thomas N. Miller, Rockford, who was seriously injured in a runaway accident November 2, is reported to be convalescent.——Dr. Halley A. Smith, Rockford, has started for France where he expects to serve in the army medical corps.

### Chicago

**Civil Service Examination.**—The County Civil Service Commission announces that it will hold an examination the last week in January, 1915, for director of the Psychopathic Institute in connection with the juvenile court. The position carries a salary of $5,000 a year and the examination is to be as to the mental and physical condition of delinquent and dependent children who appear in the juvenile court.

**Free Aid to Working Women.**—The following women physicians of Chicago have offered to give their services free to working women and also to help in the municipal dance halls. Drs. Sadie B. Adair and Lindsay Wynekoop have been assigned to the south side dance halls; Drs. Blanche Bergman and Agnes Mikkelsen to those on the west side, and Drs. Effie L. Lobdell and Clara P. Seippel to the north side dance halls.

**Health Exhibit Opened.**—The Chicago Health Department, Board of Education, Municipal Tuberculosis Sanatorium, United States Bureau of Food Inspection, United States Bureau of Animal Industry and Illinois State Board of Health have united their efforts with those of many private organizations of Chicago and elsewhere to produce a new type of expedition picturing health from the standpoint of the common interest. This expedition was opened to the public at the City Club, December 1, and includes all phases of municipal health problems, infant welfare, bad lighting, inadequate school inspection, etc.

## LOUISIANA

**Tribute to Dr. Dowling.**—The New Orleans *State*, in its issue for November 15, says editorially:

> "When the Southern Medical Association elected Doctor Oscar Dowling of Louisiana to its presidency, that body bestowed a merited honor. Dr. Dowling, as president of the State Board of Health, has brought to his work energy, courage, intelligence and enthusiasm. He has set a standard in Louisiana for the discharge of the duties of public office. He has won for the health department of Louisiana a reputation equalled by few and surpassed by none other of the like departments in other commonwealths. The good this has done for Louisiana, in correcting false impressions abroad, in remedying conditions on which some truthful unfavorable impressions were based, has been incalculable. Many thousands of Louisianians will live longer, live more effectively for themselves and for their communities, because of the work Dr. Dowling has done, and the interest he has stirred in cleanliness, sanitation, and decent and right living."

## MARYLAND

**New Diet Kitchen.**—The new diet kitchen which has been presented to the Hebrew Hospital by Mr. Wm. M. Benesch, was formally turned over to the hospital on November 25. The gift was accepted on the part of the institution by Dr. Harry Adler, Baltimore, president of the hospital board. The kitchen is equipped for the preparation of special foods and is also a school for the instruction of nurses in training in the science of dietetics.

**Portrait Presented to Faculty.**—A life-sized oil painting of Dr. Samuel Clagett Chew, dean of Baltimore physicians, formerly president of the Medical and Chirurgical Faculty of Maryland, a member of the Board of Regents of Maryland for more than forty years, was presented to the faculty November 20, by the Baltimore City Medical Society. The ceremony took place at Osler Hall. The presentation addresses were made by Drs. Charles W. Mitchell and William S. Thayer. Dr. Randolph Winslow, president of the faculty, accepted the portrait on behalf of the faculty.

## MASSACHUSETTS

**Dental Infirmary Dedicated.**—The Forsyth Dental Infirmary for Children, Boston, was formally dedicated November 24. The infirmary is a gift to the city of Boston from John Hamilton and Thomas Alexander Forsyth in memory of their brothers, James Bennett and George Henry Forsyth, and has an endowment of $2,000,000.

**Personal.**—Dr. John J. Dowling has been appointed superintendent of the Boston City Hospital, vice John C. McCollom.——Dr. H. J. Gosline has been appointed assistant physician at the Danvers State Hospital.——Dr. Charles A. Reese, West Newton, was knocked down by an automobile truck November 22 and painfully injured.

**Health Hints to Public.**—The annual course of free public health talks given under the auspices of the Robert Dawson Evans Memorial Department of Clinical Research and Preventive Medicine began November 17, at the Memorial Building in Boston, when Dr. Allen J. McLaughlin, the new health commissioner of the state, gave a talk on "The Importance of Public Education in the Prevention of Diseases." The talks will continue to be given each Tuesday evening until May 25, 1915.

## MICHIGAN

**Tuberculosis Building Opened.**—The Anna T. Dodge Children's Building of the Detroit Tuberculosis Sanatorium, was formally opened to the public on Tuberculosis Day, November 29.

**Diphtheria General Throughout the State.**—Dr. John L. Burkart, Lansing, secretary of the State Board of Health, says that diphtheria is general throughout the state, over fifty cases having been reported from Ithaca alone. Schools have been closed at Bay City and other places.

## MINNESOTA

**State Cancer Committee.**—Dr. William J. Mayo, Rochester, has been appointed chairman of the Minnesota State Committee of the Medical Society for the Control of Cancer. He has associate with him on this committee, Dr. James E. Moore, Minneapolis, and Dr. Warren A. Dennis, St. Paul.

**Personal.**—Dr. Carl J. Holman, Mankato, has been appointed a member of the State Board of Medical Examiners, succeeding Dr. John W. Andrews, Mankato, who was elected to the state senate at the November election.——Dr. Charles A. Stewart is reported to be ill at his home in Duluth.

**Red Cross Christmas Seal Campaign.**—The Minnesota Public Health Association, which has charge of the sale of Red Cross Christmas seals in the state, announces a series of prizes to districts and district managers varying from the services of a baby welfare nurse to pennants or banners in consideration of the sale of the Christmas seals.

**Bass Lake Preventorium.**—The League of Protestant Women of Minneapolis have purchased Oakwood Inn, Bass Lake, for $15,000, and will convert the inn into a sanatorium for the prevention of tuberculosis in children. The institution owns eleven acres of land and is located on the lake shore. Dr. Longstreet Taylor will be in charge of the sanatorium.

## MISSISSIPPI

**Pellagra Excluded from Natchez Hospital.**—The board of trustees of Natchez Charity Hospital, November 11, decided, in view of a reduced appropriation, to exclude all pellagra cases. The Vicksburg Emergency Hospital had previously taken similar action.

**State Hospital Overcrowded.**—The Mississippi Insane Hospital, Jackson, showed an average of 1,527 for the month of October. The appropriation made by the legislature was based on an average of 1,450 at a per capita of $140 per annum. Thus the institution is caring for 77 patients more than has been provided for by the state.

**Free Pasteur Treatment.**—By an arrangement perfected by the secretary of the Mississippi Board of Health and the United States Public Health Service, the State Board of Health announces that it will treat all cases of rabies free of charge, provided the persons suffering from the disease are unable to take treatment at the Pasteur institutions located at New Orleans or Memphis. The only stipulation is that the treatment be administered by an official of the State Board of Health.

## NEW YORK

**County Tuberculosis Hospital.**—Suffolk County has voted in favor of a tuberculosis hospital and has appropriated $50,000 for its establishment.

**Mental Defectives.**—In a recent address Robert W. Hebberd, secretary of the state board of charities, urged an extension of the state institutions for the care of feeble-minded persons. He states that a recent investigation shows that there are nearly 9,000 mentally defective persons in the state outside of New York City who are unsuitably cared for in their homes and in almshouses. A survey of New York City is now being made. A bond issue is recommended as the best means of raising funds to make provision for these unfortunates.

### New York City

**Roentgenologists Incorporate.**—A certificate of incorporation was granted, November 14, to the New York Roentgen Ray Association with the following directors: Drs. I. Seth Hirsch, George Sloan Dixon, Adomiran Judson Quimby, William A. LaField and Archibald P. Evans.

**The Common Drinking Cup in Theaters.**—An inspection of the theaters of the city has just been completed with reference to the use of the common drinking cup. Of the 429 theaters visited only 16 violations of the law were discovered and 14 of these were in Brooklyn.

**Red Cross Seals on Sale.**—A large committee composed of citizens of Manhattan has been organized and is conducting a campaign to dispose of 3,000,000 Red Cross Christmas Seals, the proceeds of which go to the Committee on Prevention of Tuberculosis of the Charity Organization Society. Special efforts are being made to bring the importance of this home charity to the attention of the public.

**Cancer Research Report.**—The report of Dr. Francis Carter Wood, director of the George Crocker Cancer Research Fund, has just been submitted to the College of Physicians and Surgeons of Columbia University. The report reviews the research work of the past year and contains a special warning to physicans against the wide use of colloidal silver salts by doctors in treating various diseases. The results of these investigations are to be published for the benefit of practitioners throughout the country. Dr. Wood states in the report that the laboratory should in time become a central bureau for information on any phase of the cancer question. With this idea in view, a large private collection of slides, amounting to some 3,000 separate specimens, has been turned over to the fund by the director. Several well-known pathologists of Europe have signified their willingness to supply the Crocker fund with a series of specimens illustrating rare forms of tumors.

## PENNSYLVANIA

**Sanatorium Wing for Children.**—The State Health Department has decided to devote the new west wing of the Cresson State Sanatorium entirely to children. The new ward which cost about $300,000 will have small wards, each containing eighteen beds, private rooms, play rooms, etc. The new wing will be ready for occupancy early in the spring.

**State's War on Typhoid Reduces Mortality Greatly.**—In spite of the recent outbreak of typhoid fever at Lehigh and of the fact that there are a larger number of cases of typhoid in the hospitals of the state at present, there has been a remarkable decline, both in the death-rate and morbidity since 1906, when an active fight against the spread of the disease began in Pennsylvania.

**Personal.**—Dr. Fred L. Grander, Forest City, fell on an icy sidewalk November 20, fracturing his left shoulder.——Dr. Robert W. Stewart, Pittsburgh, has returned from Europe. ——Dr. Frank V. McConkey, York, has been appointed a medical inspector under the division of Industrial Hygiene of the State Department of Labor and Industry.——Dr. William F. Muhlenberg, Reading, has been elected vice-president of the Pennsylvania-German Society.——Dr. Jesse H. Hazlett, Vanderbilt, is under treatment in the Allegheny Hospital, Cumberland, as the result of a skull fracture received in an automobile accident near Cumberland, November 9.

### Philadelphia

**Mütter Lecture.**—The Mütter Lecture on Surgical Pathology for 1914 was given in the Thompson Hall of the College of Physicians of Philadelphia, December 4, by Dr. Fred H. Albee, New York City, on "The Fundamental Principles Involved in the Use of Bone Grafts in Surgery."

**Personal.**—Dr. Thomas McCrae has been appointed consulting physician at Girard Hospital.——Dr. Edward K. Tullidge sailed for Europe to serve in the Austrian Field Hospital.——Dr. John B. Carnett has been appointed surgeon at the Philadelphia General Hospital to succeed Dr. Edward Martin, resigned.

**Medal to Dr. R. Tait McKenzie.**—A silver medal in recognition of his work in athletic sculpture has been sent by King Gustavus of Sweden to Dr. R. Tait McKenzie, physical director at the University of Pennsylvania. The medal bears on one side the likeness of the King and on the other the Royal Arms of Sweden.

**Curtin Medical Scholarship.**—An effort is being made by the Philadelphia Alumni Society of the Medical School of the University of Pennsylvania to complete the fund for the purpose of endowing a scholarship in the medical school of the university in the name of the first president of the society, Dr. Roland G. Curtin. Subscriptions to the fund should be sent to Dr. L. H. Adler, Jr., 1610 Arch Street, Philadelphia.

**News of Medical Institutions.**—The campaign fund for the hospital to be known as the Providence General Hospital, Germantown, has reached over $29,000. Fifty thousand dollars is necessary to start the building of the first wing on the 7-acre property at Wissahickon Avenue and Lincoln Drive. ——about $1,300 was contributed November 18, "Donation Day" at the Children's Hospital, which receives no money from the city or state.

## CANADA

**Montreal Hospitals Seek Financial Aid.**—The General, Western and Notre Dame hospitals of Montreal have appealed to the board of control of that city for funds to carry on their work. It was pointed out that the hospitals would have to meet a combined deficit at the end of the present year of $84,000.

**University Professor Dies.**—G. R. Mines, M.A., professor of physiology at McGill University, Montreal, died in his laboratory, November 7. Professor Mines had been experimenting on himself regarding the phenomena of the heart action and respiration and it is believed, lost his life while engaging in experimentation of this nature.

**Decrease of Drinking in Canada.**—Canada produced in the fiscal year of 1914, 6,972,583 proof gallons of spirits as compared with 6,458,452 in the previous fiscal year. The per capita consumption of spirits was 1.061 gallons as against 1.112 in the previous year. The average consumption has, however, been going up in Canada since 1886 when it was only .711 per capita. Canadians are drinking more beer, the consumption per capita being now placed at 7.200 as compared with an average of 3.840 in the last four decades. There has been little decrease in the average consumption of wines which is now .124 as compared with the previous average of .119. The consumption of tobacco per head is now 3.711, a little less than the previous figure of 3.818.

**Medical Reciprocity with Great Britain.**—The action of the home authorities in refusing commissions to Ontario graduates to serve in either the British army or navy unless they are able to comply with the regulations of the General Medical Council has again precipitated the whole question of medical reciprocity between the provinces of Canada and the home land. The Dominion Medical Council has, as yet, not established any measure of medical reciprocity; the eastern provinces have Quebec, New Brunswick, Nova Scotia and Prince Edward Island. It is stated that the executive of the Ontario Medical Council has refused to call a special meeting of council looking toward immediate reciprocity with Great Britain, on old grounds which are well known.

**Progress Made in the Tuberculosis Campaign.**—Since March, 1913, nine additional institutions for the tuberculous have been opened in different parts of Canada—one at Ottawa; Brantford; Mount Sinai at Ste. Agathe, Quebec; Windsor; River Glade, N. B.; Halifax; The Preventorium, Toronto; Queen Mary Hospital for Tuberculous Children, Weston, Ont.; The Connaught Home for Nurses at the same place; the Preventorium at London, Ont. Extensive additions have also been made to the Provincial Sanatorium at Kentville, N. S.; the Freeport is about ready in Waterloo County, Ont.; the Provincial Sanatorium at Qu'Appelle, Sask., is being erected. Prince Edward Island and Alberta are also making moves in the same direction. Calgary has voted $30,000 for a municipal hospital for advanced cases, and Quebec City has also raised over $60,000 for the same purpose. In twelve sanatoria reporting on the cost of maintainance, the average cost of each patient per day is $1.55.

## GENERAL

**Health Officer Appointed.**—Lieutenant Douglas W. McEnery, M. C., U. S. A., has been appointed special health officer of the city of Panama.

**Error in Article by Dr. DeBuys.**—In the article by Dr. L. R. DeBuys, entitled "Amebic Dysentery in Children," printed in The Journal for November 21, p. 1806, in table 2, column headed "Ameba," the dates February 12 to 16, there should be a plus sign indicating that ameba were found on these dates.

**Duluth and Superior Physicians Meet.**—At the annual meeting, November 18, of the Interurban Academy of Medicine, whose membership includes physicians of Duluth, Minn., and Superior, Wis., Dr. Henry A. Russell, Superior, was elected vice-president; Dr. Archibald L. McDonald, Duluth, secretary-treasurer.

**Experimental Biologists to Meet.**—The federated meeting of the Southern Experimental Biologists comprised of The American Physiological Society, American Society of Biological Chemists, American Society of Pharmacal and Experimental Therapeutics and the American Society of Experimental Pathology will hold its next meeting at the Washington University Medical School, St. Louis, December 28-30.

**Virginia University Alumni Organized.**—At the meeting of the Southern Medical Association, the University of Virginia Medical Alumni organized with the object of advancing the interests of the University of Virginia Medical School. The following officers were elected: president, Dr. Hugh H. Young, Baltimore; vice-president, Dr. John Staige Davis, University, Va.; secretary, Dr. Seale Harris, Mobile, Ala., and treasurer, Dr. Thomas V. Williamson, Norfolk, Va.

**Meeting of Tri-State Physicians.**—At the thirty-first annual meeting of the Tri-State Medical Association of Tennessee, Arkansas and Mississippi, held in Memphis, November 17 to 19, the following officers were elected: president, Dr. William P. Hicks, Earle, Ark.; vice-presidents, Drs. Jacob L. Hare, Wynne, Ark.; B. Vernon Dickson, Covington, Tenn., and Ephraim R. McLean, Cleveland, Miss.; secretary, Dr. James L. Andrews, Memphis (reelected); treasurer, Dr. James A. Vaughan, Memphis (reelected).

**Federal Foot-and-Mouth Quarantine Partially Lifted.**—An order, to become effective November 30, has been issued, releasing from some restrictions of live stock quarantine certain counties in Wisconsin, Illinois and Iowa. Cattle from these counties may be shipped in interstate commerce for immediate slaughter and for feeding purposes, but may not be shipped out for feeding elsewhere. This release order is the first issued since the quarantine was ordered, and will be followed as soon as possible by similar orders lifting the quarantine in other localities. Confidence is felt that the epidemic is now under control and will soon be eradicated.

**Medical Missionaries Meet.**—In spite of the confusion in mission fields as a result of the war in Europe, the Sixth Inter-Denominational Medical Missionary Conference held in Battle Creek, Mich., November 17-20, was attended by 200 workers from home and foreign fields. The probable effect of the war on mission work was very generally discussed, the consensus of opinion being that a temporary withholding of mission gifts would be experienced, but that the final effect would be a broader brotherhood and a most salutary condition in mission work in general. The conference will meet again in 1915 in Battle Creek.

**Bequests and Donations.**—The following bequests and donations have recently been announced:

Howard Hospital, Philadelphia, $5,000 to maintain a free bed to be known as the Annie E. Ulmer bed; West Philadelphia Hospital for Women, a bequest of $1,000 by the will of the late Annie Mathews.

Bieur Cholim Hospital, Jerusalem, and Anniston Hospital, Anniston, Ala., each one-fourth and the National Jewish Hospital for Consumptives, Denver, one-half of the estate of L. H. Caplan, Anniston.

Charity Hospital, New Orleans. La., $1,250 by the will of Mrs. Ida P. Richardson, New Orleans.

Church of St. Luke and Epiphany, Philadelphia, a donation of $1,000 to start a fresh air fund; University of Pennsylvania, Philadelphia, about $1,000,000, to be divided among the library, hospital, for the maintenance of free beds, for the system of hydropathic treatment, the department of cutaneous medicine in the Medical School for the advancement of its work and the department of archeology and paleontology, by the will of Dr. Louis A. Duhring.

Maimonides Hospital, Chicago, an appropriation of $2,000 by the Federated Orthodox Charities of Chicago.

Harvard Medical School, $25,000, the income to be used for cancer investigation work; Massachusetts General Hospital, $25,000 for the endowment of a free bed by the will of Mrs. Endicott, Boston.

## FOREIGN

**Professor Erb's Fiftieth Professional Anniversary.**—In October the well-known Heidelberg neurologist, Prof. Wilhelm Erb, completed the fiftieth year of his professional career. His son was one of the first to fall on the firing line, as already mentioned in these columns.

**Death of Emmerich.**—The death is reported of R. Emmerich, professor of hygiene at the University of Munich, author of numerous works on hygiene and epidemics, aged 62. His views on the importance of the nitrates in the soil as a factor in cholera were reviewed in The Journal, 1904, xliii, 640.

**Decorations for Members of the Profession.**—The grand cross of the Order of Alfonso XII has recently been presented to the professor of pharmacy at the University of Madrid, J. R. Carracido, who is also a senator, and the Isabella cross to S. Recasens, professor of gynecology at the same seat of learning. The decorations were conferred, the announcement reads, for distinguished services to the *cultura nacional.*

**Death of Leading Italian Hygienist.**—Our latest exchanges bring obituaries of Angelo Celli, aged 57, to whom Italy owes its present partial emancipation from malaria. He has long been professor of hygiene at the University of Rome, chief of the national board of health and senator of the realm, and to his initiative is due the government monopoly of quinin and its sale practically at cost in every post-office. He was also influential in legislation on the working hours for women and children, in the reclaiming of the marshes around Rome, and other public welfare works. In collaboration with Marchiafava, he published the first description of the meningococcus, and of certain phases of the malaria parasite, and was a frequent contributor to the literature on various topics of internal medicine. He was one of the leading scientists of the world invited to speak at the International Congress of Arts and Science held at the World's Fair in St. Louis in 1904.

## WAR NOTES

**American Hospital Opens in Petrograd.**—An American hospital with a capacity of forty beds, the gift of the American colony in the city, was opened at Petrograd November 28.

**More Red Cross Surgeons for Russia.**—The American National Red Cross are sending two additional surgeons to reenforce the American Red Cross Hospital units already sent.

**The Red Cross in Servia.**—Dr. Edward W. Ryan, director of a hospital unit sent to Servia, states that surgeons are very scarce in that country and with about 50,000 wounded, the work is exceedingly heavy. The nurses are working from 8 o'clock in the morning until 7:30 at night.

**Precautions Against Disease.**—Folkestone is now practically the only port in England open to commercial and passenger business from the Continent, and the health officers at that port are taking unusual precautions to prevent the admission of disease into England from the war zone.

**Work of the Japanese Red Cross.**—The Japanese Red Cross has sent detachments of surgeons and nurses to Russia, France and England, and quantities of hospital supplies for Belgium and Servia. They have also equipped two hospital ships which are caring for the sick and wounded of Germany and Japan.

**Needs of American Hospital.**—Dr. James A. Blake, in charge of the American Ambulance Hospital, Paris, has cabled to Mrs. George Wharton Pepper, Philadelphia, that the following supplies are needed for the work of the hospital: surgical gauze, ice bags, hot-water bags, rubber gloves, bed pans, rubber sheeting, syringes, rubber tubing, underclothes, pajamas, abdominal belts, socks, mufflers, scarfs, etc.

**Red Cross Units for Servia.**—Two Servian Red Cross units, Nos. 2 and 3, sailed for Patras, Greece, on the *Finland*, November 21. The physicians in unit No. 2 are Dr. Ethan Flagg Butler, Rochester, Minn., director; Dr. S. H. Rodger, Knoxville, Tenn., and Dr. James F. Donnelly, New York City. The medical director of the Red Cross unit No. 3 is Dr. Ernest P. Magruder, Washington, D. C., who is assisted by Drs. Clapham P. King, Annapolis, Md., and Morton P. Lane, New Orleans.——Dr. Dean F. Winn, Atlanta, Ga., sailed on the same steamer to join the Russian Red Cross unit.

**Proposed Exchange of Medical Prisoners.**—The *Münchener med. Wochenschrift*, October 27, states that the organized physicians of Germany (Verband der Aerzte Deutschlands) have petitioned the Prussian state department and war department to request the ambassador from the United States to propose to the government of Great Britain that the physicians who have been taken prisoners by the contending armies should be allowed to return home. They ask that this should be done whether the medical prisoners are or are not of the age subject to military conscription. Our exchange comments that time alone will tell whether this attempt will be successful or not.

**Medical Supplies to German Red Cross.**—On board the steamer *Potsdam* which sailed from New York City, November 10, the following supplies were sent to the German Red Cross: ten cases of hospital clothing, 2,000 pounds of bandages, 100 bales of absorbent cotton and 6,000 yards of gauze; and for the American Hospital in Munich 1,000 pounds of bandages, 50 bales of absorbent cotton and 4,000 yards of gauze and ten cases of hospital clothing.——The *Rochambeau*, which sailed from New York, November 14, carried the following hospital supplies for the French Red Cross: 20,000 pounds of absorbent cotton, 20,000 bandages, 10,000 yards of gauze, 10,000 yards of starched gauze for splints, 10 gallons of iodin, 2 barrels of alcohol, 500 blankets and 20 boxes of hospital clothing.

**Compulsory Insurance in Germany and Austria.**—The war is playing havoc with the organized state insurance of workingmen against sickness and accident. As the insured breadwinners have been drawn into the army, they have stopped paying their regular monthly premiums, and the *Kassenkranken* find that their business is practically all outgo with little coming in. Each has been collecting for years a reserve fund, but if this should become exhausted, the insurance companies would have to suspend operations. They have cautioned the physicians in their service to be extremely economical with dressings, drugs, etc. At some points they have stopped sending the tuberculous insured for the regulation course of sanatorium treatment, and the medical profession is alarmed at the danger of the spread of tuberculosis in the homes when nothing comparatively is being done for bacilli-scattering tuberculous working people.

**American Red Cross Units Located.**—Unit G of the American Red Cross has been located at Kosel in Southeast Germany, near the borders of Russia and Austria. It is attached to a military hospital of about 800 beds and has about 700 patients in its care. Dr. Bial F. Bradbury, Norway, Maine, is in charge of this unit.——Unit I is in charge of Dr. Charles H. Sanders, Washington, D. C., and is located in Gleitwitz, about 30 miles from Kosel, in a theater that has been converted into a hospital with accommodations for about seventy patients.——The units sent to Russia are said to be stationed at Kiev, back of the line of the Russian army in Austria, Galicia.——Unit D has left the Haslar Royal Naval Hospital, Gosport, and has joined Unit F at the American Woman's War Hospital, Paington.——Unit K, in charge of Dr. Cary Snoddy, is located at Vienna, Austria.——The unit located near Pau, France, of which Dr. Reynold F. Kirby-Smith, Sewanee, Tenn., is medical director, writes that medical supplies are urgently needed there and that the unit is located in the Palais d' Hiver, which has been converted into a hospital.——Unit E, located at Budapest, of which Dr. Charles E. McDonald, Salem, N. J., is medical director, has been given a modern building with 200 beds and properly equipped for a hospital.

**German Medical Officers at the Front.**—The *Berliner klinische Wochenschrift* publishes a reply from Körte to some criticisms of the work of the medical officers in the field, in which he says that gangrene is liable to develop in a serious wound of the leg even under the most scientifically applied dressings. To say that the dressing caused the gangrene is a far-fetched claim. In the district in his charge, he says, he has been amazed at what the medical officers are able to accomplish. In every field hospital and medical corps he has found at least one and generally several trained surgeons. "The task of applying the dressings and getting the men to bed (lying on straw), with scant assistance, is a hard one even when there are only a few hundred wounded. But when the wounded number thousands, the task is beyond human powers to accomplish it all. Whatever is humanly possible is done. It is easy for those at home to criticize, but it would be hard to do any better. Our work is not light, and it takes nerves of iron. In regard to the Belgian physicians, I have heard only praise, and I have seen much of their work. Our German wounded do not require aid of Belgian surgeons now, as they are all cared for in German field hospitals; there are five now in and around Brussels. The leaders among the Belgian surgeons, Depage, for instance, are faultless." [It will be remembered that Professor Depage here referred to presided at the Fourth Congress of the International Society of Surgery held at New York last spring. It is especially appropriate, considering what has followed since last April, to quote the first few lines of his opening address: "The first three meetings of the International Surgical Society took place in Belgium. We gave the preference to a neutral country so as to clearly define the scientific and at the same time the fraternal character of our association. It is not necessary for me to tell you that it is the privilege of our little Belgium to offer a meeting place to the learned men of all nationalities, covered by Europe herself with the shield of peace and liberty."]

## LONDON LETTER

London, Nov. 18, 1914.

### The War

There are being trained in this country 1,250,000 men for the new army, and recruits continue to be enlisted in large numbers every day. For a few days a lull occurred in the large number joining, but the outcry of the authorities that more men were still wanted at once restored matters. A movement is also on foot for the formation of defense forces from civilians who cannot join the army, but desire to defend their homes in the improbable event of an invasion. The government has been asked to say what should be done so that those willing to take up arms may ensure the rights of combatants for themselves. They have replied that the matter is under consideration. No doubt they are for the time too busy with the more pressing problem of the new army to attend to a new organization. Every means is being taken to safeguard the health of the recruits, mostly very young men. The public is appealed to not to show their friendliness for the soldiers in the usual manner of giving them intoxicating drinks, and the saloons are compelled to close at 10 p. m. instead of the usual hour, 12. Arrangements are being made for lectures to the recruits on the dangers of venereal disease.

### The Health of the Troops in the Field

All the reports seem to show that the health of the troops in the field is excellent and that disease has not yet become a factor in invalidity to any extent. Typhoid fever has been mentioned in German reports and cholera in Austrian, but we appear to have had no experience with either disease. The illnesses most frequently mentioned in our reports are pneumonia and rheumatism—natural results of the prolonged exposure to cold and wet in the trenches. Cases of dysentery have occurred, but not in any numbers. Possibly no army in the field has ever before had its wants so well supplied as ours. Our lines of communication, including the sea, have never been even threatened, so that ample supplies of all kinds have been insured. At the front they are conveyed to the troops by a well-organized system of motor transport. The soldiers are so well fed that they have often been able to give from their abundance to the destitute French and Belgians flying from the invaders. With the approach of winter our women are preparing large quantities of woolen garments to send to the soldiers. The queen, who has organized this movement, has made an appeal for 300,000 body belts and pairs of socks, which has met a ready response. The Indian soldiers have not been forgotten, and a special fund is being organized for their benefit.

### Consultants to the Royal Navy

The appointment of consulting physicians and surgeons to the army at the front has already been announced. The following well-known consultants have been appointed to the navy: Sir W. Watson Cheyne, Mr. G. R. Turner, Mr. Arthur Edmunds and Mr. C. H. M. Hughes (Naval Hospital, Chatham); M. G. Lenthal Cheatle, Dr. H. D. Rolleston and Mr. C. W. Morris (Naval Hospital, Haslar); Mr. Raymond Johnson (Naval Hospital, Plymouth); Sir Alfred Fripp and Dr. D. A. Shields (H. M. Hospital Ship *Sheelah*), and Sir William Macewen.

### The British Red Cross

This society has now organized in Great Britain 359 hospitals containing 11,730 beds, as well as despatched surgeons, nurses and material of all kinds for the sick and wounded to France. It has also acquired a steam yacht of 380 tons for a hospital ship which will have twenty-one beds for private soldiers and three separate cabins for officers.

### Appeal from the French Red Cross

An appeal for motor cars and funds for their upkeep has been made on behalf of the French Red Cross and has received the influential support of the queen and others. It is pointed out that the front held by the French troops is at least six times as long as that held by our own. With less population than ours the French have nearly ten times more soldiers in the field. Since nearly the whole of the active male population of France is under military orders, there is hardly any one left to whom the French authorities can appeal for more voluntary assistance, now that the supply of French motor cars has been used up. Belgium and France have supplied the battle ground for a war which has not yet inflicted any of the horrors of invasion on England, and the districts devastated by Germany are precisely those which, in coal fields and in beet sugar, are among the wealthiest in France, so that the damage done already is equivalent to the war indemnity paid by France in 1871. When cars are lent the owners can themselves drive and bring their own mechanic, can themselves drive and be provided with a mechanic, or can send their cars alone. The French Red Cross will arrange the cars in units of six, so that a group of half a dozen friends can work together if they wish. A central depot in London is being arranged for the committee, where all cars offered will be inspected.

### The Wounded at Home

Though the wounded are distributed in the hospitals throughout the length and breadth of the land, and hospitals have been improvised everywhere for their reception, so great is the number now that difficulty is beginning to be felt in the accommodation of ordinary hospital cases. A Dublin surgeon, Sir Thomas Myles, points out that the recent arrivals of wounded soldiers from France have taxed the general hospitals to their full capacity. He suggests the immediate erection of a temporary hospital capable of holding a thousand beds. Last week 700 wounded were landed in Dublin. The cases are more serious than those received earlier. Most of the patients are suffering from septic wounds, more or less serious, but comparatively few show any signs of general sepsis. The infection generally appears to be of *Staphylococcus aureus*, though a certain number of wounds have *Bacillus pyocyaneus* present.

### Effect of the War on the Medical Schools

As stated previously, the war has had the effect of greatly diminishing the number of students in the medical schools, because some have gone to the front as dressers and others have joined the fighting ranks. Against this, there has been a gain in another direction. Medical students among the Belgian refugees, and Russian and Japanese students who were studying in the German schools, but had to leave in consequence of the war, have been admitted. This novel experience has caused a difficulty in that one group of students has to be addressed in French, while Russians can be spoken to only in the German language. Cambridge University is giving hospitality to the expatriated. Unofficial courses are being given there to refugee students by eleven Belgian professors from Louvain. Facilities are also given for students who understand English for attendance at the ordinary courses. Assistance is being given to those unable to meet the moderate charges of four or five dollars a week for board and lodging, but to be eligible for such assistance and for free courses the students must submit themselves to a medical examination before the Belgian authorities, now in this country, and obtain a certificate of unfitness for military service. (The medical schools of Belgium were described p. 1751.)

### The Treatment of German Prisoners

An official from the American embassy, by request of the German government, has visited the German prisoners in this country and made a report. He gives the daily rations already stated in The Journal, and adds that an ample supply of utensils for cooking is provided. The prisoners manage their own cooking. Each man has delivered to him a plate, knife, fork, spoon and mug. Each camp has a canteen at which fruit marmalade, sweets, biscuits, preserved meats, tobacco, etc., can be bought at moderate prices. The scale of prices is settled by the commandant. The regulation directs that each man is to receive two warm army blankets. The regulation is being carried out, but there has been some delay in the issue of the second blanket in certain cases. The issue of the second blanket to every prisoner will be completed as soon as possible, and before the coming of cold weather. In the roofed-in camps most occupants have wooden bedsteads, made by themselves from wood handed over to them for the purpose. The official heard the complaint made that not every prisoner had yet got a bedstead, as the wood provided had not quite sufficed to go round. He was told that the wood had been ordered and that the deficiency would soon be made up. Along with the wooden bedsteads, straw mattresses have been provided. In the open-air camps each tent has twelve inmates who sleep on the wooden floor of the tents on sack beds. Most of the prisoners made no complaint about the sleeping arrangements. Some few, who came from the better classes, missed their own soft beds to which they were accustomed. But they are allowed to buy what provision they please with their own money, and in most cases plenty of money is forthcoming. An outfit of good cut from warm practical cloth material, with underwear, shirts, socks, shoes, all of excellent make, pocket handkerchiefs, brush and comb has been given to all men needing them. Sufficient facilities are given for washing all clothing, and a copious supply of shower baths is forthcoming. In the roofed-in camps warm water baths are provided. Soap is supplied in unlimited quantity for cleaning purposes.

### Death of Captain Angus Macnab

The death of Captain Angus Macnab, the ophthalmic surgeon to King Edward VII Hospital at Windsor, whose studies were pursued at Edinburgh, Moorfields, Freiburg and Vienna, the translator of Axenfeld's Bacteriology of the Eye and of Lohmann's Disturbances of the Visual Functions, has given rise to deep regret, especially among the London Scottish Regiment, whose medical officer he was. Captain Macnab was with his regiment in the trenches rendering aid to the wounded, when, in a charge, he was fatally wounded.

### Army Medical Casualties in the War

Since my last report the casualties among medical officers of the army have been: killed, 3; died of wounds, 3; wounded, 11; missing, 5; prisoners of war, 6. Captain H. S. Ranken, who died of his wounds on September 25, was awarded the most coveted distinction, the Victoria Cross, for valor, "for continuing to attend to wounded after his thigh and leg had been shattered" on September 20.

## PARIS LETTER

Paris, Nov. 12, 1914.

### Hughes' Electromagnetic Balance and Its Application to Military Surgery

The celebrated electrician, Hughes, once devised a little electromagnetic apparatus by which it is possible to discover the location of a metallic mass such as a piece of money or a bullet. This old invention seems to have been entirely forgotten until M. G. Lippmann, professor at the Faculté des sciences de Paris recently brought it to light at the Académie des sciences in the hope that it might be profitably employed in military surgery. It is simple, light, portable, inexpensive and easy to construct. It might be used in the numerous cases in which roentgenography is not available. It is composed of an electric battery, an interrupter and two little induction coils (Ruhmkorff without soft iron) of which the primaries are in the battery circuit and the secondaries are in series with a telephone, the receiver of which is held to the ear of the observer. The apparatus is so constructed that the opposing electromotor forces which act on the telephone are exactly equal, and, while they are in equilibrium, the telephone remains silent. If one of the coils is brought near a metallic mass, a sound is heard over the telephone. This is because induced currents arise in the metallic mass and react on the nearest coil but not on the other thus disturbing the electric balance. The sound of the telephone thus reveals the approach of the metallic mass. If the latter is magnetic (fragment of shell or German balls) the effect will be still more marked, since the magnetic mass reinforces the induced current in the nearest coil. The electromagnetic balance is therefore more sensitive to the approach of a German ball than of a French ball.

### The Treatment of Tetanus by Large Doses of Chloral

November 4, Dr. Dammler, chief physician of the army, read a paper on this subject before the Académie de médecine. In 1889 he had occasion to treat a case of tetanus with chloral in doses of from 20 to 25 gm. per day. This procedure was then recommended by Professor Verneuil. At present Dammler administers a dose of 6 gm. of chloral every six hours until the patient is in such a state of torpor that all hyperexcitability from the tetanus is abolished. Professor Capitan recently employed Dammler's method with complete success in a particularly serious case of tetanus.

### Services Rendered by Sanitary Dogs in the Present War

In previous letters I mentioned the attempts which have been made to train sanitary dogs and to supply our army with a sufficient number of dogs especially trained to search for the wounded (The Journal, Aug. 26, 1911, p. 751; Jan. 25, 1913, p. 299). From the beginning of the mobilization, the Institut de psychologie zoologique requested of the ambulance attendants to whom the sanitary dogs were entrusted brief reports on the conduct of their aids under fire. M. P. Hachet-Souplet, director of the institute, has just published some of the numerous letters which he has received on the subject. They are, in the main, very encouraging. No doubt it would be possible to criticize some details of the instructions given to the dog. Thus, the plan of having the dog bring back the wounded man's cap or handkerchief seems bad. Still the sanitary dogs are rendering important services and it is regrettable that there are not several for each ambulance.

An Association française pour le dressage du chien de guerre has just been formed. Already a large number of dogs have been given to it and sporting societies have opened their immense grounds for its use.

### Belgian Physicians on French Ships

The minister of the interior has just authorized the employment of Belgian physicians on French merchant vessels during the war.

### The Resumption of Courses in the Paris Medical School

The Faculté de médecine de Paris has just resumed its courses but its program is markedly abbreviated. All the courses for first- and second-year students are to be given under ordinary conditions. All the other courses are postponed until the summer semester. Courses in internal and external pathology, however, are to be given during the winter semester. The clinics remain open to the students.

### Personal

November 10, the Académie de médecine elected as national associate Dr. Langlet, professor and director of the Ecole de médecine de Reims and mayor of that city.

### Women-Doctors' Hospital at the Front

The hospital organized and controlled entirely by English women doctors at Paris has vindicated its efficiency. It has been placed officially under the War Office, and is permitted to draw rations and fuel from the army stores. One of the women orderlies has been appointed quartermaster. A receiving hospital has been established in Boulogne, whither half of the staff has gone, and is now working under military control. Although the hospital is only a freight shed at the railway station, an excellent operating theater has been fitted up, and the fair surgeons have been earning great commendation from the military medical inspectors.

## BERLIN LETTER

Berlin, Oct. 28, 1914.

### The War

Considering the great distance at which the present firearms, not only of the artillery but even of the infantry are fired, it is inevitable that dressing stations should be placed too near to the firing line and that they will be reached by missiles. Moreover in view of the great distances at which the opposing troops so often stand, it is inevitable that the Red Cross will not always be recognized. In addition, there are the injuries by bombs from the airships. All these circumstances have as a result that we already have lost a disproportionately large number of surgeons. While, in Franco-Prussian War, 1870-71, of 4,062 physicians on the field of battle on the German side, only nine fell and two later succumbed to their wounds, nearly 100 of about 9,000 surgeons, at present in the field, have fallen and thirty-seven have been wounded besides thirteen missing and three taken prisoners. Presumably among the missing are some who have fallen and hitherto have not been found but the greater number must have been taken prisoners.

The murderous battles have naturally had a large number of deaths and wounds among the soldiers. With regard to the extent of the losses, definite figures, naturally, cannot be given. As the reports from many parts of the army are received under very difficult conditions with great delay, the hundred lists of losses so far published give already a very sad report. Fortunately, so far the experience which has been procured in late wars with modern weapons, has been repeated with our wounded as, according to our observations, the wounds heal with surprising quickness and with proportionately small functional disturbance. Lamentable also are the large numbers of tetanus cases in our army. Relatively little disease has been reported and especially it is to be noted, that epidemics have not been hitherto observed. To be sure, in the east and in the west there have been a few hundred cases of typhoid and dysentery but these are quite sporadic and not in the nature of an epidemic, so that we may hope that this morbidity figure will be limited.

### The German Red Cross

An editorial in the issue for October 29 of the *Deutsche medizinische Wochenschrift* compares the donations to the German Red Cross during the present war with those received during the Franco-Prussian War in 1870-71. At that time France was the only foe, and all the other nations contributed lavishly to the German Red Cross, a total, in round figures, of $1,875,000 cash and $3,875,000 in goods. Austria contributed $25,000; Belgium, $28,250; Denmark, $7,000; Greece, $5,750; Germans in France, $7,250; England, $140,000; Italy, $17,500; the Netherlands, $10,250; Portugal, $5,250; Russia, $100,000; Sweden and Norway, $6,750; Switzerland, $27,750; Spain, $2,750; Turkey and Roumania, $9,000; United States, $833,333 (3⅓ million marks); Central America, $47,500; South America, $187,500; Asiatic Turkey, $1,750; India, $50,000; China, $12,500; Japan, $17,500, and the Philippines, $3,500. Egypt donated $10,000; southern and western Africa, $13,750, and Australia, $30,500. The donations in hospital supplies, products of the various countries and jewels and art wares donated, besides the above cash, are placed at an estimated value of $3,875,000 (15½ million marks). The German Red Cross raffled off jewelry, etc., donated and thus added to the cash donations. The editorial compares the conditions in 1870-71, when all the other state were neutral, with conditions now "with half or three-quarters of the world as our foe and the rest keeping a neutral attitude, at the best wishing us well, but mostly a laboriously maintained neutrality (höchstens wohlwollend, meistens mühsam erzwungenen Neutralität uns gegenüber)." Consequently, it continues, the German Red Cross must rely on its own land almost exclusively for contributions in this campaign. To date, in addition to the American Red Cross expeditions, only Greece and Luxemburg have sent or signified their intention to send contributions or expeditions. The American contingent consisted of twelve physicians, fifty-six nurses and seven carloads of supplies, and half of these were destined for the scene of the war in Austria. In Germany, to date, August 1 to October 29, $1,250,000 have been contributed to the Red Cross.

The editorial comments further that donations in Germany are being distributed more now than formerly, other funds receiving contributions as well as the Red Cross, such as the fund for the care of widows and orphans and local organized relief work, and private benefactions. "This decentralization," it adds, "has both a good and a bad side. The essential point is only that our brave soldiers—and their families—shall be protected against lack of care and clothing. That they have had to suffer much in this respect which might have been avoided by the organization—notwithstanding all the military difficulties and exigencies—seems to be beyond question. Even the best efforts of the Red Cross were unable to provide better facilities for conveying the wounded at times. Of late, however, conditions in this respect have been materially improved."

### Decoration with Pension Attached for Bavarian Medical Officers

The war department of Bavaria has announced the foundation of a new order, the Order of the Medical Corps (*Militär-Sanitätsorden*), which will take the place of the decoration founded in 1812, the *Militärsanitäts-Ehrenzeichen*. The new order will be conferred for distinguished services during war time by Bavarian physicians or physicians from outside of Bavaria who render special services to the members of the Bavarian army. The decoration is of two classes, and the one of the first class is contingent on having already received the other. The order carries with it a life annuity of $75 or $150 (300 or 600 marks).

## *Marriages*

A. Marion Wassam, M.D., Galveston, Tex., to Mrs. Mary Hambly of Washington, D. C., at Beaumont, Tex., November 5.

Hiram Watkins Kostmayer, M.D., to Miss Carrol Houston Reichel, both of New Orleans, at Chicago, August 31.

Robert Bruce Wallace, M.D., Lecompte, La., to Miss Emma Dorothy James of New Orleans, November 9.

William P. Lee, M.D., Northfield, Minn., to Miss Alice Katherine Wentworth of Winthrop, Me., November 7.

Leonard Waterman, M.D., Norman, Neb., to Miss Elizabeth Luelle James of Calumet, Mich., September 16.

Emil J. Goldring, M.D., Philadelphia, to Miss Della Meitner of Roxborough, Philadelphia, November 3.

Walter Franklin Bleifuss, M.D., Elgin, Minn., to Miss Lydia N. Lubahn of Racine, Minn., recently.

Edward A. Marrs, M.D., Moline, Kan., to Miss Blossom N. Thompson of Howard, Kan., September 27.

Lucious W. Brock, M.D., to Miss Dan Tate, both of Mount Herman, La., at Amite, La., November 10.

William R. Shaefer, M.D., Columbia, Mo., to Miss Alice Dixon of Kansas City, Mo., November 10.

Horace F. Pierce, M.D., San Francisco, to Miss Christine Buist of Moorestown, N. J., November 11.

William H. Harris, M.D., to Miss Marie Mercedes Friedrichs, both of New Orleans, October 26.

P. A. Surg. Willard J. Riddick, U. S. N., to Miss Adrienne Ziegler of New Orleans, October 28.

Percy G. Drake, M.D., Manila, P. I., to Miss Reta Helen Taylor of Baltimore, October 22.

Paul A. Ramsel, M.D., Shiner, Tex., to Mrs. Ida Kunneth of Rockdale, Tex., November 10.

Jesse Wright Downey, Jr., M.D., to Miss May Lee Willis, both of Baltimore, November 7.

Charles Jacob Barker, M.D., to Miss Aline Coulon, both of Thibodaux, La., October 14.

D. G. Mahood, M.D., Orchard, Neb., to Miss Nora Morley of Onawa, Iowa, October 28.

Porter D. Blackburn, M.D., Houston, Tex., to Miss Alice Dodd of St. Louis, November 10.

Lovell Langstroth, M.D., to Miss Dora Winn, both of San Francisco, October 23.

# Deaths

**Theodore Willis Fisher, M.D.** Harvard Medical School, Boston, 1861; surgeon of the Forty-Fourth Massachusetts Volunteer Infantry during the Civil War; from 1884 to 1888 clinical instructor in mental diseases, and from 1888 to 1893 lecturer on mental diseases in his Alma Mater; for many years in charge of the Insane Hospital, South Boston; died at his home in Belmont, Mass., October 10, aged 77.

**George Edward Gavin, M.D.** Louisville (Ky.) Medical College, 1896; a Fellow of the American Medical Association; and a well-known surgeon of Mobile, Ala.; died in that city, November 14, after a long illness from malignant disease of the bladder and liver, aged 43. At a meeting of the Mobile County Medical Society, November 14, it was decided that the members attend in a body the funeral of Dr. Gavin.

**Brigadier General Peter J. A. Cleary,** U. S. A. (retired), L.R.C.S. Eng., 1860; a veteran of the Civil War in which he served as Assistant Surgeon and Surgeon of U. S. Volunteers; a member of the Medical Corps of the Army from 1867 until his retirement in 1903; died at his home in Chattanooga, Tenn., November 5, from heart disease, aged 74.

**Charles Irving Stotelmeyer, M.D.** University of Maryland, Baltimore, 1892; of Hagerstown, Ind.; a member of the Indiana State Medical Association; trustee of Jefferson township; died in the Reid Memorial Hospital, Richmond, Ind., November 12, after a surgical operation, aged 55.

**William Henry Robertson, M.D.** University of Alabama, Mobile, 1887; a Fellow of the American Medical Association and one of the best known practitioners of southeastern Alabama; died at his home in Clayton, Ala., November 21, from valvular heart disease, aged 53.

**Aaron G. Humphrey, M.D.** New York Hygieo-Therapeutic College of New York, New York City, 1858; for more than half a century a practitioner of Galesburg; was for a few months a resident of Kansas City, Mo.; died at his home in that city, November 17, aged 82.

**John S. French, M.D.** Medical College of Indiana, Indianapolis, 1883; a veteran of the Civil War in which he served as Assistant Surgeon of the One Hundred and Twentieth Indiana Volunteer Infantry; died at his home in Pittsboro, Ind., September 19, aged 85.

**Frank N. Yeager, M.D.** University of Pennsylvania, Philadelphia, 1888; of Hamilton, Pa.; a Fellow of the American Medical Association; died in St. Mary's Hospital, Rochester, Minn., November 14, from peritonitis after an operation for malignant disease, aged 57.

**George Washington Boyd, M.D.** College of Physicians and Surgeons, Baltimore, 1895; a Fellow of the American Medical Association, and proprietor of several drug-stores in Washington; died at his home in that city, November 21, from nephritis, aged 55.

**Robert M. Sadler, M.D.** Louisville (Ky.) Medical College, 1877; died at his home in Okolona, Miss., November 10, from the effects of a gunshot wound of the head, self-inflicted it is believed, with suicidal intent, while despondent on account of ill health.

**John Henry Grimes, M.D.** University of Maryland, Baltimore, 1868; a Confederate veteran; vaccine physician of Baltimore in 1873; died at the Sheppard and Enoch Pratt Hospital, Baltimore, November 7, from arteriosclerosis, aged 72.

**Charles B. Turner, M.D.** University of Louisville, Ky., 1881; local surgeon of the Southern Railway at Bluemont, Va., and formerly a member of the Loudoun County Board of Health; died at his home in Bluemont, November 13, aged 56.

**Charles H. Mordoff, M.D.** Chicago Homeopathic Medical College, 1881; Hahnemann Medical College, Chicago, 1905; a member of the Illinois State Medical Society; died at his home in Genoa, Ill., November 16, from cerebral hemorrhage, aged 58.

**Emil V. Helfferich, M.D.** Medical College of Ohio, Cincinnati, 1883; of Cincinnati; died at the German Deaconess Hospital in that city, from injuries received in a jump from a window in that institution while temporarily deranged, aged 53.

**Andrew Cursena Gregg, M.D.** Starling Medical College, Columbus, Ohio, 1901; formerly of St. Mary's and Brookville, Pa., but more recently a resident of Chicago; died in the Englewood Hospital, November 2, from uremia, aged 45.

**Joseph Morrison Tydings, M.D.** Kentucky School of Medicine, Louisville, 1861; a Confederate veteran; well known as an author and philanthropist of Louisville; died at the home of his daughter in that city, November 12, aged 78.

**John C. Smith, M.D.** Southern Medical College, Atlanta, Ga., 1884; a member of the Medical Association of Georgia; for thirty years a resident of Carroll County, Ga.; died at his home in Mansfield, Ga., November 10, aged 64.

**Ella S. Webb, M.D.** Woman's Medical College of Pennsylvania, Philadelphia, 1885; managing editor of one of the publications of the Webb Publishing Company; died at her home in St. Paul, November 15, from heart disease.

**Warren Vernon Grimes, M.D.** Missouri Medical College, St. Louis, 1877; president of the board of health of Pacific Grove, Cal.; died at his home in that place, November 4, from cerebral hemorrhage, aged 57.

**Frank Vincent Kimbrough, M.D.** Vanderbilt University, Nashville, Tenn., 1893; of Maxon Mills, Ky.; local surgeon for the Illinois Central System at that place; died in Guthrie, Ky., November 6, aged 43.

**Amos Davis, M.D.** University of Louisville, 1874; a member of the Kentucky State and Ohio Valley medical associations; died at his home in Owensboro, Ky., November 9, from nephritis, aged 66.

**George Francis Hinmers, M.D.** University of Oregon, Portland, 1895; died at his home in Milwaukie, Ore., August 30, from injuries received from a fall from a wagon twelve hours before, aged 54.

**Joseph Henry Kelley, M.D.** Bellevue Hospital Medical College, 1884; a member of the Massachusetts Medical Society; died at his home in Worcester, Mass., November 10, from cerebral hemorrhage.

**Stephen Hunt, M.D.** Rush Medical College, 1881; a member of the Indiana State Medical Association; died at his home in Coatesville, Ind., November 8, from cerebral hemorrhage, aged 69.

**Ben Davis, M.D.** Kentucky School of Medicine, Louisville, 1908; a member of the Oklahoma State Medical Association; died at his home in Kinta, Okla., November 1, from typhoid fever, aged 31.

**Frank Henry Hobbs, M.D.** Medical School of Maine, Brunswick, 1900; a member of the Maine Medical Association; died at his home in Waterboro, Me., October 11, aged 55.

**Cassius Emmet Van Matre, M.D.** Miami Medical College, Cincinnati, 1895; a Fellow of the American Medical Association; died at his home in Newcastle, Ind., October 17, aged 44.

**Eugene V. West, M.D.** Meharry Medical College, Nashville, Tenn., 1892; a colored practitioner of Tampa, Fla., for twenty-two years; died at his home in that city, November 5, aged 45.

**Isaac R. Dunning, M.D.** Eclectic Medical Institute, Cincinnati, 1867; Rush Medical College, 1870; died at his home in Benton Harbor, Mich., August 19, from cardiac asthma, aged 71.

**Francis M. Wilson, M.D.** Louisville (Ky.) Medical College, 1884; a member of the Florida Medical Association; died at his home in Bartow, Fla., November 8, from heart disease, aged 55.

**Jerome R. Lyon, M.D.** Rush Medical College, about 1867; for forty-five years in active practice; died at his home in Excelsior Springs, Mo., October 1, from pneumonia, aged 91.

**Frederick Leander Davis, M.D.** Medical School of Maine, Brunswick, 1888; a member of the Maine Medical Association; died at his home in Biddeford, Me., October 9, aged 55.

**William Blair, M.D.** University of Louisville, Ky., 1875; a member of the Kentucky State Medical Association; died at his home in Glens Fork, Ky., November 12, aged 73.

**Andrew Benjamin Bookins, M.D.** University of Louisville, Ky., 1875; a practitioner since 1856; died in Jacksonville, Fla., September 21, from chronic nephritis, aged 80.

**Lindley Ruddick, M.D.** University of Louisville, Ky., 1882; a member of the Indiana State Medical Association; died at his home in Seymour, Ind., October 20, aged 70.

**Eugene J. Hickey, M.D.** University of Vermont, Burlington, 1907; a member of the Vermont State Medical Society; died at his home in Warren, Vt., October 7.

**Samuel H. Smyth, M.D.** New York Homeopathic Medical College, 1880; died at his home in New York City, November 1.

# The Propaganda for Reform

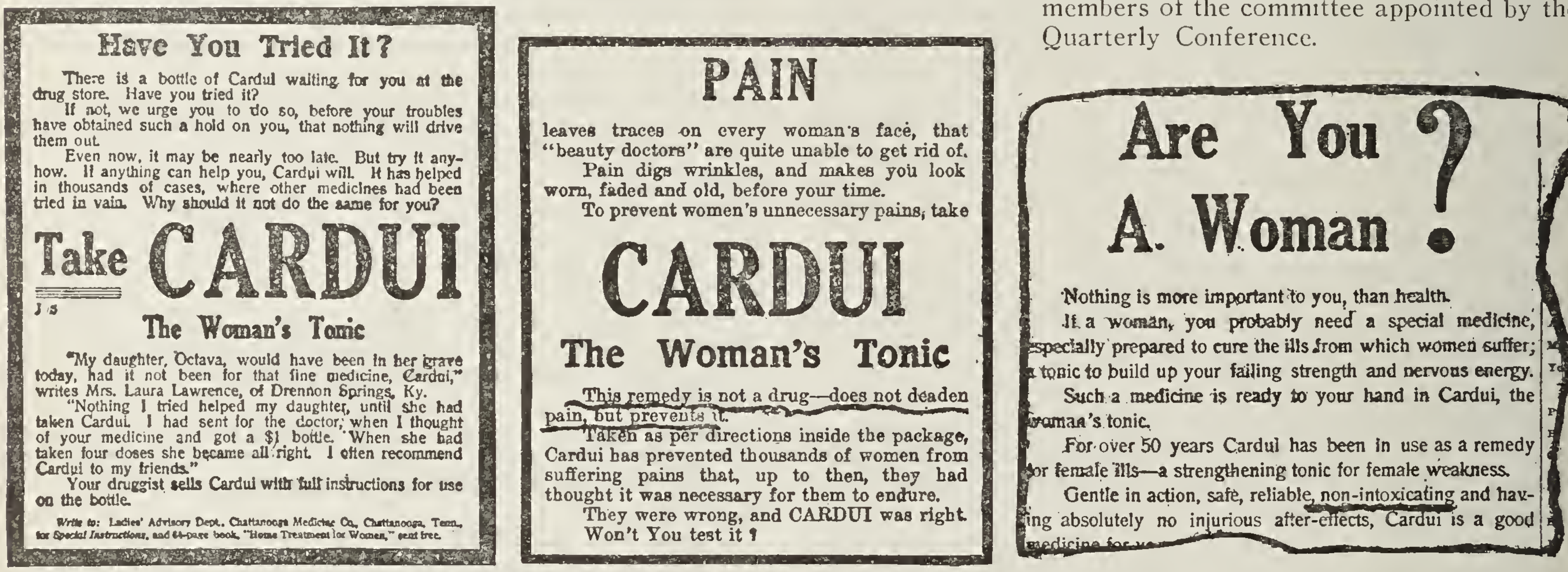
In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

## WINE OF CARDUI

### The Holston Conference of the Methodist Church Endorses this Fraudulent Nostrum

Ordinarily, The Journal would not consider giving the Wine of Cardui fraud and its exploiters any further publicity in these pages. Wine of Cardui, however, is again brought into the lime-light because of the action of its friends and beneficiaries. In this case, its friends are the official committee appointed by the Quarterly Conference of the First Methodist Church of Chattanooga, to which J. A. Patten, chief owner of the Wine of Cardui concern, belongs and the Holston Conference which officially accepted the "findings" of the committee.

We cannot state too emphatically that what follows is in no sense a criticism of the Methodist Episcopal Church. Letters we have received from earnest Methodists lead us to believe that the membership of that church, generally, takes the same attitude toward Wine of Cardui that The Journal has taken. We would also reiterate that nothing that has been said, or that may be said in the future, regarding John A. Patten is actuated by malice. The Journal has in mind not Mr. Patten, not the Chattanooga Medicine Company, not the Methodist Episcopal Church, but the thousands of sickly women over the country—and especially those in the South—who have been and are being cruelly deceived in the purchase of a fraudulent nostrum.



**Have You Tried It?**

There is a bottle of Cardui waiting for you at the drug store. Have you tried it?

If not, we urge you to do so, before your troubles have obtained such a hold on you, that nothing will drive them out.

Even now, it may be nearly too late. But try it anyhow. If anything can help you, Cardui will. It has helped in thousands of cases, where other medicines had been tried in vain. Why should it not do the same for you?

**Take CARDUI**

J 5

**The Woman's Tonic**

"My daughter, Octava, would have been in her grave today, had it not been for that fine medicine, Cardui," writes Mrs. Laura Lawrence, of Drennon Springs, Ky.

"Nothing I tried helped my daughter, until she had taken Cardui. I had sent for the doctor, when I thought of your medicine and got a $1 bottle. When she had taken four doses she became all right. I often recommend Cardui to my friends."

Your druggist sells Cardui with full instructions for use on the bottle.

*Write to:* Ladies' Advisory Dept., Chattanooga Medicine Co., Chattanooga, Tenn., for *Special Instructions*, and 64-page book, "Home Treatment for Women," sent free.

**PAIN**

leaves traces on every woman's face, that "beauty doctors" are quite unable to get rid of.

Pain digs wrinkles, and makes you look worn, faded and old, before your time.

To prevent women's unnecessary pains, take

**CARDUI**

**The Woman's Tonic**

This remedy is not a drug—does not deaden pain, but prevents it.

Taken as per directions inside the package, Cardui has prevented thousands of women from suffering pains that, up to then, they had thought it was necessary for them to endure.

They were wrong, and CARDUI was right. Won't You test it ?

**Are You A Woman ?**

Nothing is more important to you, than health.

If a woman, you probably need a special medicine, specially prepared to cure the ills from which women suffer; a tonic to build up your failing strength and nervous energy.

Such a medicine is ready to your hand in Cardui, the woman's tonic.

For over 50 years Cardui has been in use as a remedy for female ills—a strengthening tonic for female weakness.

Gentle in action, safe, reliable, non-intoxicating and having absolutely no injurious after-effects, Cardui is a good medicine for

Some advertising (greatly reduced) issued in 1910—some years after John A. Patten admittedly controlled the business.

To the initiated, the idea of Mr. Patten or his business being critized in his own locality is sardonically humorous. The man is such a power in his own city and state that the outcome of any local "investigation" is a foregone conclusion. Nevertheless, the local committee made an "investigation" and the Chattanooga *Times* gave a very full account of its "findings." The matter in the *Times* has been reprinted in leaflet form and mailed from Post Office Drawer B, St. Elmo Station, Chattanooga, Tenn. This is the "return address" that appears on the envelopes in which letters are sent out by the "Ladies Advisory Department" of the Chattanooga Medicine Company.

#### WHAT SOME METHODISTS THINK

Before discussing the report of the committee, as published in the Chattanooga *Times*, the following facts are worth noting: John A. Patten is a member of the First Methodist Church of Chattanooga. The pastor of that church is—or was—Rev. C. H. Myers. Although no statement has been made by Mr. Myers regarding his opinion of John A. Patten, the most prominent member of his church, he does not appear to be in sympathy with either the methods by which Mr. Patten made his money or the influence which this money exercises in the church. After The Journal had exposed the Chattanooga Medicine Company's fraudulent business, Mr. Myers wrote Mr. Patten a personal letter—which has recently been made public—suggesting that it might be for the best interests of all concerned if he, Patten, would turn over the teaching of the men's bible class to some one else. In addition, Mr. Myers has openly protested against what he called the undemocratic power that was being exercised in the church.

A Chattanooga paper in reporting a statement made by Rev. Dr. Myers to the members of his church said: "Without becoming personal, he [Mr. Myers] condemned the leading members of the church, declaring they recognize money as the greatest power extant." A little later Mr. Myers nominated the stewards for his church. According to the newspaper reports at the time he "eliminated ten friends of John A. Patten from the Board of Stewards." The names of the "friends" who had been eliminated were given in the paper. It is worth noting that among these "friends" were three of the six whose names go to make up the committee that put its official O K on Mr. Patten and his business. These three were, respectively, the chairman, secretary and one of the members of the committee appointed by the Quarterly Conference.

In the latter part of October the Holston Conference met in Cleveland, Tenn. One of its first official acts was to "accept" the Quarterly Conference's "exoneration" of Mr. Patten and his business. Moreover, when the conference had finished making its appointments, it was found that the Rev. C. H. Myers had been removed from the pastorate of the First Methodist Church, and had been assigned to an inferior position in another city, a position that he refused to accept. Mr. Myers, in a letter published in the Chattanooga *Times*, commenting on the action of the conference, said in part:

> "We have lost locally in our fight for a high principle, but the whole church will yet know and believe that such a bureaucratic system of church government cannot long exist as a power for righteousness. We are standing against a gigantic ecclesiastical machine, fed by an unlimited amount of money. Mammon has won."

#### ANOTHER MINISTER PROTESTS

Mr. Patten's pastor-that-was is not, however, the only churchman who has spoken against the sinister effect that Wine of Cardui money exerts on the Methodist Episcopal Church. Rev. G. T. Byrd, pastor of the First Methodist Church of Etowah, Tenn., (also in the Holston Conference) as long ago as last July arraigned the administration of that Conference. In a letter sent to the members of his conference and which a Chattanooga paper published in full under the sub-heading "Thinly Veiled Attack on J. A. Patten," Mr. Byrd charged among other things:

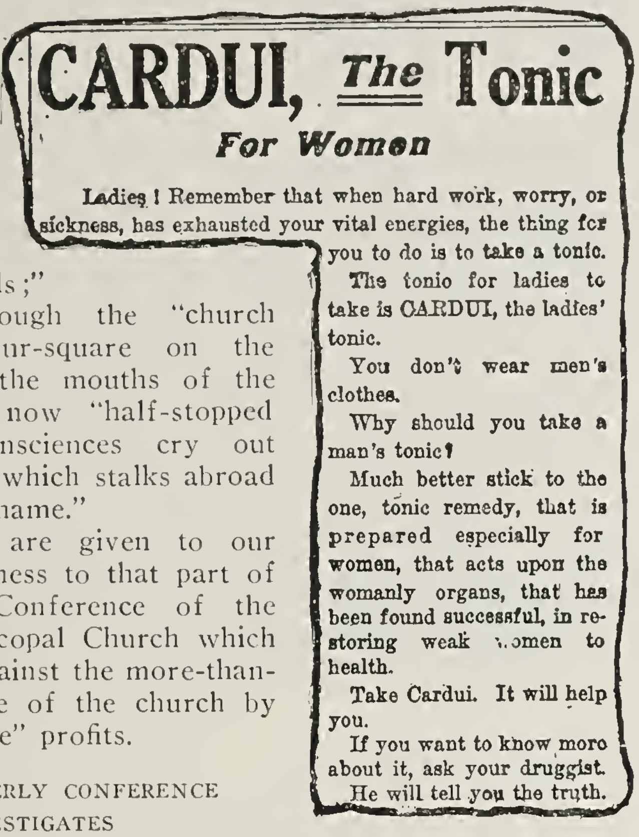
1. That the bishops seem to have "sacrificed their high sense of righteousness by accepting the influence of tainted money;"

2. That it was well-known and generally accepted "that the policies and appointments of the conference have had to have the endorsement of one prominent layman" before they were carried out;

3. That the church "is not dependent for its life and growth on the use of tainted money—money which comes from a product which government analysis shows to be 20 per cent. alcohol and which has frequently been condemned by medical journals;"

4. That although the "church has stood four-square on the liquor traffic" the mouths of the members are now "half-stopped while our consciences cry out against alcohol which stalks abroad under another name."

These facts are given to our readers in fairness to that part of the Holston Conference of the Methodist Episcopal Church which is protesting against the more-than-local dominance of the church by "patent medicine" profits.



**CARDUI, The Tonic**
**For Women**

Ladies! Remember that when hard work, worry, or sickness, has exhausted your vital energies, the thing for you to do is to take a tonic.

The tonic for ladies to take is CARDUI, the ladies' tonic.

You don't wear men's clothes.

Why should you take a man's tonic?

Much better stick to the one, tonic remedy, that is prepared especially for women, that acts upon the womanly organs, that has been found successful, in restoring weak women to health.

Take Cardui. It will help you.

If you want to know more about it, ask your druggist. He will tell you the truth.

Advertisement (greatly reduced) published in 1910. Wine of Cardui is the "ladies' tonic" — now; but some years ago the circular around each bottle of Wine of Cardui read: "IT HAS ALSO PROVED TO BE A FINE TONIC FOR MEN IN RESTORING WASTED ENERGIES."

### THE QUARTERLY CONFERENCE INVESTIGATES

Now to refer to the "investigation" made by the official committee appointed by the Quarterly Conference of the First Methodist Church of Chattanooga. The committee was unanimously of the opinion, "after deliberate consideration," that in spite of the admitted fact that one-fifth of every bottle of Wine of Cardui is pure alcohol, yet, this is the only way in which the "drug content of the remedy" can be administered. Had there been an expert chemist or pharmacist on the committee he could have told them that it was unnecessary to use any alcohol. If the vegetable material is the part of the nostrum that possesses the marvelous qualities claimed for it, the drugs could be put up in tablet or pill form. The committee was further "satisfied" with a statement ascribed to druggists who had "never heard of its being used as a tipple or booze or used habitually." Self-respecting druggists—probably the class called on—would not, of course, be likely to know of the misuse of this preparation. The report does not indicate that any testimony was sought from the proprietors of country "general stores." In any case, was this committee innocent enough to expect the retailers of this alcoholic nostrum to admit that they had sold the stuff in quantities, or for purposes that were not legitimate?

### PRESCRIBING ALCOHOL

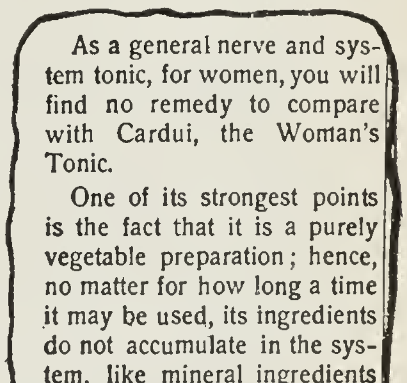
The committee was further "satisfied" with the argument—also alleged to have been given by druggists—that many remedies commonly prescribed by physicians to sick women contain a much larger percentage of alcohol than does Wine of Cardui. It is, of course, doubtless true that there are some physicians who prescribe drugs unscientifically and absurdly. To this fact THE JOURNAL has called attention for years, and has devoted much more space to and placed more emphasis on this very evil than it has devoted to "patent medicine" frauds. That the modern, educated physician is in the habit of prescribing alcohol for sickly women is, however, a question that would have to be settled on better evidence than that presented through the Chattanooga committee. Even if it were true, though, what would it signify? Because a physician prescribes a few doses of an alcoholic tincture to a patient whose physical condition is known to him and who is under his immediate supervision and control, is that any justification for a "patent medicine" concern recommending a nostrum having alcohol as its essential constituent, to persons they have never seen and the nature of whose ailments they do not, and could not, understand? To argue that because dangerous drugs are prescribed by physicians such drugs may legitimately be sold indiscriminately, is absurd. Because dynamite and blasting powder are used by, and sold on the order of, mining experts and civil engineers is no excuse for permitting every country store to sell dynamite and blasting powder to anyone it sees fit.

### "EVIDENCE" OF CURES

The committee further reported that it found "abundance of evidence to inspire in the manufacturers" of Wine of Cardui the belief that it "cures" the ailments for which it is recommended to the public. What this evidence was the committee did not disclose. The absurdity and futility of a group of laymen (there were no physicians on the committee so far as the report indicates) passing on questions of therapeutic efficiency, is self-evident. Presumably, the committee read the various testimonials that form so large a part of the Chattanooga Medicine Company's advertising material. It might be suggested at this point that the same committee could have found equally abundant evidence to prove the prophylactic powers of the left hind foot of a rabbit caught in a churchyard in the dark of the moon! And this evidence would have just the same scientific value as that of the average testimonial for Wine of Cardui or any other nostrum or method of treatment.

### THE NOSTRUM MAKER'S SHEET ANCHOR—MYSTERY

In answer to THE JOURNAL'S charge that nothing having therapeutic effects could be found in Wine of Cardui other than the alcohol, the committee says that it was "shown many authorities to the effect that it is very difficult for any chemist to analyze a vegetable compound such as this and be sure of its contents." The old, old argument of the nostrum exploiter — mystery! While technically it may be true that there are some vegetable extractives whose identity cannot be positively determined by chemical analysis, it is equally true that the active ingredients of practically every substance having any medicinal property can be identified. The fact that the chemist cannot name all of the plant extractives that enter into a nostrum such as Wine of Cardui, is of no practical importance. The essential drug in this nostrum is the alcohol, and it is the only drug demonstrably present in sufficient quantities to give any appreciable therapeutic effect.



As a general nerve and system tonic, for women, you will find no remedy to compare with Cardui, the Woman's Tonic.

One of its strongest points is the fact that it is a purely vegetable preparation; hence, no matter for how long a time it may be used, its ingredients do not accumulate in the system, like mineral ingredients frequently do.

Cardui is harmless, non-intoxicating, and its use is sure to benefit young and old.

Druggists do not sell the bulk Cardui ingredients in bulk. They are imported direct by us, so the only way to get the benefit of the Cardui medicinal value is to get the genuine Wine of Cardui, in original packages, as sold by the druggist whose name is printed on the front page of this magazine.

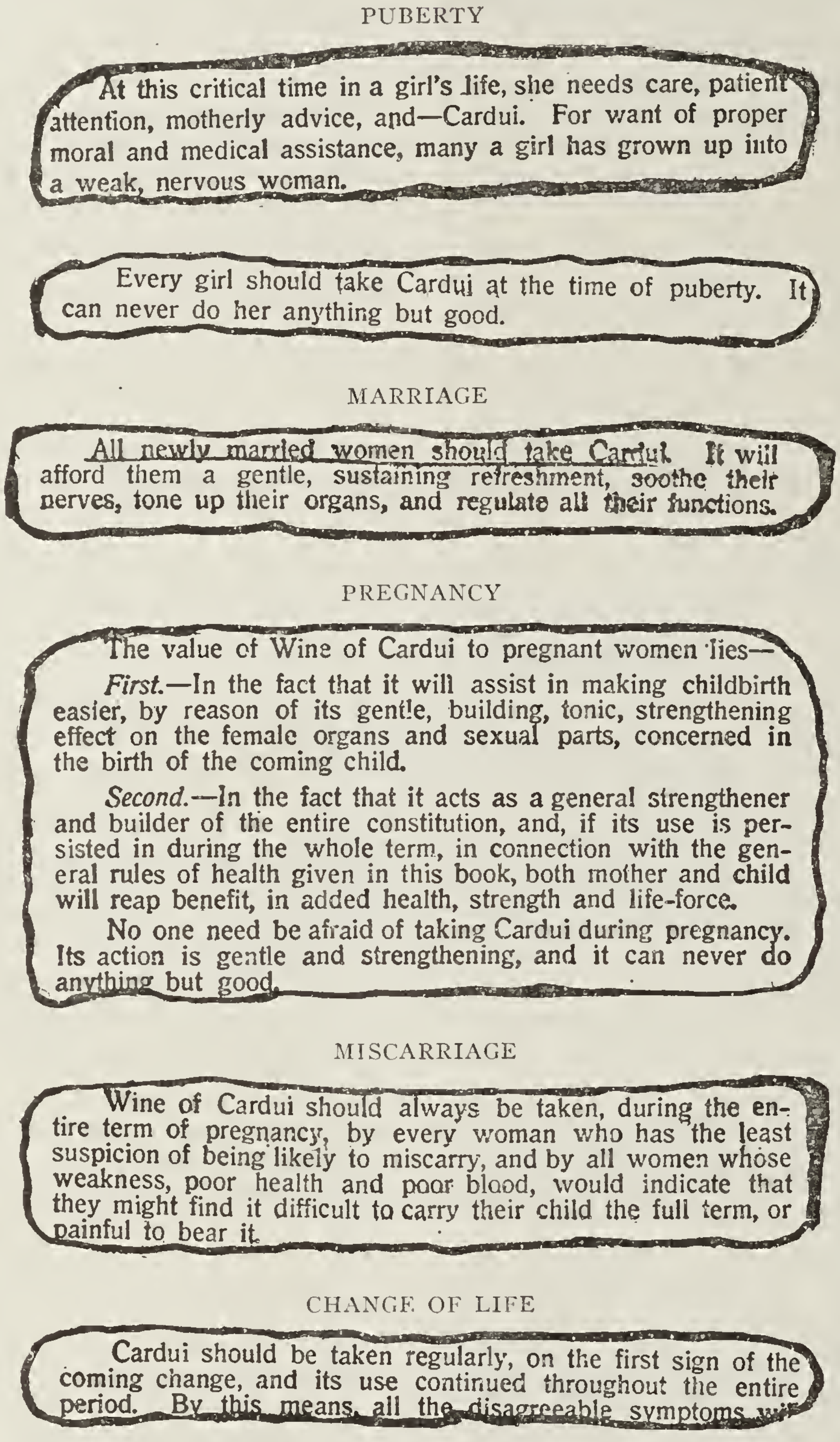
Try Cardui, today.

Advertisement (reduced) published 1910. Read it carefully and then ask whether THE JOURNAL is justified in criticizing Wine of Cardui and its exploiters.

### PATTEN'S ADVERTISING

In discussing THE JOURNAL'S criticisms of the Wine of Cardui advertising, the committee stated that there were two classes of advertising that had been criticized, (1) that which was printed before Mr. Patten took charge of the company and (2) that which was found in a book entitled, "Home Treatment for Women." This statement is but a half-truth. THE JOURNAL presented advertisements that had been published years after Mr. Patten had admittedly been in control, in addition to the claims that were made for the nostrum in the "Home Treatment for Women" booklet. The Journal went further. It gave photographic reproductions of the advertisements with a statement beneath each calling attention to the date on which the advertisements appeared! One of these reproductions was of an advertisement which in large, blackfaced type urged "young girls" to take Wine of Cardui. It contained the statement that Wine of Cardui is "non-intoxicating." This untruth used to appear on the Wine of Cardui labels in the days before the Food and Drugs Act was passed and it continued to appear in the circular around the bottle for some time after the Food and Drugs Act was passed.[1] It contained the further statement that Wine of Cardui is "perfectly harmless" — another lie that appeared on the label before the Food and Drugs Act was passed. Had the committee been more intent on giving the public a plain unvarnished statement of facts regarding the methods of the Wine of Cardui concern than it was, apparently, in wielding the "whitewash brush," it could have found many other fraudulent claims made for the nostrum other than those that The Journal has brought out.

Mr. Patten claims to have assumed control of the Wine of Cardui business in 1905, and he insists that the business should be judged according to the advertising issued since that time. This is exactly what The Journal has done. The advertising which The Journal has criticized most severely is that which was being issued in 1914; other claims just as fraudulent were reproduced from advertisements published in 1910—five years after Mr. Patten admits he assumed control. But the attempt of Mr. Patten to dodge behind a technicality, while in keeping with the tactics of "patent-medicine" fakers, is not such as to inspire respect for him or his business in the eyes of decent people. We have evidence to show that Mr. Patten was placing Wine of Cardui advertisements years before he assumed open control. Certain it is that Mr. Patten was connected with, and a beneficiary of, the Wine of Cardui business many years before his admitted complete control. He was receiving money from this wretched business when the advertising was vile, loathsome and indecent.



PUBERTY

At this critical time in a girl's life, she needs care, patient attention, motherly advice, and—Cardui. For want of proper moral and medical assistance, many a girl has grown up into a weak, nervous woman.

Every girl should take Cardui at the time of puberty. It can never do her anything but good.

MARRIAGE

All newly married women should take Cardui. It will afford them a gentle, sustaining refreshment, soothe their nerves, tone up their organs, and regulate all their functions.

PREGNANCY

The value of Wine of Cardui to pregnant women lies—

*First.*—In the fact that it will assist in making childbirth easier, by reason of its gentle, building, tonic, strengthening effect on the female organs and sexual parts, concerned in the birth of the coming child.

*Second.*—In the fact that it acts as a general strengthener and builder of the entire constitution, and, if its use is persisted in during the whole term, in connection with the general rules of health given in this book, both mother and child will reap benefit, in added health, strength and life-force.

No one need be afraid of taking Cardui during pregnancy. Its action is gentle and strengthening, and it can never do anything but good.

MISCARRIAGE

Wine of Cardui should always be taken, during the entire term of pregnancy, by every woman who has the least suspicion of being likely to miscarry, and by all women whose weakness, poor health and poor blood, would indicate that they might find it difficult to carry their child the full term, or painful to bear it.

CHANGE OF LIFE

Cardui should be taken regularly, on the first sign of the coming change, and its use continued throughout the entire period. By this means, all the disagreeable symptoms wi

Photographic reproductions (reduced) from the booklet "Home Treatment for Women," sent out early this year (1914). After The Journal's exposé a denatured edition of this booklet was issued.

But as Mr. Patten has claimed that since he assumed charge the advertising has been "free from curative claims that could be regarded as extreme or subject to any fair criticism," let us quote some more:

> ". . . of the utmost value in relieving pain, regulating the menses, curing leucorrhea, preventing miscarriage and making childbirth easy." [*Claim made in 1909.*]
>
> "It is a reliable, scientific, non-intoxicating, harmless medicine for all females, at puberty, maturity, pregnancy and during the change of life." [*Claim made in 1909.*]
>
> "No matter how serious or long standing the trouble Cardui will help you. It is a mild vegetable tonic remedy especially adapted to relieve and cure the common womanly ailments." [*Claim made in 1912.*]
>
> "For young girls just entering into womanhood and young ladies whose life duties have not long begun, Cardui is often of vital importance, giving them strength for daily tasks." [*Claim made in 1910.*]
>
> "It [Cardui] is a pure non-intoxicating preparation . . ." [*Claim made in 1910.*]
>
> "Its ingredients help build up vitality, tone up the nerves and strengthen the entire womanly constitution. It is mild and harmless." [*Claim made in 1914.*]
>
> "This remedy [Cardui] is not a drug—does not deaden pain, but prevents it." [*Claim made in 1910.*]
>
> "Cardui acts on the cause of the disease [Vaginitis] and is therefore not a mere palliative, but a scientific and specific remedy, with a curative effect upon the seat of the trouble." [*Claim made in 1914.*]
>
> "Cardui acts medicinally on the ovaries and tubes, and on all their surrounding parts, gradually subduing the inflammation, stopping pain and relieving the congestion." [*Claim made in 1914.*]
>
> "Cardui is harmless, non-intoxicating . . ." [*Claim made in 1910.*]
>
> "As a general nerve and system tonic for women, you will find no remedy to compare with Cardui, the Woman's Tonic." [*Claim made in 1910.*]

### THE JOURNAL'S ALLEGED "STRAINED INTERPRETATIONS"

The above are some of the claims made by the Chattanooga Medicine Company for Wine of Cardui *since* Mr. Patten has admittedly had charge of affairs. As to the other claims quoted in The Journal's article, taken from the booklet, "Home Treatment for Women" (sent out in 1914), these the committee gloss over with the admission that while their "phraseology" is "careless" The Journal's "interpretation" of the statements is "strained." Was it strained? The Journal called attention to the fact that women are urged to take Cardui for "hanging breasts." Let us quote the entire paragraph so that our readers can determine whether or not our interpretation is strained:

> "At the least tenderness, soreness, swelling, discharge of milk-like fluid, *lack of tone, shown by hanging breasts,* or change in the color of the areola, not caused by pregnancy, *it is time to take Cardui.*" [Claims made 1914. Italics ours.—Ed.]

The Journal said that Mr. Patten's company recommended this alcoholic nostrum for gonorrheal infection of the vulva; was it justified in so saying? Again, let the matter be quoted in full:

> "Local diseases of the vulva are, principally, heat, inflammation and itching, and are frequently caused by want of cleanliness. Very often, however, *they are caused by gonorrheal infection,* or by disease of the

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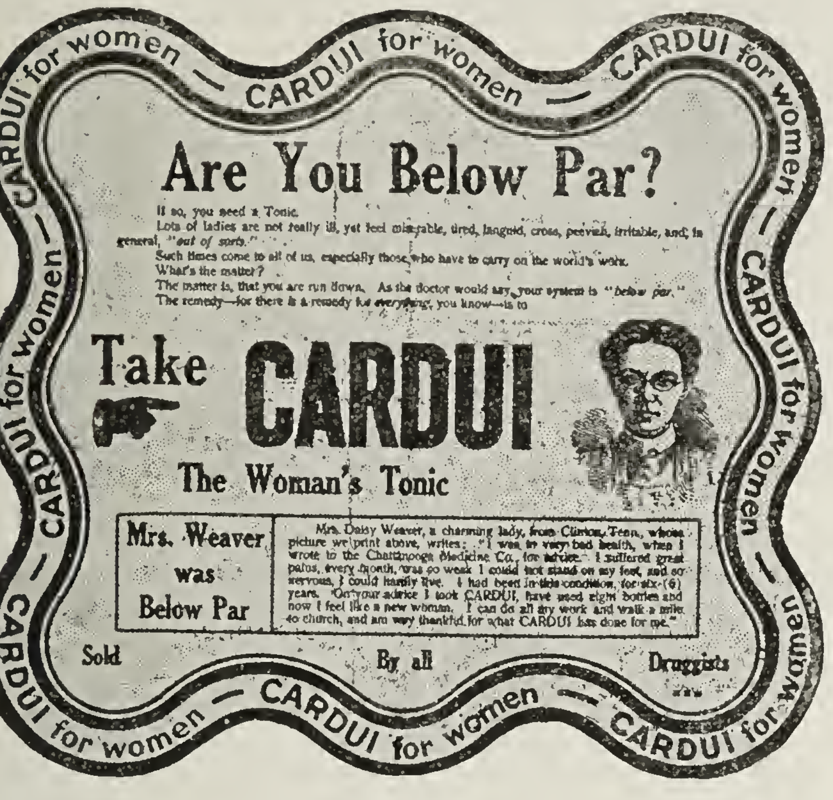
[1] For some time after the passage of the Food and Drugs Act, many "patent medicine" makers held that the circular around the bottle did not come within the scope of the Act. Hence, while they deleted the lies from the *labels* of their nostrums, they continued to falsify in the *circulars* wrapped around the bottles. The history of the "patent medicine" business shows that the average nostrum maker will lie just so long as he can do it with safety.

womb, ovaries, or vaginal canal, which causes irritating and poisonous secretions.

"*Cardui will exert marked beneficial effect upon this local irritation*, by relieving the inflammation which causes it; but, in addition to general treatment, local treatment should also be carefully carried out, the outer parts washed with castile or palm oil soap and warm water, and well dried, at least once a day, after which a little powdered boracic acid may be dusted on." [Claims made 1914. Italics ours.—Ed.]


CARDUI for women — CARDUI for women — CARDUI for women — CARDUI for women — CARDUI for women — CARDUI for women — CARDUI for women — CARDUI for women

Are You Below Par?

If so, you need a Tonic.
Lots of ladies are not really ill, yet feel miserable, tired, languid, cross, peevish, irritable, and, in general, "*out of sorts.*"
Such times come to all of us, especially those who have to carry on the world's work.
What's the matter?
The matter is, that you are run down. As the doctor would say, your system is "*below par.*"
The remedy—for there is a remedy for *everything*, you know—is to

Take CARDUI
The Woman's Tonic

Mrs. Weaver was Below Par

Mrs. Daisy Weaver, a charming lady, from Clinton, Tenn., whose picture we print above, writes: "I was in very bad health, when I wrote to the Chattanooga Medicine Co., for advice. I suffered great pains, every month, was so weak I could not stand on my feet, and so nervous, I could hardly live. I had been in this condition, for six (6) years. On your advice I took CARDUI, have used eight bottles and now I feel like a new woman. I can do all my work and walk a mile to church, and am very thankful for what CARDUI has done for me."

Sold By all Druggists

This advertisement appeared in October, 1911. In the original it measured 11 inches by 10 inches.

The Journal further said that Wine of Cardui was recommended for suppressed menstruation and also for "flooding." Was it justified in saying so? Again let us quote:

"Besides the two special forms of menstrual disorder described above [*amenorrhea* and *menorrhagia*], there may be, as stated, others, such as *scantiness, irregularity* of the functions, painful periods, etc., *all of which can nearly always be cured by persistent treatment with Cardui.*" [Claims made 1914. Italics ours.—Ed.]

The Journal said, too, that Mr. Patten's concern recommended that all newly married women should take Cardui. Was the "interpretation" in this case "strained?" Let us quote in full:

"*All newly married women should take Cardui.* It will afford them a gentle, sustaining refreshment, soothe their nerves, tone up their organs, and regulate all their functions." [Claims made 1914. Italics ours.—Ed.]

The Journal also accused the Chattanooga Medicine Company of making the villainous suggestion that every girl should take Cardui at the time of puberty. Was this accusation just?

"At puberty, the girl blossoms out like a flower from the opening bud. Her figure becomes fuller and rounder; her busts swell, and are often sore and tender; her voice becomes sweeter; hair begins to show itself under the armpits and on the lower abdomen.

"*At this critical time in a girl's life, she needs* care, patient attention, motherly advice, and—*Cardui*. For want of proper moral and medical assistance, many a girl has grown up into a weak, nervous woman . . ."

"*Every girl should take Cardui at the time of puberty.* It can never do her anything but good." [Claims made 1914. Italics ours.—Ed.]

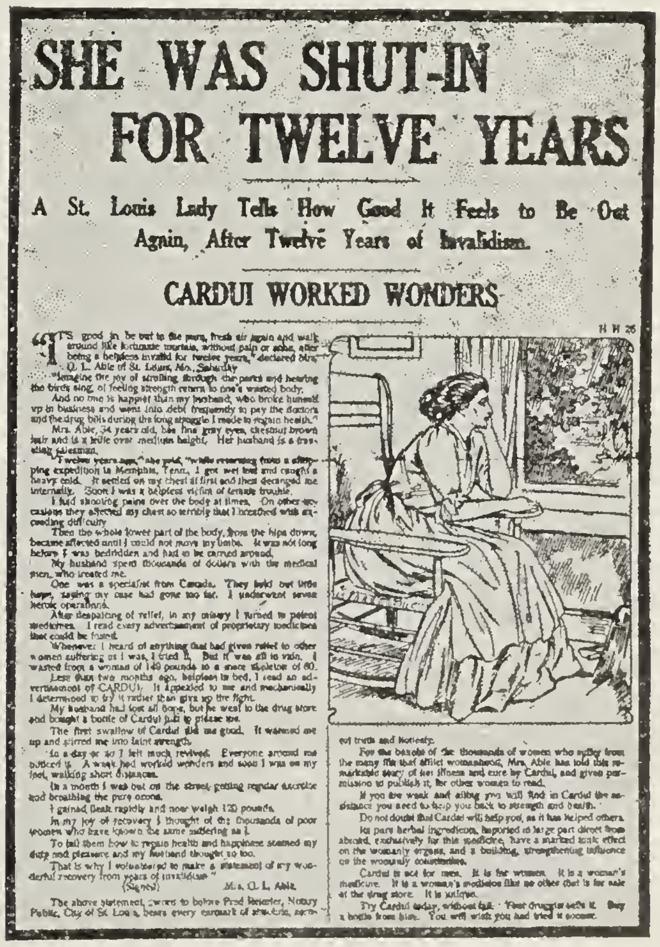
We could, if space permitted, show in detail that the charges of The Journal against the claims made for Wine of Cardui were in every instance understated rather than overstated; that The Journal's "interpretation" of the claims made by the Chattanooga Medicine Company instead of being "strained" was, in fact, more than justified.

Lastly, the committee decided that the owners of the Chattanooga Medicine Company were not morally culpable and "there could be no basis for any such charge unless it was shown that the medicine is worthless." As a matter of fact, even if Wine of Cardui had valuable drugs in it, the fraudulent claims under which it has been sold would still render its exploiters morally culpable. The committee summed up its findings with the statement that its investigation disclosed nothing which, in its opinion, "would prevent an intelligent and conscientious man" from engaging in the Wine of Cardui business, "from the point of view of either morals or religion." In other words, the Quarterly Conference of the First Methodist Church of Chattanooga—the Holston Conference, concurring—sees nothing either immoral or irreligious in the sale of a nostrum whose essential constituent is alcohol; sees nothing immoral or irreligious in the exploitation, under fraudulent claims, of this preparation to every adolescent girl, to every bride, to every expectant mother and to every woman at the menopause!

As we have said before, The Journal does not believe that this local official "whitewashing" is representative of the views of the majority, or of any substantial minority, of the members of the church in which Mr. Patten plays such an important part. It is true that a certain part of Methodist officialdom is standing up for Patten and his wretched business. Some of the *Christian Advocates* have come, editorially, to Mr. Patten's rescue, urging their readers to suspend judgment until Patten's suit for libel against The Journal has been decided. But Mr. Patten, it should be remembered, is chairman of the Book Committee which (1) annually fixes the salaries of all official editors, which (2) has power to discontinue any official Methodist publication, and which (3) has, in fact, "general supervision and direction of the publishing interests" of the church. These facts should, in fairness, be remembered in extenuation of the action of those editors who come so valiantly to the defense of the manufacturer of Wine of Cardui.

### WHY REJECT ADVERTISEMENTS OF WINE OF CARDUI

On the other hand it must again be emphasized that no official publication of the Methodist Episcopal Church accepts the advertisements of Wine of Cardui! Yet if Wine of Cardui can do half that Mr. Patten's company has claimed for it, it can accomplish more than any preparation known to medical science. If it can exert "beneficial effect" in gonorrheal vulvitis; if it is a "specific remedy" in gonorrheal vaginitis; if it has "cured" the wombs of "over a million women;" if it can "nearly always" "cure" amenorrhea, menorrhagia, "scantiness, irregularity of the functions, painful



SHE WAS SHUT-IN FOR TWELVE YEARS

A St. Louis Lady Tells How Good It Feels to Be Out Again, After Twelve Years of Invalidism.

CARDUI WORKED WONDERS

"IT'S good to be out in the park, fresh air again and walk around like fortunate mortals, without pain or ache, after being a helpless invalid for twelve years," declared Mrs. O. L. Able of St. Louis, Mo., Saturday.

"Imagine the joy of strolling through the parks and hearing the birds sing, of feeling strength return to one's wasted body.

And no one is happier than my husband, who broke himself up in business and went into debt frequently to pay the doctors and the drug bills during the long struggle I made to regain health."

Mrs. Able, 34 years old, has fine gray eyes, chestnut brown hair and is a little over medium height. Her husband is a traveling salesman.

"Twelve years ago," she said, "while returning from a shopping expedition in Memphis, Tenn., I got wet feet and caught a heavy cold. It settled on my chest at first and then deranged me internally. Soon I was a helpless victim of female trouble.

I had shooting pains over the body at times. On other occasions they affected my chest so terribly that I breathed with exceeding difficulty.

Then the whole lower part of the body, from the hips down, became affected until I could not move my limbs. It was not long before I was bedridden and had to be carried around.

My husband spent thousands of dollars with the medical men, who treated me.

One was a specialist from Canada. They held out little hope, saying my case had gone too far. I underwent seven heroic operations.

After despairing of relief, in my misery I turned to patent medicines. I read every advertisement of proprietary medicines that could be found.

Whenever I heard of anything that had given relief to other women suffering as I was, I tried it. But it was all in vain. I wasted from a woman of 140 pounds to a mere skeleton of 80.

Less than two months ago, helpless in bed, I read an advertisement of CARDUI. It appealed to me and mechanically I determined to try it rather than give up the fight.

My husband had lost all hope, but he went to the drug store and bought a bottle of Cardui just to please me.

The first swallow of Cardui did me good. It warmed me up and stirred me into faint strength.

In a day or so I felt much revived. Everyone around me noticed it. A week had worked wonders and soon I was on my feet, walking short distances.

In a month I was out on the street, getting regular exercise and breathing the pure ozone.

I gained flesh rapidly and now weigh 120 pounds.

In my joy of recovery I thought of the thousands of poor women who have known the same suffering as I.

To tell them how to regain health and happiness seemed my duty and pleasure and my husband thought so too.

That is why I volunteered to make a statement of my wonderful recovery from years of invalidism."

(Signed) Mrs. O. L. Able.

The above statement, sworn to before Fred [illegible], Notary Public, City of St. Louis, bears every earmark of sincerity, earnest truth and honesty.

For the benefit of the thousands of women who suffer from the many ills that afflict womanhood, Mrs. Able has told this remarkable story of her illness and cure by Cardui, and given permission to publish it, for other women to read.

If you are weak and ailing you will find in Cardui the assistance you need to help you back to strength and health.

Do not doubt that Cardui will help you, as it has helped others.

Its pure herbal ingredients, imported in large part direct from abroad, exclusively for this medicine, have a marked tonic effect on the womanly organs, and a building, strengthening influence on the womanly constitution.

Cardui is not for men. It is for women. It is a woman's medicine. It is a woman's medicine like no other that is for sale at the drug store. It is unique.

Try Cardui today, without fail. Your druggist sells it. Buy a bottle from him. You will wish you had tried it sooner.

Another advertisement published in 1911. The original occupied more than 150 square inches of space.

periods, etc.;" if it is what every girl at puberty "needs;" if it is something that "all newly married women should take;" if it "will assist in making childbirth easier;" if it is something the lying-in woman should take "two or three times a day;" if the woman at the menopause should take and continue its use "through the entire period"—if these are the powers and the potentialities of Wine of Cardui, then indeed are the Methodist publications remiss in their duty to humanity. If this nostrum possesses the powers claimed for it—claims which two Methodist conferences have accepted as reasonable and true—then the editors of the various *Christian Advocates* are derelict in not accepting advertisements of the product of the Chairman of their Book Committee—Wine of Cardui, The Woman's Tonic.

# Correspondence

### Do Patent Medicines Control the Press? An Example

*To the Editor:*—Any suggestion that the daily press is subservient to dishonest advertising interests is received with instant and fervid indignation by 95 per cent. of the newspapers. Just about this percentage takes money for obviously crooked advertising, in the form of quack medical "copy." As the object of much of this virtuous journalistic wrath on account of my recent novel "The Clarion," I wish to point out an instance in the career of the book itself which curiously supports my contention.

Binghamton, N. Y., is the home of Swamp Root, a conspicuous "booze-medicine" which I exposed a few years ago in *Collier's Weekly*. It is a prosperous and thriving city of almost 55,000 inhabitants, served by two local newspapers, the *Press* and the *Republican-Herald*. Just before the appearance of "The Clarion," the publishers sent to the *Press* an advertisement of the book specially designed to arouse the local interest of a city largely devoted to the patent medicine industry. The copy was returned with the following letter:

Binghamton, N. Y., Sept. 30, 1914.

Houghton Mifflin Company, 4 Park St., Boston, Mass.

*Gentlemen:*—We are returning, herewith, your order of the 28th inst., for "The Clarion" with copy, as we do not care to handle same. Thanking you for the proposition, we are

Very truly yours,
The Binghamton Press.

On the theory that this particular form of wording had been deemed too pointed, one of the regular advertisements of the book was sent. This also was refused, with the following suggestive intimation:

Binghamton, N. Y., Oct. 9, 1914.

Houghton Mifflin Company, 4 Park St., Boston, Mass.

*Gentlemen:*—We are returning, herewith, your copy of the 7th inst., for "The Clarion." We greatly prefer not to handle any advertising for this particular book. Thanking you for the offer, we are

Very truly yours,
The Binghamton Press.

As the *Press* had formerly been owned by the Kilmers, proprietors of Swamp Root, its indisposition to advertise a work dealing with the proprietary medicine evil might be attributed to a legacy of loyalty to old standards. No such inhibition would apply to the *Republican-Herald*. The first, or local advertisement was sent to that office, bringing with it tribulation of spirit to the business staff. They did not like to reject the advertising. All newspapers particularly appreciate publishers' business, as a mark of "class." But they felt evidently, that the proffered "copy" was too near home, and they wrote asking if it could not be modified somewhat. Thereupon the regular stock advertisement of the book was forwarded. What occurred in the office in the meantime is a matter of conjecture only. But the outcome is sufficiently significant. "Owing to a peculiar agreement existing between the Binghamton newspapers" (I quote from the letter of the advertising agency acting for the publishers) the *Republican-Herald* felt compelled to decline all advertising of this particular book!

Meantime the local book-stores refused to order it, although it was having one of the largest advance sales of the year in other parts of the country. One store made no secret of the fact that fear of the Swamp Root interests kept the novel off their shelves. It was not even obtainable at the local public library. Since this letter was written, however, I understand that the library has put it in, and the book department of a general merchandise store which at first rejected it, is now carrying the book.

All of which would seem to indicate that my fictional city of "Worthington" with its press under the domination of "our leading citizen," Dr. Surtaine of "Certina" fame, is not perhaps so wholly absurd and foundationless as the New York *Times*, the San Francisco *Chronicle* and others of the noble band of newspaper defenders would have their public believe. Samuel Hopkins Adams, Auburn, N. Y.

### Shields in Vaccination

*To the Editor:*—Will you give me space in The Journal in which to protest against the still too frequent use of "shields" in covering vaccination wounds? In routine vaccination work it has recently been my lot to examine many arms, a number of which I have dressed after the persons had applied shields, on their own initiative, or often on the advice of some physician. Others, having large, ugly cicatricial evidence of former pyogenic infection, too frequently give a history of having worn shields. I have removed shields and have seen a collection of accumulated pus roll down the arm, the patient thinking this a natural result of the "take." Shields are usually perforated for supposed ventilation, the perforation in reality serving to admit germ-laden dust and dirt of various kinds. The shield prevents cleansing of the wound, and gives the patient a false sense of proper protection. There is not a doubt that shields have been the direct cause of many seriously infected arms, thus in many instances causing the public to antagonize a most valuable prophylactic procedure. Shields are an abomination and a danger, and I should like to suggest that they be made a subject for comment in your department of Propaganda for Reform. They are far more dangerous than many patent medicines, as the latter are often harmless in themselves, while the former are a source of danger. It should be impressed on the profession, and the public, that a vaccination wound should have the same carefully applied sterile dressing as any other wound or sore, and that such dressing is much cheaper and simpler. These shields are manufactured by reputable firms who would, no doubt, refrain from placing them on the market if sufficient effort were made by clinicians to impress the makers with a knowledge of their dangers. Alfred G. Farmer, M.D.,
Colon Hospital, Cristobal, C. Z.

### Danger of War News

*To the Editor:*—It is time the medical profession impressed on the public the danger arising from too much reading and thinking of the war and its tragedies. Consideration of the vastness of the war, with its unnumbered and unspeakable atrocities and its suffering, overstimulates and weakens the mental fiber, and this soon reacts on the physical state of the individual. The husband neglects his wife, the mother her child, sleep is lost, appetite and digestion are impaired by reading of Belgium and blood, Prussia and pillage, Germany and guns, Servia and shrapnel, cholera, ruins, rape, hunger, cold, wounds, widows, orphans, destruction, despair, drunkenness and death. Daily the press of the country places before our greedy eyes all the printable horrors, and as we grasp our paper we breathe a curse or prayer according to the tenor of the latest despatch. The danger of this is increased by the constantly changing results of the vital conflict. The rapid shift from overstimulation of our emotions to deep depression causes increased blood-pressure, cerebral congestion, nervousness and irritability and may lead to imagined or real physical degeneration. Also it is to be remembered that the constant and earnest reader, especially he who is naturally emotional or neurotic, suffers from this overstimulation and depression for an indefinite time. The excitement and depression is quite different from that bred of a horse race or prize fight, in which our emotions undergo rapid change for only a short time, and yet we know that cases of collapse and even sudden death have occurred at such events. The ending of the present war may be far in the future, and the harrowing conditions of our fellow men meanwhile will probably become more extreme and more pitiable, while it may be that our doubts and depressions will become more marked. Another bad influence is the uncertainty of the reports we hear, so that we are exposed to frequent and swift revulsions of feeling, uplifts and downthrusts of the mental scale. As a matter of fact, we suffer far more from apprehension of doubt of the issue of events than from the event itself; in the present instance, moreover, our mental impressions are so chaotic that confusion is caused by the simple process of attempting to grasp what is going on.

What we need now especially is to conserve our energy and stop this fretting, worrying, nerve-racking and useless occupation of reading and discussing harrowing details. Each of us should look at this terrible thing soberly, quietly and broadly, not allowing an emotional element to enter the subject; for so soon as we do, our good judgment and balance is sent tumbling toward hysteria and nerve exhaustion. Gurney Williams, M.D., Atlantic City, N. J.

### The Cammidge Reaction in the Urine—Dextrinuria

*To the Editor:*—In The Journal, Oct. 31, 1914, p. 1581, which has just reached me, you comment on an article by Pekelharing and Van Hoogenhuyze (*Ztschr. f. physiol. Chem.*, 1914, xci, 151) on this subject and state that these observers suggest that the reaction is due to a dextrinuria. May I point out that in a paper which I read before the Medical Section of the Seventeenth International Congress of Medicine in London in August, 1913, on a quantitative method of performing the so-called "pancreatic" reaction, I stated that the reaction is due to the presence of a substance "intermediate between sugar and glycogen," thus hinting at its being a dextrin? Shortly afterward I was able to complete the evidence and, in conjunction with my chemical assistant, Mr. Howard, I wrote a paper entitled "Observations on the Composition and Derivatives of Urinary Dextrin," which, after some unavoidable delay, appeared in the *Lancet*, Sept. 26, 1914, p. 791. An abstract was given in The Journal, Oct. 24, 1914, p. 1508. In this paper the formula of the dextrin, which we isolated in a number of cases, was worked out and its probable relation to glycogen and starch shown. We were able to prove that the "pancreatic" reaction depends on the formation of an osazone by the pentose (xylose) split off from the dextrin by hydrolyzing with hydrochloric acid and that in the quantitative method the "iodin coefficient" of the urine is a measure of its content of dextrin. Our observations on the dextrin excretion are in agreement with those you quote, but we were also able to study the effect on the output of diseases of the pancreas, early glycosuria, and frank diabetes. One practical outcome of our observations has been to show that the appearance of sugar in the urine in diseases of the pancreas is preceded by a marked rise in the excretion of dextrin, which falls when glycosuria is established. It would therefore seem that determinations of the "iodin coefficient" are not only useful in the diagnosis of disease of the pancreas, but also afford a means of detecting and therefore treating diabetes in the preglycosuric stage with consequent better chance of success. In view of these and other results I think we can fairly claim to have established dextrinuria as a clinical entity, and it seems probable that the further investigations on which I am engaged will furnish information of value in relation to carbohydrate metabolism both in health and disease. In conclusion may I again state that neither the "pancreatic" reaction nor its modification, "the iodin coefficient" of the urine, has ever been claimed by me to be a specific test for disease of the pancreas? For several years I have stated that in my opinion it is merely an evidence of perverted carbohydrate metabolism which, when taken in conjunction with other evidence, is of assistance in the diagnosis of disease of the pancreas, since imperfect functioning of that organ is the most common cause of a metabolic failure in this direction.

P. J. Cammidge, M.D., London, England.

### Unauthorized Use of Name

*To the Editor:*—A display advertisement appeared in a Dubuque paper November 6 of the following verbiage:

"Mineral Water Mud Baths Cure Rheumatism at the Old Sanitarium, Prairie du Chien, Wisconsin. F. J. Antoine, Phy. Dr. Edward Evans, Sur."

My name was used without either my knowledge or consent. I have on file affidavits from the editor of the paper and the owner of the sanitarium saying that this advertisement was inserted without my knowledge or consent. You will confer a favor if you will insert this note in your Correspondence column. E. Evans, M.D., La Crosse, Wis.

## *Queries and Minor Notes*

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### QUESTIONS OF CORRECT LANGUAGE: "COCCI," "APPENDECTOMY" AND "SCOPOLAMIN"

*To the Editor:*—1. What is the proper pronunciation of words terminating in "cocci" and "coccic"? I sometimes hear the double "c" pronounced as if it were "k," sometimes as if it were "x" and sometimes as if it were "s."

2. What is the proper word to use to indicate the removal of the appendix, appendicectomy, appendiectomy or appendectomy?

3. What is the correct pronunciation of "scopolamin?" The latest dictionary puts the accent on the "a" but practically all physicians put it on the "o." I confess that euphony seems to be in favor of the pronunciation given by the physicians.

J. F. B., Columbus, Ohio.

Answer.—1. The double "c" in "cocci" and "coccic" should be given the ordinary English pronunciation, the first "c" hard like "k" and the second soft like "s."

2. There seems no valid reason why the consideration of brevity should not prevail, giving the choice to "appendectomy." "Appendicectomy" is sometimes preferred on etymological grounds, but such considerations seem an unnecessary refinement since the word, being a hybrid, has no etymological right to exist.

3. Both euphony and derivation favor the accent on the second "o." Scopolamin does not belong to the class of amins; it is merely the alkaloid derived from scopola.

### EXPOSURE AND IMMUNITY TO DIPHTHERIA

*To the Editor:*—1. Will you please inform me whether an adult having been in the same room with an individual who developed diphtheria the following day, but not in close contact, should be subjected to an immunizing dose of antitoxin, though she herself has had diphtheria?

2. Would your opinion be otherwise, if that individual were a teacher?

3. Is it not a fact that the majority of adults have a natural immunity to diphtheria?

4. Is it not a fact that the vast number of individuals who have once had diphtheria are immune to a second attack?

5. For how long does an immunizing dose render an individual passively immune?

A. R. Hatcher, M.D., Wellington, Kan.

Answer.—1. An adult exposed to diphtheria should be advised to receive an immunizing dose of antitoxin.

2. If the person is a teacher, she is bound to take every proper precaution.

3. The majority of adults have no marked immunity to diphtheria although they are less frequently attacked than children.

4. The immunity following an attack of diphtheria is very transient, lasting usually not more than three months.

5. An immunizing dose of antitoxin offers protection against the disease for a few weeks only.

# Medical Education and State Boards of Registration

## COMING EXAMINATIONS

Alabama: Montgomery, Jan. 5, 1915. Chairman, Dr. W. H. Sanders, Montgomery.

Alaska: Juneau, Jan. 5, 1915. Sec., Dr. H. C. DeVighne, Juneau.

Arizona: Phoenix, Jan. 5-6, 1915. Sec., Dr. John Wix Thomas, 200 Nat'l Bank of Ariz. Bldg., Phoenix.

California: Los Angeles, December 8. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.

Delaware: Dover and Wilmington, December 8-10. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

Illinois: Chicago, Jan. 13-15, 1915. Sec., Dr. C. St. Clair Drake, Springfield.

Indiana: Indianapolis, Jan. 12-14, 1915. Sec., Dr. W. T. Gott, State House, Indianapolis.

Kentucky: Louisville, December 16-18. Sec., Dr. A. T. McCormack, Bowling Green.

Maryland: Baltimore, December 8. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton, Baltimore.

Minnesota: Minneapolis, Jan. 5-8, 1915. Sec., Dr. Thomas McDavitt, 814 Lowry Bldg., St. Paul.

Missouri: St. Louis, December 14-16. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

New Hampshire: Concord, December 29-30. Regent, Mr. H. C. Morrison, Concord.

New Mexico: Santa Fe, Jan. 11, 1915. Sec., Dr. W. E. Kaser, E. Las Vegas.

North Dakota: Grand Forks, Jan. 5, 1915. Sec., Dr. G. M. Williamson, Grand Forks.

Ohio: Columbus, December 8-10. Sec., Dr. George H. Matson.

Oklahoma: Oklahoma City, Jan. 12-14, 1915. Sec., Dr. John W. Duke, Guthrie.

Pennsylvania: Philadelphia, December 1-3. Sec., Dr. N. C. Schaeffer, Harrisburg.

Rhode Island: Providence, Jan. 7, 1915. Sec., Dr. Gardner T. Swarts, State House, Providence

South Dakota: Pierre, Jan. 12, 1915. Sec. Dr. P. B. Jenkins, Waubay.

Utah: Salt Lake City, Jan. 4-5, 1915. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Vermont: Montpelier, Jan. 11-13, 1915. Sec., Dr. W. Scott Nay, Underhill.

Virginia: Richmond, December 15-18. Sec., Dr. J. N. Barney, Fredericksburg.

Washington: Walla Walla, Jan. 5, 1915. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

Wisconsin: Madison, Jan. 12-14, 1915. Sec., Dr. John M. Beffel, 3200 Clybourn St., Milwaukee.

## Connecticut July Report

Dr. Charles A. Tuttle, secretary of the State of Connecticut Medical Examining Board, reports the oral, practical and written examination held at New Haven, July 14-15, 1914. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 20, of whom 17 passed and 3 failed. The following colleges were represented:

| College | Year Grad. | Per Cent. |
|---|---|---|
| PASSED | | |
| Yale Medical School | (1911) 81; (1914) | 87.9, 89.2 |
| University of Louisville | (1903) | 83.6 |
| College of Physicians and Sur., Baltimore | (1913) 76.7; (1914) | 75.1 |
| University of Maryland | (1914) | 84 |
| Harvard University | (1901) | 82.5 |
| Tufts College Medical School | (1905) 76.2; (1913) | 78.5 |
| College of Phys. and Surgs. in the City of N. Y. | (1902) 89.5; (1903) | 83.3. |
| Syracuse University | (1913) | 76.7 |
| Jefferson Medical College | (1914) | 84.7 |
| University of Pennsylvania | (1913) | 83.7 |
| University of Vermont | (1913) 75.4; (1914) | 88.8 |
| FAILED | | |
| University of Southern California | (1902) | 61.8 |
| Maryland Medical College | (1913) | 65.2 |
| University of Canatania, Italy | (1912) | 64.9 |

## Michigan Reciprocity Report

Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports that 32 candidates were licensed through reciprocity from February to September, 1914. The following colleges were represented:

| College | Year Grad. | Reciprocity with |
|---|---|---|
| University of Colorado | (1911) | Colorado |
| Bennett Medical College | (1912) | Illinois |
| College of Phys. and Surgs., Chicago | (1907) | Missouri |
| Hahnemann Medical Coll. and Hosp., Chicago | (1910) | Texas |
| Northwestern University | (1906) | Illinois |
| Rush Medical College | (1901) (1907) (1912) | Illinois |
| University of Illinois | (1912) | Illinois |
| University of Louisville | (1907) | Illinois |
| College of Phys. and Surgs., Baltimore | (1912) | Maryland |
| University of Maryland | (1908) | N. Carolina |
| Harvard University | (1912) | Illinois |
| University of Michigan, Homeo. Med. College | (1907) | Ohio |
| University of Minnesota | (1908) | Minnesota |
| Missouri Medical College | (1895) | Missouri |
| St. Louis University | (1913) | Missouri |
| Syracuse University | (1906) | New York |
| Cincinnati College of Med. and Surg | (1879) | Indiana |
| Cleveland College of Phys. and Surgs | (1905) | Ohio |
| Cleveland Homeo. Medical College | (1898) | Ohio |
| Eclectic Medical College, Cincinnati | (1913) | Ohio |
| Starling Medical College | (1897); (1903) | Ohio |
| Starling-Ohio Medical College | (1912) | Ohio |
| University of Wooster | (1887) | Ohio |
| Western Reserve University | (1912) | Ohio |
| Jefferson Medical College | (1910) | Minnesota |
| Woman's Medical College of Pennsylvania | (1908) | Penna. |
| University of Vermont | (1908) | Vermont |
| Marquette University | (1913) | Wisconsin |
| Victoria University, Ontario | (1874) | Minnesota |

## Oklahoma Reciprocity Report

Dr. John W. Duke, secretary of the Oklahoma State Board of Medical Examiners, reports that sixteen candidates were licensed through reciprocity from April 14, to July 14, 1914.

| College | Year Grad. | Reciprocity with |
|---|---|---|
| University of Arkansas | (1910) | Arkansas |
| College of Phys. and Surgs., Chicago | (1901) | Wisconsin |
| Indiana Medical College | (1906) | New Mexico |
| University of Michigan, Homeo. Med. College | (1908) | Arkansas |
| Boston University | (1891) | Arkansas |
| Ensworth Medical College | (1910) | Nebraska |
| Meharry Medical College | (1913, 3) | Tennessee |
| Memphis Hosp. Medical College | (1902) Texas; (1912) | Tennessee |
| Tennessee Medical College | (1908) | Tennessee |
| University of Nashville | (1908) | Tennessee |
| University of Tennessee | (1900) | N. Carolina |
| Baylor University | (1913) | Tennessee |
| Physio-Medical College of Texas | (1905) | Texas |

## Utah July Report

Dr. G. F. Harding, secretary of the Utah State Board of Medical Examiners, reports the written examination held at Salt Lake City, July 6-7, 1914. The total number of subjects examined in was 19; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 6, of whom 5 passed, including 1 osteopath, and 1 failed. Two candidates were licensed through reciprocity. The following colleges were represented:

| College | Year Grad. | Per Cent. |
|---|---|---|
| PASSED | | |
| Rush Medical College | (1912) | 84.8 |
| University of Illinois | (1914) | 86.9 |
| Jefferson Medical College | (1913) 81.4; (1914) | 85.2 |
| FAILED | | |
| Meharry Medical College | (1914) | 61 |

| College | Year Grad. | Reciprocity with |
|---|---|---|
| LICENSED THROUGH RECIPROCITY | | |
| Missouri Medical College | (1883) | Wyoming |
| St. Louis College of Phys. and Surgs | (1905) | Illinois |

## Vermont July Report

Dr. W. Scott Nay, secretary of the Vermont State Board of Medical Registration, reports the practical and written examination held at Burlington, July 14-16, 1914. The total number of subjects examined in was 13; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 23, all of whom passed. One candidate was licensed through reciprocity. The following colleges were represented:

| College | Year Grad. | Per Cent. |
|---|---|---|
| PASSED | | |
| Harvard University | (1905) | 85.9 |
| University of Vermont | (1912) 82.2; (1913) 81.7, 82.6; (1914) | 76.4, 80.1, 81.5, 83.1, 84.1, 84.5, 84.5, 84.7, 85.2, 85.7, 85.7, 86.2, 86.8, 87, 87.2, 87.5, 87.5, 89, 93.6. |

One candidate, a graduate of Dartmouth Medical School, 1913, was licensed through reciprocity with New Hampshire.

# Book Notices

Frohse Anatomical Charts. Made under the supervision and assistance of the Institute of Anatomy, University of Berlin. Fourteen charts, with key to each chart. Price, $3.75 per chart. Chicago: A. J. Nystrom & Co., 1914.

This is an excellent series of fourteen wall charts illustrating human anatomy. More are promised. It consists so far of the following: skeleton and joints, 2; muscles, 2; viscera of thorax and abdomen, 4; peripheral nerves, 1; circulatory system, 1 (diagrammatic); ear, 1; eye, 1; median section through head and neck, 1; histology of skin, 1. Most are of life size, while those of the eye and ear and the median section through the head and neck are considerably enlarged. They are made from paintings which were planned and supervised by anatomists. They are admirably planned to show clearly and intelligibly the structures represented, and their scope includes the whole extent of those structures. They approach more closely to perfect anatomic accuracy than most representations of this kind. The painter, in making the main features stand out clearly and distinctly, has intentionally subordinated some details, as in the reduction of complexity in the arterial arcades of the mesentery. This is usually an advantage. The obturator nerve is represented as coming from the third and fourth lumbar nerves. Its usual origin from the second evidently did not exist in the subject from which the drawing was made. The left bronchus is represented as slightly larger than the right. On the whole the charts are unusually accurate, and excel in clearness, general scope and definiteness. In high schools and colleges they would be of very great interest and instructive value. Elementary physiology can hardly be intelligibly taught without some such help, and in laboratories of anatomy they are useful, especially on account of their wide scope, in correlating the structures in different regions of the body. Their admirable planning makes them a very effective means of instruction, and their artistic excellence and clearness will insure pleasure and satisfaction in their use.

Atlas und Lehrbuch wichtiger tierischer Parasiten und ihrer Ueberträger mit besonderer Berücksichtigung der Tropenpathologie. Von Dr. Med. et Phil. R. O. Neumann, o. ö. Professor der Hygiene und Direktor des hygienischen Instituts der Universität Bonn und Dr. Med. Martin Mayer, Abteilungsvorsteher am Institut für Schiffs- und Tropenkrankheiten in Hamburg. Cloth. Price 40 marks. Pp. 580 with 1382 illustrations. Munich: J. F. Lehmann, 1914.

The fine series of medical atlases published by Lehmann has received a notable addition in the volume by Neumann and Mayer on animal parasites and their hosts. The colored figures number more than thirteen hundred and there are numerous and excellent diagrams and text figures. The beautifully colored lithographic plates are likely to remain for a long time the high water mark for work of this sort. On some of them more than twenty colors have been employed to bring out the features desired. Considerably more than half of the text is devoted to the protozoa, and the remainder to the higher animal parasites. The work does not pretend to be exhaustive and is more complete as respects the parasites of man than the parasites of domestic animals. So far as possible the writers have tried not to neglect questions of interest to the professional zoologist, but the main purpose of the work has been to further the interests of practical medicine. The book is indispensable to every active worker in the field of animal parasitology.

Nurses for Our Neighbors. By Alfred Worcester, A.M., M.D., Chief of Maternity Service, Waltham Hospital. Cloth. Price $1.25 net. Pp. 267. Boston: Houghton Mifflin Company, 1914.

Dr. Worcester calls nursing "our common problem." and evidently does not consider that it has been solved, or that it is even near solution, by the establishment of the modern hospital training schools for nurses. He laments the lack of personal service in nursing and says that the old-fashioned custom of neighbor nursing neighbor had much to commend it. Nursing, he states, "essentially is caring for the helpless, whatever may be the cause or form of the helplessness, whether it be that of infancy, or of old age, or of accident, or of sickness; but hospitals admit only certain forms of human helplessness, and generally only the rarer forms." Again: "Experience in hospital nursing is, of course, an indispensable part of the perfect nurse's training, but it is by no means the whole of it. In our hospital training schools nurses acquire wonderful technical skill, and an extensive knowledge of diseases. They become adepts in distributing themselves and in managing many patients. As assistants of the hospital physicians and surgeon they learn much of the science, but little of the art, of medical practice; whereas nurses need to know only little of the science, but all that is knowable of the art of helping the helpless." The author speaks highly of the training given in the German deaconess institutions, in which hospital nursing is considered only as one of the departments or specialties of nursing and the young women are trained in district visiting and general home nursing. Many of Dr. Worcester's criticisms are well founded. The impersonal attitude toward patients required of nurses in hospitals is out of place in home nursing and is resented, and rightly, by the family of the patient. Too often a nurse's attempts to institute a hospital regimen in a home create irritation and discomfort among the relatives which is bound to react on the patient. Frequently, also, the nurse appears callous instead of sympathetic, and this the family naturally resents. Superintendents of hospitals throughou the country would do well to read this book and apply some of the suggestions in the training of their pupil nurses.

Diseases of Children. By Various Authors. Edited by Archibald E. Garrod, D.M., M.A., F.R.C.P., Physician to St. Bartholomew's Hospital, London, Frederick E. Batten, M.D., M.A., F.R.C.P., Physician to the Hospital for Sick Children, London, and Hugh Thursfield, D.M., M.A., F.R.C.P., Physician to Out-Patients, Hospital for Sick Children, London. Cloth. Price, $8.50 net. Pp. 1184, with 182 illustrations. New York: Longmans Green & Co., 1913.

This is the work of twenty-two leading British pediatrists, and the aim of the editors is "a comprehensive and authoritative account of the present state of our knowledge of the diseases of children, set forth with a completeness which they believe has not hitherto been attempted in this country." With Thompson, Still, Cautley, Poynton, Hutchison and others among the collaborators, the book is an expression of the most authoritative teaching on diseases of children in Great Britain to-day. We have had occasion before in reviewing the books of Thompson, of Still and of Cautley, to emphasize the fact that the British authors are keen observers and good clinicians, and this book corroborates that opinion. True they have been quite untouched by the important work that has been done in Germany, especially on nutrition and its disturbances, but this very isolation and aloofness that has laid them bare to the charge of "provincialism" has a certain value in that it gives one a different point of view. Judged from this aspect, the present volume contains a wealth of useful information to both student and practitioner, and takes its place beside that of Cautley, as one of the two most comprehensive and complete British text-books on diseases of children.

Hygienisches Praktikum. Ein Taschenbuch für studierende Aerzte und Kreisarztkandidaten. Von Dr. Med. Paul Uhlenhuth, geh. reg. rat und ordentl. Professor der Hygiene an der Universität Strassburg und Dr. Med. Hermann Dold, Privatdozent der Hygiene an der Universitat Strassburg. Cloth. Price, $1.25. Pp. 272, with 90 illustrations. New York: Rebman Company, 1914.

This small book is intended as a laboratory supplement to lectures on hygiene. It covers such subjects as the hygiene of soil, water, food and drink, clothing, ventilation, light, etc. The object of the book is didactic and the methods are for the most part familiar. In connection with the microscopic examination of water it is not clear why organisms like Vorticella and Carchesium are figured while nothing is said about the algae and other micro-organisms sometimes responsible for offensive odors in water supplies. The bacterial examination of both water and milk is summarily dismissed. The discredited method of Eijkman for the detection of *Bacillus coli* is the only procedure mentioned. The methods given for the examination of meat, etc., are well described and up to date. One chapter deals with the determination of the amount of alcohol in beer and wine. Altogether the book cannot be said to be particularly well adapted for use in this country, although it doubtless serves a useful purpose in its place of origin.

Die Wasserstoffionen-Konzentration, Ihre Bedeutung für die Biologie und die Methoden Ihrer Messung. Von Professor Dr. Leonor Michaelis, Privatdozent an der Universität Berlin. Paper. Price, 8 marks. Pp. 210, with 41 illustrations. Berlin: Julius Springer, 1914.

This is the first of a projected series of monographs on subjects in the general field of plant and animal physiology, modeled after the "Monographs on Biochemistry" series which has been such an important addition to biologic literature. Michaelis' work on hydrogen-ion concentration is an excellent illustration of the possibilities of this method of publication, and serves to render accessible an authoritative discussion of one of the most important of the recent advances in the application of fundamental principles of physical chemistry to biologic processes. The recognition that "reaction" means the proportion of hydrogen and hydroxyl ions in a solution, and nothing else, has done much to clear up many misconceptions in physiology, especially concerning the chemical conditions existing within the blood and tissues, and has been the direct stimulant of much progress in biologic and clinical chemistry. Michaelis has been one of the chief contributors to this field of research, and presents his highly technical subject with simplicity and clearness. It is not necessary to recommend this work to chemists and biologists; but we may emphasize the importance of the subject of "reaction" to physicians who desire to be informed concerning the basal advances in medical sciences, and the opportunity which this book offers them to learn its principles and applications.

Ambidexterity and Mental Culture. By H. Macnaughton-Jones, M.D., M.Ch., Q.U.I. Cloth. Price 75 cents net. Pp. 102, with illustrations. New York: Rebman Company, 1914.

The author of this little book, written for the laity, being thoroughly convinced that right-handedness and left-sided speech are acquired characteristics, advocates the teaching of ambidexterity in the lower-grade schools. He believes that the alternating or synchronous action of the dual sided brain, left and right sides equally cooperating with the associated arm and hand, and equally educated in their functional powers and uses, must have its psychophysical influence on the individual. To him that nation whose people are ambidextrous has a great advantage over others. Whether his expectations will be realized or will remain mere hopes, the teaching of ambidexterity must result in great benefit to a person who may develop aphasia and right-sided hemiplegia later in life. The book is well written and permeated by the positiveness of conviction.

Kirkes' Handbook of Physiology. By Charles Wilson Greene, A.M., Ph.D., Professor of Physiology, University of Missouri. Eighth American Revision. Cloth. Price, $3 net. Pp. 790, with 509 illustrations. New York: William Wood & Co., 1914.

This new edition of Kirkes' standard work retains the general form and features of previous issues. New material has been added in accordance with recent advances in our knowledge of internal secretions, and the author notes that an attempt is made to use as a determining pedagogic horizon not only physiology but also clinical medicine and surgery. A book of this character which has stood the test of time and reflects the best thought and criticism of some of our best physiologists is a worthy addition to any medical bookshelf.

Manual of Medical Jurisprudence, Toxicology and Public Health. By W. G. Aitchison Robertson, M.D., D.Sc., F.R.C.P.E., Lecturer on Medical Jurisprudence, School of Medicine, Royal College of Surgeons, Edinburgh. Cloth. Price, $2.50. Pp. 560. New York: Macmillan Company, 1913.

The passage of new public health laws in England since 1908—the date of issue of the first edition—and the rapid advance in the methods of mechanical filtration of water as well as the increasing demand for the book has led the author to prepare a second edition revised to date. While medical jurisprudence, public health administration laws of evidence and rules of procedure in England differ widely from those in the United States, yet the high standing and wide experience of the author will entitle his book to consideration by any one interested in public health anywhere. The second edition is larger and better illustrated than the first.

Studien über die Fortpflanzung von Bakterien, Spirillen und Spirochäten. Von Dr. Med. E. Meirowsky. Paper. Price, 12 marks. Pp. 95, with 11 illustrations. Berlin: Julius Springer, 1914.

This work of Meirowsky was planned with the idea of proving that Schaudinn's idea of the protozoal character of the *Spirochaeta pallida* was correct. Using the method of vital staining in his studies on the tubercle, lepra, paratyphoid and other bacilli, as well as on various types of spirochetes, which he cultivated, he was led to conclusions almost diametrically opposed to the assumptions on which he based his work. A discussion of the methods employed and of the details of Meirowsky's work cannot be taken up. Suffice it to say that he shows that the *Spirocheta pallida* is to be classed among the lower forms of plant life, probably in the group of mycelial types, and is in no way related to the animal forms, such as the protozoa. The subject matter is clearly written, the studies outlined being presented in a convincing manner. Many photomicrographs and drawings add to the value of the work.

A Text-Book of Pathology for Students of Medicine. By J. George Adami, M.A., M.D., F.R.S., Strathcona Professor of Pathology, McGill University, and John McCrae, M.D., M.R.C.P., Lecturer in Pathology, McGill University. Second Edition. Cloth. Price, $5 net. Pp. 878, with 408 illustrations. Philadelphia: Lea & Febiger, 1914.

In this edition of this standard text there has been added a new chapter on "The More Important Infections and Their Prominent Features." Other changes include an endeavor to simplify the classification of tumors which is a praiseworthy effort; the relegation of the chapter on "Monstrosities and Abnormalities" to an appendix, which is a good idea, and the addition of ninety-one engravings and two colored plates, making a total of 395 of the former and thirteen of the latter.

Die Moderne Therapie der Gonorrhöe beim Manne. Ein Leitfaden für Studierende und Aerzte. Von Prof. Dr. Paul Asch. Paper. Price, 2.60 marks. Pp. 84, with 25 illustrations. Bonn: A. Marcus and E. Webers, 1914.

Dr. Asch discusses in this pamphlet a subject on which much has already been written of both a valuable and a useless nature. Dr. Asch, however, takes nothing for granted and, beginning on the threshold, writes in detail from his own experience. He seems particularly partial to the Janet irrigation treatment, and believes that when instituted early and cautiously this method will prevent serious complications. There is a section on vaccine therapy and one on endoscopy which reflect modern opinions.

Manual of Diseases of the Eye for Students and Practitioners. By Charles H. May, M.D., Instructor in Ophthalmology, College of Physicians and Surgeons, Medical Department, Columbia University, New York. Eighth Edition. Cloth. Price, $2. Pp. 440, with 377 illustrations. New York: William Wood & Co., 1914.

The seventh edition of May's popular book appeared in August, 1911, and was reprinted August, 1913. This, the eighth edition, brings the work up to date. Its popularity is attested by eight English editions, two German, two Italian, three French, two Dutch, two Japanese, four Spanish and four for the British Isles.

Der Tierversuch in Psychiatrie und Neurologie. Akademische Antrittsvorlesung. Von Dr. Gabriel Steiner, Privatdozent in Strassburg im Els. Paper. Price 80 pfennig. Pp. 22. Wiesbaden: J. F. Bergmann, 1914.

In this lecture the author passes in review the various experimental methods in psychiatry and neurology as applied to animal psychology. The brochure gains in interest as many of the animal experiments, for instance those of Otto Kalischer, Pawlow and von Bechterew, can be applied to the elucidation of problems in human physiology and psychiatry.

# Medicolegal

## Physician as Committee of Lunatic

*(Lake et al. vs. Hope (Va.), 82 S. E. R. 738)*

The Supreme Court of Appeals of Virginia affirms a decree in favor of the defendant, a physician, whom it was sought to remove as committee of one Lake, a lunatic, on the ground of alleged incompetency and lack of care, together with unwarranted extravagance in managing his ward's estate, which was worth over a quarter of a millon dollars. When the defendant entered on his duties as committee his ward was a very sick man, suffering from alcoholic neuritis and some cerebral disorder due to the same cause. He was a helpless invalid—could not sit up in bed, could not lift a glass of water to his mouth, could not even turn over in bed without assistance. Mentally he was always in a state of dread, thinking that something was happening to him. Such was his serious illness up to June, 1910, when the plaintiffs complained to the court that the defendant had failed or refused to call in the services of a specialist on the disease or diseases with which Mr. Lake was afflicted. However, in the spring of 1912, Mr. Lake had improved so much under the defendant's care that he could walk wherever he pleased, while his mental condition was practically that of a sane person who could act for himself in the management of his affairs, unless subjected to great and unnecessary mental strain. The court thinks that the evidence justified the appointment and retention of the defendant as committee, and the allowance to him of $100 a month for his services as physician and for his care of his ward's estate.

One of the items of expense complained of was the purchase and upkeep of an automobile and a boat for the use of Mr. Lake. It appeared that Mr. Lake, before his illness, owned and enjoyed an automobile, which was practically his only source of outside pleasure. This machine gave out and the defendant disposed of it in exchange for a new one, which exchange involved an outlay in money in the sum of $1,150, and the upkeep of it and the boat for the year cost $350.27, making a total of $1,500.27. A son of Mr. Lake acted as chauffeur. For a man of Mr. Lake's worth, incapable of any other recreation or pastime, this item of expense for his comfort and pleasure could not be reasonably considered extravagant or wasteful. Nor was the reasonable expense of a trip of several months, taken by Mr. Lake to a winter resort in Florida, objectionable.

## Giving Treatments by Manipulation and Adjustment a Practicing of Medicine

*(Harvey vs. State (Neb.), 148 N. W. R. 924)*

The Supreme Court of Nebraska affirms a conviction of the defendant on eight counts, each of which contained this allegation: "Did then and there for remuneration unlawfully practice medicine by unlawfully treating and attempting to heal one (name of patient) for a bodily ailment through the manipulation and adjustment with the hands by the said Earle A. Harvey, of certain nerves, bones and tissues of the body of the said (name of patient) without first having issued to him, the said Earle A. Harvey, by the said State Board of Health of the state of Nebraska, a certificate or license to practice medicine." The court says that the information without doubt charged offenses under Sections 2717, 2723, and 2724 of the Revised Statutes of Nebraska of 1913.

To "operate on, profess to heal or prescribe for, or otherwise treat any physical or mental ailment of another," is "practicing medicine" by the express provision of Section 2724. It is unlawful in Nebraska to treat professionally and attempt to heal another by manipulation and adjustment of nerves, bones and tissues of the body without first obtaining a certificate or license from the State Board of Health, as provided in Articles 2 and 8, Chapter 27, of the Revised Statutes of 1913. Every such treatment constitutes a separate offense, although of the same individual and for the same physical or mental ailment, if such treatments are on different days and entirely independent of each other. So, although three counts in the information charged treatment of the same individual, but these treatments were on different days, and not dependent on each other, each was a violation of the law.

Much was said in the brief about the "liberty of the citizens to follow a profession" and to "pursue a lawful calling in a lawful manner." It was said that the state cannot "prohibit any calling or profession, save and except it be detrimental to the public welfare, public morals, public health, or a disturbance of the public peace. The state may not indirectly prohibit what it cannot prohibit directly, i. e., it may not prohibit the exercise and practice of chiropractic by refusing to provide an examination in the curriculum taught in the best schools and colleges of chiropractic—those branches deemed essential and put in operation by leading chiropractors—and compelling the chiropractor to procure a diploma from a medical college and take an examination in the curriculum of some of the sects of drug medication." But this court cannot amend the statutes, nor disregard the early decisions upholding and construing those statutes. The legislature has had ample opportunity to modify the laws, if they are considered harsh, unjust, or impolitic, and, not having done so, they must be enforced as the will of the public expressed through its lawmaking powers. All objections raised in the brief are answered by the plain provisions of the statute, as construed by early decisions of this court. The case of State vs. Buswell, 40 Neb. 158, involved what is called Christian Science healing, and was determined more than twenty years ago, upholding the statute. Little vs. State, 60 Neb. 749, involving the practice of osteopathy, was decided about fourteen years ago, and also upholds the statute.

## Corporations Not Bound for Attendance on Injured Employees

*(Journal & Tribune Co. vs. Lones (Tenn.), 169 S. W. R. 760)*

The Supreme Court of Tennessee says that the company was sued by Dr. Lones for attendance on an employee who had his hand crushed while engaged in the line of duty in the company's pressroom. The injury was received at a late hour at night, when all officers, including the general manager and the assistant general manager, were absent from the publishing plant. The night editor was the highest agent of the company on duty, and, on being notified of the employee's condition, called Dr. Lones over the telephone to attend him. With regard to the first aid treatment, no question was made, the company having admitted responsibility therefor. The contest was over that portion of the physician's bill which represented subsequent visits to the injured man at a hospital to which he was removed, and for office treatment of him. Without determining just what the authority of the night editor was, in the absence of the general manager and his assistant, the court holds that a judgment rendered in favor of the physician, against the company, was properly reversed. It says that the rule is that even the general manager of a commercial corporation has no authority or power implied from his official position to commit his company to the payment of ordinary attendance (as contradistinguished from emergency attendance) by a physician or surgeon on an employee of the corporation, injured while in the line of duty.

## Duty to Minimize Damages in Cases of Traumatic Neurasthenia

*(Mickelson vs. Fischer et ux. (Wash.), 142 Pac. R. 1160)*

The Supreme Court of Washington says that there is a duty, resting on every one who seeks to recover damages, to minimize the amount to be measured in dollars and cents. An allowance of damages in cases of traumatic neurasthenia touches the border of speculation at best, and it is manifestly unfair for one who seeks to recovery of damages to put a defendant to the hazard of a further speculation by refusing the aids which science affords and which are available, or by postponing the time of treatment until after a trial and a verdict.

# Society Proceedings

## COMING MEETINGS

American Association of Anatomists, St. Louis, Dec. 28-30.
American Physiological Society, St. Louis, Dec. 27-30.
Amer. Public Health Association, Jacksonville, Fla., Nov. 30-Dec. 5.
Society of American Bacteriologists, Philadelphia, Dec. 29-31.
Southern Surgical and Gynecological Assn., Asheville, N. C., Dec. 15-17.
Western Surgical Association, Denver, Dec. 18-19.

## SOUTHERN MEDICAL ASSOCIATION

*Eighth Annual meeting, held at Richmond, Va., Nov. 9-12, 1914*

The President, Dr. Stuart McGuire, Richmond, in the Chair

### Early Diagnosis of Pulmonary Tuberculosis

Dr. Charles H. Cocke, Asheville, N. C.: I cannot too strongly urge the value and necessity of careful history taking with the expectation of finding some contact infection. For the examination the patient must be stripped to the waist. No examination is complete without careful inspection of the throat with a laryngeal mirror. The Roentgen ray is also invaluable. Of the tuberculin tests, the subcutaneous is the test *par excellence* where there is no fever, a focal reaction bespeaking active disease, while a febrile reaction alone, unless obtained with the initial small dose, implies a high tuberculin sensitiveness and consequently almost certain probability of active tuberculosis.

### Significance of the von Pirquet Test

Dr. Thompson Frazer, Asheville, N. C.: A positive cutaneous reaction is less frequent in children than it was once thought to be. The view usually held, that the reaction has significance only during the first two or three years of life, is not borne out by recent figures, and we should be suspicious of a reaction occurring up to the age of 10. Annual tests should be instituted in the effort to detect early infection. A negative reaction, negative on the repetition of the test, is valuable evidence of the absence of tuberculosis unless the child is suffering from advanced disease or acute disease, especially measles.

### State Policy in the Management of Tuberculosis

Dr. W. S. Rankin, Raleigh, N. C.: The combination of cooperative sanatorium and correspondence school is of mutual advantage, the one developing the other. The combination gives the state an educational organization analogous to the ideal system of education in operation in Wisconsin. Our cooperative sanatorium in this system is the central university where about one-tenth of the consumptive population is treated and is taught what constitutes the right kind of treatment for consumption. These alumni, on returning home and seeing other cases not being properly treated, enable the sanatorium to improve the medical supervision of consumptives throughout the state. The correspondence school, an adjunct of the central university or sanatorium, puts the state government in almost personal touch with its entire tuberculous population.

### The Federal Government and Our Tuberculosis Problem

Mr. G. M. Cooper, Clinton, N. C.: The national government should form a cabinet office of secretary of the public health, to rank with the army and agricultural departments; then let the national Public Health Service, through each state board of health, invite any county that desires to cooperate with it in the work. Those who agree are to pay one-third of the expense incidental to maintenance of a whole-time, efficient health officer. The state board of health is to pay one-third, and the national government the remaining third. Under this plan the local county government would select the officer, subject to approval by the state and national health authorities. In this manner local self-government would continue to exist and the health officer would have the mail franking privileges, so that he could reach all classes of citizens. Open-air schools and tent colonies in each county would be established, and each county would be the center of a public health school in which preventive medicine would be taught.

### President's Address: The Profit and Loss Account of Modern Medicine

Dr. Stuart McGuire, Richmond, Va.: The most distinct profit and loss in modern medicine has come about through changes in medical education, which have been accomplished largely through the effort of the American Medical Association, the Association of American Medical Colleges and the Carnegie Foundation for the Advancement of Teaching. It was recognized that each year a progressively increasing number of low-grade practitioners were being graduated by medical colleges and licensed by state governments. An investigation of the medical schools showed that many of them were poorly equipped, had scant clinical material and lacked sufficient funds to procure the necessary time of efficient teachers. To remedy this evil a deliberate and systematic movement was inaugurated to lessen the number and improve the quality of the men who were being added to the ranks of the profession. By moral suasion, by state legislation and by the combination of the better schools, the entrance requirements were advanced, the number and length of the teaching sessions were increased, the character and scope of the curricula were improved, and the minimum number and approximate pay of the full-time teachers were specified.

While the profit side of the specialist's account is large, still on the opposite page we find some items of loss. The high esteem in which the specialist is held, the pecuniary rewards which his services command and the advertising opportunities offered by his position have made him a victim of imitators and imposters, who deceive and defraud the public. Modern medicine is not responsible for the quack and charlatan, but it is responsible for the members of the regular profession found in every town and city who claim to be specialists, but who really do a general practice, and for others who, while they may limit their work to certain diseases, are not qualified as experts and have no more knowledge or experience in their diagnosis and treatment than the average general practitioner.

### Pleural Effusions of Artificial Pneumothorax

Dr. Mary E. Lapham, Highlands, N. C.: Our five years' experience with artificial pneumothorax has led us to believe that the tendency to pleural effusions increases with the length of time the compression is maintained. We have had three types of pleural effusions, those developing without any clinical manifestations and no suggestions of any active process. The fluid may be first detected by the rise in pressure in the manometer, or by filling the needle, or be heard as a splashing sound by the patient. We call these myocardial effusions. A second class has developed in consequence of repeated traumatisms of the pleura as a result of an acute infection, such as an angina, or of chilling, or from other reasons commonly associated with ordinary pleurisies. We call these infectious pleurisies. A third class is due to tuberculous nodules and process in the pleural surfaces and these seem to have been favored by the separation of the pleural surfaces by the artificial pneumothorax.

#### DISCUSSION

Dr. W. S. Leathers, University, Miss.: There is no problem in public health that has more aspects than that of tuberculosis. There is no problem that has more difficulties associated with its solution. The best plan of attacking the tuberculosis problem is on a cooperative basis.

Dr. C. W. Stiles, Wilmington, N. C.: I take issue with the idea that the federal government is doing very little in regard to this problem. Every pound of meat that comes into a state has been inspected by the Department of Agriculture for tuberculosis. The federal government is carrying out certain restrictive measures in interstate commerce according to the law, which is no small contribution to the fight against tuberculosis. Unless the medical profession is willing to set an example by controlling its own members with regard to spitting, etc., it is foolish for us to go to the federal government and ask the state to change the Constitution of the United States in order to put local police power into the hands of the federal government.

Dr. Charles L. Minor, Asheville: The von Pirquet test has been misused. I have had cases of full-grown adults sent to me on account of a positive von Pirquet. We must not reach the conclusion that because every case reacts to this test, it is necessarily active tuberculosis. We must differentiate between latent and active tuberculosis; otherwise there will be great harm done.

Dr. Thompson Frazer, Asheville: The reason we fail to detect tuberculosis early is that we do not recognize it as a chronic disease with relapses.

Dr. W. L. Dunn, Asheville: A firm conviction on the part of the physician is necessary to impress a patient that he is ill with tuberculosis. The average physician is afraid to make an early diagnosis of tuberculosis and say so firmly to the patient, because he is afraid the patient will be unnecessarily treated or his activities will be interrupted.

Dr. E. C. Thrash, Atlanta: Many practitioners have made a diagnosis of tuberculosis from the fact that they obtained a reaction, and the result was that it would throw a well person into a panic and perhaps subject him to many inconveniences, possibly a trip away, while other persons subjected to the tests would have the disease. I have seen cases of far-advanced tuberculosis in which physicians said they did not have tuberculosis because the von Pirquet or tuberculin test proved negative.

Dr. William R. Kirk, Hendersonville, N. C.: We should not attach too much importance to the temperature curve alone, for very often we get the same curve in cases of malignant disease.

Dr. D. M. Malloy, Mobile: In New South Wales it is obligatory on every physician to report every case of tuberculosis. The law is stringent on this point, and carries with it a severe penalty in the way of a fine, and possibly imprisonment. The reporting of each case also carries with it a reward of five dollars.

*(To be continued)*

## MEDICAL SOCIETY OF VIRGINIA

*Annual Meeting held in Washington, D. C., Oct. 27-30, 1914*

*(Concluded from page 1978)*

### Trachoma

Dr. Taliaferro Clark, Washington, D. C.: Trachoma is protean in its manifestations. In the mucous membrane the lymphoid cells are stimulated and undergo enormous proliferation. There are pannus, granulations and the formation of scar tissue. The color depends on the vascularity. It requires an abrasion of the mucous membrane and moisture, and hence occurs most frequently in those living under bad hygienic surroundings. It constitutes a grave social and economic problem. From 1899 to 1901, 8.5 per thousand of all eye infections were due to this. Eighteen per cent. of all blindness in Russia is due to it. One thousand cases a year are treated in the Lemberg Hospital. In Posen and Silesia it is very prevalent. In Japan, of 400,000 recruits, 23 per cent. had trachoma. It is a world-wide disease. All seeking entrance to America are examined for trachoma. Twenty-two and seven-tenths per cent. of western Indians and 13 per cent. of Indians in Virginia have it. Only nineteen cases in negroes were found in a thousand examinations. The negro has been protected in the past only by his lack of opportunity to contract it.

### Trachoma: Methods Adopted for Its Control in Eastern Kentucky

Dr. John McMullen, Washington, D. C.: In 4,000 eye examinations in Kentucky, 12 per cent. were found to have this disease. On some of the creeks, 75 per cent. of families had it. No class were exempt. Untreated it lasts a lifetime. The large family towel is a source of danger, and the lack of good light in the houses contributes. Prevention is synonymous with education. Teachers' institutes and church organizations have been enlisted. Parents and teachers had copies of popular pamphlets mailed to them. House-to-house visits were made and instruction given. District nurses are employed. Surgical treatment under a general anesthetic must be used for young children, and the period of treatment immediately following is very important. Three hospitals have been established, of fifteen beds each. Two of these are 20 miles from a railroad. They are kept scrupulously clean as an object lesson. Patients are given separate toilet articles. There is a dispensary connected with each. The first was opened in September, 1913, and the last in March, 1914. Over ten thousand cases have been treated. The average daily total cost of each hospital is $17.30. Gratifying and encouraging results have followed. Many who were formerly paupers have been made self-supporting. Trachoma should be a reportable disease in every state.

#### DISCUSSION

Dr. Joseph A. White, Richmond: Fortunately we are free from trachoma in the cities. I recently wrote to all the oculists in the state; very few had had any experience with this disease. In my experience of over thirty years in Richmond, I have seen not more than four or five cases. We are almost as much in the dark as to the treatment as to the cause. An effort to prevent corneal complications is important to prevent blindness.

Dr. C. R. Dufour, Washington, D. C.: Hospital work is the only way to eradicate this disease. It behooves the government to establish hospitals. Some in any given family seem to be immune. I think treatment should be made compulsory, as many accept it as a visitation of the Almighty and make no effort to get cured.

Dr. C. M. Miller, Richmond: I have seen but four cases in fourteen years, but we are confronted by this menace. The negro is not immune. The conditions under which he lives are horrible, and if it gets a start it will spread rapidly. The board of health should take a hand in this work.

Dr. W. E. Driver, Norfolk: At Hampton Normal School I had recorded 30 per cent. of Indians as having trachoma, but it was different from that which I have seen abroad; I think many of them are cases of tuberculosis. I have never seen a case in a negro, though in that school the whites and negroes are intimately associated.

Dr. Taliaferro Clark, Washington, D. C.: Tuberculosis is a destructive disease, while trachoma has new tissue building. In examining probably one million eyes, I have seen only one case of tuberculosis.

Dr. Joseph A. White, Richmond: I have encountered opposition from the oculists in the matter of public lectures on the eye, because they say they would be accused of advertising themselves. This method has the approval of the American Medical Association.

Dr. E. G. Williams, Richmond: We of the state health department have not been unmindful of this menace, but have tried to attack our problems at the point where the greatest need appears. The typhoid problem is the most pressing. We recently issued 50,000 copies of a bulletin on defective hygiene, and defective eyes are treated of in this.

### Acidity, Alkalinity and Anesthesia

Dr. George W. Crile, Cleveland: Acidity of the blood is increased by muscular effort, emotional disturbances, surgical shock, infections, asphyxia, inhalation anesthetics, and excision of liver and kidneys. Ether, nitrous oxid and alcohol produce acidity. A certain degree of acidity is incompatible with life. At the point of death the blood is always acid. May not the acidity be the actual cause of death? I think it is. If epinephrin in sufficient quantity be injected the acidity is controlled. Acidosis results from starvation, diabetes and Bright's disease. The acidity of the blood is increased in two seconds after the beginning of nitrous oxid anesthesia. Acid inhibits the action of the cerebral cortex, but stimulates that of the medulla.

#### DISCUSSION

Dr. W. P. Carr, Washington, D. C.: The old physiologists said alkaline blood was necessary to carry off the carbon dioxid. This is a new and rather startling theory—acidity the cause of anesthesia. We have not yet grasped the importance of anoci impulses which reach the brain. The field opened up by this paper is enormous; we must have time to digest it. We can get this lesson at least, to make anesthesias as short and as light as possible, and use anoci methods.

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# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### Albany (N. Y.) Medical Annals

*November, XXXV, No. 11, pp. 575-638*

1 Sex Hygiene. H. L. K. Shaw, Albany.
2 Sex Education in Schools. I. S. Wile, New York.
3 Question of Sex Education. C. P. McCord, Albany.
4 Public Instruction in Sex Hygiene. W. F. Snow, Sacramento, Cal.
5 Sex Question from Woman's Standpoint. R. S. Morton, New York.
6 Albany Hospital: Twelfth Report of Pavillion F, Department for Mental Diseases for Year Ending September 30, 1914. J. M. Mosher, Albany.

### American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

*November, LXX, No. 5, pp. 689-864*

7 *Necessity of Constantly Looking for Cancer of Uterus. J. H. Carstens, Detroit.
8 *Abdominal Distention Following Operations on Pelvic Viscera. F. Reder, St. Louis.
9 *End-Results After Operation in One Hundred and Nine Cases of Displacement of Uterus, Bladder and Rectum. H. A. Wade, Brooklyn.
10 *Renal Damage from Calculi. H. D. Furniss, New York.
11 *Myomectomy with Extensive Resection of Uterus in Fibroid Tumors. X. O. Werder, Pittsburgh.
12 *Two Cases of Cancer of Uterus Apparently Cured by Postoperative Infection. J. W. Poucher, Poughkeepsie, N. Y.
13 Factors Determining Morbidity of Surgical Cases. C. W. Moots, Toledo.
14 Mineral Springs of Saratoga. D. C. Moriarta, Saratoga Springs, New York.
15 *Technic of Intestinal Anastomosis, with Special Reference to Modification of Maunsell's Method. F. D. Gray, Jersey City, New Jersey.
16 *Delayed Union in Non-Infected Epigastric Wounds. M. F. Porter, Fort Wayne, Ind.
17 Ruptured Gastric and Duodenal Ulcer. E. A. Vander Veer, Albany, N. Y.
18 Biliary Surgery. J. F. Erdmann, New York.
19 *Anastomosis of Gall-Bladder to Stomach: "Cholecystogastrostomy." J. H. Jacobson, Toledo.

7 and 10. Abstracted in The Journal, Oct. 10, 1914, p. 1319.

8, 11 and 12. Abstracted in The Journal, Oct. 17, 1914, p. 1418.

9. **End-Results After Operation of Displacement of Uterus, Bladder and Rectum.**—The body of the uterus was replaced to its proper position in the pelvis by the abdominal route combined with some sort of vaginal repair in sixty-one cases. Of the 109 cases investigated by Wade, twenty-four were made by plication of the round and broad ligaments on the upper and anterior surface of the body of the uterus, according to the method of Coffey, combined with some form of repair of the cervix or of the vagina. The operation has been fairly satisfactory. In twenty-one cases the patient has had a restoration of the pelvic viscera to their proper position, and in twenty of the cases the patients felt an improvement after the operation. Five became pregnant subsequently; one miscarried at the twenty-fourth week of her pregnancy; four went to term and were delivered vaginally of living children.

The uterus was suspended by plication of the round and broad ligaments without the aid of vaginal surgery in three cases. The uterus was movable and in place in two cases, and in two cases the patients felt improved after the operation. One became pregnant subsequently, carried her pregnancy to the twelfth week, and then aborted. The uterus was suspended from the anterior abdominal wall with No. 2 chromic catgut combined with some form of vaginal repair in thirty-three cases. The uterus remained in its proper position in twenty-three cases. In twenty of the cases the patient felt some improvement after the operation; nine women became pregnant and eight were delivered of living babies; one died. The uterus was suspended from the anterior abdominal wall without repair of the vaginal tract in seven cases. One became pregnant; three felt better after the operation, and in five cases the uterus was in place and appeared to be movable.

Four cases of the Baldy or Webster method suspensions combined with a repair of the vaginal canal were investigated. Two of the patients showed the uterus movable and well placed, and two felt some improvement after the operation. None of the patients had become pregnant. The vaginal method of supporting the uterus, and with it the bladder and rectum combined with the suspension from above, has been satisfactory to the patient in forty-two of the sixty-one cases examined. The uterus has remained in position and has been movable in fifty of the cases; fourteen of the patients became pregnant; two aborted; ten had normal deliveries, and two were delivered by the aid of forceps. Thirty-six of the patients had had the uterus supported by repair of the posterior vaginal wall without suspension; twenty-eight of these women felt improved after the operation, and in thirty cases the uterus was movable and in good position. The prolapse of the rectum was relieved in ten of the cases examined. The bladder in fifteen cases, in which it was involved in the procidentia, was placed in its proper position in the pelvis in nine cases. Eight of these women became pregnant after the operation. The mobility of the uterus has never been interfered with when replacement was affected by support from below, and flexions of the body on the cervix have not resulted from the operation. One death occurred which was probably due to cardiac embolism.

15. **Technic of Intestinal Anastomosis.**—Gray substitutes a continuous locking suture for the interrupted sutures used by Maunsell. The suture begins at the approximated mesenteric borders in the form of a circular stitch enclosing all four mesenteric leaves, the tail of the suture being left sufficiently long to tie to the other end on its return. The suture is then carried rapidly around the aperture of anastomosis, the stitches, penetrating 1/8 to 1/16 of an inch below the free borders and placed about that distance apart, locked at each thrust by passing the needle under the loop before drawing it home, which should be done under considerable tension. The final tie leaves a single knot that of necessity lies within the bowel.

16 and 19. Abstracted in The Journal, Oct. 10, 1914, p. 1320.

### American Journal of Physiology, Baltimore

*November, XXXV, No. 4, pp. 367-495*

20 Acoustic Reflexes in Decerebrate Cat. A Forbes and C. S. Sherrington, Boston.
21 *Faradic Stimuli: Physical and Physiologic Study. J. Erlanger and W. E. Garrey, St. Louis.
22 *Prothrombin. W. H. Howell, Baltimore.
23 *Coagulation of Lymph. W. H. Howell, Baltimore.

21. **Faradic Stimuli.**—Erlanger and Garrey report in detail the results of a study of the shocks yielded by induction coils of the types commonly used in the laboratory, with a view to the determination of their configuration in relation to their efficiency as stimuli under conditions commonly obtaining in physiologic investigations. The deficiencies of the string galvanometer as an indicator of currents of such short duration as induction shocks are discussed, and a rheotome method (the gap method) of making it possible to conveniently determine qualitatively and quantitatively the configuration of shocks with the string galvanometer, is described. A platinum contact key for make shocks is also described.

22. **Prothrombin.**—Howell found prothrombin may be precipitated by acetone from oxalated blood-plasma and be obtained in solution free from the other fibrin factors, with the possible exception of traces of antithrombin. The prothrombin is converted to active thrombin in the presence of calcium salts. No third factor seems to be necessary for

this activating process. The activating property of calcium salts is exhibited to a much less extent by strontium salts, and very feebly by magnesium salts. The prothrombin in salt-free or salt-poor solutions is weakened but not destroyed by heating to 60 C. Aqueous extracts of the blood-platelets show the presence of both prothrombin and thromboplastin. Prothrombin (probably some thromboplastin also) is contained in the plasma of circulating blood. In shed blood disintegration of the platelets furnishes an additional supply of prothrombin and thromboplastin.

23. **Coagulation of Lymph.**—The lymph used by Howell in his experiments was obtained from dogs by placing a cannula, vaselined along its inner surface, into the thoracic duct. The animals were anesthetized with morphin and ether. The flow from the cannula was variable, but in fed animals with a milky lymph was quite abundant, averaging about 0.5 c.c. to a minute. He found that the coagulation-time of lymph varies greatly. In well-fed animals with much chyle-fat in the lymph coagulation is slower than in the clear lymph from fasting animals, but the addition of thromboplastic material (tissue-extract or kephalin solutions) causes the lymph to clot promptly and firmly. Lymph plasma contains antithrombin in the same concentration as in blood-plasma. When freed from corpuscles by long centrifugalization the lymph plasma clots with great slowness, owing to a relative excess of antithrombin. Addition of kephalin solution to such plasmas causes prompt clotting. The thromboplastin in solution in lymph-plasma is less in amount than in the blood-plasma. In shed lymph a new supply of thromboplastin is furnished by the lymphocytes, but more slowly than in the case of the blood in which the additional thromboplastin is derived from the unstable platelets. Prothrombin is present in solution in the circulating lymph. Its activation to thrombin by calcium is retarded or prevented by the relative excess of antithrombin.

### Archives of Internal Medicine, Chicago

*November, XIV, No. 5, pp. 609-768*

24 *Pulse-Flow in Brachial Artery. A. W. Hewlett, Ann Arbor, Mich.
25 *Total Non-Protein Nitrogen and Urea of Blood in Health and in Disease, as Estimated by Folin's Methods. W. Tileston and C. W. Comfort, Jr., New Haven, Conn.
26 *Epidemic of Streptococcus Sore Throat in Jacksonville, Ill. Traced to Milk of Cows Affected with Streptococcus Mastitis. J. A. Capps and D. J. Davis, Chicago.
27 Specific Hyperleukocytosis. F. P. Gay and E. J. Claypole, Berkeley, Cal.
28 *Experimental Study of Methods of Prophylactic Immunization Against Typhoid. F. P. Gay and E. J. Claypole, Berkeley, Cal.
29 Case of Diabetes Insipidus. R. Fitz, Boston.
30 *Experimental Pathology of Stomach. W. W. Hamburger and J. C. Friedman, Chicago.
31 *Clinical and Bacteriologic Study of Hexamethylenamin as Urinary Antiseptic. L. H. Levy and A. Strauss, New York.
32 *Blood-Platelets and Tuberculosis. G. B. Webb, G. B. Gilbert and L. C. Havens, Colorado Springs, Colo.
33 *Pulmonary Physical Signs and Roentgen-Ray Findings in Healthy Adults. L. Hamman and F. H. Baetjer, Baltimore.

24. **Pulse-Flow in Brachial Artery.**—In febrile patients showing palpable types of the dicrotic pulse, Hewlett found that the brachial flow curves show characteristic changes. These consist in a marked backflow in the brachial artery just after the entrance of the primary pulse-wave and in an inflow and outflow with the dicrotic wave. In the form of pulse described as monocrotic there is also a marked outflow just after the primary pulse-wave, but no marked dicrotic wave follows. This type of pulse is closely related to the typical dicrotic pulse. The primary wave in each has a pointed character. Other things being equal, the pointed character of the pulse in the arm is increased by vasoconstriction of the arm arterioles and is diminished by their relaxation. In many, if not in all cases, factors outside of the arm play a part in the production of the jointed pulse. Among such possible factors are (1) a brief systolic output from the heart and (2) a dilatation of certain vascular areas outside of the arm, the most important being the splanchnic vessels.

25. **Non-Protein Nitrogen and Urea of Blood in Health and Disease.**—Analyses of the blood for total non-protein nitrogen and urea nitrogen were made by Tileston and Comfort by the methods of Folin in five healthy adults and 142 hospital cases. In the fasting healthy adult the total non-protein nitrogen varied between 22.9 and 25 mg. per 100 c.c. of blood, and the urea nitrogen between 12 and 14 mg. The effect of a full meal with meat in the case of the healthy adult was a rise of total non-protein nitrogen averaging 4.7 mg., and of urea, averaging 2.5 mg. In both chronic interstitial and chronic diffuse nephritis the cases without symptoms of uremia showed normal or moderately elevated values; the uremic cases, with one possible exception, showed a great increase in both nitrogen and urea. The excretion of phenolsulphonephthalein was roughly proportionate to the degree of retention; the cases with 100 mg. or over of total nitrogen all showed 5 per cent. or less phenolsulphonephthalein excretion. Many cases, however, with a considerable impairment of phenolsulphonephthalein excretion showed no signs of retention, and a moderate amount of retention of waste nitrogen often occurred with no impairment of the elimination of phthalein. The proportion of urea nitrogen to the total non-protein nitrogen in disease varied from 32 to 85 per cent. Where the nitrogen was normal the urea usually was about one-half the total nitrogen; where it was elevated, the urea usually but by no means always constituted about 70 per cent. of the whole. No reason could be found for these variations. The determination of the total non-protein nitrogen alone is therefore more valuable than that of the urea alone. The determination of the total non-protein nitrogen is a great aid in the prognosis of chronic nephritis. Patients showing over 100 mg., with one exception, did not live more than thirty-five days.

The results of blood analysis furnish the best guide as to the diet to be given in nephritis; cases with a considerable retention require a restriction of the protein, and by this means a return to normal figures may be brought about, if the azotemia is not too pronounced. In cases of outspoken uremia, however, no marked reduction of the azotemia has resulted from a protein-poor diet. Nephritis with a normal amount of non-protein nitrogen does not call for any marked decrease of protein in the diet. Many other lesions were investigated in this connection. For the results obtained in these cases the original article should be consulted.

26. **Epidemic of Sore Throat Traced to Milk of Cows.**—There were 348 cases of sore throat in the series investigated by Capps and Davis, most of them complicated by enlargement of the cervical glands and many by a marked exudate. Cultures from a number of throats showed a hemolytic streptococcus. In a canvass of 913 households, in 60 per cent. of the cases of sore throats, milk or cream from Dairy X was used, although this dairy supplied only 17.5 per cent. of the households. The morbidity rate in one institution supplied by Dairy X was 40 per cent.; in four other institutions supplied by other dairies it averaged 1.7 per cent. Among 1,000 customers of Dairy X, 215, or 21.5 per cent., developed sore throat, whereas among 6,416 customers of other dairies, 133, or 2.1 per cent., developed the disease. As a result of a systematic inspection of 416 cows on thirty-eight dairy farms, eleven cows with garget were found. Bacteriologic examinations revealed hemolytic streptococci in the milk of two of these diseased cows. The milk of both of these cows was distributed by Dairy X. As Dairy X did not pasteurize the cream at all and the milk very inadequately, Capps and Davis conclude that the streptococci originating in the bovine mastitis were probably responsible for the epidemic. Because of the extensive distribution of ice cream, manufactured from the Dairy X cream, they suspect that ice cream played an important rôle as a carrier in this epidemic.

28. **Methods of Prophylactic Immunization Against Typhoid.**—The history of the development of artificial immunization against the typhoid bacillus in animals and human beings is reviewed by Gay and Claypole, and some of the many preparations of the typhoid bacillus used for this purpose are discussed. Particular attention is drawn to the reputed advantages of living sensitized typhoid vaccine (Besredka) as opposed to other types of vaccine. The many vaccines that are still being advocated indicate that the best vaccine

has not yet been found and that the best method of proving which is the best vaccine has not been determined. Sensitized cultures of the typhoid bacillus, whether whole or as sediment, produce little or no reaction in human beings with the possible exception of those who have previously suffered from typhoid or have been immunized. By comparing their results with those of certain other observers, the authors conclude that a considerable degree of reaction, both local and general, is avoided by the use of these sensitized cultures, which possess the further advantage, so far as their experimental work can determine, of producing a more durable type of immunity.

The authors recommend vaccination at short intervals (two days) in human beings, which is rendered quite possible with the mild vaccine they employ, and is evidenced from animal experimentation, as giving rise to less toxic effect and to fully as durable an immunity as vaccination at longer intervals. This type of vaccination has the further advantage of completing the prophylactic treatment of three injections within a week. They further believe that a polyvalent vaccine derived from strains of the typhoid bacillus isolated in the vicinity of patients who are to be treated is advantageous, judging largely from the work of other observers. A further advantage in the use of sensitized cultures is that a polyvalent vaccine, no matter how recently the strains may have been isolated, is also almost entirely free from untoward effect. They recommend for prophylactic immunization against typhoid, three injections of the sediment of a dried, ground, sensitized culture of several local strains of the typhoid bacillus mixed together, given at two-day intervals and in a dosage of $\frac{3}{32}$ mg. of the original dried culture, which corresponds, as has been determined, to a dosage of approximately 750 million living typhoid bacilli.

30. **Experimental Pathology of Stomach.**—Hamburger and Friedman found that moderate pyloric stenosis in dogs (ligature around pylorus tied loosely) causes little or no change in stomach motility, acidity or size. Marked obstruction (ligature tied sufficiently tight to produce marked peristalsis and anemia of the pylorus) causes motor insufficiency, continuous secretion (hyperacidity) and hypertrophy and dilatation of the stomach. Complete occlusion (ligature or silver nitrate injection causing secondary occluding edema) results in inanition, vomiting, convulsions (gastric tetany) and death of the animal in from forty-eight to 120 hours. The pyloric ligature (stenosis) results in a motor insufficiency with food retention which in turn sets up a continuous secretion with the constant presence of free hydrochloric acid. Pyloric obstruction with resulting motor insufficiency and continuous secretion are probably the most important factors in the production of chronic experimental ulcer. While the foregoing results concern experimental chronic ulcer, the authors conclude that it is more than likely that primary partial pyloric stenosis (from whatever cause) with secondary motor insufficiency and continuous secretion are largely responsible for the progression and delayed healing of chronic ulcer in man.

31. **Hexamethylenamin as Urinary Antiseptic.**—The urines from 91 patients were examined by Levy and Strauss. The greater number of these patients received 7 gm. of hexamethylenamin three times a day. Most of the urines were examined twice and some of them as many as six times. About 250 urines were examined. The 91 cases may be divided as follows: surgical 42, medical 32, genito-urinary 17. The urines of all of the 91 patients gave a test for formaldehyd varying from 1 : 20,000 to 1 : 5,000. The urines from 72 patients showed the presence of formaldehyd in the strength of 1 : 10,000. The colon bacillus was the most common invader of the urinary tract, occurring in 64 per cent. of the cases. To be of real therapeutic value, the hexamethylenamin or its derivative would have to be excreted in a concentration strong enough to be either inhibitory or bactericidal. The action of a 10 per cent. solution of hexamethylenamin was tried on various organisms.

The authors found that formaldehyd to be of value must be liberated in strengths varying from 1 : 15,000 to 1 : 5,000, depending on the organism the growth of which is to be inhibited. To be of bactericidal value it must be liberated in strengths from 1 : 5,000 to 1 : 1,000, also depending on the organism. For the destruction or inhibition of growth of organisms other than the typhoid bacillus a high acidity is necessary. This high acidity in combination with the formaldehyd may produce injury to the kidney tissue. Hexamethylenamin, therefore, appears most efficacious as a prophylactic during the course of typhoid for the prevention of a pyelitis or cystitis.

32. **Blood-Platelets and Tuberculosis.**—Blood-platelets are consistently increased in the tuberculosis of man and guinea-pigs. At an altitude of 6,000 feet, blood-platelets are increased in the circulating blood of man and guinea-pigs. Blood-platelets would appear either to contain or to supply opsonin. Blood-platelets added to a lethal dose of tubercle bacilli appear to modify the course of infection or to prevent it. The addition of serum to a mixture of blood-platelets and tubercle bacilli appears to interfere with this modification.

33. **Pulmonary Physical Signs and Roentgen-Ray Findings in Healthy Adults.**—A careful physical examination of the chest of fifty healthy adults by Baetjer showed the pulmonary physical signs to be practically normal in eleven, definitely though not markedly altered in thirty, more obviously altered in seven and greatly changed in two. That the changes in the physical signs are the expression of corresponding changes in the lungs is borne out by the results of the Roentgen-ray examinations made by Baetjer. Forty-six of the series had roentgenograms taken and in only six were the apices found to be normal. The results of the physical and Roentgen-ray examinations, although agreeing in a large proportion of the cases, still not infrequently are at variance. In twenty-two of the forty-six cases the agreement is complete. The disagreement in the remaining twenty-four cases is as follows:

In six instances the physical examination shows practically normal conditions, whereas the Roentgen-ray examination shows slight apical clouding. In eighteen instances the physical examination indicates a definite lesion at one apex, whereas the Roentgen-ray examination shows clouding at both apices. In four instances the physical examination indicates a slight lesion at one apex whereas the Roentgen-ray examination shows clouding at the opposite apex. In all four instances the changes in the physical signs were very slight. In two instances the physical examination indicates slight abnormalities at one apex whereas the Roentgen-ray examination shows both apices to be clear. In four instances the physical signs indicate a lesion at both apices, whereas Roentgen-ray examination reveals clouding at only one apex.

### Archives of Ophthalmology, New Rochelle, N. Y.

*November, XLIII, No. 6, pp. 591-694*

34 Tangent Curtain. A. Duane, New York.
35 Sclerocorneal Trephining for Glaucoma, Complications and Failures in One Hundred Cases. A. Quackenboss, Boston.
36 Simple Angioma of Choroid. J. M. Love, Boston.
37 Easy Method of Enucleation. F. Fergus, Glasgow, Scotland.
38 Case of Extensive Accidental Corneal Splitting. A. C. Snell, Rochester.
39 Attachment for Taking Light Fields. D. N. Dennis, Erie, Pa.
40 Case of Bilateral Keratoconus, Examined Anatomically; Hemosiderin Ring of Cornea in Keratoconus and Hemosiderosis of Eye in Diabete Bronze. B. Fleischer, Tuebingen.
41 Self-Supporting Eye Clinic for Working People. M. M. Davis, Jr., and E. Hartshorn, Boston.

### Boston Medical and Surgical Journal

*November 19, CLXXI, No. 21, pp. 767-802*

42 *Chlorophyll Test of Gastric Motility. F. W. White, Boston.
43 Increase of Total Nitrogen and Urea Nitrogen in Cerebrospinal Fluid in Certain Cases of Insanity; Uric Acid Content of Blood. H. M. Adler and B. H. Ragle, Boston.
44 *Use of Radium in Cancer and Allied Conditions at Huntington Hospital. T. Ordway, Boston.
45 Intra-Abdominal Hemorrhage Complicating Normal Pregnancy. F. G. Balch and R. M. Green, Boston.

42. **Chlorophyll Test of Gastric Motility.**—In answer to the question whether the test is better than older methods of

testing gastric motility, White says that it is simpler than most; makes little demand on the appetite, and is very easy on the stomach. It is readily used in patients who are vomiting, or who are on a very simple light diet, in which a big meal is uncomfortable or impossible. The sources of error are few and probably unimportant and no considerable disturbance of motility escapes detection. It is an easy method of following results of treatment of gastric stasis. It is probably not superior in accuracy and not likely to replace the best of the older tests, but it is simpler and easier for both physician, and patients in a large group of cases and gives an extra "string to our bow."

44. **Use of Radium in Cancer and Allied Conditions.**—The best, apparently curative, results from radium therapy, Ordway states, are obtained in certain types of skin and other localized forms of cancer. In myelogenous and lymphatic leukemia the blood picture becomes almost normal, the spleen is reduced markedly in size and certain symptoms may be relieved without toxemia resulting. In many cases of true cancer which have advanced beyond the operable stage, or those recurring after operation, improvement from radium therapy may follow not only subjectively but in the local condition. This improvement may include relief from discharge, hemorrhage and pain; cleansing or healing of ulceration; diminution in size or disappearance of the growth. Such cases, however, are rarely cured. Even large growths sometimes disappear under the influence of radium but metastasis or spreading of the growth to other parts is not prevented, or the patient may succumb to the rapid disintegration of the original growth. Newer methods may improve these results of radium therapy; at present its proved value is limited, but occasionally cases beyond these well recognized limits are distinctly benefited.

### Delaware State Medical Journal, Wilmington

*September, V, No. 10, pp. 1-26*

46 Use of Liquid Chlorin for Sterilizing Water. J. E. Kienle, Wilmington.

### Georgia Medical Association Journal, Augusta

*November, IV, No. 7, pp. 197-226*

47 *Cerebrospinal Syphilis. W. R. Houston, Augusta.
48 Artificial Pneumothorax. E. C. Thrash, Atlanta.
49 *Headaches. W. H. Malone, Marietta.
50 Perineal Hernia. W. F. Shallenberger, Atlanta.

47 and 49. Abstracted in The Journal, May 9, 1914, p. 1499.

### Journal of Outdoor Life, New York

*November, XI, No. 2, pp. 321-351*

51 *Ten Years' Work at Gaylord Farm Sanatorium. I. Fisher, New Haven, Conn.
52 When to Take the Cure, and Why. E. Cummings, Hinton, W. Va.
53 Effective Work with Small Resources. H. W. Slocum, Minneapolis.
54 Use of Exercise in Treatment of Tuberculosis. C. W. Mills, Loomis, N. Y.

51. **Ten Years Work at Gaylord Sanatorium.**—With the Gaylord Farm Sanatorium, the state home for tuberculosis, with the New Haven Hospital equipment, the New Haven Dispensary for tuberculosis, the house to house work for the Visiting Nurses' Association, the New Haven Employees' Relief Association, with the Day and Night Camps, the out-of-door and open-window schools, the Improved, Housing Association, the Waterbury Antituberculosis League, the Meriden Tuberculosis Relief Association, and the State Board of Health, Fisher says, New Haven County has one of the best equipments for fighting tuberculosis in the United States or in the world. Outside of the county the state tuberculosis commission has its other homes and there are several local antituberculosis organizations, including a summer camp for girls at Litchfield, maintained by the Reverend Mr. Chapman. Active work is being done in Hartford, South Manchester, New Britain, Norwalk, Stamford and Bridgeport. Outside of the state of Connecticut the influence of Gaylord Farm has been not inconsiderable. It has been the inspiration for the formation of other antituberculosis associations and sanatoria, hospitals and dispensaries. It has supplied what many believed to be the best type or model for combining the activity of the state and of the general public in the hygiene of tuberculosis. In states in which sanatoria have been instituted by the government without private cooperation, they have been more or less blighted by politics. In cases in which, on the other hand, antituberculosis work has been undertaken without state aid, it has been crippled for lack of funds. A happy combination of state aid and private initiative seems to be the true solution. Aside from supplying a model for organization and administration, the association has lent specific aid to the antituberculosis work outside of the state.

The National Association has helped to establish over 1,000 state and local antituberculosis societies; helped to secure over 550 hospitals and sanatoriums, with more than 35,000 beds for patients; 400 dispensaries, with over 1,000 physicians in attendance; over 200 open air schools and fresh air classes for anemic and tuberculous children; and more than 3,000 nurses engaged in tuberculosis work. It has helped to get laws passed in forty-five states and local ordinances in over 200 cities, dealing with the treatment and the prevention of tuberculosis. Active field campaigns of education in forty states and territories have been carried on and no less than 100,000,000 pamphlets on tuberculosis have been distributed in the last ten years. The National Association has expended in ten years only $200,000 but has stimulated national, state and local agencies to expend about $100,000,000. It is reported that out of $20,000,000, which were expended last year in the fight against tuberculosis, over two-thirds, or nearly $14,000,000, were expended out of public funds. These include expenditures by federal, state, county or municipal governments. The best way of registering statistically the general effect of the antituberculosis movement is in the reduction of the death-rate. It is found, according to the census reports, that tuberculosis in all its forms in the states in which registration has been kept since 1900, has declined from 181 per 100,000 in 1901 to 150 per 100,000 in 1911. This is a decline of 17 per cent. in ten years, the decline being 12 per cent. for males and 23 per cent. for females.

### Journal-Lancet, Minneapolis

*November 15, XXXIV, No. 22, pp. 583-614*

55 Relations Between Newspaper Press and Medicine. B. Foster, St. Paul.
56 Some of the Problems of State Sanatorium. J. G. Lamont, Dunseith, N. Dak.
57 Diseases of Urinary Tract Produced by Diseases of Genital Tract in Female. A. C. Stokes, Omaha.

### Lancet-Clinic, Cincinnati

*November 14, CXII, No. 20, pp. 523-548*

58 New Cincinnati General Hospital. E. G. Zinke, Cincinnati.
59 Medical Investigations. W. E. Magruder, Baltimore.
60 Sources of Wassermann Error and Their Control. A. Faller, Cincinnati.
61 Shall Early Amputation Be Done in Compound and Comminuted Fractures? J. E. Pirrung, Cincinnati.

### Medical Record, New York

*November 21, LXXXVI, No. 21, pp. 867-908*

62 Public and Profession: A Criticism. D. Hecht, Chicago.
63 Plea for Research into Possibility of Cure of Dementia Præcox by Use of Serum Containing Defensive Ferment. B. Holmes, Chicago.
64 *Association of Follicular Tonsillitis with Acute Gastric Fever. L. Fischer, New York.
65 Sexual Significance of Recent Fashions. E. H. Williams, Los Angeles.
66 Clinical Significance of the Human Countenance. W. P. Cunningham, New York.
67 Vincent's Angina. H. H. Amsden, Concord, N. H.
68 Case of Acute Thyroiditis. I. W. Voorhees, New York.
69 Relation of Gynecology and Urology to General Surgery. H. Lilienthal, New York.

64. **Association of Follicular Tonsillitis with Acute Gastric Fever.**—The frequent occurrence of gastric fever, Fischer says, demands a careful inspection of the tonsils and when such tonsils show evidence of hypertrophy they should be treated as diseased tissue which may be a focus for future malignant infections. Loss of appetite, or rather a refusal to eat, will be noted; all symptoms pointing to a gastric derangement will be present, and still the predominating

symptom will be the patches or follicles on the tonsils, causing pain on swallowing. Fischer emphasizes that too much importance cannot be placed on the necessity for throat inspection in every child that refuses to eat.

The treatment he advocates is as follows: An alkaline laxative such as a 3 to 5 grain dose of compound jalap powder should be given and repeated every three hours until a thorough evacuation have been produced. During this eliminative treatment water should be given liberally but no food. Locally, for the throat tincture of iodin diluted with an equal quantity of water should be applied once with the aid of a cotton swab. After the bowels have been thoroughly cleaned, chicken soup or milk from which the cream has been skimmed or weak tea may be permitted. For the after-treatment 1 or 2 drops, depending on the age, of tincture of nux vomica may be given before meals.

### Missouri State Medical Association Journal

*November, XI, No. 5, pp. 207-248*

70 Status Lymphaticus and Status Hypoplasticus and Their Relationship to Glands of Internal Secretion. W. W. Duke, Kansas City.
71 Treatment in Heart Disease. C. H. Neilson, St. Louis.
72 Roentgen Method in Ileocecal Diagnosis. E. H. Skinner, Kansas City.
73 Auto-Intoxication and Its Relation to Intestinal Indigestion. D. F. Manning, Marshall.
74 Missouri Prehistoric Mortars and Pestles. H. M. Whelpley, St. Louis.
75 Fracture of Patella and Its Treatment. T. C. Boulware, Butler.
76 Dacryocystitis, Caused by Membranous Closure of Nasal Duct. M. Wiener and W. E. Sauer, St. Louis.

### New York Medical Journal

*November 21, C, No. 21, pp. 997-1048*

77 Insanity and Divorce. A. Gordon, Philadelphia.
78 Teratoma Testis with Tubercle Bacilli in Urine. V. C. Pedersen, New York.
79 Implantation of Pituitary Gland. E. Waitzfelder, New York.
80 Solution of Problem of Criminal Abortion. P. S. Madigan, Washington, D. C.
81 *Intraspinous Medication. O. Berghausen, Cincinnati.
82 Hyperchlorhydria. A. L. Holland, New York.
83 *New Method of Hastening Repair after Fracture. H. J. Kauffer, New York.
84 Need of More State Hospitals for Insane. J. A. Jackson, Philadelphia.
85 Rôle of Cecum in Chronic Disorders in Right Lower Abdomen. J. M. Wainwright, Scranton, Pa.
86 Tuberculosis of Kidney. J. A. Gardner, Buffalo.
87 Early Pulmonary Tuberculosis. C. H. Cocke, Asheville, N. C.
88 New Poison Containing Bottle. R. J. Lackner, New York.

81. **Intraspinous Medication.**—Following the intraspinous introduction of 5 c.c. normal saline solution rather rapidly, a gradual increase in the pressure was noted by Berghausen there being no sudden variations; as when tricresol is added in 0.5 per cent. concentration, to the normal saline solution, there was a sudden rise then a fall, and a secondary rise. The same result was obtained when the tricresol was added to distilled water in the same concentration. The needle was introduced into the spine, a few drops of fluid were allowed to flow, the needle was withdrawn, then introduced into another interspace in the lower lumbar spine, and so on. There were distinct variations in pressure, now a rise and then a fall. Apparently, then, the simple procedure of spinal puncture is likely to be followed by variations in the peripheral blood-pressure.

Berghausen is convinced from a study of this and other experiments that sudden variations in peripheral blood-pressure are likely to follow the simple procedure of spinal puncture and the subsequent injection of simple solutions; that the addition of tricresol in 0.5 per cent. concentration has no distinct deleterious effect beyond the slight toxic effect which all phenol derivatives possess in this concentration and which makes them useful as antiseptics; that serious damage can be done to the cord through the insertion of the needle too high into the spine, the immediate damage being probably due to hemorrhage, chiefly subdural.

In accordance with these findings, Berghausen controls all intraspinous injections by taking the peripheral blood-pressure after the method of Sophian. Particularly in epidemic meningitis, sudden variations in the peripheral blood-pressure are noticeable. In fact, it not infrequently becomes necessary again to withdraw the serum (using the gravity method only), owing to the fact that the blood-pressure had fallen distinctly, at times 30 to 50 mm. below the original pressure. In Berghausen's experience, sudden respiratory changes follow only when the blood-pressure has suffered a marked change, usually a drop. It is a safe rule never to withdraw the needle until the blood-pressure at the close of the injection has about reached that which was registered at the outset. The gravity method is of distinct value in attaining this end, since it affords a ready means of withdrawing the serum and fluid.

83. **New Method of Hastening Repair After Fracture.**—Kauffer makes use of homogeneously granulated bone incorporated with petrolatum, injected into and between the fractured ends of bone, to encourage repair in fractures, especially in cases of delayed union. A piece of bone (a fresh specimen obtained from the morgue) is dried and ground up to a powder, mixed with petrolatum to a consistence of bismuth paste, sterilized by placing in a large bottle, which is placed up to the neck in water and boiled for two hours. Keep in a cool place. When required, it should be warmed and well mixed by shaking, taken up into a 4 or 8 c.c. syringe, using a long needle, with a bore about gauge 20.

After the fracture has been extended and approximated, it is located by digital examination and Roentgen ray; the needle is introduced through the skin and fascia to the seat of fracture, the rough edges of which are readily appreciated. The needle is then passed as deeply as possible between the fractured ends. The contents of the syringe are injected as the needle is slowly withdrawn to the surface of the bone, when injecting must stop and the needle be removed. This procedure may be repeated into the fracture at several angles, if necessary, thus infiltrating the entire mass between the fractured ends with petrolatum and bone cells, which act as a focus for osteogenesis. The powdered bone and petrolatum are also recommended wherever bone is required. Kauffer says that the powdered bone invites calcareous deposits and encourages a metaplasia of the adjacent tissue cells.

### Northwest Medicine, Seattle, Wash.

*November, VI, No. 11, pp. 325-358*

89 Digitalis Heart Block. T. H. Coffen, Portland, Ore.
90 Graphic Studies in Cardiac Arhythmia-Ectopic Systole. M. H. Tallman, Boise, Ida.
91 *Case of Trachoma Treated with Bacillus Lactis Bulgaricus. C. R. Hudgel, Boise, Ida.

91. **Trachoma Treated with Bacillus Lactis Bulgaricus.**—Hudgel's method of treatment was as follows: One per cent. atropin once daily; hot fomentations three times daily; twice during the course of treatment he turned the lids back and scarified them thoroughly with a small bistoury. They bled freely. Twice daily he reduced to powder a tablet of the Bulgarian bacillus and dusted it on each everted lid. No astringents or other remedies were used. The improvement was marked from the start. The copious lacrimation was checked at once and the patient said his eyes felt much cooler and easier. The ulcers healed and the pannus gradually disappeared. The improvement of vision kept pace with the amelioration of the various phases of the disease. When discharged two weeks after commencing treatment vision with correction was 15/20. The eyes were clear and felt free from irritation.

### Ohio State Medical Journal, Columbus

*November, X, No. 11, pp. 647-726*

92 Salvarsan and Neosalvarsan Treatment of Syphilis. M. L. Heidingsfeld, Cincinnati.
93 Practical Consideration of Heredity Presented in Certain Anomalies of Eye. I. G. Clark, Columbus.
94 Outline of Organization of Department of Health Along Welfare Lines. A. L. Light, Dayton.
95 Internal Closure of Femoral Opening for Hernia. C. E. Briggs, Cleveland.
96 Present-Day Methods for Finding Tubercle Bacillus. T. Zbinden, Toledo.
97 Problems of Intern Service. V. A. Dodd, Columbus.
98 Benzol Treatment of Leukemia. E. W. Mitchell, Cincinnati.
99 Foot as Affected by Modern Shoe. M. Millikin, Hamilton.
100 Review of Post Urethroscopy. S. Englander, Cleveland.

### Oklahoma State Medical Association Journal, Muskogee

*November, VII, No. 6, pp. 171-202*

101 Congenital Defects of Eyes that Manifest Themselves in Children. L. H. Buxton, Norman.
102 Suppurative Otitis Media. L. A. Newton, Guthrie.
103 Id. J. B. Ferguson, Sallisaw.
104 Plea for Early Intubation by General Practitioner. A. P. Gearhart, Blackwell.
105 Pharyngeal Diagnosis from General Practitioner's Standpoint. W. E. Dixon, Oklahoma City.

### Ophthalmic Record, Chicago

*November, XXIII, No. 11, pp. 541-594*

106 Operations on Extra-Ocular Muscles. E. Jackson, Denver.
107 Heterophorias and Their Treatment. G. C. Savage, Nashville, Tenn.
108 Unanswered Questions Concerning Heterophoria and Heterotropia. L. Howe, Buffalo.

### Public Health Journal, Toronto

*November, V, No. 11, pp. 659-704*

109 Municipal Loans and Municipal Works. R. O. Wynne-Roberts, Regina, Sask.
110 Pasteurization of Milk. L. C. Bulmer, Regina, Sask.

### Southern Medical Journal, Mobile

*November, VII, No. 11, pp. 855-914*

111 "Indigestion" Forerunner of Diseases of Cardiovascular and Renal Systems. F. M. Hodges, Richmond, Va.
112 Uncinariasis and Pregnancy—Dangers. J. S. Turberville, Century, Fla.
113 Condition of Negro in South. F. G. DuBose, Selma.
114 Simple and Inexpensive Filter. P. C. Fauntleroy, Fort Monroe, Va.
115 Sarcoma of Chest-Wall. Report of Case. C. Collier, Memphis, Tenn.
116 Intestinal Stasis. Ceco-Sigmoidostomy for Hirschsprung's Disease. S. H. McLean, Jackson, Miss.
117 Transfusion—Direct and Indirect. Simplified Methods. B. M. Bernheim and A. P. Jones, Baltimore.
118 Abduction and Fixation of Elbow in Treatment of Fractures of Surgical Neck of Humerus. I. Cohn, New Orleans.
119 Local Treatment of Gonorrheic Infections. M. C. Sycle, Richmond, Va.
120 Gumma of Anterior Urethra. J. C. Vinson, Tampa, Fla.

### West Virginia Medical Journal, Wheeling

*November, IX, No. 5, pp. 145-180*

121 Spina Bifida. Report of Cases. S. S. Gale, Roanoke, Va.
122 Prevention of Insanity. C. A. Barlow, Spencer.
123 Prostatectomy. W. D. Hamilton, Columbus.
124 Hereditary Mental Deficiency. J. W. Williams, Richmond, Va.
125 Some More Truth About Alcohol. I. Hardy, Morgantown.

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## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### Archives of Roentgen Ray, London

*November, XIX, No. 6, pp. 199-234*

1 Roentgen Rays in War. F. Lemon.
2 Localizing Simply and Immediately. W. Hampson.
3 Diathermy—Its Production and Use in Medicine and Surgery. E. P. Cumberbatch.
4 Radiometry. T. Christen.
5 Treatment of Recurrences and Metastases from Carcinoma of Breast. G. E. Pfahler.

### British Journal of Surgery, London

*October, II, No. 6, pp. 189-350*

6 Exploration of Knee-Joint. E. M. Corner.
7 Rhizotomy for Spastic Paralysis. G. E. Waugh and Others.
8 Id. For Relief of Gastric Crises in Tabes Dorsalis. G. Barling and Others.
9 Id. For Relief of Pain. B. Kilvington and Others.
10 *Anoci-Association. C. A. Pannett.
11 Case of Suppurative Colinephritis. F. J. F. Barrington.
12 Contemporary Italian Surgery. R. Bastianelli.
13 Chronic Subdural Hemorrhage of Traumatic Origin and Its Relation to Pachymeningitis Hemorrhagica Interna. W. Trotter.
14 Radical Operation for Cancer of Rectum. W. E. Miles.
15 *Etiology of Appendicitis, Gastric Ulcer and Allied Conditions. R. G. P. Lansdown and G. S. Williamson.

10. **Anoci-Association.**—Pannett experimented on cats and rabbits and found that afferent impulses set up by incision of the abdominal wall in the linea alba can be prevented from reaching the nerve centers by local infiltration with novocain, as recommended by Crile. When the incision is not in the middle line, these impulses can be blocked only by anesthetizing the nerve trunks as well as employing local infiltration to render the nerve-endings insensitive. This procedure may necessitate the waiting of some minutes between the injection of the anesthetic and the severance of each layer. If perineural injections are employed, 1 per cent. novocain must be used. Afferent impulses resulting from manipulation of the viscera have in general a more pronounced effect on the vasomotor center than those resulting from the opening of the abdomen and the retraction of the edges of the wound. To bring about a condition of anoci-association of the nerve centers, it is as essential to cut off impulses ascending from the viscera as it is to block those coming from the abdominal wall. Afferent impulses set up by manipulation of the stomach, intestine and the attachments of these viscera, may be blocked by local anesthetization of these attachments. The tone of the abdominal muscles is increased by the manipulation of the viscera or by dragging on the parietal peritoneum. This reflex rigidity can be eliminated by locally anesthetizing the abdominal wall and by blocking impulses from the viscera.

15. **Etiology of Appendicitis.**—Appendicitis, gastric and duodenal ulcer, and probably certain forms of mucous colitis, Lansdown and Williamson hold originate from the action of some noxious agent on these structures. These diverse conditions are essentially associated with one another as the result of an underlying common cause; and sepsis and chronic ulceration are either secondary features or sequela of such disorder. There are in the substances of the mucous membrane of the intestinal tract certain small round-celled aggregates more or less distinct from the lymphoid follicles. These structures are associated with a particularly simple epithelium. They occur in areas of concentration in the stomach, duodenum, appendix and upper rectum. The distribution within the stomach and duodenum occupies what might be called the ulcer area. They appear to suffer some general enlargement or destruction in appendicitis, gastric and duodenal ulcer, and certain form of dyspepsia. Sepsis as a secondary process can be engrafted on such changes in the appendix, and it is to be considered as a sequela. Similarly, chronic gastric and duodenal ulcer is the outcome of some secondary irritation acting on these diseased foci. There is a pathologic link between appendicitis, certain dyspepsias and chronic gastric ulcer.

### British Medical Journal, London

*October 31, II, No. 2809, pp. 741-776*

16 *Treatment of Arthritic Deformities. R. Jones.
17 *Mechanical Considerations of Human Foot. H. S. Rowell.
18 *Soldiers' Feet and Footgear. C. Webb-Johnson.
19 Insects and War; Mites. A. E. Shipley.
20 Simple and Rapid Method of Localizing Bullets. F. Hernaman-Johnson.
21 Medical Care of Lines of Communication at Home. C. B. Heald.
22 Pinewood Sawdust as Surgical Dressing. R. Parker.

*November 7, No. 2810, pp. 777-820*

23 *Significance of Blood-Pressure Readings in Man. J. A. MacWilliam and G. S. Melvin.
24 Barber-Surgeons Company. T. G. Lyon.
25 Insects and War: Mites. A. E. Shipley.
26 Reform of Vital Statistics of Nation. V. Horsley.
27 Legal Investigation of Causes of Death in Scotland. W. G. A. Robertson.
28 Necessity for Reforming Coroner's Inquest. J. C. McWalter.

16. **Treatment of Arthritic Deformities.**—Jones emphasizes that deformities are preventable if a surgeon be acquainted with the natural course of disease. In view of ankylosis the joint should be allowed to become fixed in the position of greatest usefulness as regards function. In children most deformities can be corrected by manipulation and osteotomies and exsection of bone are very rarely required. The reduction of deformity in a septic or tuberculous joint during the existence of disease can be safely undertaken if it be immediately followed by fixation. In sound fibrous ankylosis of the hip an osteotomy should be preferred for the correction of adduction, as some recurrence of deformity would follow reduction by manipulation.

The site of osteotomy will depend on the nature of the ankylosis and on the extent of the deformity. Transtrochanteric osteotomy gives the most accurate mechanical result. It should be practiced in all cases of bony fixation in which the femoral neck is not absorbed and in which there is no marked pathologic dislocation. In cases in which the destruction of the head and neck have occurred and the femur lies close on the pelvis, a wedge should be removed from the neighborhood of the trochanter. In cases of fibrous ankylosis in the process of becoming sound, a subtrochanteric osteotomy is indicated to prevent strain on fibrous bands. All osteotomies require subcutaneous division of the adductors. Subtrochanteric osteotomy is contra-indicated in cases in which flexion is extreme.

Arthroplasty of the hip-joint in any of its many forms, Jones says, may be looked on as a valuable and successful procedure. The character of the intervening substance whether bone, free or pedunculated fascial flap, fat, or muscle, is not so important as a good technic and a sound judgment. It should not be performed on children nor in the presence of active disease. It should be reserved for adult life, and has proved more successful after recovered septic than after tuberculous disease, and in case of septic disease it should be postponed for one or more years until the periarticular structures have become more normal.

The results of arthroplasty of the knee are not too encouraging. In bony ankylosis of the femur and tibia the results are distinctly discouraging. In those instances in which the ankylosis is fibrous, with perhaps bony fixation of the patella, results are often good. In such conditions, however, Jones states, mobility may often be secured without operation. In painful and progressive deformities, such as in osteo-arthritis of the hip, many procedures may be expected to give relief by preventing the friction of tender joint surfaces.

17. **Mechanical Considerations of Human Foot.**—Rowell's main conclusion is that for the ordinary inactive life of the drawing-room, office and shop, high-heeled boots and shoes may be advantageous in giving to the feet a pleasant, braced-up feeling, quite different from that enjoyed or suffered by those who slither about in heelless slippers.

18. **Soldiers' Feet and Footgear.**—When a man's feet are sore and inflamed, but not blistered, Webb-Johnson says, it is advisable for him regularly to do one of the following: (a) Rub the feet night and morning with spirit, to which may be added 1 to 2 per cent. of salicylic acid. (b) Paint the tender parts once or twice a day with either a saturated solution of picric acid or a solution of chromic acid (2 to 3 grains to the ounce). (c) After drying the feet, sprinkle with a powder composed of talc and salicylic acid (salicylic acid 2 grains, talc 1 ounce). (d) Soak the feet in a bucket of cold water to which potassium permanganate, salt, alum, tannic acid, or saltpeter has been added.

Men who complain of excessive sweating of the feet should soak them daily in a solution of formalin and water (1 to 800), dry them, and dust them with zinc oxid or some other powder. Tender feet may be well greased with zinc or boracic ointment, or the soles of the feet may be soaped. When a man's feet are normally fatigued at the end of a long march, after he has washed and dried them, he will find great relief if he lies down and raises the feet by resting them against some firm object.

If, in spite of all these precautions, a blister forms, the fluid should be evacuated aseptically and the surplus skin, liable to cause pressure cleared away. An antiseptic ointment should then be applied and the blister covered with stockingette plaster. As, after the heel, the most common situation for a blister is the plantar aspects of the fourth and fifth toes, it is in this case advisable to use animal wool round and under the toes to counteract the flexion which causes the pressure on these parts.

23. **Significance of Blood-Pressure Readings in Man.**—In doing blood-pressure estimations MacWilliams and Melvin find it desirable to determine the diastolic index while the armlet pressure is being raised; in some (rare) cases in which arm compression leads to a marked rise of blood-pressure, the diastolic reading taken with a rising armlet pressure may differ from that obtained during the lowering of the armlet pressure (after determining the systolic index) by as much as 20 mm. This is especially the case when simultaneous estimations are made in the two arms. But a decided effect is sometimes observed when only one arm is tested. Comparison of the diastolic values with rising and falling armlet pressures may thus give important indications of the liability of the arterial pressure to vary in an abnormal way, when a large artery is closed, as in the process of systolic estimation.

As regards the impressions derived from digital examination of the pulse, they have found the impression gained as to (a) the tension in the vessel within the beats (diastolic pressure), and (b) the extent of the change at systole (pulse pressure) to be specially fallacious in some cases—apparently more deceptive than the impression as to the compressibility of the pulse (systolic pressure). An enormous pulse pressure (for example, 120 mm. in a case of aortic regurgitation) may be present, as shown by measurement of the systolic and diastolic pressures, when the finger fails to give any adequate conception of such a pressure wave along the artery. And the measured diastolic pressure may be very high when the impression given by digital examination is that it is rather low.

### Bristol Medico-Chirurgical Journal, London

*September, XXXII, No. 125, pp. 193-256*

29 Local Analgesia in Surgical Operations. A. L. Flemming.
30 *Case of Richter's Strangulated Hernia. C. A. Moore.
31 Roentgenographic Centroscope and Roentgenographic Episcope. W. Cotton.

30. **Case of Richter's Strangulated Hernia.**—In Moore's case the operation was followed by no marked shock, but paralysis of the bowel caused a highly critical condition for the next few days. Enemata were useless, but a course of intramuscular injections of pituitary extract given simultaneously with a turpentine enema produced the desired result.

### Practitioner, London

*November, XCIII, No. 5, pp. 589-732*

32 Diagnosis of Nasal Accessory Sinus Disease. W. S. Syme.
33 Diffuse Sclerodermia: Report of Two Cases. A. Howell.
34 Psychic Factor in Insomnia. H. C. Miller.
35 *Pruritus Ani. L. E. C. Norbury.
36 Anesthesia. J. Blumfeld.
37 Diseases of Lungs. A. J. Jex-Blake.
38 Anemia with Enlargement of Spleen. J. S. McKendrick.
39 Etiology and Prevention of Rickets. D. Curle.
40 Choice of Winter Health Resorts. R. F. Fox.
41 *Rhinosporidium Kincalyi. T. S. Tirumurti.
42 Diaphragmatic Hernia of Stomach and Part of Small Intestine. W. E. Graves.

35. **Pruritus Ani.**—In every case of pruritus ani, in which no satisfactory causative factor can be found by external examination or examination of the anal canal with the sphincteroscope, Norbury urges that a thorough investigation of the rectum and pelvic colon by means of the sigmoidoscope should be carried out. In this way hidden lesions may be discovered, and treatment established on a sound basis. For instance, pruritus may be the result of irritating discharges from simple or malignant growths in the bowel, from certain forms of colitis or proctitis; granular proctitis or the hypertrophic catarrhal variety. Norbury has had several cases of pruritus ani associated with a large granular patch of mucous membrane, and situated in the lower part of the rectum proper; treatment by rectal injections with sulphate of zinc and local applications of silver nitrate has given considerable relief.

41. **Rhinosporidium Kinealyi.** — Tirumurti shows by a recital of cases that the name Rhinosporidium is a misnomer, because the parasite is found in other situations than the nose, though the nasal mucous membrane is its favorite site. The occurrence of the sporozoon in the conjunctival and nasal mucous membrane is explained by direct inoculation through infected clothing, handkerchiefs, or the hands. The spores are discharged in the nasal secretion, which is rather

profuse in patients who suffer from this parasitic polypus in the nose, and who are subject to chronic nasal catarrh and profuse bleedings from the nose.

The growth of the parasite being usually one of long duration, the source of the infection is forgotten and a history of close contact is not easily elicited. The preponderance of the parasitic cysts in large numbers, mainly in the epithelial and subepithelial tissues, is also suggestive of this mode of conveyance of the disease by infected nasal secretion. The occurrence of the parasite in the penis in a man who was otherwise healthy and showed perfectly normal appearances of the conjunctiva and nasal mucous membrane, is very suggestive of direct inoculation through sexual congress.

Tirumurti suggests that rhinosporidial polypi do occur in the mucous membrane of the mouth, anus and vagina, but are overlooked, microscopic examination not being conducted in every case. The growths have a great tendency to recur, though after their removal the bases are cauterized. Thorough cauterization may prevent a recurrence. The clinical features of the growths are characteristic, though the characters are modified according to the site of their occurrence. The recurrence and innumerable number of cysts of the parasite, in different stages of development in a small fragment of the tissue affected, are in favor of the sporozoon undergoing its complete cycle of development in the human body without the intervention of an intermediary host.

### Sei-I-Kwai Medical Journal, Tokyo

*October, XXXIII, No. 10, pp. 59-64*

43 *Excretion of Arsenic in Urine after Subcutaneous or Intravenous Injection of Salvarsan. K. Irokawa.

43. **Excretion of Arsenic in Urine After Injection of Salvarsan.**—Irokawa injected salvarsan either subcutaneously or intravenously in eight cases of syphilis, two cases of tabes dorsalis and one case of epilepsy and examined the daily excretion of arsenic in the urine for from three to thirty-nine days. He found that from 40 to 90 per cent. of the arsenic injected is excreted in the urine. When salvarsan is injected subcutaneously, it remains at the site of the injection unabsorbed and one can detect the arsenic in the urine, even when it does not cause any inflammation, after three weeks. The excretion of arsenic after intravenous injection is quite slow; and one can prove the presence of arsenic in the urine even after three weeks. In a relatively large number of the cases 10 per cent. of the arsenic is excreted during the first day, but the greater part is excreted in the course of the first week.

### Bulletin de l'Académie de Médecine, Paris

*October 27, LXXVIII, No. 33, pp. 179-230*

44 Advantages of Double Gloves and Socks in Cold Weather. (Contre le froid aux mains et aux pieds.) Fernet.
45 *Surgery in the Base Hospitals. (Chirurgie de guerre dans les hôpitaux de l'arrière et du service d'évacuation des blessés.) Témoin.
46 Jagged Wounds from Rebounding Bullets. (Des blessures par balles de ricochet.) Rochard.

45. **Surgery in the Base Hospitals.**—Témoin declares that his experience with 800 wounded has confirmed anew the necessity for refraining from operative mutilations. . . . "One can never reiterate enough *combien il faut être sobre de mutilations chirurgicales.*" "Notwithstanding the vast destructive lesion, notwithstanding the distressing appearance of the shattered tissues, notwithstanding the way in which the bones are fractured at several points and project from the wound, even notwithstanding the appeals of the wounded who plead for amputation to put an end to their suffering, conservative surgery, thanks to the means now at our disposal, yields extremely satisfactory results, so satisfactory that we should consistently refuse to amputate when the wounded are first brought in. Almost all fractures, no matter what the complications, heal perfectly. All that is necessary is to disinfect the wound and immobilize the limb as early as possible." Prompt and definite immobilization was followed by rapid and complete healing in his thirty-seven compound fractures of the humerus, thirty-five of the leg and twenty-seven of the thigh. Only one man required amputation and he had developed tetanus. A wide gap is left in the plaster apparatus to permit dressing the wound. He warns against attempting to explore the wound with fingers or instruments; a simple flat dressing, not attempting to bring the lips of the wound together, is the entire surgical task for the first few days. If wounds of the skull do not prove immediately fatal, they seem to heal with less disturbance than with trauma of the skull under other conditions. In the latter case they are generally the result of a fall on the head and the whole brain suffers more from the concussion.

Certain complications of modern artillery wounds are opening up a new chapter of pathology and surgical practice. The infectious complications develop so rapidly that any intervention is futile. Another complication is the serious secondary hemorrhage which comes on the fourth to the tenth day, when the wound seems to be healing favorably. Then the wounded region, limb, axilla or neck begins to pain and swell, and the temperature runs up. The aspect of the region suggests an abscess but instead of pus when it is incised, a large mass of ill-smelling clots is evacuated with putrefied clots in the depths. If not incised, gangrene is almost certain to develop. If nothing is done but clear out the clots, the immediate relief is great, but during the day or night fulminating hemorrhage comes on, and many have died from this secondary hemorrhage. The only way to avoid it is to realize that when the region is thus uniformly swollen, with agonizing pain and total inability to use the limb—which is never observed with ordinary abscess or phlegmon—some vessel is bleeding into the tissues, and an emergency operation is called for to ligate this vessel above and below the lesion. He lost the first patient from gangrene but the other seventeen were saved by ligating the carotid or femoral arteries, the axillary and brachial or the latter alone or the popliteal or anterior tibial. The wounded should be carefully sifted so that those whose wounds require institutional care should not be taken where such is not available. The sifting out of the wounded is thus a very important task. It can be done on the trains during the transportation, and the case-card should be of a different color for those requiring special skill or equipment.

### Archiv für klinische Chirurgie, Berlin

*October, CV, No. 4, pp. 769-1051. Last indexed Oct. 24, p. 1509*

47 *Surgical Stomach Disease. (Zur Chirurgie des Magens auf Grund von 1,100 in 7 Jahren behandelten Fällen.) H. Küttner.
48 Isolated Chronic Appendicitis from Schistosomum Eggs. S. Goto.
49 Ultimate Results with Sprengel's Plastic Transverse Abdominal Incision. (Dauerresultate der plastischen Bauchquerschnitte.) J. Bakes.
50 Improved Technic for Exarticulation of the Femur. (Erhaltung der Vena femoralis bis zur Auslösung des Schenkelkopfes bei der Exarticulatio femoris nach Rose.) B. Riedel.
51 *Transplantation of Thyroid Gland. (Bedingungen erfolgreicher Schilddrüsentransplantation beim Menschen.) T. Kocher.
52 Source of Regeneration in Case of Transplanted Bone. (Quelle der Regeneration bei Knochenüberpflanzung.) N. N. Petrow.
53 *Exophthalmic Goiter and the Thymus. (Basedow'sche Krankheit und Thymus.) A. Kocher.
54 *Restoration of or Substitutes for the Esophagus. (Ueber Oesophagoplastik im allgemeinen und über den Ersatz der Speiseröhre durch antethorakale Haut- Dickdarmschlauchbildung im besonderen.) V. von Hacker.
55 Roentgen Findings in Condyle After Injury of Knee. (Weitere Beobachtungen über den Stieda'schen Knochenschatten am Condylus internus femoris.) K. Vogel.
56 Operative Treatment of Bladder Tumors. (Blasentumoren.) O. Hildebrand.

47. **Operations on the Stomach.**—Küttner states that 10 per cent. of all his surgical work at Breslau in the last seven years has been on the stomach. In the total of 1,100 stomach cases two-thirds were malignant and only 20 per cent. of these were operable. The proportion of operable cases was lowest in patients who came from private practice. One woman was in the hospital for a year on account of multiple cysts in the upper third of the femur, first on one side and then on the other. Necropsy revealed that the cysts were metastases from a gastric cancer which had been entirely unsuspected, although the woman had been under super-

vision for all that time. Malignant disease of the stomach apart from the pylorus causes achylia and mechanical conditions like those artificially induced by a gastro-enterostomy. This explains why cancer of this kind can exist so long without attracting attention. In 15 per cent. of his cancer cases there had been preceding stomach trouble, but whether gastritis, ulcer or achylia is not known. In one case both a cancer and an ulcer were found in the stomach, and in another five or more separate cancers. The operable cases generally had a longer history of disturbances than the inoperable ones. Roentgenoscopy was usually disappointing except when it disclosed inoperable conditions. The Gluczinski method of differentiation proved reliable. The later the pain develops after eating, the nearer the pylorus the lesion is found.

He resects only when cancer cannot be excluded with absolute certainty; that is to say, he does resection in every case of tumor-forming callous ulcer, as he is convinced that this is in reality of cancerous nature. The fear of transformation of other forms of gastric ulcer into cancer is not borne out by his experience; there were only two in which cancer developed later, in his 120 cases, and the ulcer was of the callous type. After-hemorrhage from an ulcer treated by gastro-enterostomy was responsible for the death of one patient, and also for that of another treated by resection. Perforation did not occur after gastro-enterostomy in any instance, and the ultimate outcome was a complete cure of all disturbances in 65 per cent. and essential improvement in 20 per cent. The ultimate outcome was also surprisingly good after a gastro-enterostomy done for sagging of the stomach, thus kinking the pylorus. The results when the pylorus was excluded were no better than with simple gastro-enterostomy alone.

51. **Transplantation of the Thyroid.**—This report of Kocher's experimental and clinical experience fills nearly one hundred pages. He has only good results to report from the twenty-one patients treated by this means alone. The lessons learned from this material in regard to the conditions for success are presented in detail, as well as for the technic.

53. **Exophthalmic Goiter and the Thymus.**—Kocher states that no instance of Basedow's disease is yet known in which at necropsy or operation the thyroid was found free from hyperplasia, but the thymus is often apparently normal. In nearly 50 per cent. of all cases of Basedow's disease a tendency to tardy hyperplasia or tardy involution of the thymus is evident. Hyperplasia of the thymus is more frequent in younger Basedow patients. No special histologic findings were discovered in the thymus with Basedow's disease at necropsy of fourteen cases; six had died under operative treatment and eight from the Basedow alone. When there is hyperplasia of the thymus, the patient might be prepared for an operation on the thyroid by a course of thymus extract and Roentgen exposures of the thymus, just before the operation on the thyroid.

54. **Antethoracal Restoration of the Esophagus.**—Von Hacker gives a profusely illustrated description of the technic with which he provided a girl of 12 with a functionally capable esophagus after the natural passage had been impassibly corroded by swallowing a tablespoonful of lye. It had been given her by her mother, who took a similar dose and died of the injury. The operation was done at several sittings, the entire procedure requiring about six months. The plan was to take a segment of the transverse colon and implant it in the lesser curvature of the stomach and bring the other end up under the skin nearly to the clavicle. The esophagus was severed above the stenosis and the proximal stump brought out through a transverse incision in the neck and worked down under the skin and sutured to the upper end of the colon segment. The illustrations show a healthy girl with scarcely any trace of her injury except a linear scar from the umbilicus to the neck.

### Berliner klinische Wochenschrift, Berlin

*October 19, LI, No. 42, pp. 1717-1736*

57 *Treatment of Tetanus, Especially with Magnesium Sulphate. W. Weintraud and E. Unger.
58 Principles of Dietetics. (Die Kost der Arbeiter und die Grundsätze der Ernährung.) F. Hirschfeld.
59 Treatment of Lupus. A. Alexander.

*October 26, No. 43, pp. 1737-1756*

60 *Treatment of Cholera. L. Lichtwitz.
61 Application to Gait of Man and Animals of Laws of Velocity. (Anwendbarkeit des Gesetzes der korrespondierenden Geschwindigkeiten auf die Gangbewegung von Menschen und Tieren.) R. du Bois-Reymond.
62 Exaggeration of Symptoms from Spinal Tumor After Lumbar Puncture. (Ueber im Anschluss an die Lumbalpunktion eintretende Zunahme der Kompressionserscheinungen bei extramedullären Rückensmarkstumoren.) L. Newmark (San Francisco).
63 Neosalvarsan for Children. (Anwendung der epifascialen (bzw. intramuskulären.) Neosalvarsaninjektionen nach Wechselmann im Kindesalter.)* H. Kern.
64 Congenital Dropsy. (Angeborene Wassersucht.) H. Wienskowitz. Commenced in No. 42.
65 Aviators' Arrows. (Der Pfeil als Fliegerwaffe.) H. Coenen.

57. **Tetanus.**—Weintraud says that the number of cases of tetanus among the wounded makes it imperative to recognize the first symptoms of it, which only too often the patient—"in his touching patience and ignorance of the dangers to which he is exposed"—regards as too trivial to mention. They may include dizziness, heavy sweats, slight difficulty in urination, a feeling of tightness in the muscles of the jaws or back of the neck, or brief spasms of the muscles of the chest or of the diaphragm. The latter are liable to be mistaken for pleurisy pains. The technic and dosage for serotherapy should be mastered beforehand and no one should be misled into assuming that antitetanus serum can be given like diphtheria antitoxin. Its efficacy lies in prophylaxis and the immunity conferred is transient.

When tetanus is once installed, Weintraud continues, little can be hoped from serum treatment, but we have an important symptomatic aid in Meltzer and Auer's magnesium sulphate treatment. He has been so much impressed with the value of this measure that he urges all medical societies to devote a meeting to it, exhibiting the classic guinea-pig experiment, injecting subcutaneously 7 c.c. per kilogram of weight of a 25 per cent. solution. All the voluntary and involuntary movements of the body are entirely arrested. Unless artificial respiration is applied the guinea-pig dies without any signs of pain or suffocation. The animal lies relaxed without a single manifestation of life except for the heart-beat and blood-pressure which with small doses persist almost normal. Artificial respiration restores normal conditions and the animal seems none the worse for his experience. The animal can be restored also by injecting 5 or 10 c.c. of a 5 per cent. solution of calcium chlorid slowly into a vein in the ear. In twenty seconds the animal begins to breathe deeper, rouses in a minute, and in a short time cannot be distinguished from its normal mates.

This exhibition convinces all of the extreme value of magnesium sulphate in tetanus, but it warns also of its dangers. Too small a dose does no good, and too large arrests the breathing. The individual susceptibility differs also. In the three cases of recovery at Wiesbaden the patients had all been given magnesium sulphate. After a single injection the rigid muscles relaxed, breathing became deeper and freer, cyanosis and sweating subsided, and the patient sank into refreshing slumber. If he is wakened anew by pains and spasms, these can be relieved again by the sulphate. Individual tentative experience must be the guide to dosage. To date, he says, fifty cases of tetanus have been given this treatment, and the mortality of 35 per cent. is being constantly lowered. Kocher lost only one of his six patients, and this one succumbed to sinus thrombosis. The intraspinal technic is scarcely applicable outside of institutional supervision. No one physician can carry it through alone; in one case in his service eight intraspinal injections were given during the week, thus arresting the paroxysms each time as they returned, until finally the tendency was conquered. The general practitioner must content himself with subcutaneous injection. Brilliant results have been attained with it, but even this requires the most devoted supervision, keeping the patient under this long, deep, lasting anesthesia and yet not letting it be so deep that the relaxation paralyzes vital functions. The danger of total arrest of the respiration confronts one constantly. The aspect, the tint, are no criteria; the breathing must be watched for the slightest tendency to paralysis of the respiratory muscles.

With intraspinal injection the spinal canal can be washed out when the effect is too intense, but with subcutaneous injection no relief is possible in this way, but the drug can be more or less completely neutralized by the antagonistic action of 5 c.c. of a 5 per cent. solution of calcium chlorid, injected intramuscularly, repeated several times at need. Artificial respiration, however, is the main reliance and may suffice alone, especially if preceded by an injection of 1 mg. physostigmin salicylate. If these fail, intratracheal insufflation is within the reach of every one. If there is no oxygen tank available, air can be pumped in with an ordinary bellows. If skilled in intubation technic, tracheotomy can be avoided.

In conclusion, he reiterates that the sulphate does not menace the heart directly, but the heart may need camphor from the exhaustion following the spasms. He does not seem to have had any personal experience with the subcutaneous technic, but cites others to show that the dose should be at least 15 or 20 c.c. of a 20 per cent. solution or 12 or 16 c.c. of a 25 per cent. solution for an adult. Parker injected 28 c.c. of a 25 per cent. solution at a time. Mielke thus cured a girl of nearly 6 with doses of 3 gm. in a 20 per cent. solution three times in twenty-four hours, to a total of twenty-four injections, using up 61 gm. of the drug. Of course, the smallest effectual dose should be used. The relief from the sulphate is so great that the patients pay no heed to the local pain of the injection, but this can be reduced by giving a little morphin.

Unger describes a method of treatment which he has applied in one case with apparent success. Antitetanus serum was injected into the ulnar or radial artery through a ureter catheter, pushed in until the tip reached the arch of the aorta. The serum thus pumped in passed at once to the brain through the carotid arteries and into the spinal cord through the descending aorta. He has often introduced ureter catheters in this way far up into veins and arteries. Heddaeus has recently reported a somewhat similar intra-arterial technic, injecting the antitetanus serum directly into the internal carotid artery. He had applied it in six cases of tetanus with gratifying results.

60. **Cholera.**—Lichtwitz confesses that he has had no experience with cholera, but theoretically is convinced that great benefit might be derived from epinephrin administered intravenously by the drip method, taking two or three hours to inject half a liter of the epinephrin-salt solution, as for peritonitic shock. This replenishes the epinephrin in the circulation as fast as it is eliminated. When this technic is impracticable, the next best is to inject occasionally 100 c.c. of the solution as slowly as possible. Another point which he emphasizes is that when bolus alba or charcoal is used it must not be forgotten that this will absorb and nullify the action of drugs given soon before or with it. It is also liable to absorb and nullify the digestive ferments, and thus impair the appetite.

### Medizinische Klinik, Berlin

*October 25, X, No. 43, pp. 1607-1632*

66 *Serious Injuries of the Eyes in the Field. (Die wichtigsten Augenverletzungen im Krieg und ihre erste Behandlung.) C. von Hess.
67 Vaccination Against Typhoid, Cholera and Dysentery. (Schutzimpfung bei Kriegsseuchen.) H. Lüdke.
68 *Chronic Irritation of the Intestines Secondary to Stomach Disease. (Ueber die vom Magen ausgehenden chronischen Reizzustände des Darmes.) S. Jonas.
69 Whooping-Cough Endotoxin Reaction. (Allergische Reaktion mit dem Bordet-Gengouschen Keuchhusten-Endotoxin.) R. Neurath.
70 Massage in Diagnosis and Treatment of Muscular Rheumatism. A. Müller.
71 Technic for Thiersch Flaps. (Die Transplantation nach Thiersch.) O. Nordmann.
72 Typhoid and Paratyphoid Fever. N. Ortner. Concluded.

66. **First-Aid for Injuries of the Eyes.**—Von Hess says that he has seen a number of cases in which the optic nerve had been cut by a bullet while the eye itself had scarcely been injured. When the eye is injured the first thing is to determine whether it is perforated or not. If the tension of the eyeball is found reduced, on cautious palpation, there is certainly perforation, but this cannot be excluded even if the tension is found normal; the hole may close up behind a minute splinter in the eyeball. A hemorrhage in the anterior chamber is generally absorbed in a week or so, but when the blood penetrates into the vitreous body it is never entirely absorbed. A copper scrap is peculiarly dangerous in the eye, as it rapidly induces aseptic suppuration; when a copper splinter is supposed to be in the eye, the man should be rushed to a specialist with extra speed. Iron or steel scraps, on the other hand, do not threaten special danger for a few days. It may be weeks or months before siderosis bulbi develops. Lead should be got out early.

He says that sympathetic ophthalmia develops only when a chronic iridocyclitis follows on a perforating injury of one eye. The signs of this are discoloration of the iris, a precipitate with tenderness and photophobia and congestion in the ciliary region—evident a week or two after the injury and especially when the ciliary region was involved in it. With these findings the patient had better be advised to have his eye enucleated, as this alone will protect certainly against sympathetic ophthalmia. If the eye suppurates after the perforating injury (hypopyon, panophthalmia), sympathetic ophthalmia need not be feared. A small superficial foreign body can be removed with a small scalpel at need, holding it flat; it does no harm to slice off some of the epithelium around, as this regenerates in a day or so under a well-fitting bandage. At the front, foreign bodies which are not superficial should be left unmolested. No occlusive dressing should be applied to the eye when there is much conjunctival secretion. The eye should not be bandaged except when there is a loss of substance in the cornea or prolapse of the iris. Even after opening a stye, the eye should not be bandaged. Mucous or purulent conjunctival secretion can be combated in emergencies by everting the lids and dabbing them with a 1 or 2 per cent. solution of silver nitrate once or twice a day. This must never be instilled into the eye.

68. **Gastrogenous Diarrhea.**—Jonas tabulates the findings in five cases of achylia, in five of hyperacidity and in five of extreme gastroptosis. Comparison of these groups shows that the behavior of the pylorus in abnormal conditions is what determines whether diarrhea or constipation shall prevail. When it is unduly permeable, as with achylia, subacidity, and in some cases of hyperacidity and atony, there is a predisposition to diarrhea, while the reverse tendency prevails with defective motor functioning of the stomach and bowel and unduly long closure of the pylorus.

### Münchener medizinische Wochenschrift, Berlin

*October 20, LXI, No. 42, pp. 2089-2124*

73 *Increased Pressure in Cerebrospinal Fluid in Certain Eye Diseases. III. (Lumbaldrucksteigerung bei Iritis und Chorioiditis.) L. Heine.
74 *Technic for Serodiagnosis. (Zum Nachweis der Blutfreiheit der zur Abderhaldenschen Reaktion verwendeten Substrate und Seren.) Fetzer and Nippe.
75 *Arrest of Coagulation by Syphilitic Serum. (Ueber die Gerinnungshemmung durch Luessera—Hirschfeld und Klinger—und die chemische Natur des Zytozyms.) E. Frankel and F. Thiele.
76 Tachysystole of the Auricles and Irregular Pulse. (Rhythmische Vorhoftachysystolie und Pulsus irregularis perpetuus.) H. E. Hering. Commenced in No. 41.
77 *Open Treatment of Suppurating Wounds. (Offene Behandlung eiternder Wunden.) F. Schede.
78 Determination of Typhoid Bacilli in the Stools. (Ueber das Bierastsche Verfahren der elektiven Beeinflussung von Bacterium coli zum Nachweis von Typhusbazillen im Stuhl.) H. Schmitz.
79 Treatment of Traumatic Tetanus with Serous Transudate from the Abdomen. S. Durlacher.
80 Dumdum Bullet Wounds. (Dumdumgeschossverletzung.) Kreitmair.
81 Lint for Dressings. (Scharpie als Verbandmaterial.) F. Brunner.
82 Need for Economy with Cotton Dressings. (Seid sparsam mit den baumwollenen Verbandstoffen!) F. Williger (Berlin).
83 Cross Sections of Arm and Leg. (Querschnitte.) H. Krauss.
84 Prophylaxis of Epidemic Diseases in the Field. (Bekämpfung der Kriegsseuchen im Felde.) A. E. B. Nocht. Commenced in No. 40.
85 Field Dressings and Infection. H. Kümmell.

73. **Pressure on the Brain with Certain Eye Diseases.**—Heine says that if we regard the cornea as a protruding part of the brain, then the meninges are practically continuous with the uveal tract. The first sign of irritation of the meninges is increased secretion of cerebrospinal fluid, and he found this pronounced in over three-fourths of 63 cases of uveitis. The coincidence occurred too regularly for it to be regarded as casual. It testified that with inflammation in the choroid, the iris or the ciliary body, the meninges share in the irritation. In 16 of the 30 cases of iritis, it was of tuberculous origin; syphilitic in 5; gonorrheal in 1; all three in 1; in another case there was sinusitis and in another diffuse atheroma. In the 33 cases of choroiditis, 13 were of tuberculous and 10 of syphilitic origin. Twenty-four of the patients in each group were men. In the 30 cases of iritis one eye only was involved in 23, but only in 8 of the 23 choroiditis cases.

74. **Technic for Serodiagnosis.**—Fetzer and Nippe call attention to the value of the malachite green test in revealing by a change in color the slightest admixture of blood. With the aid of this test it is possible to avoid serious error from the presence of blood in doing the Abderhalden test.

75. **Coagulation Test for Syphilis.**—Fränkel and Thiele confirm the diagnostic importance of the inhibition or delay in coagulation as a sign of syphilis. In seventy cases tested the findings paralleled those of the Wassermann test. The coagulating influence seems to proceed from the ether-soluble fraction of the thrombokinase or cytozyme. Syphilitic serum destroys this, and thus prevents coagulation. (Compare with Abstract 75, page 1241.)

77. **Open Treatment of Suppurating Wounds.**—Schede asks what is the use of trying to keep profusely suppurating wounds bandaged. The body is striving to throw off infected secretions, and why cannot we help it in this task instead of our futile efforts to staunch the copious discharge. Oftener than not, the dressings directly hinder instead of promoting Nature's efforts, while the changing of the dressings threatens the environment. An illustration shows the two plaster casts and iron strip frame between, with which he secured the rapid healing of severe shrapnel injuries of the leg. Almost at once the secretions lost their fetid odor and purulent character, the fever subsided, and necrotic tissue was cast off by healthy granulations. When the secretions are too thick to drip, he steams the wound under a cover and thus obtains a "moist dressing" without the drawbacks of shutting off the air and retention of secretions. In other cases superheated air answers the purpose better. If the suppurating focus is on the top of the leg, he provides for drainage by a counter incision in the depths of the lesion. The great advantage of this plaster-cast open method, he reiterates, is that each lesion can be treated as it needs, open or covered, moist or dry, aseptic or antiseptic, and it can be bandaged at any time when the healing has progressed to render this desirable. The plaster and the iron cost far less than the constantly to be renewed dressings with such a lesion, while the patient is spared all the pain and discomfort of change of dressings.

### Wiener klinische Wochenschrift, Vienna

*October 15, XXVII, No. 42, pp. 1363-1378*

86 *Lumbar Puncture in Chorea. (Lumbalpunktion bei Chorea infectiosa.) F. Passini.

*October 22, No. 43, pp. 1379-1398*

87 *Dentistry Protheses for the Wounded. (Der Zahnarzt im Kriege.) M. Kraus.

86. **Lumbar Puncture in Treatment of Chorea.**—Passini remarks that the latest text-books have changed chorea from the "diseases of the nervous system" chapter to the chapter on "infectious diseases." Recent research has apparently demonstrated that the choreic movements are the result of irritation of the cerebral tracts passing from the red nucleus to the dentate nucleus. He examined the spinal fluid in a number of cases of chorea developing secondary to acute articular rheumatism; some of the children had signs of having passed through endocarditis, but all were free from fever and the chorea had been under way for several weeks unmodified by any measures. Lumbar puncture in five exceptionally severe cases showed that the fluid was under high pressure, from 30 to 40 c.c. spurting as the patient reclined and still more escaping as the child sat up. The fluid was clear and apparently sterile. In three of these five cases the chorea promptly and permanently subsided after the lumbar puncture. In the two other cases the chorea was of a year's standing and no benefit was derived. The lumbar puncture was repeated later and showed normal pressure, but the choreic movements persisted unmodified. Evidently the part of the nervous system involved had suffered beyond possible recuperation from the overpressure or from toxic elements in the cerebrospinal fluid. Lumbar puncture before irreparable lesions are installed seems to have a direct curative action.

87. **Dentistry Protheses in Military Surgery.**—Kraus concludes his remarks on the necessity for trained assistance in this line for the wounded, by urging that the results are incomparably better when the prothesis is applied early. Healing can then proceed along normal lines and there will be nothing to undo later, while old disfiguring deformity in hard callus is difficult to correct.

### Zentralblatt für Chirurgie, Leipsic

*October 24, XLI, No. 43, pp. 1609-1632*

88 *Treatment of Ascites. II. (Zur Beseitigung des Ascites.) J. Kumaris.

89 *Phenol-Camphor in Local Treatment of Phlegmons in Joint and Tendon Sheaths. (Hochprozentige Karbol-Kampferspiritusinjektionen gegen Phlegmonen in Gelenken und Sehnenscheiden.) G. W. Schiele.

88. **Ascites.**—Kumaris reports here three cases in which the technic he advocates has been applied with perfect success. He excises a patch of the parietal peritoneum and thus induces adhesions. (Described in The Journal, Jan. 31, 1914, p. 421.) One patient died twenty-two days later from erysipelas, and there was no fluid found in the abdomen. The cure was complete when the patient was seen a month later in another case, and also during the six months to date in the third case. This patient was a man of 55. The incision was carried down to the mesentery of the ascending colon, up to the cremaster hepatis and toward the colon on the left. A tongue-shaped flap was then cut in the peritoneum and turned back over the fundus of the bladder, and a wisp of omentum was drawn down into the exposed space of Retzius. A stretch of the prevertebral peritoneum was also loosened up. By the end of forty-eight hours the edema in the ankles had disappeared, the abdomen was free from pain, the walls soft and edematous. There was slight oozing from the upper part of the wound for a few days, and then a subcutaneous infiltration required puncture the fourth and sixth weeks, after which approximately normal conditions were restored and have been permanent to date.

89. **Phenol-Camphor for Phlegmons.**—Schiele writes to corroborate the great benefit from injection of a mixture of 30 parts liquefied phenol with 50 parts triturated camphor in 8 parts alcohol. He has never witnessed anything suggesting intoxication with this treatment, while his invariable success with it has convinced him that practically always it will abort incipient phlegmonous processes in cavities, especially in large and small joints and tendon sheaths, and the method deserves a trial in gunshot wounds and tardy abscesses. Among the typical cases described is that of a young woman with a phlegmon in the sheath of the flexor tendon of a finger. He filled the cavity with the mixture and the tendon could be exercised without pain, and the three incisions healed without impairment of function. The injection was repeated daily, the tendon swimming in the oily fluid. In another case 5 gm. of the fluid was injected into the knee joint every second day after evacuation at first of 150 gm. of purulent secretion. The phlegmon had followed an external injury. The pain and fever disappeared promptly, and by the third day the man of 55 was walking, using the knee.

### Zentralblatt für Gynäkologie, Leipsic

*October 24, XXXVIII, No. 43, pp. 1345-1368*

90 Mechanism of Delivery with Fractured Acetabulum and Dislocation of Head of Femur. A. Mayer.

### Zentralblatt für innere Medizin, Leipsic

*October 24, XXXV, No. 43, pp. 953-968*

91 *Production of Antibodies in Leukemia. (Fähigkeit von Leukämikern Antikörper zu erzeugen.) H. Rotky.

91. **Antibody Production in Leukemia.**—Rotky reports a series of experiments on eight patients with tuberculosis or multiple sclerosis and on two leukemics, testing them all for agglutinating properties in the blood. The findings confirmed in every respect Moreschi's recent statement that the blood in leukemia has no agglutinating power. Rotky accepts this as indicating incapacity for production of antibodies, and suggests that this explains the lack of resisting power in leukemia to otherwise harmless infections.

### Gazzetta degli Ospedali e delle Cliniche, Milan

*October 18, XXXV, No. 118, pp. 1813-1828*

92 Leukemia. (Leucemia e morbi affini.) P. Castellino, A. Ferrata and G. Rummo.
93 Non-Tuberculous Apical Disease. L. Devoto and E. Tedeschi.
94 Gastric Neuroses. A. Ferrannini and F. Schupfer.

*October 22, No. 119, pp. 1829-1844*

95 Transvesical Prostatectomy. F. Marinelli.

### Riforma Medica, Naples

*August 8, XXX, No. 32, pp. 871-896*

96 The Liver-Pancreas Syndrome in Diabetes. U. Deganello. Commenced in No. 31.
97 Case of Myasthenia Gravis. (Morbo di Erb-Goldflam.) M. Marzemin.
98 Treatment of Acute Rheumatism. G. Paoletti.

*August 15, No. 33, pp. 897-924*

99 Leukemia, Hemolytic Jaundice and Splenic Anemia. (Sulle emopatie splenomegaliche I.) G. Rummo. Continued to No. 40.
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116 *Washing the Blood Outside the Organism; Artificial Jugular Pulse. I. P. Mikhailoffsky.

106. **Progressive Pernicious Anemia.**—Mikhailoff reports excellent results from spleen extract in the treatment of pernicious anemia. He produced pernicious anemia in 18 rabbits by injecting phenylhydrazin for four to five days. Ten were left without treatment and 8 of these succumbed by the third to the fifth day. The other 8 rabbits were treated with spleen extract, and in all the blood-picture returned almost to normal. Encouraged by these results, Mikhailoff used this treatment in a very severe case of pernicious anemia in a man of 26, who had had every other known treatment applied without benefit. About 2.5 c.c. of a 2 per cent. solution of an extract of spleen substance was injected and improvement was noticed after the seventh injection and a complete cure obtained after the fiftieth. Six months later the hemoglobin rate was 95 per cent.; the reds numbered 5,125,000; the whites, 6,800; the color index was 0.90. Equally good results were obtained in two other out-patients. Mikhailoff explains the favorable action of the spleen extract in the treatment of pernicious anemia by the presence of hormones which stimulate the functioning of the blood-making organs.

107. **Cultivation of Tissues Outside the Body.**—Veselkin and Kartashevsky claim that if the blood plasma of diabetics reduces the regenerative vitality of tissue, as is apparently evidenced by the serious course of skin lesions in diabetics, then the growth of tissues in plasma of this kind would be inhibited and be different from that in healthy plasma. They experimented on cats whose pancreas had been partially or totally removed under ether. Spleens of kittens were used for cultivation purposes. The spleen tissue showed normal growth in the plasma of both the pancreatectomized cats and the controls, demonstrating that the removal of the pancreas does not affect the regenerative power of the tissue cells, but only reduces the vital resistance.

108. **Camphor in Pneumonia.**—Markevitch advocates the use of 10 per cent. camphorated oil in the treatment of croupous pneumonia in doses of 5 c.c. four times daily or 10 c.c. twice a day of a twice stronger solution. The camphor was given by hypodermic injections combined with digitalis internally. The 226 male patients treated by this method gave 6.6 per cent. mortality, while of 322 treated without camphor 13.3 per cent. died. In 133 grave cases of pneumonia, 66 had no camphor treatment, with 48 per cent. mortality, while of 67 given the camphor as above only 15 died, namely, the mortality rate was only 22 per cent. Camphor thus considerably lowers the death-rate. The temperature usually fell by lysis; if a crisis occurred it was generally on the ninth day, instead of the seventh, which fact Markevitch explains by the gravity of the cases treated. Dyspnea is relieved, the respiration becomes quieter and deeper, the temperature subsides in two or three days; there is no delirium; the sputum decreases, the appetite reappears, and with the improvement of the general conditions recovery sets in. The local pneumonic process is little influenced by this treatment, though the area of consolidation was found diminished. The only by-effects were painful infiltrations at the points of injection, especially when the camphor got into the subcutaneous fat. There was suppuration at the point of injection in only two cases in the four years. Camphor has a bactericidal action, it is slowly absorbed, and thus gradually and quietly brings on lysis.

110. **Diarrhea After Resection of Intestines.**—When part of the intestines are excised, the remaining portions take on themselves the task of the resected part. If the processes of digestion and absorption continue normally, then the intestines are sufficient, but otherwise not. One of the annoying and dangerous signs of intestinal insufficiency is diarrhea. The question arises whether it is not possible to stop such a diarrhea by administering an astringent or opium. To settle this question, Brukhanoff made fistulas at various points along the gastro-intestinal tract of dogs, and studied the digestive processes after short-circuiting the bowel by resecting the jejunum or ileum. He found that with intestinal insufficiency the astringents and opium did not inhibit the passage of food through the intestinal tract, but rather accelerated it, and that these drugs acted unfavorably on digestion and absorption, and did not influence the decomposition of albuminoid substances. Therefore, he concludes, it is not advisable to administer astringents or opium in the diarrhea caused by intestinal insufficiency. The only rational treatment is dietetic.

111. **Roentgen Exposures of the Thymus in Treatment of Exophthalmic Goiter.**—Sinozersky studied on twenty patients with exophthalmic goiter the rôle played in its production by the thymus gland. Some were given Roentgen treatment of the thymus after two or three thyroid vessels had been ligated, but the majority had this treatment before any operative measures. The condition of the thymus gland was estimated by dulness on percussion over the sternum and to the left, after a tumor or aneurysm had been excluded by roentgenoscopy showing a shadow moving up and down the aorta during respiration, and by blood examination—increased num-

bers of lymphocytes (55 per cent.) and reduced polynuclears. Preliminary experiments on young dogs and rabbits showed that exposures to the Roentgen rays cause atrophy of the thymus. Roentgen treatment of Basedow's disease, directed against the thymus, with exposures every three or four days, gave marked improvement after five or six sittings. The pulse fell to 80 from 120 or 140; the goiter, the sweating, nervousness and exophthalmos decreased and the blood showed a decrease in the number of lymphocytes and increase of the polynuclears. As the skin in Basedow's disease is very sensitive to the Roentgen rays, an interval of three weeks is necessary before entering on another series of exposures. His conclusions are that the rôle of the thymus gland in the pathogenesis of exophthalmic goiter is established now beyond question.

112. **Epinephrin in Typhoid and Pneumonia.**—Mansvetova used epinephrin in infectious diseases, pneumonia, typhoid and paratyphoid, to improve the heart action. In order to determine the necessary dose of the 1 per thousand solution of epinephrin, she injected hypodermically 0.5 c.c. in 13 patients; 0.75 c.c. in 10 patients, and 1 c.c. in 7 patients. She found that 1 c.c. caused a rapid and considerable rise of the blood-pressure during systole, while the diastolic decreased; 0.75 c.c. also raised the blood-pressure, but more gradually. The action is rather inconstant; the systolic increases, the diastolic falls. The dose of 0.5 c.c. caused a less pronounced increased blood-pressure, and in these doses, given every hour and twenty minutes or every ninety minutes, the weakened circulation could be maintained for a long time. These small doses do not affect the peripheral circulation, but cause dilatation of the coronary arteries of the heart, thus improving the circulation in the cardiac muscle and its nutrition. The larger dose of 1 c.c. is indicated when a rapid rise in the blood-pressure is necessary, as, for instance, in postoperative shock, collapse or acute poisoning, but in acute infections so large a dose should not be used, as the heart under the toxic influences may be unable or too weak to respond to such a dose.

114. **Laboratory Anthrax Infection.**—Popoff reports a case of fatal septicemic anthrax of the left bronchus in a patient who had contracted this disease in a laboratory in which anthrax vaccine was prepared. The organs showed parenchymatous changes, such as are caused by any toxemia. He concludes that death from anthrax is caused not by mechanical, but by toxic influences, and that the infection may take place sometimes through aspiration or inhalation. Prophylactic vaccination against anthrax, serodiagnosis and serotherapy are of tremendous importance, especially in Russia, he says, where in the army 61 persons die annually from this cause on an average, and during the years 1904 to 1908, 80,498 persons and 218,956 horses and cattle throughout Russia were affected with it.

115. **Nucleoproteid of Dysentery Bacillus.**—Neitz obtained from bodies of Shiga-Kruse bacilli an albuminoid substance with the chemical properties of a nucleoproteid. The latter proved to be extremely toxic for dogs and rabbits, as death would occur on the second or third day after injection into rabbits in the ear, abdominal cavity or under the skin. The temperature falls by 5 or 9 degrees C., general convulsions set in, collapse, dyspnea and paresis of the hind limbs make up the clinical picture of poisoning, with frequently diarrhea two or four hours after the injection of the nucleoproteid. The blood culture always proved negative. The serum of animals immunized by repeated injections of dead Shiga-Kruse bacilli (heated to 60 or 65 C.) precipitates the nucleoproteid from its solution. The serum of rabbits rendered immune by repeated intravenous injections of 1 per thousand nucleoproteid solutions agglutinates Shiga-Kruse bacilli, but no other type of dysentery bacilli.

116. **Washing the Blood.**—Mikhailoffsky connected with long tubes the upper end of a bottle with the right femoral artery of a dog and the lower end with the right external jugular vein. The bottle was filled with Locke's fluid. Having removed the clamps, he let the arterial blood run into the bottle, and from the latter pass with the Locke's fluid back into the jugular vein. When a fourth of a liter of blood had been let out, he connected the femoral artery directly with the jugular vein through a tube 40 inches long, and he could see and feel the pulsation of the jugular vein—an actual artificial pulse. The Locke's fluid saturated with blood was then replaced by a new quantity of the same fluid, without blood, and the experiment was repeated. About two-thirds of a liter of blood was thus removed, and neither the pulse nor the respiration showed change. These experiments suggest that Locke's fluid may replace normal blood, preventing its coagulation in vitro, that the blood may be greatly diluted with it without fatal complications for the animal, that an artery may be directly connected with a distant vein, no thrombus forming, and that an artificial venous jugular pulse may be obtained, and that the blood may thus be safely washed out in uremia, cholemia, snake poisoning, ptomain poisoning, etc.

### Hospitalstidende, Copenhagen

*October 21, LXII, No. 42, pp. 1273-1296*

117 *Convulsions in Whooping-Cough. (Om krampe ved Kighoste.) S. T. Sørensen.

*October 28, No. 43, pp. 1297-1320*

118 *Radiotherapy of Lupus and of Bone and Joint Tuberculosis. (Om Anvendelse af kunstige Lysbade ved Lupus vulgaris og kirurgisk Tuberkulose.) A. Reyn and N. P. Ernst. Concluded in No. 44.

117. **Convulsions in Whooping-Cough.**—Sørensen has noticed that when convulsions occur in the course of whooping-cough they are generally accompanied by fever which may run very high. This suggests that the same cause inducing them may have a paralyzing action on the heat-regulating center. In the 26 cases he has encountered, 21 terminated fatally; the convulsions in 15 of the fatal cases developed once at the beginning of the disease, five times in the second and five times in the fourth week, and once the third, fourth, sixth and eighth weeks. The date is not known in 6. Only 5 patients with the convulsions recovered, but in the majority of the fatal cases death was due to pertussis pneumonia, the convulsions being secondary to this when they did not develop until the fourth week or later. One child of 3 had fever and cramps in his arms with meningitic symptoms and unilateral facial paralysis for ten days before the pertussis manifested itself. As this developed, the other symptoms subsided completely. In only one other case were there symptoms on the part of the meninges, and both these children were 3 and 5; all the others were infants. In one of the few cases that came to necropsy, thrombosis in the longitudinal sinus was pronounced, but the bacteriologic findings were negative. The children who had convulsions were all without exception of the spasmophilia type, the nervous system unstable.

118. **Radiotherapy of Lupus and Bone and Joint Tuberculosis.**—Reyn and Ernst give a number of illustrations "before and after" treatment in forty-two cases of lupus, all but five being very old and mutilating cases. They prefer to call this method of treatment artificial heliotherapy, as their aim is to use a light which resembles direct sunlight as closely as possible, and this they think is the carbon arc light. Of the thirty-seven cases rebellious to all previous measures, nine were completely cured and twenty remarkably improved, and the improvement is still continuing. Two of the patients died soon after the treatment had been begun; the interval since has been too short in the other cases for estimation of the final outcome. They were much impressed with the improvement in the general health under the artificial heliotherapy. The universal chemical light bath was Finsen's ideal, they state, rather than intensive local exposures to the light. The light baths were given daily or two or three times a week; some patients were cured with fifty-one exposures; the one requiring the longest course had 208. The baths were never over two and a half hours in duration.

### Ugeskrift for Laeger, Copenhagen

*October 22, LXI, No. 43, pp. 1837-1892*

119 Dwarf Growth from Fetal Chondrodystrophy. (Om Dværgvaekst som Folge af Chondrodystrofia foetalis.) V. Poulsen.

120 The Food in the Prisons of Germany and Denmark. (Fængselskost.) A. Erlandsen.

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# THE RELATION OF THE MEDICAL SCIENCES TO CLINICAL MEDICINE *

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In the medical curriculum there has come to exist a distinction between the medical sciences and the clinical subjects. At the middle of the course of four years there is a more or less sharp break — the student drops his science, the pursuit of which he has sometimes looked on as a burdensome, if not superfluous, experience, and turns abruptly to what he is often inclined to regard as the real thing in his preparation for professional work. Even the medical practitioner sometimes assumes a similar attitude toward the two groups of studies, and teachers of clinical medicine have not always been free from the encouragement of such a notion. That such an idea is wrong goes without saying, for it receives no sympathy from the best minds of the medical profession. Yet this arrangement of studies has not always existed; the present medical curriculum, which in its main features is essentially the same the world over, is a product of evolution, and one of the striking incidents of its recent history is the prominence that has been acquired by the medical sciences. It may be helpful to look into the rise of these sciences in some detail.

## EVOLUTION OF THE MEDICAL SCIENCES

Anatomy is the original and it still remains the traditional medical science. For centuries religious and social prejudices against the dissection of the human body confined anatomic study largely to the lower animals; nevertheless, even in the days of the Alexandrians, three hundred years before Christ, students of medicine probably had opportunities to witness frequent human dissections by Herophilus and Erasistratus and their followers. Later human dissection fell into disrepute and then revived, and by the fourteenth or the fifteenth century it became a part of the routine of medical instruction at the leading European universities. It received a new impetus from the great anatomists of the sixteenth century, led by Vesalius, but even then the students had little anatomic opportunities except to look on at demonstrations by the leaders or, more commonly, by the barbers or surgeons who actually handled the organs and tissues. It was not until the eighteenth century that the use of the scalpel by the student himself became at all common; and from that time until almost the present day the dissecting-room has been regarded as the student's proper abiding place during all his hours outside the lecture or clinic. It is obvious — and to no one more than the anatomist himself — that the gross structure of the human body presents a limited field of study for both the investigator and the undergraduate. In the last fifty years it has been supplemented and illumined by the study of microscopic structure, of embryologic development, and of genetic relationship, and has thus become broader and more helpful than before. But even with these additions, anatomy does not now occupy, and can never hope to regain, its former unique position as the one medical science deserving a separate place in the medical curriculum. Anatomists are entitled to great credit for having impressed on medicine the importance of their science during all the centuries; it helped to raise medical art above the degrading empiricism and speculation with which it was beset; it long kept alive the scientific spirit; and if its preeminence in medical study is now lessened this change must be ascribed, not to the fault of anatomy or anatomists, but largely to the general scientific renaissance through which we are passing.

Physiology, like anatomy, is one of the classical medical sciences. It is of prehistoric origin, for doubtless men always interested themselves in the working of their own bodies. At the time of the height of Grecian culture and of Alexandrian wisdom it had risen to an honorable place among the departments of human knowledge. Five hundred years later it was enriched by the labors of the immortal Galen. Through the middle ages it slumbered. In the sixteenth century it received an undying impulse from William Harvey and his discovery of the circulation of the blood, and from that time to the present it has had an unbroken advance, more rapid with each succeeding decade. During the century that has just closed, along with the passing of the doctrine of vitalism and the rise of the conception of the conservation of energy in physics and that of oxidation in chemistry, physiology has developed along two main lines and has come to be known as the science of the physics and chemistry of living matter; and as the content of the science augments, these two lines, although possessing a common aim, are forced by their different points of view and their different technical methods to diverge from one another. As a matter of medical education physiology had no separate status of its own until the eighteenth century. It was taught as an integral part of anatomy, the function of a part being naturally considered in connection with its structure. In the eighteenth century physiology came to be recognized as deserving of specific mention in the medical curriculum, but it was still united with other subjects, the choice of its companion apparently being determined by local circumstances. When the first medical school of Kings College, the forerunner of Columbia, was established in 1767, physiology and pathology together constituted one chair. The first physiologic laboratory was established at Breslau in 1839. The subject was first taught by means of lectures exclusively, but during the nineteenth century demonstrations gradually crept in. In this country the demonstrative teaching of Dalton, who came to the College of Physicians and Surgeons in 1854 fresh from the inspiring laboratory of Claude Bernard, created much enthusiasm and inaugurated a new era for American students of medicine. It is within a period of only about twenty-five years that laboratories of physical and chemical physiology for the general body of students have become common, and undergraduate students at last after all the centuries of growth of the science have been given the privilege of learning it. In Europe physiologic laboratories are not so well equipped for instruction as they are in this country, and it may truthfully be said that few medical practitioners in any country who have passed the age of fifty have had adequate opportunities to learn the methods of this science, to them most indispensable, or to steep themselves in its spirit.

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* Address delivered at the opening of the session of 1914-1915 of the Columbia University College of Physicians and Surgeons.

Although many individual diseases were well known to the ancients, pathology, the science of diseases, was necessarily largely a matter of theorizing until after the beginning of the revival of learning. By the sixteenth century those who dissected the human body began to be interested in the finding of abnormalities in the organs. This became gradually more and more common, and a mass of pathologic knowledge slowly accumulated; but it can hardly be said to have been organized for two hundred years and until the Italian, Morgagni, published in 1761 his remarkable five books on "The Seats and Causes of Disease as Investigated by Anatomy." There for the first time with any degree of completeness gross anatomic lesions were considered in relation to the clinical records of the diseases, and the science of pathologic anatomy may be said to have been born. It required still another hundred years before the cell conception was introduced into pathology by the great Virchow. Physiologic, or experimental, pathology was even slower in coming into being, for it could not well appear before normal function had become known. As with physiology so in pathology all teaching was at first didactic; later necropsies were employed for instruction; then the microscope was brought in for demonstrating the changes produced by disease in tissues; but not till about thirty years ago did undergraduate medical students have an opportunity themselves to prepare microscopic sections and examine them in the laboratory. The receiving of formal instruction in experimental pathology is still the privilege of the favored few.

Drugs have been used for therapeutic purposes from the earliest times, and the history of drug treatment is perhaps the strangest in all medicine. Here we see crude empiricism at its very worst. Although the ancients used many drugs intelligently the materia medica of the time of Queen Elizabeth contained, among remedies which may still be rationally used to-day, such monstrosities as cast-off snake's skin, dried vipers, foxes' lungs, spiders' webs, a plaster "compounded of viper's flesh, with live frogs and worms," oil of ants, oil of spiders and earthworms, "oil of puppies boiled with earthworms," cat ointment, and "moss from the skull of a victim of violent death." During the seventeenth and eighteenth centuries medical schools attempted some improvement by establishing botanical gardens to which students were expected to resort in order to study growing medicinal herbs, a strategy for inducing mental exercise which does not seem to have appealed strongly to the student mind. Pharmacology, however, the exact science of the physiologic action of drugs, did not appear until the nineteenth century when Magendie, the French physiologist, showed its possibilities. Its first laboratory was opened in Dorpat in 1856. Young as it is as a science, it is still fighting its way for independent laboratories and an adequate place in the medical curriculum.

But the youngest of all the medical sciences is bacteriology, and it has had the most rapidly brilliant career. All the world knows that its founders were Louis Pasteur and Robert Koch, and that less than half a century has passed since they began their epochmaking studies of the relation of micro-organisms to human diseases. It is since then that the most of the known species of bacteria have been discovered, and, what is of the greatest importance medically, the mutual physiologic relations of bacteria and their living hosts have become in a considerable degree elucidated. A knowledge of these physiologic relations has given us serums and vaccines and their therapy, and the whole fabric of immunity. As rapid as has been its growth, almost as quickly has bacteriology won its place in the medical curriculum, and it is the poor school now that does not possess a laboratory in which undergraduate students may personally experiment with disease germs.

From this brief glance at the evolution of the medical sciences we see that, with the exception of anatomy, they all have taken their places as separate branches of medical study during a period comprising even less than one hundred years. As time passes, therefore, their position within medical schools has been achieved only very recently. Moreover, the sciences that have thus come quickly into being as factors in medical education are chiefly those that have to do with function rather more than with structure — they are physiologic rather than morphologic sciences. Hence they are sciences that progress by means of experiment rather than by simple observation. In detail they include physiology itself, physiologic and pathologic chemistry, physiologic pathology, pharmacology and the greater part of bacteriology. This fact of the great inroad into medical education of these physiologic sciences is, I venture to think, a very remarkable and significant fact; for it indicates that they are of vital importance to the practitioner of medicine. Their influence is threefold: In the first place, they supply the future practitioner with a vast mass of systematized knowledge of the ways in which the complex human body performs its work, physical and chemical work, both in health and in disease; they show how this work may be modified by drugs and other remedial measures; they show how perturbations of bodily functions may be prevented and how normal function, when once disturbed, may be restored. In other words, they give to the future practitioner the basis for his technical procedures and teach him the reasons therefor. Moreover, they show him how this knowledge has been obtained, where it is still incomplete, and the ways in which it may be added to. In the second place — and this is of equal if not greater importance — they reveal to the future practitioner the nature of the scientific method; they show him how many of the best of the world's minds have proceeded when confronted by the problems of nature, how they have analyzed and clarified these problems, how they have devised experimental methods for the purpose of investigating them, and how they have solved them. They teach him the nature of causation, the necessity of finding causes if natural phenomena are to be understood, and the fallacy of the idea, which is far too prevalent in medicine, that that which precedes is necessarily the cause of that which follows: that, for example, when a certain drug is given and a cure follows, the cure is necessarily due to the drug — *post hoc, ergo propter hoc*. They show the importance of exactness in all scientific work and how as the medical sciences have advanced they have become constantly more exact. Moreover, they show that the problems of the practitioner are simply problems of Nature — the problems of the bedside are the same in kind as the problems of the laboratory, and they demand for their solution the attitude of the man of science. In the third place, if instruction in the medical sciences is what it should be, it imbues the student with a love for science and the scientific method; it fills him with the scientific spirit, without which no follower of medicine can attain the best.

### CLINICAL MEDICINE

Now let us turn from the consideration of the sciences to that great body of knowledge which constitutes modern clinical or practical medicine. It is a wonderful achievement of man. It represents the efforts of countless human minds, each working during his brief generation, while the whole is the product of the restless labor of centuries. It has had a manifold origin — individual experience, philosophical theory, speculation that cannot lay claim to the title "philosophical," and occasionally chance and accident have all contributed their share, and through it all but rising into commanding prominence in modern times there can be found the desire to discover causes, to connect causes and effects, to control effects by influencing their causes, and to substitute rationalism for authority — and this is the essence of science. If the history of medicine is to be summarized, it may be conceived as a constant conflict between empiricism and speculation on the one hand and science or something that corresponds to science on the other. Each side has had its victories and its defeats; each has had its periods of ascendency and its periods of decline; neither side has been wholly wrong; medicine at all times has been a mixture of the two; nevertheless the scientific conception and the scientific method have gradually won their way, they have demonstrated their merit, and they are bound to prevail in the end.

A striking chapter from the history of this conflict is illustrated by the course of medicine in Germany during the past century. In the first half of the century it fell on evil ways and descended to a low level. In 1854 — only sixty years ago — the clear-sighted Virchow wrote:

> German medicine on account of its views and dissenting "schools" has become the laughing stock of the world.

Oertel has graphically described the situation of the time. He says:

> There did not exist a well-founded universal scientific method of thought, investigation or teaching, but only opposed and battling "schools" and "systems" of medicine and therapy, such as homeopathy of Hahnemann, polypragmasia, Rademacher's system, Priessnitz's system, therapeutic nihilism, eclecticism, Bouillaud's bleeding to unconsciousness of the patient, Dietl's absolute condemnation of bleeding as a criminal offense (1849), Mesmerism and others. They formed the source of endless and senseless discussions, for they were all speculative and contributed much to the entertainment of their pompous defenders and the laity but not to the benefit of their patients. . . . It was not even a time of crude empiricism, but a fantastic period which, like a nightmare in individuals, occasionally arises during the life of a nation.

And yet Germany was then on the threshold of a great reform, for the medical sciences — pathologic anatomy, pathologic histology, physiology and pharmacology — were beginning to show to clinical medicine the pathway to higher things, and it was not many years before Germany had become the world's medical leader. But notwithstanding the triumphs of science the constituent parts of the great mass of modern medical knowledge are still of very unequal value; empiricism and speculation have not yet ceased to be; they are still the bane of medicine, and it is still necessary to contend against them.

As with everything that is of ancient origin, so in clinical medicine tradition is very potent. It is surprising to see to what an extent modern medical theories and practices come from the ancients and presumably therefore are purely speculative or empiric in their beginnings. This does not mean that they are therefore necessarily wrong, but their early ancestry always arouses suspicions in these days when science is smashing tradition right and left. Thus the fantastic doctrine of the humors, the beginnings of which seem to antedate all historical writings, still existed at the beginning of the nineteenth century. The pernicious fashion of blood-letting was practiced not only by Hippocrates four hundred years before Christ, but by the disciples of Hippocrates twenty-two hundred years after his death. The old treatment of pneumonia still persists, and from 20 to 40 per cent. of the patients still die. Quinin was used successfully for malaria by the Spanish invaders of South America in 1638 — an excellent example of the empiric introduction of an invaluable drug, the use of which medical science has now shown to be justified by its specific action on the malarial organism. A well-known American neurologist tells me that he frequently uses one of Galen's prescriptions and finds it very helpful. The celebrated Papyrus Ebers is said to record the fact that arsenic was used in the treatment of cancer even in ancient Egyptian times. The practice of greatly restricting the diet in patients suffering from acute febrile diseases was advocated and used by the "Father of Medicine," and is still practiced extensively, although the careful scientific work of Coleman now shows that it is to the disadvantage of the patient. The achievements of bacteriology have destroyed at once long-held and cherished traditions regarding the course, treatment and prevention of infectious diseases, and have enabled surgery to pass from an ancient to a modern art. Recent advances in our knowledge of the physiology of nutrition bid fair to place the traditionary topic of dietary treatment at last on a rational basis. With very many of the customary usages of present-day medicine it would probably be extremely difficult, if not impossible, to search out their origin, but every doctor who employs them should at least be able to justify their continued employment. One of the dangers to which students are exposed is that of learning the methods of their instructors without the reasons therefor and blindly carrying over the same methods into their own practice. This procedure, which may be called learning by inheritance, while implying a gratifying degree of respect on the part of the student for his professor, is not to be recommended, for while it may make a ready man, it does not make a full one. All young practitioners are subjected to this danger, often during their hospital service, and especially while serving on the staffs of the dispensaries. They there find that particular lines of treatment have, it may be, been long in use, certain prescriptions have become hallowed by age. It is not always easy to obtain and still less easy to remember their formulas, and to question their reason or practicability is not expected. The path of least resistance is to accept them, and this the younger doctor proceeds to do. What dispensary physician has not prescribed, without further thought of their constituents or physiologic actions, "Loomis' tonic," "tonic No. 6," "whooping-cough mixture No. 4," "epilepsy mixture," "Lockwood's sedative," "Pill Janeway," or their equivalents? Such a practice becomes too often mere mechanical routine, detrimental to the future growth of the scientific physician. I have heard it related of the great French physiologist, Magendie, that he was once demonstrating to some of his colleagues a new fact which he had discovered. His friends were skeptical of its validity and remarked that it could not be true because it was contrary to "the law of the membranes" — whatever that may be. To which the courageous savant replied that he knew no law of the membranes, but that there before them was the demonstrated fact. Adherence to tradition is right when tradition can justify itself, but a wholesome and well-balanced skepticism as to traditional medicine is the only safe and sure attitude of mind for the physician who would be progressive.

It is customary in these present days of great medical achievements to dwell on these achievements and to congratulate ourselves on what we have been able to accomplish. This is justified. Medical advance has indeed been marvelous; both medical science and clinical medicine are daily making magnificent conquests, and for this success no one has a greater admiration than I. But while in the face of such success self-congratulation is permissible to us, self-complacency, I submit, is not, for it cannot be denied that medicine has glaring deficiencies. It is of some of these that I wish, with your permission, now to speak—although in no pessimistic spirit. Consider the matter of diagnosis. Dr. Richard Cabot[1] has recently made a very frank and courageous, but very significant comparison, in the cases of three thousand patients who have died at the Massachusetts General Hospital, of the pathologic conditions actually found at necropsy and the diagnoses made during life from the clinical findings. He found the percentage of mistaken diagnoses to be as in the accompanying tabulation:

PERCENTAGE OF MISTAKEN DIAGNOSES FOUND BY CABOT

| | | | |
|---|---|---|---|
| Acute nephritis | 84 | Phthisis, active | 41 |
| Acute pericarditis | 80 | Aortic stenosis | 39 |
| Hepatic abscess | 80 | Septic meningitis | 36 |
| Chronic myocarditis | 78 | Brain hemorrhage | 33 |
| Vertebral tuberculosis | 77 | Mitral stenosis | 31 |
| Bronchopneumonia | 67 | Gastric cancer | 28 |
| Renal tuberculosis | 66.7 | Tuberculous meningitis | 28 |
| Suppurative nephritis | 65 | Cerebral tumor | 27.2 |
| Peptic ulcer | 64 | Chronic glomerulonephritis | 26 |
| Acute endocarditis | 61 | Lobar pneumonia | 26 |
| Hepatic cirrhosis | 61 | Cancer of colon | 26 |
| Thoracic aneurysm | 50 | Aortic regurgitation | 16 |
| Chronic interstitial nephritis | 50 | Typhoid fever | 8 |
| Miliary tuberculosis | 48 | Diabetes mellitus | 5 |

The average of mistaken diagnoses in these twenty-eight diseases is 46.5 per cent., or nearly one-half, and this in one of the leading hospitals of the country, where all available aids to correct diagnosis ought to be had! Dr. Cabot says: "The study of the details in these cases before and after death convinces me that, for the present and under the present limitations of diagnostic method, few of the mistakes tabulated above could have been avoided. . . . They mirror the methods of an average up-to-date hospital." Professor Orth, director of the Pathological Institute in Berlin, is said to have made the statement that "of all appendixes that have been submitted to him for examination by conservative surgeons with the clinical diagnosis of appendicitis, as many as 17 per cent. showed no disease." Dr. Starr tells me that the diagnosis of the location of brain tumors is a matter of probability, not of certainty, in 40 per cent. of the cases. We can easily identify a disease in a dead man, but what is needed is more accurate methods of finding it in the living one.

Does treatment afford us a greater cause for self-congratulation? In 1909 of the 732,538 deaths which occurred in the registration area of the Unted States, 90,868 resulted from pneumonia and other diseases of the respiratory organs; 90,456 from diseases of the circulatory organs; 81,720 from tuberculosis; 66,803 from nervous diseases; 48,430 from nephritis; 44,648 from diarrhea in infants; 38,020 from cancer and other tumors; 10,722 from typhoid fever, and 10,358 from diphtheria. Moreover, during the ten years from 1900 to 1910 there was a large increase within the registration states in the death-rate from certain forms of disease: diseases of the arteries, 396 per cent.; diabetes, 60 per cent.; organic diseases of the heart, 39 per cent.; cancer, 30 per cent.; nephritis, 18 per cent.; cerebral hemorrhage, 18 per cent., and cirrhosis of the liver, 14 per cent. When we realize that the registration area of the United States covers a comparatively small portion of the inhabited world's surface, we can form some notion of the huge army of the world's people who die each year from diseases for which there ought to be remedies. And the pronounced increase in the number of victims of some of these maladies reveals that medicine is not advancing as rapidly as are certain destructive agencies.

Sir William Osler's optimism in all things medical is pronounced, and hence it is the more interesting to read his words of prognosis. He says: Of typhoid fever: "Of the 1,500 cases treated in my wards, 9.1 per cent. died." Of pneumonia: It "is one of the most fatal of all acute diseases, killing more than diphtheria, and outranking even consumption as a cause of death." Of bronchopneumonia: "The death-rate in children under five has been variously estimated at from 30 to 50 per cent." Small-pox "in unprotected persons . . . is a very fatal disease, the death-rate ranging from 25 to 35 per cent." Of diabetes mellitus: "Personally I have not known an instance of recovery in a child." Of cirrhosis of the liver: "The outlook is bad." Of chronic Bright's disease: "The prognosis is extremely grave. . . . It is an incurable affection." Of pernicious anemia: "The ultimate prognosis in a great majority of cases is bad." Of leukemia: "Recovery . . . is practically unknown." Of diseases of the myocardium: "The outlook in affections . . . occurring late in life is extremely grave." Of aneurysm: "The outlook in thoracic aneurysm is always grave . . . in abdominal aneurysm is bad." Of Addison's disease: "The disease is usually fatal." Of the prognosis in epilepsy Osler frankly confesses: "This may be given to-day in the words of Hippocrates: 'The prognosis in epilepsy is unfavorable when the disease is congenital, and when it endures to manhood, and when it occurs in a grown person without any previous cause. . . . The cure may be attempted in young persons, but not in old.'"

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[1] Cabot, R. C.: Diagnostic Pitfalls Identified During a Study of Three Thousand Autopsies, The Journal A. M. A., Dec. 28, 1912, p. 2295.

### THE SCIENTIFIC AND THE PRACTICAL

From what I have said it is, I trust, sufficiently obvious that notwithstanding the high character of clinical medicine in many of its aspects and the great advances which it is making in many of its divisions, there is still everywhere imperfection, and serious imperfection, to be eliminated. Medicine is still very far from its ideal, which, I take it, is to maintain the individual in health, in other words in a physiologic state, if possible; and if he has lapsed from that state, to restore him to it. How can such an ideal best be attained? Two things are here needed.

In the first place, there must be a greater development of the medical sciences. "Medicine," says Dr. Victor C. Vaughan, the accomplished President of the American Medical Association, "consists of the application of scientific discovery to the prevention and cure of disease. All else which may go under the name of medicine is sham and fraud." The medical sciences have already accumulated a huge mass of material which is at the service of those who would utilize it in the treatment of disease. And yet there is still pioneer scientific work to be done everywhere. The more one labors to unravel the mysteries of the human body, the more intricate it seems to be; the farther one penetrates, the more one sees of unsolved problems. In the present stage of the evolution of the medical sciences the chief labor must be performed by the aid of experimentation, and here physiology, physical and chemical, must lead the way. The establishment of hospitals for the care of the sick and even for clinical research, the giving of large sums of money for the investigation of specific diseases, while having a certain value to the human race in the immediate saving of imperiled human lives, do not provide, I believe, the most direct path to the desired goal. The endowment of physiologic research, the dedication of a host of bright minds to the unraveling of the intricacies of the living mechanism, the learning of the ways in which the mechanism acts in health — herein, and herein chiefly, lies the secret of rapid, comprehensive medical advance. When once we know the normal activities of the body — and often while learning these — we can the more quickly discover the abnormal activities, and then the way to bring the diseased body back to the normal will soon be devised.

In the second place, in order to attain its ideal more completely, clinical medicine must be more fully saturated with a knowledge of the medical sciences, with scientific method and with the scientific spirit. The clinician must know more of what the physiologist, the pathologist, the pharmacologist and the bacteriologist are doing. Their discoveries are vital to him. Moreover, he must have so acquired the scientific habit of looking at the problems of nature that instinctively, when confronted by a case of disease, he will attack it, not as a matter of routine, not as he may have attacked a hundred other cases of the same disease before, for no two cases are wholly alike—nature never copies her works of art exactly—but as the man of science attacks one of his laboratory problems, with the critical, analytic spirit of the investigator, eager to find new facts and new points of view, eager to discover causes and relate them to effects. The problems of clinical medicine differ from the problems of the laboratory in this important respect: namely, that, while in the laboratory the investigator can establish the conditions under which he is to study, at the bedside the conditions are already established for him and he who is to officiate there must accept them. This makes his problem all the more difficult of solution.

Moreover, the practitioner in his professional capacity rarely has an opportunity to see the complex living mechanism with which he has to deal, in its normal state. When it is brought to him it is out of order, something has gone wrong, and the balance is upset. This may complicate the matter still more, for while it may be obvious that some of the parts are not behaving properly, it may not be so evident where the primary seat of the trouble lies. The practitioner cannot take the mechanism apart, as can the laboratory worker, but must necessarily deal with symptoms, and here is one of his dangerous pitfalls. For one who has learned the conventional clinical routine it is easy enough to prescribe for symptoms; but prescribing for symptoms alone is the resource of the ignorant and the inert. In current discussions of diseases we often hear that learned and awe-inspiring word, "syndrome," which is full of mystery to the uninitiated. A syndrome means a certain group of symptoms which are found to occur together. They may be related obviously or they may involve widely diverse organs. While the word is used in different fields of medicine it has become especially prominent in neurology, which already recognizes more than fifty different symptom complexes. Syndrome is a convenient word, but there is a real danger in its use, and this lies in regarding it as a finality. The symptoms, or the group of symptoms, is nothing if one cannot go deeper and find the anatomic and physiologic conditions which underlie the obvious signs. "Many neurologists think," says Dr. Tilney, "that when they have got down to a mass of symptoms, they have got to the end. Really they haven't begun. They are looking through the wrong end of the telescope." The excellent analytic work of Dejerine and von Monakow — and not to go to a greater distance from home — in our own laboratories and clinics the work of Professors Pike and Tilney indicate the advantages of placing clinical neurology on an exact anatomic and physiologic basis.

But it is not in nervous diseases alone that critical analysis must be carried beyond the symptoms to the underlying focus of the disease. One of the leading orthopedists of America told me a few days ago of a severe case of arthritis which he had recently had in his practice. The patient had been bedridden for several months, unable to move, except with difficulty and much pain. The inflamed and stiffened state of the joints was obvious and seemed to call for local treatment. The physician, however, caused a thorough chemical and physical examination of the patient to be made, during which a roentgenogram revealed the presence of unsuspected local abscesses at the roots of several of the teeth. The removal of these affected teeth resulted in the prompt recovery of the patient from his joint disease. In the opinion of this physician every orthopedist ought to have at his command a competent physiologic chemist with a well-equipped laboratory.

Prof. J. Whitridge Williams, of Johns Hopkins University, in a recent address as president of the American Gynecological Society, severely criticized the members of that society for not taking a more prominent part in the advancement of obstetric knowledge, and he added that universities ought to equip and maintain women's clinics "liberally provided with laboratories for the anatomical, chemical, pathological and physiological investigation of gynecological and obstetrical problems." The staffs of hospitals should be increased to include, in addition to the always existing pathologist, a physiologist, a physiologic chemist, a pharmacologist and a bacteriologist, competent to observe human beings from their respective points of view. If this were done, not only could their rich stores of knowledge and experience be brought to the service of the clinician, but they in turn could have wider opportunities than their laboratories afford for the investigation of their problems and the broadening of their knowledge. Their work should by no means be restricted to experimentation on animals, but they should have abundant opportunities for the legitimate extension of their observations to human beings. "How helpful it would be," says Sir William Osler, "if clinicians had always at hand skilled physiologists, pathologists and chemists to apply their most advanced technic to clinical problems, and not the technic alone, but the biological and chemical principles upon which medicine as an exact natural science is founded." This could be made a powerful agency in drawing together the two divisions of medicine, now unfortunately far too divergent.

### IMPORTANCE OF SCIENCE TO THE STUDENT

At the beginning of this address I spoke of the distinction that has come to exist in the medical curriculum between the medical sciences and the clinical subjects, and of the sharp break that occurs at the middle of the four years' course when the student drops his science and turns eagerly to the clinic and all that it is supposed to bring to him. Such a break ought never to be. One spirit, and only one, ought to permeate the undergraduate's four years, and that should be the spirit of untiring devotion to science, the master to whom all must pay their whole allegiance who wish to attain the best. Those who teach the medical sciences have not done their whole duty if they have not convinced their students that the sciences provide the key by which all that comes after may be unlocked; and the teachers of the clinical subjects have likewise failed if they do not hold to a rigid scientific ideal in their outlook over the details of practical medicine. Nor must this ideal be forgotten any the more during the two years of the hospital internship. After that the young doctor, sent forth on a world that is more or less skeptical of the efficiency of medicine and inclined to turn to fads and cults, must decide for himself what his course will be. He will find two paths open to him — the path of tradition and the path of progress. With the one his professional life will consist of a long succession of yesterdays, filled with the contemplation of what has been; with the other he will be ever reaching out for what to-morrow may yield. To him medicine may be either a trade or a profession. A man who is to follow a trade learns as an apprentice certain procedures, and thereafter it is his task to follow those procedures implicitly. The routine of a trade once learned is learned for a lifetime. It is possible to practice medicine in the same unintellectual way and to win what the world may call success. But there exists a higher type of physician. He it is who recognizes that his is a learned profession and who rises to the full dignity of it. Fortunate will be the life of that young man who feels irresistibly the call to the higher ideal.

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# GASTRO-INTESTINAL STUDIES

## IV. DIRECT EVIDENCE OF THE SECRETION OF A GASTRIC JUICE OF CONSTANT ACID CONCENTRATION BY THE HUMAN SUBJECT

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The question of gastric acidity has received considerable attention in recent years. It has been demonstrated quite conclusively, for example, that the phrase "the normal gastric juice of man contains about 0.2 per cent. of hydrochloric acid" can no longer go unquestioned. On the basis of older experimental evidence a rather high acidity (from 0.5 to 0.6 per cent.) was accorded the gastric juice of such lower animals as the cat and dog, whereas man was found to remain content with an acidity in the vicinity of 0.2 per cent. More recent experiments,[1] however, indicate that the actual acidity of the gastric juice of man is very similar (from 0.4 to 0.5 per cent.) to the gastric juice of the cat and the dog.

Pawlow,[2] on the basis of experiments made principally by his colleague Ketscher, enunciated the belief that "the gastric juice as it flows from the glands possesses a constant acidity." Various observers have repeatedly demonstrated both clinically and experimentally that there are pronounced variations in the gastric acidity. These variations Pawlow would explain as due mainly to the varying lengths of time the juice was in contact with the alkaline mucosa of the stomach. In substantiation of this view, he brought experimental evidence to prove that the juice which was secreted rapidly possessed a higher acidity than juice which was secreted more slowly, the latter form of juice having been more thoroughly neutralized because of its longer or more thorough contact with the mucus of the mucosa. The theory of constant acidity received further support in certain of Pawlow's tests on fasting dogs equipped with the Pawlow pouch. When such animals were subjected to "sham feeding," the acidity of the gastric juice remained constant notwithstanding the fact that the chlorid content of the animal's body was very markedly deficient. "Sham feeding" finally failed to evoke any secretion of gastric juice; but so long as there was any output of juice, it was of constant acid concentration.

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[1] Reports of these are given in the following:
Umber: Berl. klin. Wchnschr., 1905, xlii, 56.
Sommerfeld: Biochem. Ztschr., 1908, ix, 352.
Bickel: Deutsch. med. Wchnschr., 1906, xxxii, 1323.
Hornberg: Jahresb. ü. d. Fortschr. d. Tiersch., 1903, xxxiii, 547.
Rehfuss, M. E.; Bergeim, Olaf, and Hawk, P. B.: Gastro-Intestinal Studies, I, The Question of the Residuum Found in the Empty Stomach, The Journal A. M. A., July 4, 1914, p. 11.
Rehfuss, Bergeim, and Hawk: The Journal A. M. A., 1914, lxiii, 11.
Babkin: Die äussere Sekretion der Verdauungsdrüsen, Berlin, 1914, p. 113.
Boldyreff: Quart. Jour. Exper. Phys., 1914, viii, 1.

[2] Pawlow: The Work of the Digestive Glands, translated by Thompson, Ed. 2, p. 32.

Boldyreff[1] is the latest to assert a constant acidity for the human gastric juice. This investigator declares that the juice as poured out by the gastric glands has an acidity of about 5 per cent. This secretion of relatively high acidity is rapidly neutralized through the instrumentality of the regurgitated duodenal juices, the prime factor in the neutralization being the pancreatic juice. The "optimum" acidity is placed by Boldyreff at from 0.15 to 0.2 per cent., and the aim of the reflux of alkaline material into the intestine is to maintain the "optimum" acidity. If alkaline, neutral or faintly acid juices are introduced into the stomach, they are believed to excite an additional outpouring of the highly acid juice in order that the acid concentration of the stomach contents may be maintained at the "optimum."

In experiments on cats which had been subjected to the Pawlow pouch, Carlson, Orr and Brinkman[3] have recently demonstrated that "milk, whether ingested voluntarily or given forcibly, yields practically identical quantities and concentrations of gastric juice."

Wills and Hawk,[4] in a series of tests on the influence of water drinking with meals, demonstrated that the excretion of urinary ammonia was directly proportional to the volume of water ingested. They concluded that "the uniform relationship between water ingestion and the ammonia output might perhaps be considered as indicating that there was an attempt on the part of the gastric cells to maintain a uniform acid concentration."

Kersten[5] reports data which might be interpreted as demonstrating that the dog under some circumstances at least secretes for rather long periods a juice which is approximately constant in its acid concentration. The acidity values for a period of six hours after feeding 600 c.c. of milk are submitted in Table 1.

TABLE 1.—ACIDITY VALUES GIVEN BY KERSTEN

| Hour | Hydrochloric Acid Per Cent. |
|---|---|
| First | 0.49 |
| Second | 0.55 |
| Third | 0.55 |
| Fourth | 0.55 |
| Fifth | 0.48 |
| Sixth | 0.45 |

Certain experiments of Chighin[6] are also of interest in this connection. This author demonstrated that the introduction of 150 c.c. of water into the large stomach of a Pawlow dog evoked a secretion of 2.1 c.c. of gastric juice in the pouch, the juice containing 0.42 per cent. of hydrochloric acid, whereas when 500 c.c. of water were used a much more copious flow of juice, 7.2 c.c., was obtained, but its acidity was approximately the same (0.45 per cent.) as before.

Lönnqvist[7] has also reported data which may be interpreted as indicating, in some cases at least, that the juice as secreted from the Pawlow pouch, after the introduction of water and salt solution into the large stomach, is practically constant in acid concentration for periods of at least two hours or more.

Foster and Lambert,[8] on the basis of experiments made on Pawlow dogs, report data which indicate that the acidity of the juice is not constant, but varies from hour to hour. They assert that "early in the digestive period the content of chlorin in the juice is higher than toward the end of digestion." Among other data, they submit that given in Table 2.

TABLE 2.—ACIDITY VALUES GIVEN BY FOSTER AND LAMBERT

| Hour | Hydrochloric Acid Per Cent. |
|---|---|
| First | 0.56 |
| Second | 0.52 |
| Third | 0.44 |
| Fourth | 0.31 |
| Fifth | 0.22 |

Foster and Lambert say, "If the statement of Pawlow relative to the constancy of acid is correct, the gastric secretion would form an exception to present ideas of glandular activity."

### EXPERIMENT AND COMMENT

In the course of the investigations on the gastric acidity which have been under way in this laboratory for some time, it was noted that there were many individuals, both normal and pathologic so far as the gastric function was concerned, whose gastric juice was rather constant in its acid concentration for considerable periods of time. The data from these cases are submitted at this time as evidence favoring the contention of Pawlow which we have already mentioned. The samples of juice were removed for analysis by means of the Rehfuss tube,[9] which has been used in the investigations previously reported from this laboratory.[10] The following cases have been selected inasmuch as they demonstrate forcibly the tendency of the gastric secretion, after it reaches a certain equilibrium, to be poured out in a more or less constant acid concentration. In the beginning of the curve other forces come into play: (1) the passage of the material through the alkaline mucosa; (2) the union of the alkaline pyloric secretion with the acid fundal secretion; (3) the fixation or neutralization of the acid by the ingested material, and (4) probably the decreased velocity of the formation of the acid and the consequent greater neutralization by the mucosa. When all forces affording a stimulus to secretion are at work this affords a complete evacuation of the glands and a more representative secretion. The curve naturally drops toward the end of digestion, owing (1) to the lack of continued stimuli and (2) possibly to the formation of certain inhibitory or secretory moderator substances such as peptone. It can therefore be understood that during the process of digestion more or less fixation of available acid occurs, giving us a curve which we naturally encounter in normal cases. In the absence of this factor or in the presence of an excessive secretion, the outpouring of juice is of surprisingly constant acid concentration, and, in the absence of some substances which are capable of combining with the acid, remarkably constant in its physical and chemical characteristics. This is particularly marked in the so-called "continued secretion" which we have indicated as following certain types of digestive curves and in the hypersecretion which is encountered. The irregularities in the beginning of the curve and particularly the psychic phase can be explained on the basis of the irregular stimuli which enter into play at that particular moment.

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[3] Carlson, Orr and Brinkman: Am. Jour. Physiol., 1914, xxxiii, 86.
[4] Wills and Hawk: Jour. Am. Chem. Soc., 1914, xxxvi, 158.
[5] Kersten: Inaug. Diss., St. Petersburg, 1902.
[6] Chighin: Inaug. Diss., St. Petersburg, 1894.
[7] Lönnqvist: Skand. Arch. Physiol., 1906, xviii, 223.
[8] Foster and Lambert: Jour. Exper. Med., 1908, x, 820.
[9] Rehfuss: Am. Jour. Med. Sc., June, 1914.
[10] Rehfuss, M. E.; Bergeim, Olaf, and Hawk, P. B.: Gastro-Intestinal Studies, I, The Question of the Residuum Found in the Empty Stomach, The Journal A. M. A., July 4, 1914, p. 11; II. The Fractional Study of Gastric Digestion with a Description of Normal and Pathologic Curves, ibid., Sept. 12, 1914, p. 909. Bergeim, Rehfuss and Hawk: Jour. Biol. Chem., 1914, xix, No. 3.

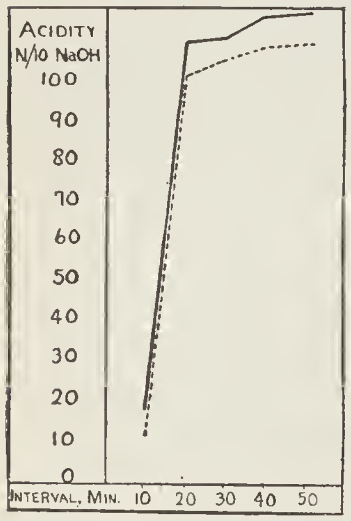

Chart 1.—L., after the administration of 500 c.c. tap water. Solid line, total acidity; broken line, free acid.

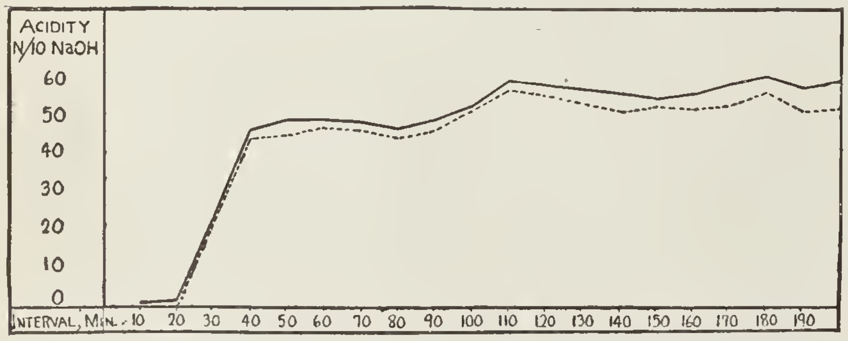

Chart 2.—H., "continued" secretion after the administration of 50 c.c. water at 50 C. Solid line, total acidity; broken line, free hydrochloric acid.

We believe that this constant acidity or the "average" acidity with slight variations in health is always to be found within certain limits, but may be in the absence of combining or neutralizing substances of comparatively high concentration. In disease every variation is encountered which must be interpreted by a thorough study of all the phenomena attending the outpouring of the secretion.

The following experiments are reported in detail because as far as we know they constitute the first evidence (direct) of the outpouring in the human subject of a secretion of constant acid concentration:

Experiment 1.—In a young student, aged 28, an excessive meat eater who smokes cigarets excessively, the figures given in Table 3 were obtained on the empty stomach in response to the introduction of 500 c.c. of cool tap-water.[11] Besides indicating the rapid exit of water from the stomach, the figures show that the character of the juice was remarkably constant in its acid content and that the outpouring of the liquid was unchanged until the termination of the test (Chart 1).

Experiment 2.—In an experiment on Mr. H., a person to all intents and purposes in perfectly normal health, there was an extraordinary continued secretion which lasted for several hours in response to the administration of 50 c.c. of distilled water at 50 C. (122 F.).[11]

TABLE 3.—FINDINGS IN EXPERIMENT 1

| No. | Time, Minutes | Total Acidity | Free Acid |
|---|---|---|---|
| 1 | 10 | 19.0 | 16.5 |
| 2 | 20 | 111.5 | 103.0 |
| 3 | 30 | 112.5 | 107.5 |
| 4 | 40 | 118.5 | 110.0 |
| 5 | 50 | 119.5 | 111.5 |

TABLE 4.—FINDINGS IN EXPERIMENT 2

| No. | Time, Minutes | Total Acidity | Free Acid |
|---|---|---|---|
| 1 | 10 | 1.5 | 0. |
| 2 | 20 | 2.0 | 0. |
| 3 | 30 | 23.0 | 21.0 |
| 4 | 40 | 47.0 | 45.0 |
| 5 | 50 | 50.5 | 46.0 |
| 6 | 60 | 50.0 | 48.0 |
| 7 | 70 | 49.0 | 47.0 |
| 8 | 80 | 47.5 | 45.5 |
| 9 | 90 | 49.5 | 47.0 |
| 10 | 100 | 54.5 | 53.0 |
| 11 | 110 | 61.5 | 58.5 |
| 12 | 120 | 59.0 | 57.0 |
| 13 | 140 | 57.0 | 52.5 |
| 14 | 150 | 56.0 | 54.5 |
| 15 | 160 | 57.0 | 53.5 |
| 16 | 170 | 60.0 | 54.5 |
| 17 | 180 | 62.5 | 58.0 |
| 18 | 190 | 59.0 | 53.5 |
| 19 | 200 | 61.0 | 53.5 |

The curve (Chart 2) shows a remarkable constancy with slight rhythmic fluctuations within very narrow limits. Many similar curves were obtained in normal individuals under the influence of varying stimuli, all of which tend to reach a certain level and then fluctuate within very narrow limits.

Experiment 3.—A medical student (Mr. F.) who smokes excessively has never been troubled with any gastro-intestinal disturbance. Lavage of the stomach was followed by the administration of 100 c.c. of water.[11]

TABLE 5.—FINDINGS IN EXPERIMENT 3

| No. | Time, Minutes | Total Acidity | Free Acid |
|---|---|---|---|
| 1 | 10 | 22.5 | 20.0 |
| 2 | 20 | 33.5 | 31.5 |
| 3 | 30 | 45.5 | 44.0 |
| 4 | 40 | 72.0 | 66.5 |
| 5 | 50 | 82.0 | 69.0 |
| 6 | 60 | 106.5 | 87.0 |
| 7 | 110 | 87.5 | 82.0 |
| 8 | 120 | 83.5 | 77.0 |
| 9 | 130 | 86.0 | 80.5 |
| 10 | 140 | 88.5 | 83.5 |
| 11 | 150 | 78.0 | 76.0 |
| 12 | 160 | 90.5 | 86.0 |
| 13 | 210 | 84.0 | 75.0 |
| 14 | 220 | 83.0 | 75.0 |
| 15 | 230 | 87.0 | 82.0 |
| 16 | 240 | 97.0 | 87.0 |
| 17 | 250 | 98.5 | 92.0 |

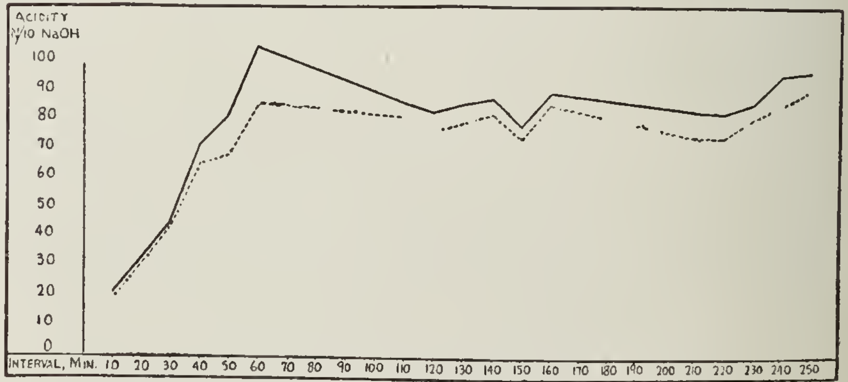

Chart 3.—F., 100 c.c. water after lavage. "Continued" secretion, four hours and ten minutes in duration. Solid line, total acidity; broken line, free hydrochloric acid.

The curve (Chart 3) likewise emphasizes the tendency toward a secretion of constant acid concentration. We have many curves similar to this, indicating that normally after the secretion is fully established, it has a strong tendency to become constant.

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[11] Bergeim, Rehfuss and Hawk: Jour. Biol. Chem., to be published.

From these frankly normal cases, at least normal inasmuch as they were free from all evidence of gastro-intestinal disturbances, let us turn to several which are distinctly pathologic, mostly recruited from the medical wards of the Jefferson Hospital.

Experiment 4.—Mrs. I. was given an Ewald meal.

A study of the curve in Chart 4 shows first that there was slow response with the rather tardy appearance of a secretion of comparatively low acidity. After reaching this point, with slight fluctuations, it remained at that level and within two and one-half hours there was still an appreciable amount of material in the stomach, although further examination revealed nothing. Cytologic examination was likewise negative; no mucus, no occult blood, only impairment of motility which together with the physical examination and the history justified the diagnosis of atony.

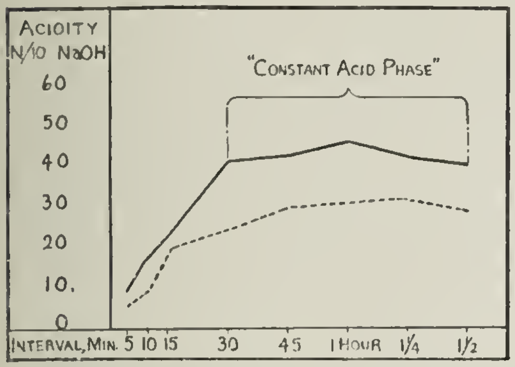

Chart 4.—Mrs. I., Ewald meal. Atony. Solid line, total acidity; broken line, free hydrochloric acid.

Experiment 5.—The condition of the patient, Miss F., was diagnosed as general visceroptosis, movable right kidney, upper intestinal catarrh and spastic constipation, the whole a part of the typical Stiller syndrome with rather pronounced vagotonic symptoms. Clinically the most pronounced symptoms were those due to atony, the discomfort and eructations following the ingestion of food being due to atony and being completely relieved by measures directed toward that end.

At two and three-quarters hours there was still an appreciable amount of material in the stomach, but examination of various samples, as in the previous case, failed to elicit the slightest sign of inflammation, neoplasm or ulceration.

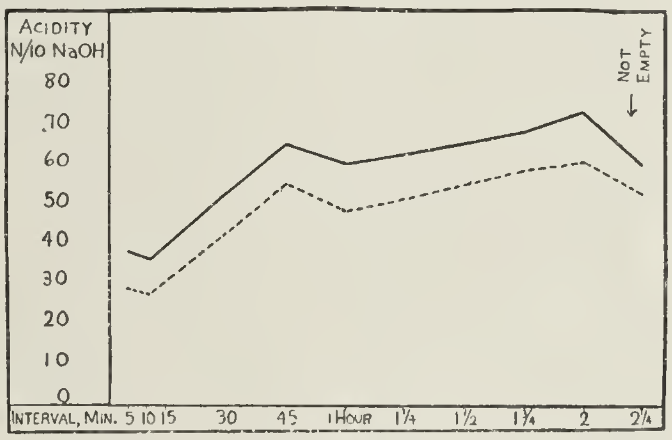

Chart 5.—Miss F., Ewald meal. Vagotonia; gastroptosis; atony. Solid line, total acidity; broken line, free hydrochloric acid.

TABLE 6.—FINDINGS IN EXPERIMENT 4

| No. | Time, Minutes | Total Acidity | Free Acid |
|---|---|---|---|
| 1 | 5 | 10.5 | 6.0 |
| 2 | 10 | 19.5 | 10.5 |
| 3 | 15 | 23.0 | 20.3 |
| 4 | 30 | 42.0 | 25.5 |
| 5 | 45 | 43.5 | 30.0 |
| 6 | 60 | 47.0 | . . . |
| 7 | 75 | 43.0 | 32.0 |
| 8 | 90 | 41.0 | 29.0 |
| 9 | 150 | Still considerable food and juice in the stomach, although no marked retention. | |

TABLE 7.—FINDINGS IN EXPERIMENT 5

| No. | Time, Minutes | Total Acidity | Free Acid |
|---|---|---|---|
| 1 | 5 | 38.5 | 29.0 |
| 2 | 10 | 37.0 | 28.5 |
| 3 | 30 | 53.0 | 45.5 |
| 4 | 45 | 66.5 | 56.5 |
| 5 | 60 | 61.0 | 49.0 |
| 6 | 75 | 63.0 | 52.5 |
| 7 | 90 | 66.5 | . . . |
| 8 | 105 | 69.5 | 59.5 |
| 9 | 120 | 74.0 | 61.5 |
| 10 | 135 | 60.5 | 53.5 |

Experiment 6.—This is a definitely pathologic case which illustrates a number of points regarding this study. The individual in question was given an Ewald meal on the empty stomach and the figures given in Table 8 obtained.

TABLE 8.—FINDINGS IN EXPERIMENT 6

| No. | Time, Minutes | Total Acidity | Free Acid |
|---|---|---|---|
| 1 | 5 | 31.8 | . . . |
| 2 | 10 | 41.4 | . . . |
| 3 | 30 | 30.2 | 18.0 |
| 4 | 45 | 30.2 | 20.0 |
| 5 | 60 | 35.8 | 23.3 |
| 6 | 75 | 38.0 | 26.7 |
| 7 | 90 | 43.5 | 30.0 |
| 8 | 100 | 43.0 | 30.3 |
| 9 | 105 | 51.2 | 38.8 |
| 10 | 120 | 50.5 | 38.0 |

At this point, the patient began to complain of pain and gnawing, and the figures showed a distinct rise in acidity as follows:

| | | | |
|---|---|---|---|
| 11 | 135 | 56.3 | 44.5 |
| 12 | 150 | 63.3 | 52.7 |

From this point on at 2¾ hours the stomach was empty after a distinct delay, but there followed a pure hypersecretion with average figures of

| | | | |
|---|---|---|---|
| 13 | . . . | 76.3 | 69.8 |

Careful study of the curve in Chart 6 shows that it is full of interesting data. In the first place the initial figures are high, in fact almost as high as the figures which follow, which average around 40. The high initial figure indicates, what a glance at the specimens shows, that the administration of the meal had been preceded by hypersecretion. The patient therefore had a fasting hypersecretion, which was confirmed by examination of the empty stomach. Then the digestive cycle commences with an outpouring of juice, which is comparatively constant for several hours during which there is no subjective complaint. Although there is a slight rise at one and three-quarters hours, the patient feels comfortable until the two and one-quarter hour interval, when he complains of distinct gnawing and griping. At the same time, it is evident that the stomach is empty and two things are occurring: an outpouring of pure juice which is unsaturated by food, and an increase in the acid concentration of the juice which is being propelled into the duodenum. At intervals he called attention to the cramp-like character of the pain, namely, pylorospasm. This is frequently seen in these cases and indicates the value of this method of examination. It enables us to record graphically the exact changes which are occurring in the stomach at any particular moment, and by the character of digestion record the particular phase in the digestive cycle in which the change is occurring. The pouring of digestive products of the latter part of the meal into the duodenum has given rise, either reflexly or through the action of hormones, to the outpouring of a juice which

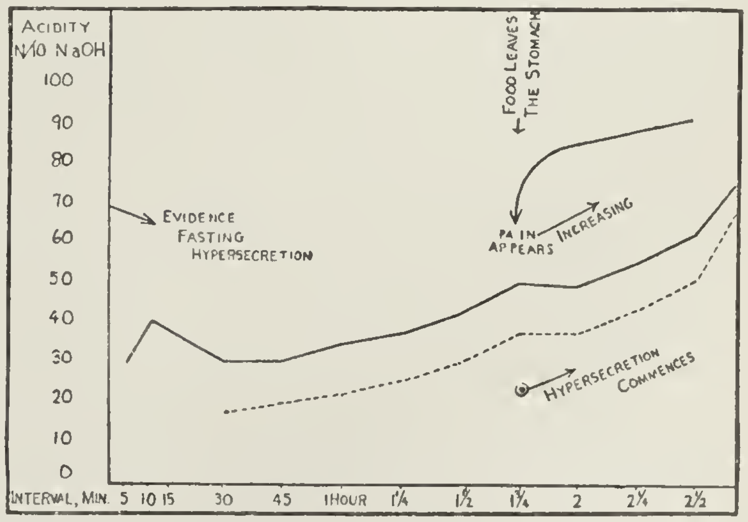

Chart 6.—N., duodenal ulcer, confirmed by operation. Solid line, total acidity; broken line, free hydrochloric acid.

apparently is not of the same character as that observed through the digestive phase, and therefore pathologic for the individual. Another point of interest was found in this case. The examination of the empty stomach revealed a twelve-hour retention (peas, the remains of green vegetables) and the specimens at one and one-half, one and three-quarters and two hours showed definite amounts of free fat. The diagnosis of a stenosing ulcer of the duodenum was made, and an operation was subsequently performed which demonstrated the correctness of the diagnosis.

Experiment 7.—The patient, Miss K. G., complained for several years of severe pain after eating, and on the supposition that an ulcer was present, operation was performed and no ulcer was found. The operation failed completely to relieve her and she continued to complain of the same type of pain with occasional attacks of hyperacidity. The pain was particularly pronounced after she had a bowel movement or anything which decreased intra-abdominal tension and permitted the stomach to sag. The history of this case was more or less typical of ulcer, although the last symptom, as one clinician pointed out, was very suggestive of adhesions. This was substantiated by the intermittent character of the pain often independent of meals. There was, however, sharp pain shortly after the ingestion of food. Accordingly an examination was made of the empty stomach, which showed absolutely no retention but a large very liquid residuum, a fasting hypersecretion. An Ewald meal was then given. The results obtained by fractional examination are recorded in Table 9.

TABLE 9.—FINDINGS IN EXPERIMENT 7

| No. | Time, Minutes | Total Acidity | Free Acid |
|---|---|---|---|
| 1 | 20 | 40.7 | 18.5 |
| 2 | 30 | 47.0 | .... |
| 3 | 45 | 50.3 | 25.6 |
| 4 | 60 | 48.2 | 25.9 |
| 5 | 75 | 43.5 | 25.0 |
| 6 | 90 | 42.7 | 24.3 |
| 7 | 105 | 44.9 | 25.7 |
| 8 | 120 | 48.4 | 28.5 |

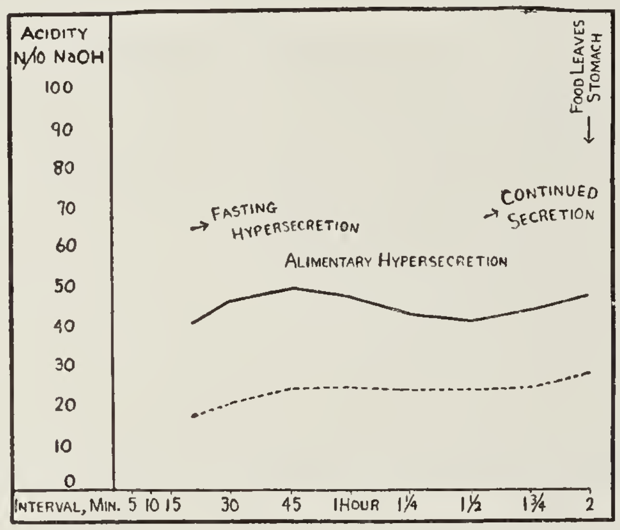

Chart 7.—Miss G., gastric adhesions, confirmed by operation. Notice continued high acidity. Solid line, total acidity; broken line, free hydrochloric acid.

Digestion was over in normal time, and there were no retention, no mucus, no bacteria, no occult blood, in fact nothing unusual about the specimens except the alimentary and continued hypersecretion, there being an exaggerated quantity of juice poured out in every phase of digestion. One point is significant: The gastric curve (Chart 7) is almost a straight line, there being no rise from the abscissa, and with the exception of the first figure, which is but slightly lower than the others owing to temporary saturation by food, the juice is practically of constant acid concentration. This curve is always pathologic and never seen in normal cases. In this case, examination of the stools, cytologic examination of the gastric contents and a study of the albumin content were all against the possibility of ulcer. We could find nothing in the curve or the specimens to suggest ulcer except the obvious hypersecretion suggestive of irritation. Roentgen findings indicated a spastic hour-glass contraction with ulcer on the lesser curvature. We would willingly believe this, but the spastic hour glass should also be accompanied by pylorospasm and delayed motility, particularly with gastric ulcer, evidence of which we could not find. In summing up our conclusions, we suggested ulcer, pylorospasm, possibly a fissure of the pylorus, but in all probability adhesions. Operation was subsequently performed and the only finding was adhesions, causing a transverse constriction of the organ. This case served to intensify the feeling that negative cytologic, chemical and occult blood findings in the presence of hyperacidity and hypersecretion indicate usually an extrinsic cause. The case shows well the pouring out of juice of a constant acid concentration.

Lack of space prevents us from enumerating a number of cases which we have collected after the administration of various stimuli, the Ewald meal, water, etc., which seem to indicate that after the phenomena of initial neutralization and fixation, there is apparently an equilibrium in the factors which bring about the production of acid, and the juice is very constant in its acid concentration. This is particularly the case in hypersecretion and in the normal "continued" secretion cases in which in the absence of substances which are capable of neutralizing the acidity is often remarkably constant. This is particularly the case in the second or chemical phase of the gastric cycle in contradistinction to the initial or psychic phase, which may be more erratic.

## CONCLUSIONS

1. By means of the fractional method, we have been able to demonstrate directly evidence of the secretion of a gastric juice of constant acidity in the human stomach.

2. This has been demonstrated in a large number of cases both normal and pathologic.

3. The low acid figures obtained at the beginning of the ordinary curve are explained by: (*a*) the lessened velocity in the formation of acid during the beginning of digestion (Pawlow); (*b*) the partial neutralization of the newly formed acid by the mucosa (Pawlow), and (*c*) the neutralization and fixation of the acid by the proteins of the bread. The lessening in acid figures toward the end of digestion is probably explained in those cases in which that phenomenon occurs and to (*a*) the lessened acid formation incident to the accumulation of inhibitory and sedative substances which tend to lessen acid formation, together with (*b*) a partial neutralization by the food of the acid already formed.

4. A clear exposition of constant acidity is best seen in those cases of "continued" secretion which we have pointed out in normal individuals and in many cases of hypersecretion in which, in the absence of definite material on which acid fixation or neutralization can occur, the acidity remains constant over long periods of time.

5. Pathologic deviations in this "constant" acidity can be noted and are often accompanied by subjective symptoms.

6. This is the first direct demonstration in the human subject in favor of Pawlow's theory of the secretion of a juice of constant acid concentration.

We wish to thank Dr. Olaf Bergeim and Prof. C. C. Fowler for assistance rendered.

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**Interdependence of Rural and City Health.**—Disease is communal. The health of the city is dependent upon the health of the country. A large part of the disease in the cities is brought in from the country.—William De Kleine, in *Pulbic Health*, published by Michigan State Board of Health.

# THE PREVALENCE OF OCCUPATIONAL FACTORS IN DISEASE, AND SUGGESTIONS FOR THEIR ELIMINATION [*]

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The purpose of this paper is, first, to point out the socially wasteful practice of administering daily to person after person for the same types of morbidity, due to the same causes, and, secondly, to emphasize a much neglected sphere of etiology, the proper conception of which is contained in the term "industrial relations."

The research summarizes a study of (1) U. S. Census Mortality Statistics of Occupations; (2) 65,000 dispensary records and many hundreds of cases personally seen during a two-year period at Rush Medical College (Central Free Dispensary); and (3) the medical portion of 27,887 cases in which the patients received treatment in Cook County Hospital during the year 1913.

1. Attention is first directed to an arrangement of mortality statistics somewhat different from forms customarily shown. An analysis of the mortality statistics of 210,507 persons engaged in 140 occupations in the registration area of the United States exhibits the percentages for the census year 1909 (the only year in which complete tables were published), given in Table 1.

TABLE 1.—MORTALITY AMONG OCCUPIED MALES*

| | Those in Agricultural Pursuits. Percentage of All Deaths | Those in 131 Trades and Callings. Percentage of All Deaths |
|---|---|---|
| Deaths from *preventable* causes (6/7 are diseases)† | 27.4 | 43.0 |
| Deaths from *degenerative* diseases (under 70 years of age)‡ | 26.5 | 31.2 |
| Total deaths after 70 years of age | 35.9 | 13.4 |

*"Occupied males" include professional callings, officials and proprietors, those engaged in domestic and personal services as well as those we ordinarily term real workers, namely, those in trade and transportation, manufacturing and mechanical pursuits, miners, quarrymen, etc., composing a total of 140 chief occupations—including those engaged in nine agricultural pursuits.

† "Deaths from preventable causes" include typhoid fever, pulmonary tuberculosis, pneumonia (under 70 years), alcohol, lead poisoning, other occupational poisonings, suicide, accidental poisonings, accidents and injuries, rheumatism, bronchitis, pleurisy and hernia—for the last four, only such deaths as have occurred under 70 years are included.

‡ "Deaths from degenerative diseases" include cancer, diabetes, apoplexy, heart disease, "other circulatory diseases" (4,858) asthma, cirrhosis of the liver, "other liver diseases" (880), and Bright's disease. There remain in the census classification 27,105 deaths from peritonitis, appendicitis, "other respiratory, digestive, nervous" and "all other causes," a large percentage of which were also undoubtedly preventable or prematurely degenerative, but which are not taken into consideration in the classification given above.

From this we see a marked difference in the prevalence of certain wasteful death causes between the two classes compared. We also note that the agriculturist stands a one-in-three chance of reaching old age (70 years), while the others' probability is but little better than one in eight. None can fail to grasp the significance of this table. To disclaim the importance of these figures on the basis of incorrect diagnoses and uncertainty of occupations is unjust. The fact that only the registration area is included, and the recency of the reports answer the first point. As to the second feature. Wilbur[1] has shown that where another or previous occupation could have been a factor, it amounts to less than 1 per cent., which is less than ordinary errors of transcription.

2. Before proceeding farther it is necessary to explain one or two terms. *Industrial health-hazards* may be defined as working conditions which, while they may not impair the more resistant worker until after a prolonged period, produce morbid conditions in the average worker, and tend ultimately to create preventable and degenerative diseases in all persons so subjected. The hazards, arranged schematically in order the better to remember them, are (1) dust, (2) dampness, (3) darkness, (4) devitalized air, including motionless and vitiated air, (5) heat, (6) cold, (7) fatigue, (8) inactivity, (9) compressed air, (10) infections, (11) poisons and (12) industrial *stimulantism*—the latter a common condition created by the belief among many workers that alcohol, strong coffee, etc., limit or counteract the effects of dust, poisons and other hazards; it is also promoted by dirty, disordered and depressing surroundings and the absence of proper thirst-assuaging facilities at the workplace. It is understood that each of the above-named hazards stands for a class of component hazards.[2]

Among 65,000 different applicants at Rush Medical College (Central Free Dispensary) there were 15,475 persons with definite trades. Professional persons, laborers, housewives and nondescripts were excluded in summarizing. Of this number 10,370 had afflictions deemed not occupational or controversially so, and were also excluded; such were venereal, surgical and acute infectious diseases; sexual, senile and certain skin, ocular (including refractive errors), ear, nose, throat and some nervous diseases. Certain trade tendencies could be noted in many of these; a good part of the surgical cases were strictly occupational. The balance, or 5,105 tradespersons, or about one-third the total number of tradespersons, worked at occupations having definite health-hazards, and had afflictions which such hazards were producing and definitely promoting. Such circumstances would render them applicants for industrial compensation for occupational diseases according to many foreign provisions[3]—"the diseases (scheduled) shall be deemed to have been due to the nature of that employment unless the contrary is proved"—the burden of proof lying on the employer, who has to show that the worker has not been subjected to work hazards which could produce the disease in question.

Among 2,500 consecutive applicants at the Central Free Dispensary Branch of the Chicago Tuberculosis Institute were 875 tradespersons engaged in occupations surrounded with definite and well-known health-hazards. Of this number 615 were found to be tuberculous, 125 were not positively diagnosed and the balance were not suffering from tuberculosis. Of 368 patients who were intelligent and answered questions,

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[*] Results of a study conducted at the Central Free Dispensary (Rush Medical College) and Cook County Hospital, Chicago, under the Occupational Disease Fellowship of the Otho S. A. Sprague Institute for Infectious Diseases.

[1] Wilbur, Cressy L.: "Vital Statistics in the United States," Am. Jour. Pub. Health, December, 1913, p. 1258.

[2] The Ohio State Board of Health, in the survey of industrial hygiene and occupational diseases which it is now conducting, uses, for workplace investigations, a card 4½x7 in. on which is logically arranged a complete list of the usual health-hazards of industry. By a simple code each is opinionated as "good," "fair" or "bad," as inspection reveals.

[3] See "Compensation for Industrial Diseases," by E. T. H. Lawes, 1909, Stevens and Sons, London, 306 pp. Also, "Order Extending the Workmen's Compensation Act," Great Britain and Ireland, Bull. Int. Labour Office, 1914, ix, Nos. 1, 2, pp. 23-24. Also, "Compensation for Occupational Diseases," Ontario, Canada, U. S. P. H. Reports, Aug. 21, 1914, xxix, No. 34, p. 2176.

259 made complaints of working conditions involving dust, light, dampness and ventilation. Their statements were not taken as to the more insidious hazards such as poisons, fatigue effects, liability to communicable diseases, temperature exposures, and industrial alcoholism.

3. In Cook County Hospital in the year 1913 there were 11,022 adult medical cases. Of this number, at least 2,866, or about 27 per cent., were persons engaged in definite trades having well-known health-hazards and were suffering with afflictions which were induced or promoted by such hazards. None of these, so far as we know, received compensation or even condolence from the sources responsible, nor, indeed, were their cases investigated by an executive branch of the government.[4]

It might be considered advisable to give a division of all of these 11,022 persons by "occupations" and by diseases. This was attempted, but it suffices to say that a large majority of this class of "down and out" patients have no regular occupations, and that, also, the term "occupation" as used in a charitable institution of this sort is capable of such loose construction that, unless each case is painstakingly examined, records and casual statements more often mislead than direct. The term "laborer," for instance, was found to apply to practically all occupations.

In the hospital diagnoses of these 11,022 medical cases, one finds none classified under the head of "occupational," or "industrial" diseases. Turning next, however, to the prominent poisons, and running them through, the records disclose cases charged to industry as given in Table 2.

TABLE 2.—CASES OF POISONING CHARGED TO INDUSTRY

| | No. of Patients |
|---|---|
| Lead poisoning | 47 |
| Arsenic poisoning | 3 |
| Wood alcohol poisoning | 1 |

But if such a search is extended to *diseases which might be occupational,* such as dermatitis, eczema, bronchitis, tuberculosis, heat-exhaustion, tetanus, flat-foot, lumbago, rheumatism, constipation, gastritis, pancreatitis, appendicitis, nephritis, neuritis, and particularly neurasthenia, one finds many comments on the history sheets savoring of occupational etiology. In fact, after such a search one comes to the conclusion that almost any medical complaint may be occupational, or at least may have in its etiology an important occupational factor.

As limited in number as are the *lead poisoning cases* noted, they are more frequent in occurrence than in the year 1910 in the same hospital. In spite of all legislation which followed the report of the investigation by the Illinois Commission on Occupational Diseases in the year 1910, they have still continued to come[5] and in several instances from the same identical workplaces.

An analysis of the principal symptoms given on the history records and used for arriving at a diagnosis in the cases of plumbism is given in Table 3. It is based on forty-six of the cases, as one patient absconded from the hospital before clinical features could be determined.

TABLE 3.—PRINCIPAL SYMPTOMS IN FORTY-SIX CASES OF PLUMBISM

| | Per Cent. | | Per Cent. |
|---|---|---|---|
| Colic | 98 | Basophilic degeneration | 43 |
| Constipation | 91 | Headache | 42 |
| Lead line | 80 | Albumin and casts | 29 |
| Vomiting | 78 | Multiple neuritis | 27 |
| High blood-pressure* | 75 | Wrist drop† | 18 |

* Determined in only 16 cases. In no case was it less than 125 mm. Hg, but in 12 cases it was more than 100 plus the age in years.

† The detection of lead paresis, preceding paralysis, can be made early, in the case of the arms, by the use of the hand dynamometer (Hayhurst, E. R.: Critical Examination of One Hundred Painters for Evidences of Lead Poisoning, Am. Jour. Med. Sc., 1914, cxlvii, 788).

The high percentage of lead lines shows quite conclusively that many cases without lead lines were not diagnosed as plumbism, since this sign is certainly not present in over one-third of even acute cases. Most lead workers are instructed and have learned to take "salts" regularly and as a result do not suffer much from colic, constipation, vomiting and headache, but they do suffer nevertheless from chronic plumbism as is shown by weakened neuromuscular function, blood-pressure determinations, facial pallor, impaired nutrition, affected kidneys, hardened arteries and fundus oculi examinations.

Analyses show that a total of 530 patients were engaged in processes which exposed them to lead in its various forms. As mentioned above, but forty-seven patients were industrially poisoned in the scrutiny of the histories of these cases. Among the balance we cite below the details of ten selected cases. Space alone limits the publishing of many times this number. I do not question the diagnoses made, necessarily, but wish to comment on their incompleteness. (The hospital diagnosis is given first, with civil statistics, and some of the symptoms; then the results, in briefest form, of our own investigations in connection with each case.)

Case 1.—*Aortic Aneurysm.*—Laborer, aged 52, U. S., signs of aneurysm, with symptoms of angina pectoris. Symptoms beginning four months previously. Found to have worked for the past three years in a lead factory, inordinately exposed to lead. This case ended fatally, presumably by rupture of the aneurysm. Four and one-half months in the hospital.

Case 2.—*Alcoholic Neuritis and Nephritis.*—Painter (general), aged 40, U. S. Found to have had an attack of acute plumbism two months before, with wrist-drop. Had his first attack twelve years before.

Case 3.—*Musculospiral Paralysis and Multiple Neuritis.*—Laborer, aged 32, Pole, double wrist-drop, blue line, basophilic degeneration. Found to be a lead worker. Later sued his employers for his condition. How much the hospital diagnosis will help or hinder his suit is left to the reader to conjecture.

Case 4.—*Arteriosclerosis.*—Painter (general), aged 54, U. S. History of several lead-poisoning attacks and in the hospital but a few months before for "lumbago."

Case 5.—*Constipation.*—"Iron molder"—such was his regular trade, but he worked in a paint factory for one week, putting paint in cans—aged 38, Pole; symptoms acute. Stated that the work-room was filled with dry paint dust, and that masks were "more or less" constantly worn.

Case 6.—*Pus Appendix,* gangrenous (diagnosis made by abdominal section). Russian, aged 31. Within the past year a farmer in Russia. Sick for past four months. Found to be a white lead molder, and made great complaint of the amount of lead fumes and dust he was compelled to breathe. Place of employment the same from which four other cases of lead poisoning had come to this one hospital within the period of our observations.

Case 7.—*Chronic Rheumatism and Acute Uremia.* Painter (general), aged 60, Irish. Sick for past two months. Entered hospital in semicomatose condition with convulsions. Found to have had lead colic as far back as twenty years previous.

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[4] In this connection we may say that the powers of the state factory inspection department, limited as they are to the reports of factory physicians only and then to a certain few poisonous industries, do not permit of aggressive investigations of this sort.

[5] See Bull. Ill. State Depart. of Fact. Inspect., October, 1913, and April, 1914, i, 1 and 2.

CASE 8.—*Catarrhal Jaundice.*—Laborer, aged 28, Greek. Sick twenty-one days—colic. Found to be a lead smelterer, and from the same place where several other positive cases of lead poisoning occurred, several of the patients entering this hospital within the past year. The firm is an old offender.

CASE 9.—*Neurasthenia.*—Painter, aged 42, Hungarian. Complaint, abdominal pain. Had similar attacks off and on for the past four years. Found to be a passenger car painter, and complained of breathing paint dust. There have been many cases of lead poisoning reported, both at this hospital and elsewhere, among his fellow workers.

CASE 10.—*Paratyphoid Fever.*—Battery assembler, aged 23, Lithuanian; abdominal colic; blue line. Found to work in a storage battery factory exposed to much lead dust. Also had all symptoms of lead colic eight months previous.

This series illustrates how easy it is for primarily occupationally diseased patients to be lost sight of in terminal complications; the necessity of going deeply into the exact occupational risks which the patient has endured, and the lack of significance of the term "laborer." Furthermore, these cases emphasize very well the social waste in continuing to treat, and failing to diagnose etiologically cases which keep coming from the same sources, trades and callings year after year.

Industrial *arsenic* poisoning is not frequent in Chicago, yet the three cases noted above were hardly one-fourth of the total in this one hospital; another ten cases (all acute), which we could discover, were termed "dermatitis," "eczema" and "acute gastritis." In this connection it is well to state that in several instances these patients gave their previous regular occupations, such as "boilermaker," "electrician" and "jeweler," instead of mentioning their recent arsenic-industry employment, when questioned by the hospital entry clerks.

The three diseases given in Table 4 were correlated with occupations of the patients; the figures give the numbers which were in whole or in part occupational in character.

TABLE 4.—OCCUPATIONAL CASES IN THREE DISEASES

| | No. of Patients |
|---|---|
| Chronic nephritis | 265 |
| Rheumatism (various forms) | 417 |
| Organic heart disease | 333 |

In the case of the latter disease it is well to mention the efforts now being made in New York and at Cincinnati to select proper forms of work for such patients after discharge, in order to prevent occurrence and recurrence of non-compensation and consequent return to hospitals.

No cases were recorded of *pneumonoconiosis*, or of its various forms, as *siderosis, chalicosis, aluminosis,* etc., although there were a total of 134 cases of *chronic bronchitis* without efforts at etiologic diagnosis.

There were recorded 229 cases of *arteriosclerosis.* Unfortunately an idea of the extent to which fatigue-substances, heat-toxins and extrinsic poisons of industrial origin may have entered into this class of cases can rarely be gained from present-day histories anywhere; hence any idea of using the information for shutting off the oncome of such cases is at once precluded. They are all charged apparently to the account of moral hazards, or disease misfortunes.

There were 156 cases of *neuritis* of various types. While the preponderance of alcoholism and drugging as causal may be admitted, each should be searched for the likelihood of industrial poisoning, both extrinsic and intrinsic. For example, multiple neuritis occurs at a given rate among all alcoholics, but among those exposed to lead it is unusually common. We did not find time to go into these.

There were 157 cases of *neurasthenia* for which no other cause could be found than exhaustion, and we know that every effort was made by diagnosticians to keep this number minimal. Why should not the cause of such exhaustion be inquired into with the idea of naming it etiologically, and, if industrial, as it probably is in 90 per cent. of the cases, of recording it as *occupational neurasthenia?* If each such case were looked at from this point of view, corrective agencies would have a case to investigate.

There were twenty-eight cases of pes planus, fifteen cases of tetanus, and numerous cases of skin disease, heat exhaustion, neuralgia, uremia, etc. Here and there was a mention of work etiology, but the mention was productive of nothing. In fact, it was lost sight of entirely through the absence of a heading in the filing system under which to place "occupational complaints." It is largely on this account that so few occupational diseases can be found in institutional records anywhere (they are nearly all alike in this respect) when one intuitively feels they are omnipresent, especially if any field work has been done in industrial health-hazards.[6]

During the course of the year 1913, there were in the hospital *2,230 adult cases of tuberculosis* (I understand that not over 50 of these were "repeats"), 1,800 males and 430 females. One may safely say that practically none of these had active tuberculosis at the age of 14 years! The question is, Why and how have they acquired it since? How many of them would have it now had they lived an agrarian existence, for instance? The predisposing causes of their tuberculosis may be placed under three heads: (1) moral hazards, (2) domestic or housing hazards, and (3) industrial hazards. These three factors operating, perhaps, in unison have caused either a reawakening of latent childhood infection, or have invited environmental infection. Without disregarding the importance of the first two hazards, I am of the opinion that the importance of industrial hazards has been greatly underestimated in almost every case, and that it is useless to fight tuberculosis unless the daily eight to twelve hours vocation be investigated and supervised. The so-called "occupations" under which these 2,230 tuberculous persons were registered give practically no information of value. For this, it would be necessary to individualize cases. The records show one thing which is certain, however—that *they keep coming,* and very largely *from the same environments.* One important analysis shows that there was a total of 672 medical patients in the hospital engaged in dusty trades, of whom 284, or 38 per cent., were tuberculous. This is almost double the general tuberculosis rate among the medical (adult) cases in the hospital (20.2 per cent.). For "laborers," as a class, the percentage of tuberculosis was 23.3 per cent.

A principal feature in all these cases is to determine exactly the occupations. The principal result should be an etiologic diagnosis as far as possible, including the use of qualifying terms such as "bronchitis, occupational," "neuritis, chiefly occupational,"

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6. Several excellent text-books have recently appeared on occupational diseases and industrial or vocational hygiene which discuss the various hazards of each calling.

"aortic aneurysm, probably occupational," "nephritis —alcoholic and lead," etc. This is similar to uses elsewhere, as seen in such descriptive terms as *puerperal* sepsis, *tuberculous* pneumonia, *typhoid* fever and diabetes *mellitus*.

It must not be forgotten that patients themselves are densely ignorant of what constitute health-hazards; that they calmly accept them as a matter of course, and unworthy of notice; that the competition for work is great; and (one comes to realize) so much greater than everything else is *the innate desire in man to work*—a desire which, in the normal man, equals his appetite and seeks to be satisfied in spite of all conditions.

## SUGGESTIONS FOR THE SOLUTION OF THE PROBLEM OF OCCUPATIONAL DISEASES

The health-hazards of industry which cannot be feasibly removed are insignificant in number.[7] The best proof is the fact that certain establishments engaged in the industries and processes in question have circumvented such hazards, and invariably to the improvement of production, as well as labor attitude and relations.

1. First, there is needed a nomenclature to designate properly what is meant by "occupation." No one word will do this. The word "occupation" as used in medical parlance, hospitals, institutions, anti-tuberculosis society records, etc., should be abolished absolutely. A little study of some of the application blanks of insurance companies, particularly those carrying sickness insurance, offers many suggestions to framers of history sheets, social statistics, nurses' records, etc. After considerable study, and several years of field and statistical experience with this question, we have evolved and are using a scheme to take the place of the word "occupation" as outlined in Table 5.

TABLE 5.—SCHEME TO TAKE THE PLACE OF THE WORD "OCCUPATION"

INDUSTRIAL RELATIONS
(AS STATED BY THE PATIENT)

| | Present | Past | Previous (to Past)* |
|---|---|---|---|
| 1. Name of employer .......... | | | |
| 2. Address of employer......... | | | |
| 3. Business of employer ....... | | | |
| 4. Calendar years worked here.. | | | |
| 5. Department(s) worked in.... | | | |
| 6. Particular process(es) engaged in .................. | | | |
| 7. Health-hazards† exposed to... | | | |

* For acute afflictions it is not necessary to go back beyond a few days or weeks, perhaps. For recurrent afflictions one should go back months or years. For chronic afflictions it is necessary to go back preferably five years or more. It is not to be expected that the busy entry clerk will fill out this record. It should be the duty of the history taker, oftentimes with the aid of an interpreter, and, if significant, even with outside assistance.

† Question "7" should be answered whenever there is any possible relationship between the patient's affliction and his industrial relations.

This is not dissimilar to what is ordinarily inquired into by the average insurance company. The question at once arises, Should not social and charitable institutions demand just as thorough an investigation of industrial relations as a sickness insurance company? Certainly the taxpayers of a community have a right to demand as much.

2. It is a serious handicap to many interests that there is to-day no logical classification of occupations in existence. To different persons the same term conveys quite dissimilar intelligence. With the information obtained from the use of the blank form given in Table 5, a *logical classification of occupations* may be attempted. While the names and addresses of employers are not necessary for the classification in question, they should be required on all institutional case-records as legitimate information pertinent to the care and supervision of the case. With the facts secured by Answers 3, 5 and 6, any given type of worker and all of his kind may be descriptively and distinctively classified. A scheme to classify occupations must collate "industry," "business department" and "trade process." It therefore requires three descriptive terms to do this. "Industry" must be considered, because, for example, a fireman at a zinc smelter-works is subject to considerably different hazards from those of a fireman in the boiler room of a public building; "business department," because, for example, a cook with a railway construction gang has considerably different hazards from those of a cook on a railway dining-car, etc. Let us apply this principle to a heterogeneous collection of workers (Table 6).

TABLE 6.—THE COMPLETE STATEMENT FOR "OCCUPATION"

| *Industry* | *Business Dept.* | *Trade Process* |
|---|---|---|
| Pottery | Clay shop | Jiggerman |
| Pottery | Glaze room | Dipper's helper |
| Vehicle | Painting | Painter and sander |
| Agricultural implements | Painting | Dipping machine laborer |
| Iron and steel | Butt mill | Furnaceman |
| Brass | Foundry | Furnaceman |
| Iron foundry | Foundry | Laborer |
| General | Nondescript | Laborer |

In this way it is possible to classify any one's trade or calling exactly. As in the case of "iron foundry," redundancies seemingly occur, but these are only apparent, for all the information obtained is necessary to exactly identify each worker's industrial application and environment.

It is not necessary for two persons to describe the terms exactly alike for a given case; nor, in the case of the same activities at two separate places, is it necessary to have descriptions identical, word for word. The information given under the three headings will invariably convey intelligence enough to enable a third person to comprehend fully just what is meant. The statistician is at liberty, furthermore, to enlarge the groups so as to come under the usual general industrial headings: agriculture, professional, personal service, trade and transportation, manufacturing and mechanical pursuits, and miscellaneous.

3. With the occupation definitely known and the health-hazards recorded, the weight of these in the affliction at hand can be estimated. The next step is to *investigate and verify* the patient's statements. Right here is where our system of social service fails. It is at present nobody's official business to attend to this. This function should constitute a part of the *statutory business of the community health department* whose findings, when positive, with recommendations and suggestions, should be given over to the proper (state) executive department. It should also become a corollary obligation on this health body to lead in the hygienic education of the workers, and to some extent of the employers, by drawing up rules and regulations to be observed by both of them and to be posted in workplaces as health-placards. This last function should not be hampered by having to wait for preparatory legislation aimed at each line of industry, as is now the usual manner of remedying such conditions. This power is just as much the rightful function of the health body as any of the offices

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[7] See Symposium on Ventilation, Jour. Indust. and Eng. Chem., March, 1914.

it now performs. *This power should be legalized and made mandatory on the health body.*

4. The enforcement of such regulations should depend, in the end, on the *compensation principle,* by which the employer will soon undertake to supervise his own plant, quite independent of the state's enforcement, as well as the health of his workers, both in and beyond the workplace, the latter on the now accepted theory that the employer has a right to demand "his money value for his expenditure for labor." Physical supervision, medical examination of employees, and a better selection of workers for the job will be the first effects of this system, while workers whose sicknesses are the results of moral or domestic hazards will soon be educated into line, or eliminated from industry. As industrial relations usually determine home conditions and habits, it would appear rational at all times to make an attack on delinquent social conditions at the place of employment.

### SUMMARY

As a result of considerable study of hospital and dispensary cases and records, of vital statistics, and of field investigations, we reach the following conclusions:

1. Occupied persons, other than agriculturists, suffer an enormous mortality (figures show 74 per cent.) from well-recognized preventable and prematurely degenerative diseases.

2. Occupational diseases exist because industrial health-hazards exist. Responsible employers do not realize the existence of either, while treating agencies take little cognizance of employments.

3. From one-fourth to one-third of the medical afflictions of tradespersons are due in whole, or in great part, to industrial health-hazards.

4. In institutions, the vast majority of industrial diseases are lost sight of through failure to recognize properly the industrial relations of the patients, to make etiologic diagnoses, and to classify properly in subsequent filing.

5. Specific occupational diseases, such as lead poisoning, are not recognized in more than one out of three or four instances, more especially the chronic cases.

6. Present-day institutional records are of value only in showing the enormous numbers of representatives of groups of industrial pursuits who are below the physiologic normal, and who seek medical aid for preventable afflictions. Such records have little value to the student of economics.

7. A most important first remedy is a proper nomenclature for industrial relations to take the place of the word "occupation." Such a nomenclature is here propounded. The chief feature of this is the introduction of the term "industry-department-process" for the word "occupation." Adoption of this proposed term, furthermore, renders a logical classification of occupations possible. No such classification now exists.

8. The powers and functions of the community health-governing body should be extended to the prompt investigation of all industrial complaints, and to the prompt remedying of them without the necessity of preliminary legislation against certain alleged responsible industries.

9. In spite of the fact that the state in which this study was made has an occupational disease law, workers are still coming into its charitable institutions from the same types of trades, and in some instances, from the same manufacturing establishments, in even greater numbers than at a period three years previous, when the Illinois Commission on Occupational Diseases made its investigation. This, we charge, is most directly due to the non-existence of a correlating body between the hospital and the factory.

10. Too much importance is usually given to alcoholism, with a failure to appreciate that subjection to industrial health-hazards in itself induces and promotes stimulantism.

As a noted health officer has stated, many occupational afflictions might well be made the subject of a grand jury investigation, and others, of a coroner's inquest. The enormity of the public and private sums now spent on preventable sickness and death should induce those who pay the tax to bend every effort to run down these contributory factors and abolish them.

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# CLINICAL CLASSIFICATION OF ETHMOIDITIS*

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As a result of the efforts of many observers during the past quarter of a century, we have acquired considerable knowledge concerning the inherent and associated pathology of the ethmoid cells. The clinical study of these cells is still of great importance, for by the knowledge thus obtained we are better able to judge of the macroscopic pathologic changes observed by direct inspection and by the aid of endoscopic instruments. Endoscopic examination of the nose enables us to inspect recesses which are otherwise hidden or at best only poorly observed. There is great need of study in this direction, for many of the findings are more positive than can be obtained in any other method. The roentgenogram is an aid which is of much service in some cases of ethmoid disease. It may give a working knowledge of the arrangement and size of the individual cells and it may be of considerable help in demonstrating the coexistence or the absence of associate sinus disease. We have also made considerable progress in our ability through surgical and medical means to relieve local pathologic conditions—those due to extension into adjacent structures, and also those due to reflex nervous impulses. From a clinical point of view there is still need of much research into the pathology and treatment of this region. We are in need of more uniform nomenclature and there must be a better understanding in regard to the best procedures, medical and surgical, for the relief of the various conditions with which we have to deal.

It is important that we do not forget that the ethmoid with the middle turbinate performs two very important functions. The air-spaces within the ethmoid act as non-conductors of heat and cold as well as other irritations, and through this structure the orbit and its contents are protected from the frigid currents of air which are inhaled during cold weather and which without this non-conductive barrier would come into close contact with these delicate structures. The restriction of the superior and middle fossae of the nose by the ethmoid with its middle turbinate and covering of erectile mucous membrane provide for the warming and moistening of the inspired air before it enters the throat and passes into the lower respiratory organs. When for any reason the middle turbinate and lower wall of the ethmoid have to be sacrificed there results a deformity which practically produces all of the ill effects of mouth-breathing. The inspired air is not sufficiently warmed or moistened and there almost always follows a chronic dry pharyngitis and a chronic laryngitis. Frequently the trachea and bronchi suffer in like manner as the upper respiratory organs. These patients almost always suffer from orbital as well as nasal disturbances whenever they are subjected to the influence of cold or dry air or to air contaminated with irritating dust or gases.

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I am devoting considerable space to these preliminary remarks concerning the physiologic functions of the ethmoid and to the resulting disturbances when for any reason this structure has to be sacrificed, as it is of the utmost importance when we take up the study of this subject in the concrete. Were it not for the great importance of this structure, the clinical significance of our study would be reduced to a simple operative procedure. There would be nothing gained by the expenditure of time and energy in trying to differentiate between the infections of the various cells of the ethmoid or of the middle turbinate, for it would be easier to remove all of the turbinate together with the nasal wall and trabeculae of the whole ethmoid. With our present knowledge, the most important thing is to ascertain, so far as possible, the degree and extent of the existing pathologic conditions, to learn of the duration of the disease and whether there have been previous attacks, to consider the inconvenience of the existing ethmoid disease to the patient, the degree of extension into other structures and the inconvenience as well as danger due to this extension. It is likewise of great importance to consider the patient's general condition, his hygienic surroundings, his habits and previous treatment, if any. After having gone over the individual case, unless we are sure that the whole ethmoid structure is beyond repair, I believe it is our duty to make the patient understand that it will give better results in his case to save all the nasal structures possible and tell him that in trying to obtain this final result several operations may be necessary. After this understanding, we should do only what we believe to be essential to accomplish the results and follow this up with suitable treatment, resorting to further operative interference if found necessary. We cannot make this point too strong because it is so easy to be led into extensive radical exenteration; and it is impossible to restore structures once removed or to overcome the symptoms frequently resulting from this extensive loss of tissue. In extensive ethmoid diseases it may be absolutely impossible to stop the progress or to give relief without thorough exenteration. When we are able to prove that we are dealing with such conditions it would be folly to attempt what would ordinarily be conservative treatment. The most thorough exenteration is none too radical and must be advised.

The ethmoid cells are intimately associated and are practically a part of the labyrinth of cells beginning anteriorly with the frontal and ending posteriorly with the sphenoid. Through their drainage they are also more or less intimately associated with the large inferior orbital cell, the maxillary antrum. In dealing with the ethmoid cells—from an etiologic, a diagnostic, a prognostic and a therapeutic point of view—we have to consider carefully the frontal and sphenoid cells and also the maxillary antrum. The symptoms are frequently exaggerated by those arising from a coexisting frontal, sphenoid or maxillary disease, or they may be simulated by disease of these associated areas. Again, disease of the maxillary may be simulated or produced by the discharge of a diseased ethmoid into its cavity.

Irritation of associated nerve filaments, especially the dental, may produce symptoms of pain and sometimes hypersecretion of mucus within the nose which naturally suggests infection and may lead to a wrong diagnosis unless much care is exercised.

Clinically, we see a number of pathologic conditions within the ethmoid. These conditions vary in intensity and produce varying and various degrees of symptoms. These symptoms are not necessarily a guide to the severity of the pathologic process. The anatomy varies considerably and this variance is an important factor in the production of the symptoms and in the progress of the pathologic processes.

Although it is clinically impossible to classify satisfactorily the pathology of the ethmoid, for the purpose of more easily presenting the clinical aspect, we can first divide it into two classes, the purulent and the non-purulent. The purulent may be either acute or chronic. The non-purulent may occur as an acute inflammatory, a chronic inflammatory, a degenerative (polypoid and atrophic), a syphilitic, a tuberculous or a neoplastic. The purulent or non-purulent types may occur independently or may be associated. The acute inflammations are extremely common and are usually associated with attacks of acute general rhinitis. The majority are self-limited. They are often the most difficult to diagnose as the symptoms are frequently the only real guide, and when the drainage is not materially obstructed the symptoms may be so slight that the condition is overlooked. When there is associated purulent secretion which can be observed coming from some of the ostia, the diagnosis is easier and more positive, but more frequently the secretion if excessive is mostly serum and it is practically impossible to state positively from what area it is coming. It spreads out over the mucous membrane of the turbinates and fossae and discharges from the nose anteriorly or into the epipharynx posteriorly.

The symptoms in this condition are usually not severe until some of the channels of escape become blocked by the swollen mucous membrane. When there is a blocking of excessive secretion from the ethmoid cells there arises a sensation of fulness and heaviness within the head and there begins a more or less severe pressing pain which radiates from the eye and often extends into the temple, the parietal, and sometimes into the postauricular areas. All the visible mucous membrane within the nose is usually infected and more or less swollen, as the results of the infective process usually spread over quite an extensive area.

The important objects to accomplish are first to relieve the distressing symptoms and to relieve pressure within the bony encased areas so that normal circulation may be established and the inherent vital forces given a chance to combat these infective elements and restore normal conditions as quickly as possible. The more rapidly and perfectly this takes place, the less liable is there to be a weakened resistance or a chronic termination. Though 70 per cent. or more of the acute inflammatory processes within the ethmoid cells are self-limited and result in cure without any interference, the knowledge that the others are liable to become chronic and may become extremely severe, producing not only local distress but also general infirmity, should make us very careful in studying and treating all the patients who come to our attention. It is important that the general condition of the patient receive immediate and appropriate treatment. The gastrointestinal tract must receive attention and the patient should be protected from exposure and fatigue.

Locally, much can be gained from a diagnostic point of view by a systematic application of cocain about the ostia which naturally drain the various accessory cells. In order to gain positive knowledge, it is advisable to use a very small cotton-tipped applicator saturated with 5 to 10 per cent. cocain solution, and to carry this directly to the anterior portion of the middle fossa under the tip of the middle turbinate. The patient's head should be inclined forward. If after a few minutes the distressing symptoms are relieved we can reasonably assume that the principal cause of the trouble is the anterior portion of the ethmoidal labyrinth or within the frontal sinus. At least the main object of our research, the relief of the pressure and faulty drainage has been obtained, and if this can be maintained our patient is nearly always started on the road to recovery. If this first application gives only slight or no relief, the next application should be made at the posterior end of the middle fossa where the posterior cells are liable to communicate with the nose. After this procedure the floor of the nose can be anesthetized and a thorough endoscopic examination made.

In acute cases in which cocain and epinephrin establish drainage and give relief to the symptoms, the local use of these with the addition of argyrol is usually sufficient to effect a recovery in a comparatively short time. There are cases with acute onset in which we cannot establish drainage and give relief by local application, and more radical interference may be necessary. These cases may be annoying as we realize the great necessity of preventing serious advance and destruction of tissue and the desirability of sacrificing as little of the nasal structure and function as possible.

If the site of the disturbance seems to be in the anterior group of cells, an excision of the extreme anterior portion of the middle turbinate may be advisable and the anterior internal wall of the bulla ethmoidalis may be removed. The temptation is to use the curet extensively within the spongy cells, but this must be resisted until such time as we are reasonably sure that it is absolutely necessary.

Chronic suppurations of the ethmoid vary much in degree and in severity of symptoms. The purulent secretion within the nose is frequently very annoying, and that which flows backward into the epipharynx and into the pharynx may be very distressing when profuse, and extremely disagreeable when it is retained and forms decomposing crusts. The irritation of the mucous membrane within the nasal chambers with the resulting swelling frequently impedes the passage of air. There is often pain over the bridge of the nose or radiating from the nose to the temporal region. There are at times disturbances within the orbit. Frequently the complications within the epipharynx and eustachian tube produce the only severe symptoms. Quite often there is more or less enlargement of the normal cellular spaces because of retention of hypersecretion, and frequently these cells become much distended. This is especially true of the middle turbinate. When the condition is at all advanced, the cystic turbinate obstructs the nasal passage and produces the symptoms due to obstruction. The chronically inflamed ethmoid when subjected to excessive pressure from retained secretion frequently becomes necrotic. If this necrosis happens to break down the cell walls so as to produce good drainage, the process is occasionally self-limited. This is not, however, the general course of events. There usually develops more or less profuse granulation-tissue which tends to retain the secretion, and unless aided by surgery the process slowly advances. In this condition the middle turbinate may become so cystic and enlarged as practically to fill the superior fossa and obscure from our direct or endoscopic inspection the middle and superior fossae of the nose. Pus may be seen in the groove about the turbinate, but it is impossible to determine its original source. Sometimes much can be gained by crushing the turbinate with forceps, as sufficient space may be gained to be able to inspect the middle as well as the superior fossa. When there is sufficient space to obtain a good endoscopic view we can frequently determine the extent and location of the disease. The increased space obtained by reduction of the turbinate may enable direct treatment and a cure may result with little sacrifice of tissue and slight, if any, loss of function. When there is extensive degeneration and necessarily much loss of structure we can hope for relief but not a restoration of a normally functioning nose.

Polypoid formation as well as the hypertrophic inflammatory processes may begin as very circumscribed conditions and without purulent manifestations. Polypoid formation may exist for years and become very extensive without becoming purulent. While examining the nose with the endoscope we not infrequently discover small polypi within the middle fossa under the middle turbinate which have given no symptoms and might cause none until they had become large enough to appear below the turbinate. So far as the ethmoid is concerned, the mucous polyp is practically a malignant manifestation. Unless there is thorough removal of the growth together with the adjacent structure, there is almost sure to be a return of the condition. Little can be expected from a simple snaring of the polypoid mass, and in advanced cases permanent relief can be hoped for only through a radical exenteration of the ethmoid.

Syphilitic disease of the ethmoid may at first appear as a simple acute or a subacute inflammatory process. Later it may give symptoms and show the signs of a purulent ethmoiditis. It is important in all ethmoid disease to consider and estimate, if possible, the possibility of syphilitic infection. When there is a possibility of the ethmoiditis being due to syphilitic extension, surgical interference should never be resorted to until after thorough antisyphilitic medication.

Neoplasms of the ethmoid other than polypi are very rare, and when discovered are frequently beyond eradication. Whether of the sarcomatous or carcinomatous type they are usually friable and very vascular. Any soft vascular tumor within the nose should arouse suspicion and receive immediate attention.

The technic of the various operative procedures is so well known that it has not seemed necessary to consider the subject here. It is also very difficult to deal with this subject in a conservative manner without being misunderstood. In certain cases the most radical procedures are really conservative, and were it not for the importance of the surrounding and associated organs they should be made even more radical. It is so much easier to perform a radical operation than to be obliged to perform perhaps several less thorough ones that inasmuch as the radical measures sacrifice more of the physiologic functions it is our duty to refrain from great sacrifice of tissue unless we are reasonably sure that other so-called conservative measures will not suffice.

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# PATHOLOGY OF THE ETHMOID LABYRINTH*

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In this consideration of the pathology of the ethmoid I shall take up only some of the more common pathologic conditions which have come under my own observation and discuss the clinical symptoms by which these conditions can be recognized.

The most frequent pathologic condition involving the ethmoid labyrinth is acute catarrhal ethmoiditis. This develops as a frequent sequel to an acute coryza. The changes in the mucous membrane covering the ethmoid which are characteristic of this condition can often be observed by an examination of the middle meatus where the ethmoid labyrinth comes more or less clearly into view. In these cases, by inspection we can recognize along the under surface of the middle turbinated body, along the unciform process, and along the exposed surface of the bulla ethmoidalis, an edematous-like swelling of the mucous membrane. Occasionally we observe in this acute form of ethmoiditis the formation over the exposed part of the ethmoid of small mucous polypi, which tend to disappear spontaneously on the subsidence of the acute process.

The occurrence of acute catarrhal ethmoiditis can usually be recognized from the symptoms, which are the result chiefly of impaired ventilation and drainage of the ethmoid cells, occasioned by the swelling of the mucous membrane. The patient experiences a characteristic sense of pressure and fulness, or even of pain, between the eyes. There is a profuse discharge of mucous into the nose and, as a rule, a great deal of sneezing. The latter symptom is more or less characteristic of impaired ventilation of the ethmoid and is perhaps the most characteristic symptom of the chronic hypertrophic form of ethmoiditis.

An occasional sequel of acute catarrhal ethmoiditis is the occurrence of a closure of an ethmoid cell, with retention of secretion, over a considerable period. It is associated with a sensation of fulness or pressure in the region of the ethmoid. Very often the condition is relieved, after it has existed for a few weeks, by the spontaneous discharge of a quantity of a lemon-yellow or straw-colored fluid from the nose. More rarely the condition persists as a chronic mucocele, with a gradual distention of the ethmoid cells, sometimes toward the nasal chamber, at other times toward the orbit, through the orbital plate of the ethmoid.

An acute purulent involvement of the ethmoid labyrinth, acute empyema, is not so common. In these cases the profuse discharge of pus into the nose may be associated with a great deal of pain, caused primarily by impaired drainage from the ethmoid cells. The result of the impaired drainage is the same in the acute empyema of the ethmoid as when this condition develops in acute empyema of the mastoid; the bony framework becomes involved. With the softening of the bony walls of the ethmoid there is likely to develop an extension into the orbit and, finally, an external fistula, which is usually located either just above or just below the inner canthus of the eye. When the ethmoid bone becomes involved in cases of acute empyema of the ethmoid the process is certain to persist as a chronic empyema unless the diseased bone is thoroughly removed by operation.

Of the chronic pathologic conditions involving the ethmoid, the most common and often the most troublesome form is chronic hypertrophic ethmoiditis. This is primarily a non-suppurative disease, but with the impaired drainage of the ethmoid cells, which the hypertrophy of the mucous membrane produces, the condition may become the seat of a secondary suppuration which persists after an acute infection as a chronic empyema.

The first change that takes place in the hypertrophic form of ethmoiditis is in the mucous membrane, which undergoes a polypoid degeneration. This involves the mucous membrane lining the ethmoid cells, as well as the covering of the nasal wall of the ethmoid, especially the unciform process and the bulla ethmoidalis. Later, the ethmoid bone itself becomes involved. The changes in the bone are the result in part of reabsorption of the bone, and in part of newly formed bone, the former, as a rule, predominating. The symptoms by which the hypertrophic ethmoiditis can be recognized are quite characteristic. The patient complains of symptoms of almost continuous acute head cold, attacks of sneezing associated with profuse water discharge from the nose, sensation of fulness and pressure between the eyes, etc. A careful examination of the middle meatus is often necessary before one can detect the characteristic polypoid degeneration over the exposed surface of the ethmoid. It is not always possible to determine the extent of the process involving the ethmoid by the changes observed in the middle meatus. Very often one detects only a few small polypi under the middle turbinate, when an opening of the labyrinth discloses an extensive polypoid degeneration of the membrane lining the ethmoid cells. The hypertrophic form of ethmoiditis is not infrequently a part of a diffuse hypertrophic process involving the lower turbinate bones as well.

The chronic empyema of the ethmoid cells occurs usually as described above: first, by the persistence of an acute empyema, because of the involvement of the bony framework when the drainage has been seriously impaired; second, by an acute infection taking place in the presence of a hypertrophic ethmoiditis—here the impairment of drainage keeps up the process as a chronic empyema.

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

There is a chronic atrophic form of ethmoiditis seen, as a rule, in connection with a general atrophic process throughout the nose. In these cases, the atrophy apparently begins in the mucous membrane of the ethmoid, but, just as in the remainder of the nose, this atrophy is associated with atrophy and shrinking of the bony framework. This atrophic process is, as a rule, bilateral, but it is not uncommon to find the disease limited chiefly to one side of the nose. We see it developing on the side where a deflected septum has produced a roomy nasal passage, as well as on the more obstructed side. It is in these unilateral cases especially that we should suspect some circumscribed process, such as a focus of pus in the ethmoid labyrinth, as the cause of the atrophy. This conclusion is borne out by certain cases in which circumscribed suppuration of the ethmoid is associated with an area of atrophy restricted to the immediate region of the ethmoiditis. I have seen a circumscribed area of atrophy in the recessus spheno-ethmoidalis in which chronic empyema of the sphenoid was found unassociated with any involvement of the other nasal accessory sinuses.

The cystic enlargement of the middle turbinated body and of the bulla ethmoidalis are often described as pathologic conditions. While it is true that these structures may be the seat of a mucocele which is causing them to enlarge, the enlargement is usually in the nature of an anatomic variation. These variations are quite common in the formation of the ethmoid labyrinth. It is not unusual, for example, to find a large ethmoid cell developing in the floor of the frontal sinus, or for an unusually large cell to develop at the expense of the other ethmoid cells. The aberrant ethmoid cells which occasionally develop in the middle turbinated body may become the seat of a chronic inflammatory process, just as may any other ethmoid cells. In most of the cases of cystic enlargement of the middle turbinated body the cell is free from any secretion.

Tertiary syphilis not infrequently involves the ethmoid, with extensive bony necrosis. In these cases the orbit is usually sooner or later involved and an external fistula forms in the region of the inner canthus.

The development of a primary malignant growth in the ethmoid labyrinth is occasionally observed. The first symptoms in these cases are likely to be those produced by a secondary involvement of the orbit, while in the nose there may be relatively little to indicate the serious character of the disease.

122 South Michigan Avenue.

## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. HOLMES AND SHAMBAUGH

**Dr. Ross Hall Skillern**, Philadelphia: In 1909 when Uffernorde first brought out his work on the ethmoid he laid particular stress on the idiopathic, hyperplastic form. That is the form, of course, of polypoid degeneration and polyp formation. Previous to that time we considered that all polyps springing from the ethmoid region were due to some form of sinusitis, generally purulent, and when Uffernorde made that statement it was received with opposition by his German colleagues. It was taken up here, however, and now has come into general acceptance in Germany as well.

Uffernorde's classification really failed to bring out anything new. Twenty-five years ago Bosworth brought out a classification in which he mentioned this hyperplastic form. He divided ethmoiditis into six forms, and while some of these varieties were but different degrees of the same condition, nevertheless he anticipated Uffernorde in mentioning this distinctive form and so the priority belongs to an American. For operative purposes we can divide the condition of the ethmoiditis into the hyperplastic, the suppurative and a combination of these two. The hyperplastic may be extracapsular, the polyps being outside of the capsule without the cells being affected. The suppurative form may include one or more cells. As a rule, the suppurative ethmoiditis is limited to the anterior or posterior cells. Except in the atrophic form, suppurative ethmoiditis of the whole capsule is not frequently met. We may have a combination of these two forms, of course. The question has been raised whether the polyps cause the sinusitis or the sinusitis the polyps. It has been shown that when these conditions are in combination they are dependent on one another. There is an idiopathic form, in which pus never occurs, and again cases occur of the worst kind of purulent sinusitis in which polyps have never been seen.

This new operation has its place in certain conditions, the principal of which is when the middle turbinate lies close to the lateral wall of the nose, when it is going to be hard to infract the turbinate and get underneath it. Dr. Mosher short-circuits the whole thing. He makes a hole in a definite place where certain things are to be found underneath. At present the way we operate on the ethmoidal labyrinth is first of all to attack the uncinate process which stands out in front of the ethmoid capsule, sometimes from 0.5 to 1.5 mm. We break that down with the hook; that gives us this extra distance. The bulla is directly in front and we can easily resect it. In the past in operating on the ethmoid we failed to have a sufficiently clear idea of just what we proposed to do when we started out. We should be in the same state of mind as the general surgeon when he starts an exploratory operation in the abdomen, for example. He opens the abdomen but doesn't know exactly what he is going to do. We say, "Well, we will go in and take out the polyps and make a nice clean passage," but we know they are going to return sooner or later. Now if we make up our minds when we begin that we are going to take out these polyps and see what is underneath, and if necessary continue further back, we will be doing a more satisfactory operation. If we have definitely in view that we are going as far as the indications warrant, we will do better work and get better results.

**Dr. Otto T. Freer**, Chicago: Deep hyperplastic ethmoiditis, as I have found it, is more inclined to involve the anterior ethmoidal cells than the posterior, but may include the entire ethmoid labyrinth. In marked cases the middle turbinated body and all of the cell-walls except a few remaining spiculae of bone are absorbed and the lateral mass of the ethmoid bone is replaced by polypi tightly packed in a space bounded outwardly by the orbital plate, above by the cranial plate over the ethmoid cells and internally by the nasal septum. In such extensive cases, not rare, Dr. Mosher's landmarks are lost, but nature furnishes a guide in the form of the polypi and softened bone, the operator knowing when he has reached the boundaries of the disease because his curet encounters firm, hard bone. I employ Grünwald's sharp spoons, the Grünwald punch with its wide mouth, and also ring curets, as the ring form cuts best. It is necessary to curet not only to the orbital plate but also forward and upward toward the frontal sinus, as the frontal cells (Killian) are nearly always involved, blocking the outlet of the frontal sinus, so that, after their removal, the operator nearly always finds himself in the frontal sinus and close under the cranial plate. After the operation a large cavity is seen above the lower turbinate with hard walls and free from polypi. A consideration of the anatomy of the region, as given by Dr. Mosher, will show how great the need of caution is in deep operations on the ethmoid bone. The dangers of the operation are penetration of the orbital plate, penetration of the cranial plate over the ethmoid cells and entering the antrum of Highmore. The latter accident is usually without consequence, though acute maxillary sinusitis may occur. In two cases related to me by colleagues, penetration of the orbit was followed by blindness, the cause, in one case, being hemorrhage into the orbit; in the other, orbital abscess. To avoid such accidents the curets must be sharp so that they may be used without force and nothing must be done without the aid of sight. Working cautiously with curet and punch, and taking his time, the operator need not fear disaster.

Dr. George F. Cott, Buffalo: Dr. Mosher's operation is one of the neatest, cleanest, best operations for draining the ethmoid cells that has ever been proposed. In latent sinusitis many pathologic conditions occur, producing great discomfort to the patient, as rhinorrhea, excessive sneezing, etc., with apparently no affection of the sinuses. That is in the latent stage, in which there is no pus, perhaps no mucopurulent discharge, but if the cells are opened and cleaned out often almost immediate relief is obtained.

Dr. W. W. Carter, New York: I do not think we should ever operate in acute ethmoid inflammation unless there is distinct evidence of pus under pressure. With regard to chronic purulent discharge, we all know from the structure of the cells, the position of their ostia, that it is impossible for them to drain thoroughly unless an opening is made into them. The real indication for operation on the ethmoid should depend on the condition of the bony walls of these cells. It has been shown that one of the earliest changes in polypoid degeneration occurs in the vascular layer of the periosteum, that it is a passive hyperemia, producing an edema. The condition, therefore, of the bone is a pathologic one, and if the bone is diseased you must remove it. Therefore polypoid degeneration is a definite indication for exenteration. Since the introduction of the Mosher operation I have used it a number of times and have had excellent results. It has given me a confidence in operating in this region that I never had before.

Dr. F. W. Sears, Syracuse, N. Y.: I speak from the patient's point of view. I suffered for years from ethmoiditis, which had finally resulted in severe attacks of asthma. A number of operations were performed with practically no benefit. Finally a Baltimore specialist attempted to relieve the trouble by an operation under a local anesthetic, which did not relieve the ethmoiditis. The asthmatic conditions came on worse than ever during the following October. At that time Dr. Mosher, after having several roentgenograms taken, operated under a general anesthetic. I believe the anxiety and suffering from local anesthesia more than offsets the discomforts and dangers from a general anesthetic. The operation resulted in a complete relief from the asthmatic conditions and a rapid restoration to health.

Dr. A. L. Burdick, Lansing, Mich.: I was impressed by Dr. Shambaugh's remark in which he compared the ethmoid to the mastoid labyrinth. I do not know why this is not oftener done. I was called to see a patient who had fever and intense pain, and exophthalmos of the left eye. There was a history of chronic nasal discharge for fifteen years. On examination the condition was undoubtedly one of purulent ethmoiditis. Four hours later I operated and removed literally sacs of pus, the sacs made up of the lining of the ethmoid cells. After three hours the pain was gone and the patient was practically well. In this case there was abscess of the orbit, but it was not followed by blindness.

Dr. G. W. MacKenzie, Philadelphia: We may classify the condition into different types, but there are all grades of these different types and every case becomes individual. Conservative treatment is important for that reason. A patient came to me who had been operated on on the right side of the nose for frontal sinusitis, accompanied by maxillary sphenoiditis and more or less ethmoidal disease. It was on the concave side where there was a considerable deflection of the septum. I washed out each of these cavities and could find no involvement of the cells at this time. The patient, however, had an accumulation of mucopurulent secretion over the posterior part of the septum and more or less on the lateral wall. I cleansed it thoroughly and inspected the parts with the Holmes endoscope, which is advantageous in examining that region. After having assured myself by these methods that nothing was present, I sent the patient to two roentgenologists who made various roentgenograms, none of which showed positive indications of sinusitis. I then tried the experiment of plugging the right side of the nose with cotton sufficiently to filter the air breathed in this wide-open side. The patient reported the next day saying that he had no secretion. I tried the experiment several times and have since tried it in other cases, and I find that when there is sinus disease, on removing the cotton there is a jelly-like secretion and when no sinus disease exists there is practically no secretion. This led me in this case to do a septal operation with most favorable results.

Dr. Charles R. C. Borden, Boston: I emphasize an important point made by Dr. Holmes. The second turbinate is a valuable structure and should be preserved as much as possible. In the early cases it is possible to save a considerable portion of it. Removing the anterior ends of the turbinate is poor surgery if it can be avoided. In cases in which simple drainage is desired I perform a modification of the Mosher operation, using a biting forceps in place of a curet. I have had several unfortunate complications following the use of a curet and consider it a dangerous instrument. It is a comparatively safe and simple procedure to open the anterior ethmoid cells at Mosher's point of election with a biting forceps, making a long narrow pathway through the body of the ethmoid until normal bone is reached. A little force is required to make the first bite, but after the cells are reached they cut away with surprising ease. One is often amazed at the large number of small polypi which will come away in the mouth of the forceps when none were suspected of being present. The curet usually fails in this respect, as that instrument simply pushes the polypi aside. Of course, in advanced cases, this method of procedure will not be sufficient. In the early cases, however, it not only provides the desired drainage, but removes the polypoid tissue and at the same time leaves a considerable amount of healthy tissue in place, which is desirable for the welfare and comfort of the patient. In the advanced cases I perform the Mosher operation, using both biting forceps and the curet as it is practically impossible to use the forceps alone. I have known several cases of meningitis to follow operations and great care is needed in doing them with any form of an instrument.

Dr. John O. Roe, Rochester, N. Y.: After listening to Drs. Holmes, Shambaugh and Mosher, one would naturally get the impression that operations on the ethmoid sinuses are simple procedures and that to enter the ethmoid sinuses and curet or cut away diseased tissues is comparatively free from danger. I therefore call attention to some of the dangers connected with these operations, especially in the hands of amateurs. Recently two deaths occurred in Rochester following nasal operations. These deaths, however, are not the only ones to be referred to, for the report of cerebral complications in nasal surgery are too frequent to be reassuring to the amateur, and it is only by those experienced in this line of work that such operations should be undertaken. I agree with Dr. Borden as to the advantage of biting forceps over the curet in many cases. When the walls of the ethmoid cells are quite thin and more or less fragile, the curet has its advantages, but in cases of more rigid walls, I have found the biting forceps much superior. For the anterior ethmoid cells I use the straight biting forceps, similar to those mentioned by Dr. Borden, but for entering the posterior ethmoid cells, I use forceps that I have had made, with cutting blades set at right angles to the shaft of the forceps, which I have previously described. In many of these cases we find marked enlargement of the turbinal cells of the middle turbinate body, completely blocking the central portion of the nasal fossae. In dealing with these cells, I first determine their presence and extent by puncturing them at their anterior portion with a slender bistoury. In a large majority of cases, the knife will enter the cells freely, indicating at once the nature of the conditions we have to deal with. With the straight forceps the outer wall of these cells is taken away, then by fracturing and forcing outward the inner wall, the nasal passage at this point is made free, while at the same time a mucous membrane forming a covering for this outer wall, is preserved. Before entering the posterior cells with the rectangular forceps, or even with the curet, it is of the utmost importance to locate carefully the posterior wall of the nasal passage, particularly in the region of the cribriform plate. This I do with a slender flat probe, made of steel, the distal end 4.5 mm. wide and very thin. It will go where the round probe will not, and with it the exact location and condition of the parts can readily be determined. This little instrument I have found so exceedingly serviceable in all such work, that I have dubbed it "my long finger."

Dr. H. Wilson, Detroit: If I do not err in my understanding of the essential nature of Dr. Mosher's operation, the use of biting forceps in exenterating the ethmoid labyrinth goes aside from the spirit of the operation itself. I recall no other nasal operation which is exactly the same as Dr. Mosher's. It depends for its success on the ability of the operator to visualize the anatomic and pathologic conditions that exist at the end of his curet. Without this, one cannot properly execute the operation. The ability that we possess to translate the impression we receive from biting forceps fails to meet the requirements of the operation. It seems to me, however, that that is the crux of the operation itself; that is what makes it different from all other ethmoidal operations. It begins at a different point and we know our landmarks from that point on. As to the serious results spoken of, no one has a right to perform such an operation who has not acquired this power of visualizing the anatomic structures he is engaged in operating on. Failure to be able to do this may be the cause of the unfortunate results that Dr. Roe and others have referred to.

Dr. Joseph C. Beck, Chicago: It is important to amplify the gross pathology of ethmoiditis. The names of three men should be mentioned in referring to the pathology of ethmoiditis—Woakes, Uffernorde and Wright. Last year I presented at the meeting of the Laryngological, Otological and Rhinological Society the subject of the histology of ethmoiditis, in which I showed the varieties I had found in my own practice. The bone and periosteum show the greater change, except in the acute cases. There is a distinct difference between polypoid and inflammatory edema of the mucous membrane and it will make a great difference in the results of operation. In the hyperplastic form, imperfection of the bone and periosteum are essential points in the pathology, not secondary changes from infection; it is a degenerative process. It would be well for men to study their clinical cases and make a few sections showing where the disease is in individual cases. Two years ago this operation was demonstrated to me by Dr. Mosher. I went home and tried it on one side, the old method on the other. Now I use no method but his. If some one comes and tells us of blindness occurring in a certain case, thus putting a damper on such an operation, we should know who such operators are. It should not frighten expert men away from doing a good operation.

Dr. Lee M. Hurd, New York: Sometimes instead of the papery shell-like bone of the ethmoid we find it very thick, from 1 to 1.5 mm. of hard bone. In one case I could not get through. We find necrosis of the bone of the ethmoid cells of a non-specific nature at times and we do not get the condition well unless we exenterate the entire labyrinth. Taking out the polyps alone is like cutting the heads off dandelions. To get a cure we must do an exenteration. How does Dr. Mosher get at the prolongations of cells over the orbit? A straight curet will not reach these. I have been injecting Beck's paste into any remaining cells that cannot be reached at the operation and it seems to aid.

Dr. E. M. Holmes, Boston: I do not want to give the impression that I am opposed to operative procedures in the treatment of ethmoiditis. I thoroughly appreciate the work of Drs. Mosher and Skillern and others and am glad to see this operative improvement, but my paper was as I said, conservative, because we are seeing so much operative work, extensive exenteration, by men who are new at the work and who have not had sufficient experience. It is much easier for them to sacrifice all the structures in the nose than properly to study the case. All tissue which can be should be saved so that all the functions possible may be conserved. We all find cases in which polypoid degeneration extends to the upper and outer wall of the ethmoid cavity, even after thorough operation. It may be our duty even to remove a portion of the orbital plate.

Dr. George E. Shambaugh, Chicago: Perhaps the most interesting pathologic condition involving the ethmoid labyrinth is the condition first described by Woakes, which we now recognize as the non-suppurative hyperplastic ethmoiditis. It is often the most difficult to recognize and is the cause of the most troublesome and, in a way, the most interesting symptom. It is this form which is often associated with asthma. The early symptoms are those of recurring acute head colds, sneezing attacks, etc. I received a shock some years ago when Dr. Bosworth described his method of curing recurring acute head colds. He stood behind the patient and with an electric burr reamed out the ethmoid labyrinth. We now recognize that he was operating for the relief of symptoms caused by hypertrophic ethmoiditis. We are doing the same thing now, only not quite in the same way. The one thing most essential in operation on the ethmoid is that the operator have a clear conception of the anatomy of this region. Unless he understands this thoroughly he has no business operating. To my mind not the least important part of Dr. Mosher's work has been to get our men interested in acquiring a better knowledge of the anatomy of this region. I am accustomed, when operating on the ethmoid, to do the work under local anesthesia. I usually remove a part or the whole of the middle turbinated body; then with a Hartman nasal forceps I begin in front and break through one cell after another until the whole labyrinth has been exenterated. The work with the forceps requires but a few seconds to complete. If one direct the pressure outward, backward and upward, one keeps clear of the cribriform plate. For this reason I like to leave standing the mesial wall of the labyrinth. The roof of the ethmoid labyrinth is a firm bone, whereas the cribriform plate is very fragile.

Dr. Harris P. Mosher, Boston: We have many good methods of getting into the ethmoid, but we want, more than anything else, a better idea of the pathology of ethmoiditis. I have found that non-success in getting into the labyrinth easily in this way is often because the curet is not placed high enough up or far enough back. Dr. Skillern says go as far as the pathology in the particular case warrants. That is the right idea. Dr. Freer said that in many cases of degenerative process there are no landmarks; that they have been destroyed. Of course that is true, but if one has a systematic procedure to follow one will not be in danger. As to the use of biting forceps rather than the curet, I prefer the curet until I find out where I am, and then I use the biting forceps. I use it freely after I have secured orientation with the curet. As to the serious results spoken of, anyone who does work on the ethmoidal labyrinth without a proper anatomic and surgical preparation simply has no surgical conscience. I agree with Dr. Wilson that to be able to visualize the operation is the main thing. As to Dr. Hurd's question about the cells that extend out over the orbit, they are, as he says, difficult to reach; I simply do with them the best I can. Dr. Shambaugh says he leaves the middle turbinate. I use the middle turbinate as a landmark to keep me in the labyrinth and to keep me away from the olfactory fissure. Then when I have cleaned out the labyrinth I remove the middle turbinate to free the front face of the sphenoid.

# I. THE SECTION ON STOMATOLOGY: ITS NEEDS, ITS DUTIES AND ITS OPPORTUNITIES. II. THE FIELD OF STOMATOLOGY*

WILLIAM C. FISHER, D.D.S.
NEW YORK

## I. ITS NEEDS

I do not think there has ever been at any time in the life of this Section any question as to the quality of the membership or of the caliber of their intellect, but I do know that the numerical strength of our membership and more particularly the attendance on our scientific meetings has more than once been a subject of regret and even concern. Time and time again have excellent programs been prepared and presented to an audience so small as almost to discourage the essayist and embarrass the members. Therefore, I venture to state that one of the great needs of our Section is increased attendance and that can be the better accomplished through increased membership. Understand I do not for one moment think we should lower the high standard that has been so diligently maintained by those who have in the past years guided the affairs of this Section. And it is not necessary to lower our standard one particle. There *must be* hundreds of able men of the dental profession who if an invitation was extended to them would be pleased to affiliate with this Section of the Association and in so doing bring profit both to themselves and their Section.

The great amount of scientific information developed and presented in this Section every year is of great value to the general practitioner of dentistry, as well as the specialist in the several branches of oral surgery; therefore I contend that this Section on Stomatology is not performing its duties until it makes possible such a dissemination of scientific medical dental knowledge. According to the Constitution of the American Medical Association the degree of M.D. is not necessary for associate membership in several of its Sections, and of this number, the Section on Stomatology is one. And in its particular case the associate member need only possess the D.D.S. degree. Now this is not generally known. The idea most commonly entertained throughout the dental profession is that the additional degree of M.D. is necessary to qualify for membership in the Section on Stomatology. And also I have heard it stated time and again that the average dental practitioner could not grasp the papers presented here. This may or may not be true, but if true does it not just as aptly apply to any and all of the sections of the A.M.A. and their respective membership?

We must be a little more liberal and admit to our Section good men of the dental profession. Yes, even urge them to join us, if we wish others to receive the benefit of these excellent programs.

## PART II. THE FIELD OF STOMATOLOGY

What is it? In other words where does the practice of dentistry, or stomatology, if you wish, end, and where does the practice of medicine begin? To what point may one possessing only the D.D.S. degree go in the treatment of oral infections; and if my question will not appear too foolish, to what point may a person possessing the M.D. degree go while in the same field. Some of you at this moment are wondering why I raise such a question and what can be gained by it. I raise the question for this reason: that there are at present many men possessing both the M.D. and D.D.S. degrees but licensed by their state to practice only dentistry. They are, I feel sure, frequently in their daily routine trespassing on the territory of the medical practitioner.

Now, legally, these gentlemen are no better off than the man possessing only his D.D.S. degree and so licensed. But I am sure many of the former class have not quite realized this and in their enthusiasm to care for their patients have lost sight of the fact that there must be some point at which the practice of dentistry stops and the practice of medicine begins.

Where that most aggravating point may be, your chairman is not going to dare even to suggest. But it does exist. And the presence in the dental profession of men with great scientific and medical knowledge, which they are daily applying more and more to the practice of dentistry, becomes almost a serious question as to just how far this dental practitioner may go and yet obtain the protection of the law for his acts. Sooner or later the several state legislatures will find it necessary to locate and define this dividing line and it is for this reason that I at this time raise this question, that you may give it serious thought. So that, when the time comes neither the dental nor the medical practitioner shall be hindered in his work, or what is more important the public shall not be deprived of the skill of even one man.

Do not understand me to say that scientifically there is any dividing line between the practices of the two professions. It cannot possibly be located, for it does not exist, but legally it does and we must define it or better define and remove it.

373 Fifth Avenue.

## ABSTRACT OF DISCUSSION

Dr. John S. Marshall, Berkeley, Cal.: I have always been intensely interested in this section, and when Dr. Talbot and myself and some of the older men joined it we had to have the medical degree; no one was eligible else. The object in organizing the section was, as Dr. Fisher has indicated, to disseminate dental knowledge to the general medical practitioner. That has been the object all through the history of this section. I believe this section has been the leader in many things with regard to dental medicine and dental surgery. Of course, at first, we realized that, inasmuch as the medical degree was a prerequisite for membership, we could never be a large body. Some may remember that when the Association met in Chicago in 1886, Dr. Allport introduced a motion making dental surgeons with the D.D.S. degree eligible to membership, provided they came from colleges which had the same preliminary requirements that the medical schools had, and that did the same work in the fundamentals, chemistry, physiology, anatomy, etc. That was passed unanimously. Later, after I went into the United States Army, some change was made in the constitution whereby we have regular members who have the D.D.S. degree and also associate members. That has not added materially to the size of our section. There seems to be something lacking to build up the section; what that is I am not prepared to say. I want to make this suggestion, however, that we take up original investigation and present it to the Association as presented to-day by Dr. Price as part of the work done by the Research Commission of the National Dental Association. Our work has always been in the preparation of papers on those subjects that we consider vital for the medical man to know, and these have been read with a great deal of avidity, and altogether we have done much toward bringing before the medical profession the real benefit of a thorough knowledge of dental diseases and their application to general medicine. I should be glad if this old idea of separation between medicine and dentistry could be obliterated. There is a coterie of men always talking about the dental profession as separate and distinct from medicine. I have always talked about dentistry as a department, a specialty of medicine, as much so as that of the eye, ear, nose or throat, or obstetrics and gynecology; but there is a feeling, and statements have been made by older men than myself in the profession, that they did not want to be the tail to the dog. I think it is a good thing to be the tail sometimes, provided you can wag the dog. I believe the time is coming when the distinction between dentistry and medicine will be wiped out and we will be simply called dental specialists instead of a separate profession of dentistry.

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* Chairman's address read before the Section on Stomatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, June, 1914.

Dr. H. L. Wheeler, New York: I am desirous of getting some information. I find written across my membership card always, and I have been a member of this section for many years, "Associate Fellow." Can anyone tell me what that means?

Dr. E. S. Talbot, Chicago: I cannot answer that.

Dr. F. B. Moorehead, Chicago: If you became a member through your state medical society, you should be a Fellow.

Dr. Wheeler: I am a D.D.S.

Dr. Moorehead: Then you are simply an "Associate Fellow."

Dr. Wheeler: That is the rub. I have no inclination to apologize for being a D.D.S. I have the medical certificate from the regents of the state of New York, but a great many dentists feel that there is a distinct line drawn between the degrees of M.D. and D.D.S., to the disadvantage of the D.D.S., in an organization composed largely of men with the M.D. degree. I feel it because I have probably done more organizing of dental service in hospitals than any other man in the country, and I have had that same difficulty in New York, which has dealt absolutely fairly with the dentist from start to finish, and there, at present, dentists are on the same footing as medical men, getting the same titles and the same pay in every department in which they serve. I believe this section has been useful and I believe that it can be made more useful. I believe, as Dr. Marshall has said, that our profession is a specialty of medicine. I have no sympathy with the idea of dentistry's being a separate profession any more than I feel that it is necessary for me to apologize for being a D.D.S. and nothing else. I believe that the D.D.S. covers that specialty thoroughly and completely, and that if dentists are wanted to attend these meetings they must be given to understand that there is no discrimination between men; that if one has the ability it does not matter what degree he holds. When the profession is convinced that whether the M.D. degree is or is not held, if a man holds the D.D.S. degree and shows ability to work substantially for the good of the healing art, I think we will have a much larger membership than we now have. I do not mean to infer that the attitude of the section is against the man who holds only the D.D.S. degree, but there is a great misunderstanding with regard to it which needs to be rectified. For instance, members of this section in New York have attempted to establish special service in the hospital in New York, and have insisted that if dentists were to have the recognized position they must have the M.D. degree. You cannot successfully establish such service if that policy is followed out. I have told them, and it is a fact, that in no institution in which the M.D. degree was insisted on have they got any further than the extraction of teeth. The institutions in which they have taken care of the mouth and teeth, in which they are working with the physicians, visiting the wards, and looking after the mouths while the physician is looking after the rest of the body, are the institutions that have taken the dentist without regard to degrees. I am grieved that there should be any difference of degrees when it comes to dentistry, and I believe the quicker that can be ignored the more quickly will institutions of this kind increase their strength.

Dr. E. S. Talbot, Chicago: I shall have to correct both Dr. Marshall and Dr. Wheeler with regard to the matter. There is no difference in their standing, except in degree. As Dr. Marshall has said, when the resolution referred to was passed, dentists were put on an equal footing and we have never had a single instance in which there has been any discrimination from that time. I have repeatedly explained this condition to various men and if dentists do not understand it, it is their fault. There has not been a single instance come up in the section in the House of Delegates or in the general body where the dentist has been discriminated against in any way.

Dr. Marshall: Is that so to-day?

Dr. Talbot: Certainly it is so to-day. Every dentist in this section has the same privileges as the medical men.

Dr. M. I. Schamberg, New York: After listening to Dr. Talbot's explanation that there is no discrimination between dental and medical members of the Association, I call attention to the fact that my card likewise records me as an associate member, and at times it has been worded "dental member" although I hold both the medical and dental degrees. When I came into the section I was a member of the Philadelphia County Medical Society, and I was not even aware that my name came from any other source than through the county medical society, so that I have been surprised to be recorded as a dental member of the American Medical Association. That, however, is a trifle, because, as Dr. Talbot has said, there has been no discrimination at any time by the medical members toward the dental members of this Association. Several points mentioned by Dr. Fisher are of vital importance not alone to the members of this section but to many men practicing throughout the country whose status is not definitely defined by the law, or is not definitely understood. At present I am practicing in the state of New York under a dental license, having been unwilling to submit myself to the humiliation of passing the medical examining board ten or fifteen years after I had finished with the elementary subjects. This, however, every physician has to contend with when moving from one state to another, and makes it imperative that the legislatures of the various states should consider that dentists are primarily medically educated; that we take the elementary medical subjects whether or not we hold the medical degree, and that it is merely coincidental that dentistry has developed as it has in the separate schools. Many men with the D.D.S. degree are as able to perform operations in and about the mouth as we who were fortunate enough to have extended our work a year or so and acquired the M.D. degree. Dentistry is in truth a specialty of medicine and there should be no distinction between the two professions. I believe that, in time, the specialties of ophthalmology, otology, gynecology, etc., will be acquired as dentistry is. This is distinctly a day of specialties, and I believe that men in other specialties are less fitted for special practice on the day of graduation than are the members of the dental profession. It requires special instruction, and dentists have been receiving this and also instruction in the fundamental principles of medicine. Dr. Fisher's address should not be casually passed over. I believe dentistry should be defined in the statutes of the various states.

Dr. G. V. I. Brown, Milwaukee, Wis.: I have given the better part of the last few months to consideration of this subject. It is a pretty good time now for us to clear the atmosphere of these doubts so far as may be possible, and when we get into it a little more deeply there are some very distinct underlying educational questions which must in some way be satisfactorily answered before we can entirely dispose of the matter. I have been trying to suggest a way by which we may ultimately find out where we stand.

With regard to Dr. Wheeler's question, here is the difficulty with regard to membership; when the dental colleges agreed on a four-years' course, the dental members were on a par with the medical men and no difference was made, but when they went back to the three-years' course, there must necessarily be some distinguishing mark between the man who has three years and the man who has four.

**Dr. Wheeler**: The dental colleges are coming back to the four years' course.

**Dr. Brown**: I think they are coming to that, but until then there must be some distinction. It does not make any difference either in the conduct of the sections of the Association or their members, but nominally there must be a difference.

**Dr. R. H. Ivy**, Philadelphia: There is a way in which the section might bring the dental profession closer to the medical profession. The papers of different medical journals are abstracted each week in The Journal of the American Medical Association, and it might be possible through this section to have some of the papers appearing in the dental journals abstracted, as many of these papers are of interest to the medical profession. In that way much of the work of the dental men with regard to oral sepsis and other things would be directly brought to the notice of the medical profession.

**Dr. William C. Fisher**, New York: I did not purposely bring out the difference in the standing of the members. My idea was to bring to your attention facts which I thought possibly many had forgotten. Dr. Marshall seemed to think that the object of this section was to educate the members of the medical profession in things dental. I think if that was the object of it in its organization, we certainly should widen the scope and also educate dental men in things medical.

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# THE SECTION ON STOMATOLOGY AS A FACTOR IN THE EVOLUTION OF DENTAL AND MEDICAL SCIENCE*

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Recent advancement toward more general recognition of the pathologic influence of oral affections as factors in disease has been so great that almost every thought of distinction between those who treat disorders of the teeth, and the practitioners whose ministrations are directed to the relief of such distress in other anatomic regions, or of the organism as a whole, has been swept as driftwood before a tidal wave in the common desire of a great humanitarian impulse that brooks no trammel of limitation by degrees or titles.

Surely this is an age when dreams come true, for the visions that inspired the speech and directed the pens of such men as Alkinson of New York, Garretson, Bonnwill and Flagg of Philadelphia, Allport of Chicago and their contemporaries in early years touching as they then did the very boundary limits of the heights of empiricism, are now becoming prophetic in the light of actual scientific demonstrations of their truth.

In like manner the foundation laid with the help and guidance of the master surgeon, Samuel D. Gross, and the great builder of medical associations, Dr. N. S. Davis, and the little band of dentists who joined hands as organizers of the Section on Dentistry, now the Section on Stomatology of this great body, the American Medical Association, has become the underlying support of a rapidly extending scientific edifice. It is obvious that this superstructure can be sustained only by an ever-increasing broadness at its base; otherwise this influence must perish. It therefore seems advisable at this time to glance backward along the recorded pages of the thirty-two years of the Section's existence, and then to scan as best we may the already forming, though ill-defined, outlines of the possible future requirements in this division of medical science.

At a meeting of the American Medical Association held at Richmond, Va., May 3, 4, 5, and 6, 1881, there gathered together for the purpose of forming a Section on Dental and Oral Surgery the following organizers: Drs. W. W. Allport, Chicago; Huxhurst, Grand Rapids, Mich.; Eugene S. Talbot, Chicago; T. W. Brophy, Chicago; J. A. Williams, Boston; George L. Parmlee, Hartford, Conn., and D. H. Goodwille, New York. At that meeting Dr. Samuel D. Gross of Philadelphia asked for a suspension of the regular order of business and moved that the By-Laws of the Association be so amended as to create another Section to be known as No. 7 and entitled Dentistry. This was made effective the following year.

The first meeting was held at St. Paul, June 6, 1882. It is especially interesting in view of later events to note that at this time Dr. Allport offered a resolution providing for the appointment of dentists in the Army and Navy and to cooperate with Dr. Maynard of Washington for this purpose.

The resolutions of sympathy spread on the records of the Section, as they from time to time mark the passing of some important member, bear the stamp of a depth of feeling that cannot be measured by ordinary standards because each one of these far-seeing men was an integral part of the little group that was laboring for higher things in the progress of dental science.

My purpose in presenting this brief reference to the past is not so much an endeavor to do justice to faithful individual effort during a period of thirty-two years, deserving of such praise as the work may be, as to try to present in just the right way, if possible, the whole scheme of the present status of the pathology and treatment of tooth and mouth affections in their common relation to other diseases and incidentally to assist in clearing up the confusing conditions which pertain to the professional association of those who treat them, whether distinguished by the degree of D.D.S. or M.D. or both.

I fully realize that it will be next to impossible for me to state in exact terms just what this relationship, or state of interdependence, should be, for no one really knows and no two of those who ought to be best informed have ever been able to state their views similarly. Yet for this very reason there is even greater need of proper treatment of this subject.

To picture comprehensively the real influence of the work of this Section, one should have in mind, first, the all-important part that the mouth plays in the etiology of disease, as a source of focal infection, a cause of local or general nerve disturbances, and a factor in developmental, digestive, circulatory and other disorders; second, a just idea of the constructive benefit of the steadily continuous presentation of these subjects during thirty-two years in a section of the largest and best-recognized medical organization in this country, and of calling the attention of medical practitioners to this particular field in a specific way through the medium of their own medical journal; third, it should be understood that in the past too much attention has been given to degrees and much harm done through failure of dentists generally to realize that strictly dental organizations bear precisely the same relation to the Section on Stomatology of the American Medical Association that the special societies of other divisions of practice bear to their respective associations.

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* Read before the Section on Stomatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

For example, the sections on surgery, internal medicine, eye, ear, nose, and throat have their corresponding associations in the American Surgical Association, American Neurological Association, American Laryngological, Rhinological and Otological Society, American Dermatological Association, American Association of Obstetricians and Gynocologists, etc., just as the dentists have the National Dental Association. There should be no question of loyalty involved in consideration of attendance on both.

When the members of the National Association of Dental College Faculties voted to extend the courses in their colleges to four years, the American Medical Association promptly accepted dentists to full membership in this body; but when the colleges decided to go back to three-year courses for graduation, it was obvious that there must be some distinction between men who have had four years' training when considering their association with those who have had only three. Thus dental graduates came to be accepted as associate members, but there is no appreciable difference between these two forms of membership in the conduct of section work and there ought to be a more general understanding of the fact that every dentist in this country has profited in some degree at least, professionally, socially and even personally, by the good work that this Section has accomplished.

There are grave questions to be met if dentistry is to hold her own in the advancement which marks the modern appreciation of pathologic and therapeutic considerations. This is no time to cavil about degrees. The true standard in rating the future practitioner in that branch of the healing art which directly relates to oral affections must be the measure of his knowledge of medical science, and his ability to cope with the requirements of a more or less radically changed order of practice.

From an educational point of view this means that the formerly so-called theoretical branches of the curriculum of his special college courses are after all in reality the very practical ones. Students of dentistry can no longer be permitted to skim through these studies and pass out into active practice with only a superficial knowledge of them. Anatomy, physiology, physics, chemistry, biology, histology and pathology are quite as necessary for them as for their brother students in general medicine. Obviously this cannot be accomplished under the plan of instruction as now given in preparation for the D.D.S. degree.

If, as Rosenow and other investigators have apparently proved, the principal sources of focal infection are found in the tonsils, the mouth, teeth, nose and nasal accessory sinuses, and if, as he also states, pathogenic micro-organisms can be harbored in these situations during the period of transmutation by which they may assume an increased virulence which makes them accountable for such diseases as ulcer of the stomach, rheumatism and its well-known chain of far-reaching symptoms, for endocarditis, myocarditis, gall-stones, and joint affections, and if in addition it can be shown, as we believe it can, that by proper care of the teeth and direction of the development of the dental arches, the pathologic conditions of both the tonsils and the nasal accessory sinuses can in large measure be controlled or prevented, then it must be accepted that full medical training is as essential for the one who has charge of the welfare of this fertile field for the propagation of disease, as it is for those who undertake to treat the general bodily manifestations thereof.

This does not of necessity mean that a student must first pursue the regular four years' course in medicine with the additional premedical and postgraduate years of studentship that are now being urged as necessary for proper training for the practice of medicine, and in addition a full course of two or three years more to complete his equipment for the practice of dentistry.

Desirable as these long years of preparation may be, and admitting to the fullest extent the value of the knowledge that might thus be acquired, there are nevertheless certain definite reasons why such preparation for the practice of dentistry is not practicable under present educational conditions.

Lest my position be misunderstood in view of this statement, and others that follow, it seems advisable for me to state that according to my belief it will no more be possible for dentistry to continue permanently as a profession distinctly apart from medicine than it was for the United States to exist half slave and half free, as recognized by Lincoln.

There must ever be some common meeting ground for all who practice legitimately every branch of the healing art. That has been, and will be with steadily growing recognition of its importance, the office of this, the representative stomatologic division of this great medical body.

Beyond a doubt there must come in the course of time the adoption and general use of degrees to distinguish the several medical divisions. Men without special training in surgery cannot be permitted to continue indefinitely to undertake grave surgical operations simply because they have qualified to the extent of a medical degree and a state board examination of general character. This is equally true of eye and ear, or nose and throat, or other limited practitioners, and they also should be required to have distinct evidence of preparation for their particular field of work.

With the continued extension of the required number of years of medical study and the very evident need of additional training for special practice, it would seem that in the course of the evolution of educational conditions there would ultimately be established a fundamental course of study which all must complete before taking up a special division of practice. The number of years required for this foundational preparation would be somewhat less instead of more than is now required for the M.D. degree, and the student after having completed this course could then in two years more of special study prepare himself for the degree which would represent his actual life work more completely than is usual at the present time. The following opinion expressed by Dr. E. C. Kirk is of interest because he is in charge of the Thomas W. Evans Museum and Dental Institute and therefore in control of the largest structure in the world exclusively devoted to dental instruction. As this institute is designed to give both undergraduate and postgraduate instruction, the views of one who is to direct its course are important in this relation.

> It seems to me to be inevitable that in the course of time a rearrangement of the medical curriculum must result from the specializing tendency, and from the increase of bulk in medical knowledge, both of which factors have made it

impossible to educate any man in medicine so that he can cover the whole ground.

That reorganization will, I think, take something of the following form: A sufficient length of time in the medical curriculum will be devoted to the training of men in all of the sciences that are fundamental to the entire field of the science and art of healing, and the termination of that phase of the curriculum will be marked by the conferring of a degree which will be educationally equivalent to the bachelor's degree in science and letters, and from the point of attainment of the bachelor's degree in medicine the student will specialize in groups of studies that will make him an efficient practitioner in some recognized special department of medicine at the termination of which he will have conferred on him his doctorate in medicine, and he will be licensed to practice only within the limits of the specialty for which he has been trained. Should he desire to acquire the right to practice an additional specialty it will be necessary for him to prepare himself by further educational work in another special department, and then secure the license to permit him to practice in that department, and so on.

It may be too much to demand such sweeping reforms in medical education until such time as in the course of natural evolutional progress these changes gradually may be inaugurated. There is, however, an immediate necessity for more thorough education of students who are to become dental practitioners in the branches of study in which their courses parallel those of their brothers in medicine. Without delay these fundamental medical sciences should be given exactly the same as for students of general medicine, and a passing mark on any one of them should be considered equivalent in every way, no matter what branch of practice may be contemplated or selected. Thus, the dental graduate will not only be more thoroughly prepared for his special division of practice, but he will also have so many definite credits toward the medical degree that he may reasonably be able to complete this course also without too much hardship. In due time it will follow that increasing numbers of the most promising students will complete their double education and take both degrees. Ultimately through the selective influence of a more enlightened laity the two degrees will be required.

Dealing practically with the educational difficulties that lie in the way of idealization in this educational formula, we find that in the absence of certain necessary but apparently impossible changes in the underlying primary courses of instruction, by the time the average student could complete his literary course with four years leading to a degree in arts, or science, and then four years in medicine, with the very necessary hospital internship of one year more, in a majority of cases he will have reached such an age that the first enthusiasm of his career will be lost. It is a grave question if the average result would be as good as it has been in the past when an aspirant for a medical degree was allowed to enter the medical college with but little if any more preparation than a high-school education. But leaving that much-discussed question for the settlement of educators now battling with it, there at least can be no question regarding the probability that at this advanced period of life it would as a general rule be quite impossible for an individual to acquire the necessary manual dexterity for successful dental practice. It would seem then that the best that can be done at the present time is so to arrange the curriculum of the dental student as to make it possible for him to have full training in the technic laboratories from the very beginning of his course, and to take during his first two years as many of the strictly medical studies as he can carry and complete in each the full regular medical student's course in these branches.

Obviously when the medical student's first and second years are crowded to the limit of average capacity, the dentist cannot do all this thoroughly and spend approximately forty hours a week in dental technic laboratories beside. Every teacher of anatomy or physiology or other similar branch can testify to the difficulties that have presented themselves when this has been attempted. By distributing the work and making the courses for the dental degree extend through four years instead of three, then with all this work out of the way, one year more could be made sufficient for acquirement of the medical degree.

Our problem is thus a problem no longer and the dentist is now a completely developed specialist in his work. Whatever the final solution of the complex professional relationship may be, it is at least apparent that the influence of this section, past, present and future, will be instrumental in its final adjustment.

The horizon from a dental and oral outlook appears wonderfully bright at the present time. The establishment of free dental clinics in many of the principal cities of the United States, examinations of the mouths of schoolchildren, lectures on oral hygiene under state appointment; endowed institutions for the care of the mouths and teeth of the poor and the systematic education and training of dental original research workers, supported by funds contributed for the purpose, are some of the many evidences that might be cited of the undisputed right of this stone rejected by the medical builders in 1840 to a place in the great temple of medical science.

Who can doubt that the cumulative effect of the long years of faithful educational service that the members of this Section have rendered has been a potent influence in the preparation of the soil in which the seeds of the various movements have given such gratifying evidence of fertility? Above and beyond all other factors, the usefulness of the work of this Section must be attributed to our secretary, Dr. Eugene S. Talbot, who has made it his life work, and who for years has directed the broadness of the scientific policy that has shaped the character of the program from year to year.

Next to this the most active influence has been the earnest cooperation and assistance of Dr. Simmons and his predecessor, Dr. Hamilton, as editors of The Journal of the American Medical Association, without which there could have been no such wide spreading of the truths of the gospel of oral medicine.

For the future the most desirable consideration appears to be a closer union between this Section and the state, county and national dental organizations such as may lead to increased cooperative activity. This would also lead to a more widely extended recognition of the value of this link in the chain of medical specialties which has been so carefully welded and forged and tried in the fire of these many years, in order that it might be relied on to hold with sufficient security its own representative division in proper relation to all other parts of the associated body of the sacred order of those whose mission is to mitigate and relieve the ills of suffering humanity, whose common purpose is to render human life happier if not longer and at least a little more worth the living.

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## ABSTRACT OF DISCUSSION

Dr. Joseph Head, Philadelphia: Dr. Brown's paper states clearly a fundamental thought that has been in the mind of every intelligent dentist since he began to practice. The dentist ought to be so perfect a mechanic that such perfection would be considered a goal easily sufficient for a life occupation; but the dentist also should be a thoroughly trained physician. We find that the mechanical appliances of dentistry which heretofore have been considered independent of a knowledge of medicine are now so closely associated with the health and happiness of the community that they can no longer be considered apart from pathology and therapeutics, but all these must be considered as an independent whole. For just as general medicine contains specialties, a complete comprehension of which would require twenty-five or thirty years to master, so the dentist has undertaken a specialty the complete comprehension of which would require ten or twelve years. This preliminary training is not feasible. By the time a man has studied ten or twelve years in college he will be so old that the enthusiasm of youth will be apt to be lacking and so it would be difficult for him to build up a practice. There should be, in my opinion, a bachelor's degree of medicine that *per se* would not allow any man to practice medicine, but from which he could go on to the special doctor's degree to which he would effectively confine his efforts.

Dr. F. B. Moorehead, Chicago: The discussion of any educational subject is of vital human interest and no set of men can ever determine the ultimate policy of any educational system, simply because it is a matter of evolution. This whole question that we are facing to-day in the matter of dental and medical education is simply a sign of the times. As man expands in thought and usefulness in the world, he is most surely going to demand a different type of training, and that is what this means. The question of dental education is a live subject to-day, because we are now facing a fact and not a theory. The physician and dentist have both awakened to the fact that the mouth is more important than it was thought in the past, and, therefore, the dentist must face and solve some serious problems. This calls for a different type of dental student. How to make that different type is an exceedingly difficult problem. We must educate enough dentists to care for the people and at the same time we must change from the kind of education we have given in the past and make the dental student a broader man. One step in that direction is the four-year course which I am convinced is sure to come. The first year in the four-year course should be a predental year in the university. The university method of study; the university enthusiasm and spirit will give the student a bigger and better perspective. This is the type we must have for the dentist of to-morrow. One cannot get away from the fact that, as much as we value medical training, the man who is to be a good dentist must be a good mechanic, because if he is not he cannot make his patients comfortable, and unless he makes his patients comfortable he is not serving them properly. The man who is uncomfortable is physically and mentally unfit. So we cannot lose sight of the fact that we must make mechanical dentists while developing the man of parts to take care of the medical side of dental practice.

Dr. Arthur D. Black, Chicago: I think Dr. Brown has presented the consensus of opinion of a great many physicians and dentists as to the general proposition of the future of our educational system in medicine and dentistry, and the relationship which will probably exist between dentistry and the other specialties on the one hand, and a general medical education on the other. By the process of evolution we are gradually coming to the point where, whether it is taught in the medical school or in the dental school, all men who practice medicine and the specialties of medicine must have the same foundation education. It is certainly as important that the dentist know as much of general medicine as the man who is practicing any other specialty of medicine. That it will be a great many years before the dental specialist gets that foundation in the medical school, I am quite thoroughly satisfied. The greatest problem that we have from the point of view of dental education is that of developing a different type of men in the dental school, men who will enter with the idea that they will have to study and master physiologic and pathologic problems as a basis for their technical service. In the school with which I am connected we are endeavoring to develop this type under the conditions which now necessarily exist by shifting more of those subjects which require hard study into our freshman year and diminishing the amount of technical work required during that year. We hope to impress the student with the fact that he must learn to study if he ever gets the dental degree, and at the same time we are eliminating in the freshman year a lot of men who will not study. Doubtless the higher entrance requirement, especially if this consists of a prescribed course of a year in college, will be of material aid, both in the extra year's work and the college associations. This is a problem which many men interested in college work are considering at present; that we should prescribe, previous to admission into the dental school, not only a high-school education, but definite instruction in certain branches which the academic department is better qualified to give than is the dental school.

There is, however, another question to be considered in this connection. While the dental school must develop men who will be able to solve the more complex problems involved in the relationship of mouth conditions to general health, they cannot, on the other hand overlook the greatly increasing demand for the ordinary care of the teeth. The wave of public education in oral hygiene has brought such an increased demand for the most ordinary dental service that we cannot go so fast in this matter of advancing dental schools that we will materially reduce the number of graduates and thus not provide sufficient men for the ordinary dental service.

Dr. Eugene S. Talbot, Chicago: At the time this section was established few graduates of medicine were practicing dentistry. Indeed very few were graduates in dentistry, as compared with those practicing without a degree. The friendly relations between dentistry and medicine, and between graduates of dentistry and non-graduates did not then exist. The medical profession on the other hand has always shown the greatest respect for our specialty. This is no doubt due to the fact that physicians realize that each branch of medicine has gradually advanced from small beginnings, requiring many years to reach the present state of evolution. They are willing and glad to help the youngest branch of medicine in its rise to a higher position. The Section on Stomatology has from year to year endeavored to represent the best material in the dental profession. We had been organized only a few years when we found that some of the ablest men practicing dentistry had not the medical degree, which was then necessary for membership in the A. M. A. We petitioned the general body and they immediately changed the constitution and by-laws so that practitioners of dentistry, holding the degree of D.D.S. and belonging to their state and local dental societies, could become "dental members" enjoying all the privileges of regular medical members. Again the medical profession came to our rescue and gave us a helping hand. Dental members have been stimulated to a higher sense of their relation to medicine. On the other hand, at nearly every meeting the names of physicians and surgeons are on the program. At present physicians are invited to read papers in dental societies and dentists have read papers at medical gatherings. There is no doubt that, in the future, some medical societies will recognize the dental degree for all that it implies, just as they now recognize other specialties in medicine. Recently a mutual ground between dentistry and medicine has been found, for which this section stands and which neither dentistry nor medicine are in themselves qualified to practice or teach. Those who will be the future successful practitioners of stomatology must be well grounded in the general principles of medicine. The practitioner of medicine has already begun to recognize those specialists who are abreast of the times with regard to mouth infection as a source of systemic disease. The physician will soon seek those who are competent to assist him in making an exact diagnosis. Dentists who wish to be successful in the future must thoroughly educate themselves in both medicine and dentistry. The Council on Medical Education should discourage medical schools from conferring medical degrees on dentists who have not taken the prescribed medical course.

Dr. W. C. Fisher, New York: Dr. Brown's suggestion as to the establishment of the B.M. degree is a good one. I read a paper last year entitled, "The Need of a New Degree, Bachelor of Medicine." I simply gave it as a suggestion at that time, and backed up my statements by those of Dr. Bevan of the Council on Medical Education of this Association, in which he stated that too much time was being wasted in preliminary preparation before men entered the medical schools; that we could not turn out competent medical men in twenty-nine or thirty years with the present restrictions, and that some new scheme would have to be devised whereby men could go out on their life work earlier. Professor Lowell of Harvard has said that instead of demanding the Bachelor of Arts degree before entrance to medical schools it would be better if we would incorporate some of these studies in the course leading to the Bachelor of Science degree and take one year from the four-year course, instead of spending a couple of years in studies that did not particularly relate to medical education. The man who has an excellent preparatory school education, and that does not mean two years in college, is qualified to undertake the study of the sciences of medicine and dentistry. When we speak of getting better men I am in favor of that, but I am opposed to anything that makes it so late in life before a man can acquire that degree which entitles him to go forth into the world and earn his livelihood.

Dr. G. V. I. Brown, Milwaukee, Wis.: We have been discussing subjects that my paper relates to ever since the meeting opened, and it is clear to me that, in the settlement of this question, the time element alone will not do it, but it is equally clear to me that we should not make any step in this direction until we know best what to do.

# CONTINUOUS PAINLESS RENAL HEMORRHAGE AND ITS TREATMENT *

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The selection of the title for this paper has been made with the purpose in view of excluding all other conditions having hematuria as an accompanying symptom, and limiting the name to those cases in which there is constant and continuous bleeding from the kidney over a considerable period of time unaccompanied by pain except such as could easily be explained by the plugging of a ureter by a blood-clot. Objection might be had to the word "continuous," for in many cases the bleeding stops either spontaneously or after the administration of medicines or of serum, or as the result of mechanical therapy directed to the kidney pelvis. The bleeding may start again and continue for weeks or months, during which time blood in varying amounts may be recognized macroscopically in the urine. The term "essential renal hematuria" is in my opinion a proper name for this condition, because it is from the kidney substance that the bleeding takes place. This name, however, should be applied only to those cases in which absolutely nothing pathologic other than blood appears in the urine, and where no lesion can be demonstrated by a competent urologist. When epithelium from the tubules or the pelvis, or when pus, micro-organisms or crystals of any type are found in the urine with the blood, or when with the Roentgen ray or by palpation a tumor or foreign body be diagnosed in this organ, or when intermittent or chronic hydronephrosis is found or suspected, it would be manifestly wrong to call such a condition essential renal hematuria just because blood is present in the urine. I shall have occasion later to refer in a more detailed manner to the subject of differentiating this condition from others in which bleeding exists.

The literature on this subject is too voluminous to review at length. To those who are interested I may refer to Kretschmer's article,[1] which brings the bibliography up to 1907, and White's paper,[2] dated 1910. The bibliography since these reviews were published is also quite extensive, and I shall only give the gist of the opinions expressed therein.

Pathologists are in apparent accord that the lesions found in renal hematuria are confined mostly to the glomeruli, and the bleeding has therefore been attributed to a glomerulonephritis. The changes are briefly as follows: while most of the glomeruli are normal, a few show absence of some of the endothelial cells lining Bowman's capsule, while others show hyaline degeneration, and some have undergone fibrosis. Kidneys that had bled for a long time present more advanced changes of the same kind with a beginning fibrosis of the intertubular tissue, in other words an interstitial nephritis—*identically the same changes which are found in kidneys which have been passively congested for some time.*

Senator[3] cites a case in which he could find no lesion of the kidney either macroscopically or microscopically, and believes the condition to be a renal hemophilia. The general opinion, however, is that if these kidneys were scrutinized more carefully the changes described above would have been found.

Much has been written to show that hemorrhage from the kidney is fairly common in lesions of that organ. Elsner[4] tabulates the cases in which blood was found in the urine as follows: Chronic tubal nephritis, 33 per cent.; acute tubal nephritis, 100 per cent.; *secondary congested kidney, 100 per cent.;* chronic interstitial nephritis, 14 per cent. In the same article he cites cases of profuse hemorrhage with no symptoms and no findings in the urine which would indicate nephritis, and yet these after a long time (in one case five years) presented symptoms or urinary findings which are expected in Bright's disease. In the vast majority of these cases the blood was microscopic, and they, therefore, cannot be dignified with the term "hematuria."

The question naturally arises, Why is there such profuse bleeding in essential renal hematuria when pathologic changes are so slight, whereas in the kidneys of patients who have succumbed to nephritis in which the lesions were a hundred times worse there had been no hematuria? Are these pathologic changes the cause of hematuria as is generally thought, or are they the result of the process which causes the bleeding? In my humble opinion the prime cause is a chronic passive congestion. Although positive proof of this assertion is still lacking, I shall essay to bring forth some facts which tend to favor this view.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Kretschmer, H. L.: Beitrag zur Frage der essentiellen Nierenblutung, Ztschr. f. Urol., 1907, i, 490.

[2] White: Quart. Jour. Med., 1910-1911, iv, 509.

[3] Senator, H.: Ueber essentielle Nierenblutung und renale Hämophilie, Berl. klin. Wchnschr., 1910, p. 205.

[4] Elsner: New York State Jour. Med., 1913, xiii, 144.

It is not uncommon to find blood in microscopic quantities in the urine from a kidney which is out of position, particularly when hydronephrosis is present. Occasionally even free bleeding is present. When the kidney is fixed properly in position this bleeding ceases. It is therefore fair to presume that the hemorrhage was due to a passive congestion, because while the inflowing blood-supply was not interfered with, the outflow was impaired. This would naturally come to pass in certain positions of the kidney because the caliber of the vein is more easily reduced in size than that of its companion artery for the following reasons:

1. Because its wall is thinner than that of the artery.
2. The pressure behind the inflow is many times greater than in the renal vein.
3. Because there are as a rule multiple renal arteries, while multiple renal veins are the exception.

If this passive congestion lasts a certain length of time, we shall find the identical changes that are seen in kidneys removed for essential renal hematuria. What more natural therefore than to assume that the cause of essential renal hematuria is a passive congestion?

Another reason for our belief is that these cases of essential renal hematuria cease to bleed spontaneously, and remain apparently well for varying periods, often never to recur. How may we account for this except for the explanation that the kidney after being twisted on a short pedicle so as to narrow the caliber of the vein subsequently resumes its proper position? The outflow of blood being no longer obstructed, the passive congestion clears up and the bleeding stops. In a week, a month, a year, the kidney may for some reason again be out of position, passive congestion once more occurs, and bleeding ensues.

We can thus account for the fact that Senator and others found no microscopic changes in some of these excised kidneys, while other observers have frequently found the glomerulonephritis previously described. If the kidney started to bleed as soon as it became congested and was removed before the pathologic changes could occur, it would be of course perfectly normal to the naked eye and under the microscope. In those cases, however, in which the passive congestion had continued over a longer period before removal, we would find this glomerulonephritis. If the kidneys were taken out at a still later stage we would probably find all the changes that accompany a chronic interstitial nephritis.

It seems to me that a passive congestion of one kidney can be accounted for only by a twisted short pedicle, for I can conceive of no other way, barring outside pressure on the pedicle, that would give rise to this condition. Several other observations have led me to believe that a twisted pedicle is the cause of this condition. In stereoscopic pictures of the collargol-filled kidney pelvis the organ occupies normally a certain fixed position, with the pelvis directed downward, inward and forward toward the ureteropelvic junction, while in cases in which the kidney cannot be called loose, but is nevertheless giving trouble, we have found its position so changed that the convex border instead of being almost parallel to the spinal column, is nearly at a right angle to the spine, as shown by the direction of the pelvis. In other cases again, particularly the one I recall to mind, in which a beginning hydronephrosis existed with blood in the urine, the kidney was so placed that its convex border presented toward the abdominal wall. The patient was cured by fixing the kidney, which was not loose, in its proper position.

Another argument: In cases of hydronephrosis with concomitant bleeding the latter symptom was arrested by simply fixing the kidney properly; and cases of essential renal hematuria in which no hydronephrosis was present have been cured by fixation.

The necessity of differentiating this condition from others accompanied by renal bleeding is quite apparent, but not always so easy. The microscope must show red blood-corpuscles unaccompanied by pus, micro-organisms, casts or epithelium from the kidney or its pelvis. The bladder must be free of disease, the ureter mouths normal, the flow from the ureter catheters normal, the kidney must be impalpable, or if palpable no larger than normal and it must present no irregularities to the hand. The Roentgen ray must show the kidney clearly when a pyelogram is made, and the kidney pelvis must be normal in shape and size. If the contents of the kidney pelvis exceed 10 c.c.[5] I do not consider it normal. With these restrictions we can exclude renal tuberculosis, stone, abscess, hydronephrosis and the commoner conditions in which hemorrhage occurs.

In tumors of the pelvis, by the time bleeding is continuous, one would expect epithelium in large quantities from the pelvis, together with débris from the constantly degenerating neoplasm. Continuous hemorrhage is extremely rare in tumors of the kidney until the enlarged growth has attained such a size as to be palpable.[6] Pyelitis will show besides red corpuscles other elements in large numbers in the segregated urine. Nephritis presents well-known symptoms or urinary findings which make this condition recognizable. *Besides a true nephritis cannot be one-sided.*

A diagnosis of essential renal hematuria having been established, the question arises as to its proper treatment. Ordinarily we should keep the patient under observation unless the anemia begins to give grave concern. Many of these patients never become anemic. In the meantime we may try the injection of blood-serum, a rest in bed for a short time, and a properly fitted lower abdominal corset. As to the injection of epinephrin into the kidney pelvis,[7] I consider this procedure more of a diagnostic than a therapeutic measure. If the bleeding arises from the pelvis the urine should be free from blood, or at least clearer for a short time following the injection, although it should not (theoretically) affect the bleeding in essential renal hematuria. In the three cases in which I have tried epinephrin the result was nil.

If the anemia progresses in spite of these procedures it is time to consider surgical intervention. One must, however, think long and arduously before daring to operate, and when operation is finally decided on, nephrectomy should be the last thought.

Years ago, before the advent of the present diagnostic facilities, the kidney was bisected at the operating table in order to determine whether stone or tumor was present. If neither was found the organ was securely sewed together. To the surprise of the operator the bleeding from the kidney stopped, although nothing had apparently been done to bring about this happy result. This occurred so often, and was so frequently reported in the literature, that it came to be adopted as a routine treatment for essential renal hematuria. Many a kidney has been bisected not for the sake of diagnosis but in the belief of the efficacy of nephrotomy. In all probability, however, it was the suturing of the kidney, with its consequent removal of a large portion of the kidney tissue from the renal circulation (partial nephrectomy) which produced the cure. Much has been said in praise of this bisection as a cure, and very little of the dangers that accompany it. In fact, a recent article by Payne[8] asserted that not a single case has been reported in which this procedure failed to relieve this condition. While this may be true, it is surely contrary to reason to bisect a kidney if it be not the bisection which cures, when in a large number of cases the secondary bleeding from the incision is so great as to necessitate reopening the wound and removing the kidney.

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[5] Childs, S. B., and Spitzer, W. M.: Roentgenographic Study of the Normal Kidney, Its Pelvis and Ureter, The Journal A. M. A., Sept. 30, 1913, 925.

[6] Barney, J. Dellinger: Reports of the Meetings of the New England Branch of the American Urological Association for the Winter 1912-1913.

[7] Suggested by Kretschmer, with report of case in which bleeding was stopped, The Journal A. M. A., July 5, 1913, p. 17.

If the arguments as to the cause of essential renal hematuria be valid, what is the proper surgical treatment? Nephropexy with decapsulation, in the earlier stages, with a careful attempt to place the kidney in the position where it belongs. It may not be amiss at this point to call attention to the position of the kidney when properly placed. The kidneys are so situated that the upper poles are nearer together than the lower, the distance between the lower poles being almost twice as great as between the upper. The convex border of the kidney is posterior to the pelvis. If accessory arteries are found, they should be cut and tied. If the operation be not successful in stopping the hematuria, then at a subsequent operation a continuous mattress suture may be placed in the kidney, running from pole to pole, just as one would place it had the kidney been bisected. Experimental work on dogs by me has demonstrated that no evil results follow from this method of suture excepting the infarction that must of necessity ensue. There is no doubt that it is this partial nephrectomy which cures these patients, and not the bisection of the kidney. The rationale of the cure is probably the following: The vein capable of carrying only a certain percentage of blood back from the kidney is required to transport a smaller amount after this partial nephrectomy and is thus able to perform its function even though its patency is impaired.

I have had eight cases of this condition under observation, and will give a concise report of them. In one the bleeding ceased after four months, and did not return during the following eighteen months, after which time I lost sight of the patient. In four more the bleeding had persisted for periods of from six months to two years before they came under my observation. As the patients did not suffer from the hematuria I advised delay, and two of them passed from sight. I feel gratified that I did not advise surgical interference. Two others, with whom I am still in touch, seem to be in perfect condition despite hematuria of over two years' standing. In another case I advised surgical interference and assisted at a bisection of the kidney, which subsequently bled much worse than before by way of the bladder as well as from the wound, so that after eleven days I advised nephrectomy in order to save the patient's life. In still another case, nephropexy cured the condition. In the remaining case the hemorrhage was very free, and the surgeon who had referred the case to me for diagnosis removed the kidney as soon as I traced the bleeding to its source. In the two cases in which the kidney was removed and in another one belonging to a colleague I had an opportunity to study the pathologic changes. In two of them the glomerular changes described above were the only lesions found, while in the third, in which blooding had persisted for eighteen years, microscopic examination revealed intertubular fibrosis besides the glomerular changes.

## CONCLUSIONS

1. The changes found in kidneys of essential hematuria are identical with those found in passive congestion and are therefore caused by passive congestion.

2. The bleeding is due to passive congestion, the kidney being an organ so constructed that it must of necessity bleed in the presence of passive congestion.

3. It is erroneous to ascribe the bleeding to nephritis, as there are no clinical symptoms or urinary findings indicative of nephritis, nor can the latter be unilateral. Still, it is admitted that if the bleeding continues, the pathologic changes in the kidney would be the same as in chronic interstitial nephritis.

4. The passive congestion occurring in one kidney only is due to some interference with the outflow of blood, which comes from a twisting of the kidney on a short pedicle.

5. Operative interference is warranted only when it becomes necessary to save the patient's life because of an increasing secondary anemia.

6. Bisection of the kidney for the cure of this condition is contra-indicated, and likewise dangerous.

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## ABSTRACT OF DISCUSSION

**Dr. Herman L. Kretschmer**, Chicago: The term "essential hematuria" originally was meant to be applied in those cases in which no reason could be found for the hemorrhage. That, of course, excludes cases of stone, tumor and tuberculosis. In view of the fact that Dr. Spitzer found aberrant blood-vessels and a movable kidney, these cases could not be put into the class of essential hematuria; because he found some reason for the bleeding. The term is one that is used very recklessly and carelessly. A great many times the term essential hematuria is "hooked" onto a case that is not sufficiently worked up. It is an expression of our limitations in pathology and diagnosis. If these cases are studied bacteriologically, sections made, not from a part, but from the entire kidney, and cultures made from the urine, in the large majority of instances some reason for the bleeding will be found. The ease with which lesions may be overlooked is illustrated in a recent case of Schupbach, who had a patient in whom the diagnosis of essential hematuria was made. The kidney was decapsulated, the bleeding did not stop, and it became necessary to remove the kidney. The kidney was cut open and no pathologic lesion found. Serial sections, however, revealed the presence of tuberculous lesions which had eroded a small blood-vessel, thus causing the hemorrhage. The more these cases are studied, the less we will use the term. I cannot agree with Dr. Spitzer that his case was one of essential hematuria, because he found a movable kidney. Nor can I agree with him that we have the same pathologic factor in this as in passive congestion. As regards the unilateral occurrence of the hemorrhage, we should consider the possibility of these lesions being bilateral. Dr. Spitzer says nephritis would not be unilateral. That is a good point, particularly when these patients are to be subjected to nephrectomy. I recall a case in which a patient had a one-side hemorrhage. The diagnosis of essential hematuria was made, the kidney was decapsulated, and the bleeding stopped. I saw him a year later and he was bleeding from the other side. Sections from the second side showed extensive nephritic changes. If we had removed that patient's kidney it would have been very unfortunate, because both sides were diseased. I do not think we can call attention to this too often. All that nine out of ten surgeons require to know is which side is bleeding, and they do a nephrectomy. Cases of hydronephrosis associated with bleeding should not be included in these cases of essential hematuria. Dr. Braasch pointed out last year that in a certain number of cases of pyelitis profuse bleeding occurs. This is another argument in favor of care in analyzing these cases. Too many of these patients are operated on, the kidneys exposed, and the diagnosis of essential hematuria made. Even if such a kidney were cut into, unless the pelvis were opened, it is easy to see how a lesion in the renal pelvis could be overlooked. I therefore wish to be recorded as opposing nephrectomy in the treatment of this group of cases except as a last resort. In many of these cases of essential hematuria the bleeding stops with less radical measures. In a case reported a few years ago by Dr. Hagner the bleeding ceased following ureteral catheterization. Many cases of bleeding stop with a simple procedure. Catheterizing the bladder in one case stopped the bleeding. The injection of epinephrin into the kidney is a valuable procedure, and so far as I know was first used by Dr. Young. We must bear in mind that most of these cases have an organic basis and hence we must not treat them too long with the epinephrin injections.

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[8] Payne: Surg., Gynec. and Obst., July, 1913, p. 93.

Dr. W. F. Braasch, Rochester, Minn.: I want to call attention to a condition which is easily overlooked and which may be regarded as due to essential hematuria, when in reality it is due to an inflammatory condition of the renal papillae. The accompanying clinical data are much the same as in the so-called essential hematuria with the exception that a varying number of pus-cells are found in the urine often together with colon bacilli. On section of the kidney, the papillae appear somewhat inflamed or slightly ulcerated and occasionally white areas, which are the result of necrosis, are visible at the tips. In the past year, we have found two cases in which we could say quite definitely that the hematuria was due to a condition which might be called chronic papillitis. Both of the cases were given pelvic lavage and autogenous vaccine without effect, so that nephrectomy was necessary.

Dr. Hugh Cabot, Boston: This opens an interesting and difficult question, and I am not sure that I entirely understood Dr. Spitzer. He will correct me if I am wrong. I object to the use of the term essential hematuria, because it seems to me merely a cloak for ignorance. We had better say frankly we do not know what is the matter with a patient; but up to the point where absolutely nothing can be found let us classify these cases according to the cause of hemorrhage. I do not think that I agree with him in regard to bleeding from cases of chronic nephritis. I am sure that unilateral bleeding in chronic nephritis occurs. At least two cases were observed over a term of years in which intermittent bleeding occurred and a diagnosis of chronic nephritis was made, the bleeding having been first from one kidney and then from the other. We never happened to see it coming from both. I have no doubt that during that time a period of bilateral bleeding did occur. The bleeding in these cases of chronic nephritis I believe to be due to localized changes in the kidney, but I think it rarely occurs in chronic nephritis because there are few cases of such severity as to cause bleeding in which a diagnosis cannot be made by the other evidences of chronic nephritis. I think we are apt to overlook the fact that chronic nephritis is not a disease of the kidney; that there are other conditions, circulatory and otherwise.

Here is a point concerning which I am not at all sure that I understood Dr. Spitzer, but I rather gathered that he said that conditions causing passive congestion in the kidney would ultimately cause changes in the kidney similar to chronic nephritis. That I believe to be based on pathologic error. I believe it necessarily occurs from a reaction in the kidney, and is always glomerular or arteriosclerotic. I do not believe any amount of change in the position of a kidney will produce the essential lesion of chronic nephritis. That mobility of the kidney can produce hematuria has been known for many years, and that the replacement of these movable kidneys will stop the hematuria is also well known. In those cases the diagnosis of kidney mobility and not essential hematuria should be made.

I did not hear Dr. Spitzer discuss those cases of varicose papillae which are now, I think, proved to be pathologic entities beyond the shadow of a doubt. They will give rise to renal hematuria without any other evidence but that of blood in the urine. This hematuria may be severe in character, may produce a high degree of secondary anemia, and has been treated by nephrectomy, which I believe to be entirely unnecessary. But the fact that it has been treated by nephrectomy has given us the pathologic material on which the diagnosis has been made with certainty.

That a condition that we may be required to call essential hematuria may occur cannot, I think, be denied. It simply is a confession of ignorance, not a confession of wisdom, and more and more as these cases are narrowly examined with the best methods we shall find them in this inflammatory category to which Dr. Braasch referred, or with some demonstrable lesion as the cause of the bleeding. That the bleeding occurs as an act of God, without any reason whatever, is still to be shown.

Dr. J. W. Squires, Charlotte, N. C.: A case of renal hematuria came under my observation. Ureteral catheterization was done and the functional output from each kidney as shown by phenolsulphonephthalein, was 15 per cent. About one month ago, ten months after the first ureteral catheterization, the patient came in for another catheterization. At this time the right or bleeding kidney, was putting out 5 per cent. in one hour and the left 25 per cent. in one hour. When the patient first came into my hands I made a diagnosis of essential hematuria because of the fact that the functional output was normal and I could not find any pathologic lesion or any etiologic factor for the bleeding from this kidney. After the last catheterization I told him that there was now a demand for an operative procedure, and advised it. In the operation we found a hypernephroma of the right kidney. I wish to emphasize that in unilateral renal hematuria the function of the two kidneys may be practically the same when the case first comes under observation, but if kept under observation for sufficient time some pathologic lesion will be detected.

Dr. W. M. Spitzer, Denver: Dr. Kretschmer, I think, misunderstood me. I stated that at the time of operation one should replace the kidney and sew it in its proper place, and if accessory arteries are found they should be cut. In my paper I distinctly limited these cases of essential hematuria, so-called, to cases in which a competent urologist could find no lesion in the kidney, no micro-organisms in the urine, no pus, no epithelial cells from either the pelvis of the kidney or the kidney itself; in which no tumor was palpable, and in which the roentgenogram of the kidney as well as one of the collargol-filled kidney pelvis, showed no tumor; and I also excluded hydronephrosis, and then called the rest of the cases those of essential renal hematuria. As to bleeding from both sides, I have never seen a case. I have never even seen bleeding first from one side and then from the other, but if I should see such a case I should very strongly suspect a nephritis, although I agree with Dr. Cabot, that signs of nephritis and urinary findings should be present. In the cases of lesions in the papillae, mentioned by Dr. Braasch, we should find enough pelvic epithelium in the urine to help us diagnose them as such. I mentioned that I considered the injection of epinephrin a diagnostic measure. We might get a cessation of hemorrhage by injecting epinephrin in cases in which the papillae are bleeding. I do think, however, that this is a rare cause of bleeding. I do not see how we can refuse to call these conditions cases of essential hematuria when they are narrowed down. It is the kidney substance itself that is bleeding. It is a cloak for our ignorance to call it idiopathic renal hematuria, but it is not so to call it essential renal hematuria. Dr. Cabot doubts that the changes can be the same in these kidneys as those we find in chronic interstitial nephritis. They will be the same eventually. If a chronic passive congestion of the kidney exists, the same changes that I have described will be found, and after that a round-cell infiltration and finally an intertubular fibrosis, and thus, eventually, all the changes of chronic interstitial nephritis. Dr. Cabot also spoke of varix of the papilla. The reason I did not mention it was that I was afraid to. Harry Fenwick has described six cases and Dr. Cabot has described one. I do not see how it could be demonstrated microscopically after the kidney was excised. It may be it can be demonstrated macroscopically while operating. Lately there have been no cases of varix of the papilla reported. Dr. Squires speaks of a case of tumor of the kidney with accompanying hemorrhage, in which there was a low output of phthalein. This is as it should be. If careful roentgenograms had been taken in his case, I do not doubt that the diagnosis of tumor would have been made before the patient was operated on.

# EXTRAPERITONEAL RUPTURE OF THE BLADDER

## ITS SURGICAL MANAGEMENT *

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Extraperitoneal rupture of the bladder, for a serious injury, has received little specialized study or attention, and when this can be said of a surgical condition of such magnitude it follows almost as a matter of course that its management has been, as a rule, inefficient and unsatisfactory. Some may criticize this statement on the ground that hospital statistics show that a large percentage of patients with such injuries are at present discharged from the hospital alive and with the record "recovered." Still, if one will take the trouble to investigate these patients so discharged, it will be found that almost all of them have recovered only sufficiently to be discharged from hospital, and that most of them have been left invalided—the majority, severely so.

Peritoneal rupture, on the contrary, has been carefully studied, and the surgery applied to it has been radical and eminently satisfactory. Severe violence directed against the suprapubic or perineal region may result in extraperitoneal rupture. When violence is simultaneously exerted in both these directions, the bladder has small chance of escaping severe damage. The worst cases of extraperitoneal rupture are those associated with fracture of the pelvis. In many such cases violence has been severe enough to cause general destruction and to make death inevitable. In these extreme instances surgery, at its best, may be ineffectual. It is in the cases uncomplicated by pelvic fracture that surgery has a chance to show its efficiency.

Extraperitoneal rupture generally occurs in the region of the trigonum; less frequently above, under the space of Retzius, and occasionally at the side of the vesical neck. In most instances the injury consists of one tear, less frequently of two, and occasionally of even more. Multiple ruptures usually occur in connection with fracture of the pelvis, and some of them are in the nature of punctures caused by the sharp ends of the fractured bone. If a rupture is small and perhaps incomplete, the amount of urine extravasated may be correspondingly slight, the result being simply a circumscribed area of involvement. A case such as this, treated expectantly, can leave the patient with nothing more than a corresponding area of pericystic sclerosis. The symptoms arising from such sclerosis may be slight or severe, according to the extent and position of the lesion. In the great majority of cases, however, owing to the volume of the extravasation or to a complicating secondary infection, expectant treatment invites a fatal termination. Following such injury, the extravasated fluid tends as it increases in amount—owing to a continuance of vesical distention or to pus formation from secondary infection—rapidly to extend itself, so that after the extravesical space about the site of the rupture is filled, active burrowing follows. The directions which can be taken by such burrowings are various. One point, however, seems from my experience to be reasonably assured, and that is that the most dependent part of the extravesical space—in other words, the postprostatic area in which the seminal vesicles lie—always becomes involved; primarily, when the extravesical rupture is, as is usual, at the base of the organ and secondarily, when it is elsewhere. This is a point of the utmost importance to be kept in mind, as will be seen in considering surgical treatment.

Further burrowings point outside the pelvis. They may extend behind the peritoneum—sufficiently, perhaps, to involve the perinephritic region on one or both sides—or they may mount upward, filling the space of Retzius in the middle, or the inguinal regions to either side. The extension above the space of Retzius may result in a marked hypogastric tumefaction, liable to be mistaken for an overdistended bladder. Or, following extrapelvic deviations of the pelvic fascia, the burrowing may invade the thigh, passing out of the pelvis under Poupart's ligament, generally externally to the internal iliac vessels; or it may reach the scrotum, following along and externally to the structures occupying the inguinal canal. The buttocks can be invaded, the paths being via the obturator or the great sacrosciatic foramens. These last paths, however, are rarely taken, as they are narrow and devious. Extravasations can break through the pelvic fascia into the ischiorectal space, the perineum and elsewhere, but the assumption of such directions is not to be expected unless the trauma causing the bladder rent likewise breaks down other structures which would otherwise serve as natural barriers.

There are no strikingly characteristic clinical symptoms associated with extraperitoneal vesical rupture, and it is on this account that often the injury remains undetected until inflammatory changes or burrowings in connection with the extravasation attract attention. Hematuria is present after the accident, perhaps to such an extent as to fill the bladder with clot; or it may be so slight as to cause no noticeable discoloration. When the bleeding is so slight as not to cause the formation of clot, and when the laceration does not involve the vesical neck, there is not apt to be retention. There is always some pain on urination, and this may be severe. The pain, however, associated with other parts which have been injured by the

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traumatism responsible also for the bladder injury, may be so prominent as to divert attention, thus causing the discomfort connected with urination to escape observation. There is apt to be febrile disturbance, generally marked. As extravasation progressively develops, attendant symptoms arise, and it is these secondary symptoms, as stated, which frequently first lead to a realization on the part of the surgeon of existing conditions.

Diagnostic considerations as regards extraperitoneal vesical rupture vary greatly in accordance with the time which has elapsed after the accident before surgical aid can be rendered. When a surgeon sees a case promptly, the differential diagnosis between anuria, intraperitoneal rupture and extraperitoneal rupture is most important. When there has been considerable delay, time itself, for better or worse, has generally solved these questions, but left in all probability others. When a case indicating bladder injury is seen promptly, the patient should be instructed to urinate. If he can do so naturally and the urine is free from blood, the chance is that there has been no vesical injury, and expectant treatment, as far as the bladder is concerned, is warranted. If he cannot urinate, a sterile catheter should be passed. If no urine and no blood is thereby revealed, the probability of anuria due to shock is justified. The abdomen, however, should be carefully watched, and if, at the end of a brief interval, on a second introduction of the catheter no urine should be found, a measured amount of sterile normal saline solution should be injected into the bladder. If the volume injected is caught in the return flow, well and good. If not, the abdomen should be promptly opened and an intraperitoneal rent looked for and closed, if found. If there be no intraperitoneal injury, inspection should then be made to find if there exists any evidence intra-abdominally of extraperitoneal vesical injury.

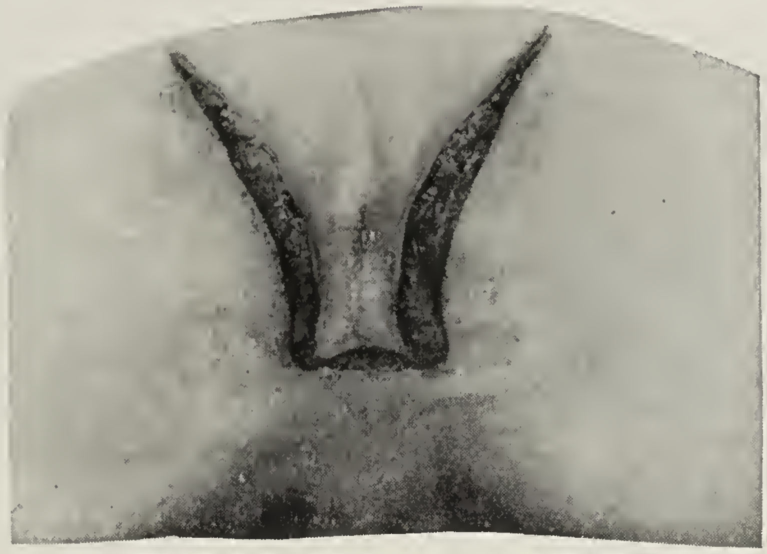
Fig. 1.—Line of incision.

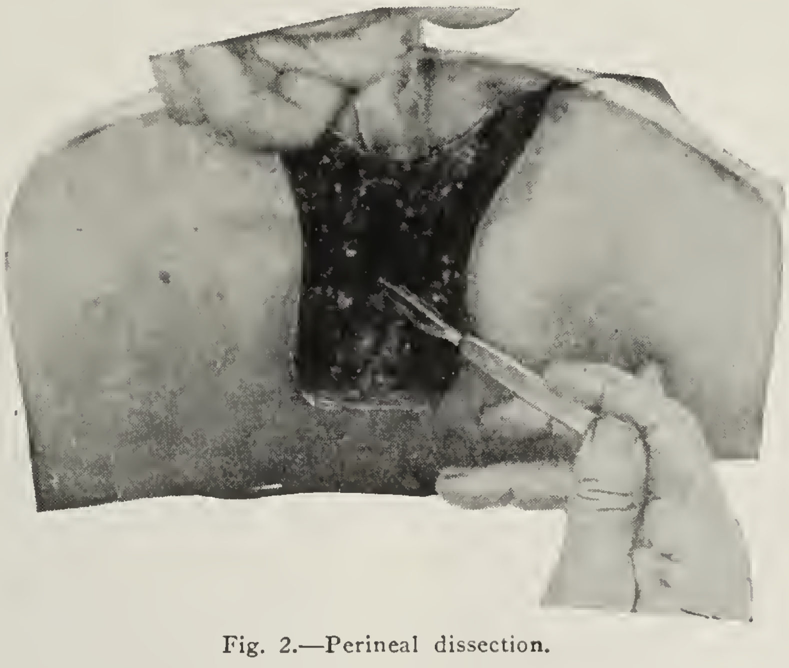
Fig. 2.—Perineal dissection.

To aid in this inspection, in case there should be no evidence, a catheter can be introduced and the distention of the bladder watched as fluid is injected. The abdominal wound should then be closed and the bladder opened suprapubically and drained. Such prompt drainage may anticipate any extraperitoneal extravasation, allow the bladder to heal, and obviate a secondary operation such as will be necessary should there be any marked degree of extravasation. If the bladder contain blood clot, or if there be retention due to an involvement by the trauma of the bladder neck or deep urethra, then suprapubic cystotomy should be promptly performed. The bladder, on being opened, should be emptied and inspected, to locate injury. If there be then any indication of rupture involving the peritoneum, the abdomen should be opened as a secondary step in the primary operative procedure, and such a rent closed. In any event, suprapubic vesical drainage should be established. If suprapubic cystotomy discloses extravesical rupture and there is good reason to believe that the bladder has been opened before urinary extravasation to any degree has had time to take place, nothing further should be done. After such operation it may be advisable—even in case there be doubt regarding the question of extravasation—to delay operating to insure extravesical drainage until symptoms develop indicating the necessity for such further procedure.

It is the cases of extraperitoneal vesical rupture that have not had the benefit of prompt surgery immediately following injury — a prophylaxis, as it were, against urinary extravasation — which especially deserve notice, as they represent the large majority. Before considering the question of how these should be surgically treated, it may be well to remark on the inefficient treatment so generally employed, for it is from the study of bad results that good ones can be appreciated.

In most instances in which extravasation has not burrowed sufficiently to produce external manifestations, it will be found that the bladder has been opened perineally or suprapubically, or perhaps in both directions. When burrowing has been extensive enough to cause surface evidence or much localized pain, an incision into such part or direction is common, followed by the liberation of pent-up fluid and the maintenance of drainage. Although late cystotomy does little and perhaps no good, incision into the area involved by the extension of extravasation is very beneficial in that it probably saves life. Still, its fault is that it does not cure. This is because such incision only partially drains the area. Another error into which those cutting into such burrowings may fall is observed in connection with cases in which the burrowings have been sufficiently extensive to point outside the pelvis, far from its original source. When such a pus cavity is opened, the false inference may be drawn that a nearby part is the source of suppuration and consequently requires surgical removal. As an illustration, the head of the femur has been resected, the suppurative process having in reality burrowed out of the pelvis by way of the great sacrosciatic foramen; or a piece of the sacrum has been chiseled off, on the supposition that disease there was the original cause.

In a paper[1] which I read in 1902 and which represented my early surgical experience, I made the following remarks:

> The surgical management of suppuration in this part or elsewhere lies in the establishment of free drainage. In order that drainage be free, it must be dependent. As the pelvic cavity is deep, the surgical problem of effecting dependent drainage arises. . . . In each individual case there are two surgical principles to be determined in connection with the establishment of the drainage: first, the location of the dependent pocket of suppuration, and, second, the dissection to reach that pocket. . . . No dependent dissection should be attempted till the pocket has been located. . . .
>
> The second step in the surgical procedure is the dependent dissection. This dissection should open a perineal path and expose the lymph space between the prostatic capsule and the rectum, the urethra being left intact. In making this dissection, the dorsal position and the Zuckerkandl incision can be employed; but what is far superior is the knee-breast position and the incision which I devised to expose the seminal vesicles and the prostate, a description of which has been published in The Journal of the American Medical Association, May 4, 1901.

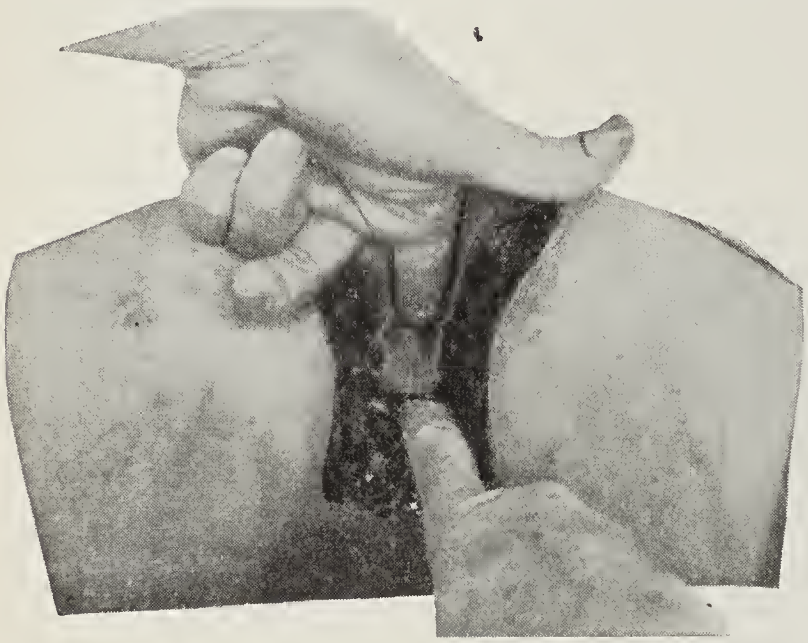
Fig. 3.—Separation from the rectal wall.

This early opinion, though thoroughly sound, I have since seen fit to modify as regards procedure, in that I now make the second step the first, while the original first step becomes the second. This change simplifies matters and avoids exposing the patient to what often resulted in a needless degree of dissection in locating the pocket in connection with the original first step of the operation. As all these extravasations tend speedily to reach the most dependent extravesical space, that space should first be opened. It will then be found a much simpler matter to trace with the finger or probe the track of the burrowing from its dependent position to its limit of extension, than was the vice versa original procedure. When the limit of extension is located, an external incision can be made down on the end of a probe and drainage tubes introduced. It may be that burrowings have taken place in more than one direction, in which event more than one external connecting incision will be necessary. Drainage tubes should be serrated and of sufficient length to pass in at the external connecting incision and out at the entrance to the dependent incision.

The accompanying photographs illustrate the performance of the dependent dissection. As the seminal vesicles in these cases are embedded by infiltrate, it is wise to open them just as would be done in the performance of a regular seminal vesiculotomy. The patient is in the knee-chest position.

Figure 1 shows the line of incision. In this photograph, although the depth of the incision is still superficial, the marked tendency to retraction of the tissues is clearly evident. This tendency to retraction, intensified by the position of the patient, is an element of great aid to the operator. The converging cuts on either side of the rectum are made long so that the rectum can freely retract as the perineal dissection liberates it from its natural anchorage.

Figure 2 indicates the method of perineal dissection. Note the marked retraction of the rectal structures, the lower rectal flap having already retracted fully two inches. This retraction is sufficient to expose the prostate on lifting the rectal flap, making that organ a superficial rather than a deep-lying structure. In making this dissection, the forefinger of the operator's left hand is maintained in the rectum to serve as a guide while the dissection progresses. While so operating, the side rather than the blade of the scalpel is used, so as not to cut into the muscular structure of the perineum, the path of dissection lying just outside the muscular perineal body and inside the perineal fascia. By so doing, and by starting the transverse flap well below the margin of the anus, the rectal sphincter and the blood-vessels encircling that organ escape injury. In fact, so little injury is done to blood-vessels that it is exceptional when it is found necessary to ligate a single vessel through the performance of the entire operation. As the dissection proceeds around the perineal body, that structure tends of itself to retract downward. The fascia propria of the pelvis, with its median raphé, is then exposed, and when this is cut through the bursal space separating the rectum from the prostatic body is entered.

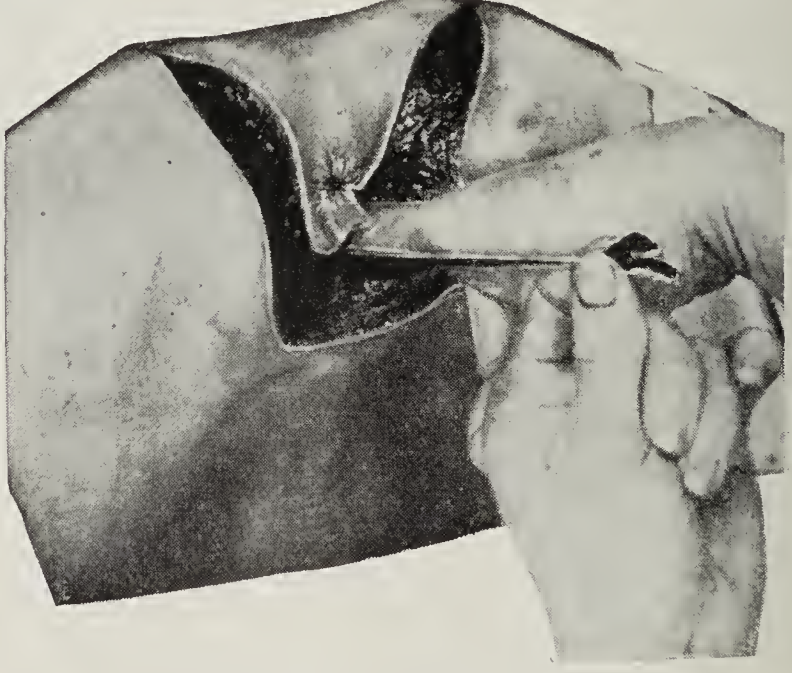
Fig. 4.—Placing the grooved director.

Figure 3 shows the next step in the operation, the separation of the rectal wall from the underlying prostate, the seminal vesicles and the bladder floor. After the fascia propria of the pelvis has been divided, the scalpel is put aside and the right forefinger of the operator is introduced into the bursal space just mentioned, and the process of separating the rectal wall from the prostate and seminal vesicles by digital manipulation is undertaken. In accomplishing this, the right finger-tip should be bent down to guard against perforation of the rectal wall, while the left forefinger is still maintained in the bowel as an aid in the same direction; for should the right finger impinge too closely on the bowel wall in accomplishing its separation, the left finger gives the operator immediate warning. In the performance of this digital separation it may be that fibrous bands are encountered, too dense for separation by the finger-tip. If such is the case, the scalpel guided by a director can be introduced to cut the band, after which the digital separation is resumed.

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[1] Fuller, Eugene: Drainage of Extravesical and Extraperitoneal Suppuration of the Male Pelvis, The Journal A. M. A., Oct. 25, 1902, p. 1021.

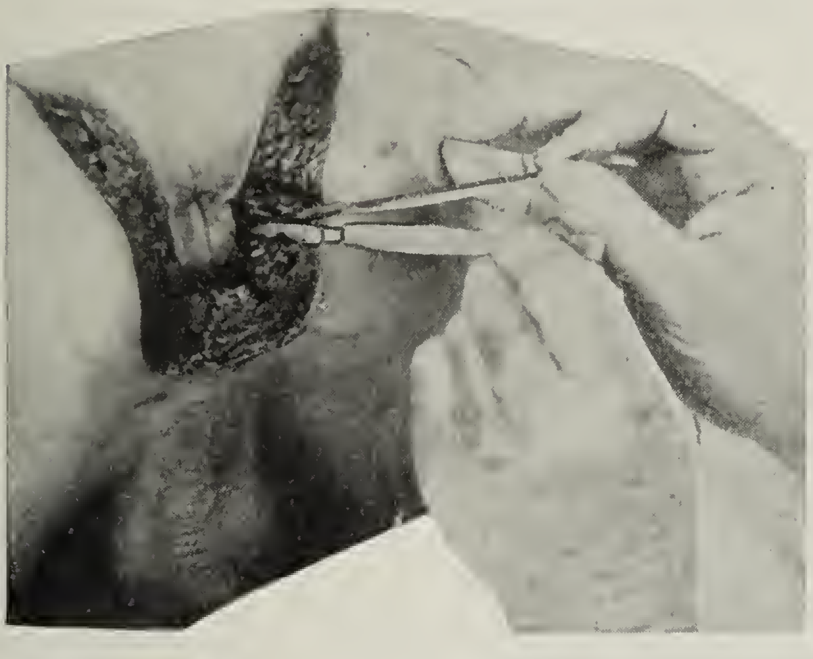

Fig. 5.—Passing the knife.

Figure 4 illustrates the putting in place of the grooved director under the guidance of the operator's right forefinger. After the rectal wall has been detached from the underlying seminal vesicles, the operator places his right forefinger-tip on the apex of a seminal vesicle (in the photograph, it is the apex of the right organ), and maintains the finger-tip in that position, while with the left hand the grooved director is passed under and along the right forefinger till its point reaches the apex of the seminal vesicle under the right finger-tip. In this position the director is firmly held while the right forefinger is withdrawn.

Figure 5 shows the next step in the operation, which is the passing of the knife along the groove of the director. After the knife reaches the apex of the seminal vesicle at the point where the end of the grooved director is fixed, its shaft is lowered so that the belly of the blade lies against the seminal vesicle, and a cut of an inch and a quarter to an inch and a half is made longitudinally into the seminal vesicle so as to lay that organ open its entire length. Often the first cut may not be deep enough to accomplish its purpose. If a digital examination shows the cut to be incomplete, the director should be replaced and a second cut made in the line of the first. Sometimes, especially in sclerous cases, three or more cuttings may be required before a thorough opening of the seminal vesicle has been accomplished. Should it be desired to open the floor of the bladder for drainage, the end of the director should be placed against the wall at a point midway between the seminal vesicles and far enough back to be in a line with their apices. The knife should then be slipped along the groove and the bladder wall perforated, after which the director should be immediately slipped into the bladder and maintained there to guide the introduction of a drainage tube.

Figure 6 shows the method of packing the cavities of the seminal vesicles and the deep limits of the dissection. Two strips of gauze are employed, one for each side. Here the packing is being introduced into the right opened seminal vesicle, the right forefinger of the operator being maintained in the opening to crowd in and arrange the placing of the gauze as it is being pushed in by the operator's left hand, aided by a blunt-ended clamp. In placing the packing, a space should be left between it and the rectal wall for the drainage tubes.

Figure 7 shows the two drainage tubes in place above the packing, the lower portion of the dissected flap having been fastened in place by lateral sutures.

Figure 8 shows the completed operation previous to the placing of the dressing. The two ends of the gauze packing are left protruding, to facilitate removal. Safety pins have been passed through the tube ends, and to these have been attached strips of adhesive plaster, so as to guard against a premature slipping out of the tubes.

The following clinical reports serve to illustrate the surgical procedure advocated in cases coming under observation long after the original injury:

Case 1.—Man, aged 23, on entering the City Hospital could not walk without support, nor could he void urine. All the urine leaked away through a perineal sinus. There was constant and severe pain in the region of the pelvis. Several months before, while working in a mine, his pelvis had been caught between two cars. Retention followed the pelvic injury. He was sent to a local hospital, where a perineal opening was made, and it was out of that opening that the urine was passing when he entered the City Hospital. Roentgenoscopy revealed that there had been a fracture of the pelvis. The injury had also caused thorough disorganization of the deep urethra, so that complete occlusion had resulted. Rectal examination showed marked tumefaction of the postprostatic tissues, and any pressure there caused extreme pain. The patient was put in the knee-chest position and the seminal vesiculotomy dissection was made. Before this dissection had extended beyond the prostate, the anterior limit of the dependent area of extraperitoneal extravasation was opened, and when completed a large chamber was exposed occupying the entire postprostatic space. Com-

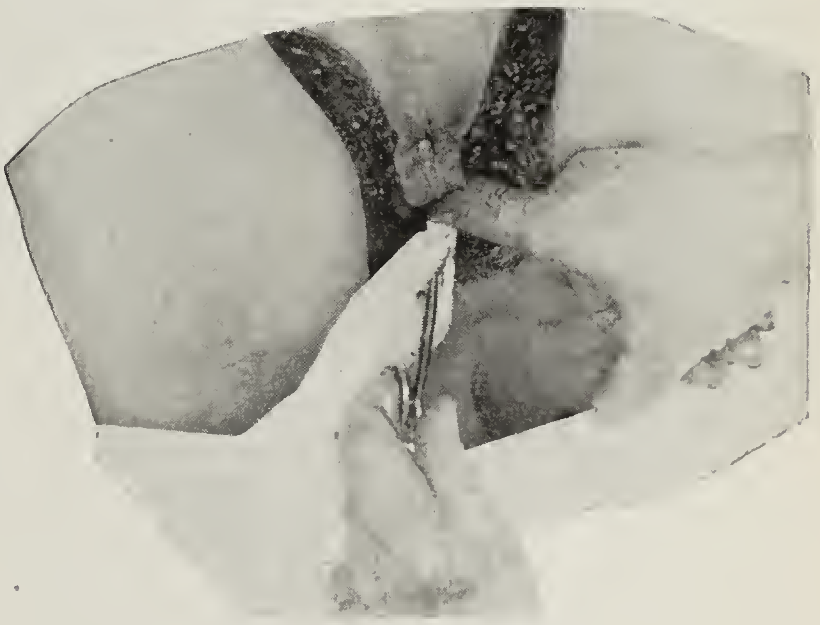

Fig. 6.—Placing the packing.

municating with this chamber was an opening through the trigonum sufficiently large to admit the forefinger. To the right of the vesicle neck, the chamber extended upward into the space of Retzius. A suprapubic counter-opening was consequently made, and a connecting chamber occupying the space of Retzius was thereby exposed, and another vesical rent found connecting the bladder cavity directly with the space of Retzius. From the space of Retzius, the burrowing had extended to the left under Poupart's ligament and into the upper thigh. An opening was consequently made into the upper thigh so that a drainage tube from the suprapubic opening could be there passed out. A suprapubic drainage tube was also passed through the space of Retzius to the right of the vesical neck, through the postprostatic space, and out at the base of the perineal dissection. Another good-sized tube was passed along the perineal incision and into the bladder through the rent in the trigonum. This was for vesical drainage. The operation was followed by marked relief.

Two months after the first operation the deep urethra was resected and made pervious. The patient now—four months after the first operation—is about, using a cane, in comparative comfort. The suprapubic opening into the space of Retzius has not as yet been allowed to close, so as to afford a vent in case of persisting suppuration. The flow of urine, likewise, has not yet been diverted from the perineum to the urethra. The perineal opening can, however, be closed by a slight plastic operation whenever it may be deemed advisable.

Case 2.—A man, aged 31, entered the City Hospital with a history that two years before a log had fallen on him, causing rupture of the bladder, together with laceration of the deep urethra. Suprapubic cystotomy had, at the time, been performed. Eight months later, a perineal section had been performed to rid the patient of traumatic stricture formation and to avert threatened retention. His chief complaint on entering the City Hospital was impotence, which had been complete ever since the accident. On this account, his wife had left him. There was also marked pain in the sacral region after much exertion, together with loss of force to the stream on urination. Rectal feel showed marked infiltration and tumefaction of the postprostatic tissues, digital pressure causing severe pain. There was still a marked traumatic stricture involving the deep urethra. Before the accident the patient had been normal and vigorous sexually, and there was no antecedent history of gonorrhea.

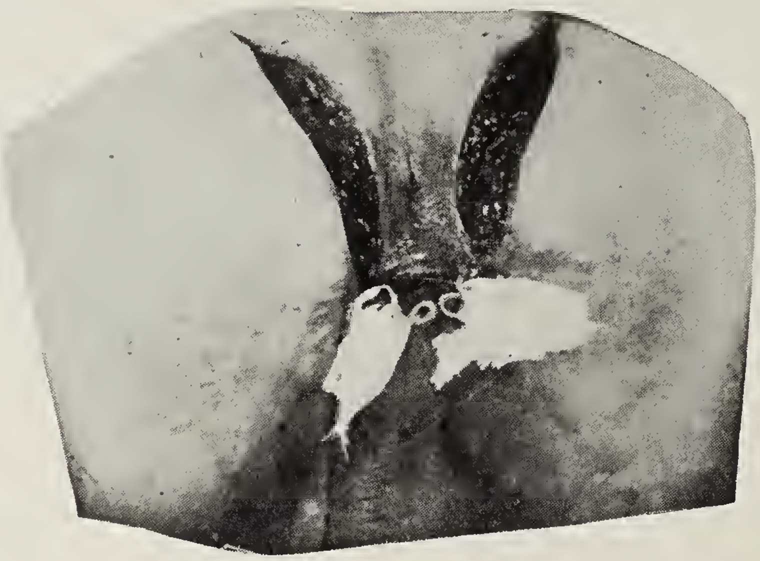

Fig. 7.—Drainage tubes and packing.

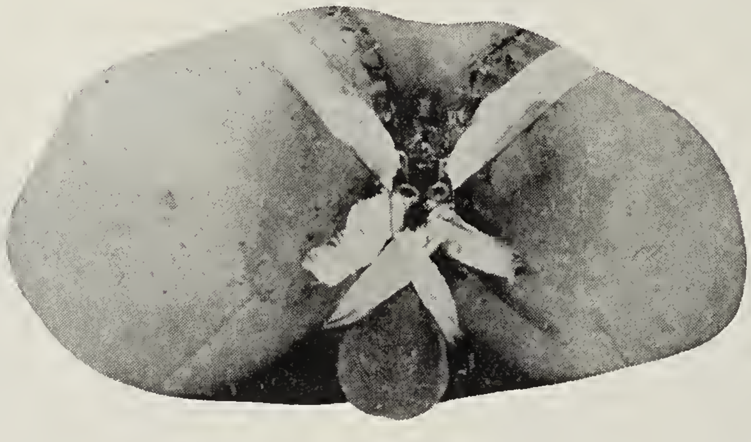

Fig. 8.—The completed operation.

The opinion being held that the postprostatic tumefaction was due to urinary extravasation, the patient was put in the knee-chest position, and the seminal vesiculotomy dissection employed. A burrowing extravasation cavity, in which lay both seminal vesicles, was opened. This cavity was found to communicate with the bladder by way of a rupture through the middle of the trigonum. This rupture was large enough to admit the tip of the forefinger. The extravasation had not burrowed beyond the confines of the postprostatic space. The involvement of the seminal vesicles evidently accounted for the impotence. Both these organs were opened, as in an ordinary seminal vesiculotomy, and their cavities, as well as that of the extravasated area, packed. A perineal tube for urine drainage was passed into the bladder through the opening caused by the rupture.

Two months after this operation, the deep urethral stricture was resected. This patient is now completely well, has regained his sexual stamina, and is at work as a laborer.

Case 3.—A man, aged 40, came to hospital with the history that seventeen years before he had fallen fifteen feet, striking his sacrum against a wheel. Before the accident he had been strong, and up to that time he had never had sexual intercourse. After the accident he was in bed for a long time, and had great difficulty with urination, together with pain, but as the accident had occurred seventeen years before it was impossible to obtain exact clinical data. Four years after the accident he married and had one child. He had never been well since the accident, owing to severe sacral and suprapubic pains, increased on exertion. These pains were often accompanied by chills or chilly sensations. The sexual function had never been strong since marriage, and for many years he had not indulged in coitus at all, owing to the fact that the act served to exacerbate his pains and chills. At present he had no complaint regarding urination, and the urine was normal. He had a great dread of urethral instrumentation, as such treatment caused him much after-suffering from an exacerbation of his symptoms. Neurasthenic symptoms were marked. In fact, neurasthenia had been the usual diagnosis given to account for the symptoms. Rectal feel showed the postprostatic space filled with scar tissue which involved both seminal vesicles. Digital pressure against this region provoked great pain and could not be tolerated. There was no stricture. The cystoscope showed little except that in the region of the trigonum the blood-vessels were enlarged and irregular. There were also in that area patches of scar tissue.

The patient was put in the knee-chest position and the seminal vesiculotomy dissection employed. In this case no actual extravasation cavity was found, probably owing to the fact that the accident had been so long ago; but the dense cicatrix was cut through, the floor of the bladder liberated, and also the seminal vesicles, after which both these organs were opened. The space was packed and drained.

Complete recovery, with relief of all symptoms, followed.

252 Lexington Avenue.

## ABSTRACT OF DISCUSSION

Dr. A. G. Rytina, Baltimore: In connection with Dr. Fuller's paper I will mention a case that is perhaps a surgical curiosity, and I report it to find out if any one has seen such a case. About six or eight months ago a young man entered the Physicians and Surgeons' Dispensary complaining of burning on urination. While one of my assistants was introducing the cystoscope into the posterior urethra the patient gave a sudden lunge. My assistant, in determining the bladder capacity, noted that it was very large, about 1,000 c.c. He then allowed the fluid to return and in all about 600 c.c. returned. The man was asked to strain, and a small amount of fluid feces came back. The assistant suggested that he had gone through into the rectum, and to make sure he put his finger into the rectum and felt the back of the cystoscope. I pleaded with the man to undergo an operation but he refused. I notified the resident to call me up as soon as the man came in. Next afternoon the resident called me up, saying the man was feeling fine and was passing perfectly clear urine. I kept the man in bed and perfectly quiet for two weeks, and from that time to this he has passed perfectly clear urine and has never had any trouble from his accident.

Dr. D. N. Eisendrath, Chicago: I have had quite a large experience with both extraperitoneal and intraperitoneal rupture of the bladder, and I believe that if I had followed Dr. Fuller's suggestion my mortality probably would have been about 75 per cent. instead of about 10 per cent. in twelve cases. The only objection I have to Dr. Fuller's method of drainage is that it is altogether too radical for a man who has had as severe an injury as a recent fracture of the pelvis or a recent extraperitoneal rupture of the bladder. Every one of the cases I have had has been diagnosed within the first seventy-two hours, and it sufficed in all those cases simply to drain the bladder through a tube suprapubically, without any attempt to repair the rent in the bladder, and to drain the extravesical space through suprapubic drainage. With regard to the diagnosis, the chief point that I have always impressed on house surgeons is that if a man has met with any injury involving the region of the pelvis, the first thing the surgeon should do is to catheterize that patient if he can; if he cannot catheterize him, not to use any force at all, but to percuss above the pubes and if there is any dulness there to send word to someone at once who is more skilled in catheterization than he. If both then find that they cannot catheterize the patient, this means a rupture near the trigon, usually at about the junction of either the fixed portion of the urethra or at the anterior portion where it is attached to the symphysis pubis. If that is the case, the best way to do is not to try to do an external urethrotomy, but to do a retrograde catheterization, no matter whether the rupture is of the extraperitoneal portion of the bladder or of the deep urethra. It is better not to waste time, but to go in from above, and if one finds a rupture of the urethra one can retrograde catheterize the patient much more quickly. If one has an extraperitoneal rupture of the bladder the bladder can thus be drained.

Dr. Eugene Fuller, New York: Dr. Eisendrath seems to be doing with his patients exactly what in my paper I said was generally done with them, that is, they are discharged from the hospital crippled, of no earthly use; not dead, but they might as well be. If you get a pus pocket outside of the bladder in which material has extravasated how is a patient going to get well by catheterizing or by fussing with him? He does not get well. This radical operation of mine is not horrible because you do not as a rule have to tie a blood-vessel in its performance and it is of slight danger. I have done this supposedly horrible dissection over six hundred times with but one death and that person died because he had granular kidneys. An operation that is terrible ought to have a bad record, and this one has not. It is technical. There is no use jumping on it because it is technical, and trying to sidetrack it on that account. It is far better to take a cadaver, do a little dissecting, thus mastering the technic and then to try the operation. The whole thing is to get these patients well. These cases belong to a neglected branch of surgery, and the old way of doing nothing with them except seeing that they have a pervious urethra and leaving them alone does not cure them. The cases I reported were in a lot of derelicts who had been the rounds. The patients had been in four or five hospitals when I took hold of them, and I cured them. Dr. Pilcher wanted to know if I so treated these patients at the time of the injury. These are the cases in which the injury had taken place a long time before and in which extravasation is seen. If one gets a man with a rupture of the bladder immediately after the injury one naturally then would open suprapubically and drain as I stated in my paper. Then one probably would get ahead of the extravasation and prevent its occurrence.

# THE MECHANICS OF A PLASTER-OF-PARIS CAST IN FIXED LATERAL CURVATURE OF THE SPINE *

## E. G. ABBOTT, M.D.

PORTLAND, ME.

It is absolutely necessary to know the exact position of the anatomic parts entering into a deformity in order to correct it.

Overcorrection or the reversal of the deformity is necessary to effect a cure. Overcorrection is obtained by pushing the parts back through the same arc which they passed when the deformity developed, and thence through a similar arc to a position exactly opposite to that of the original.

In order to know through what arc the parts travel in the development of a deformity, they must be traced from their normal positions to that of the deformed.

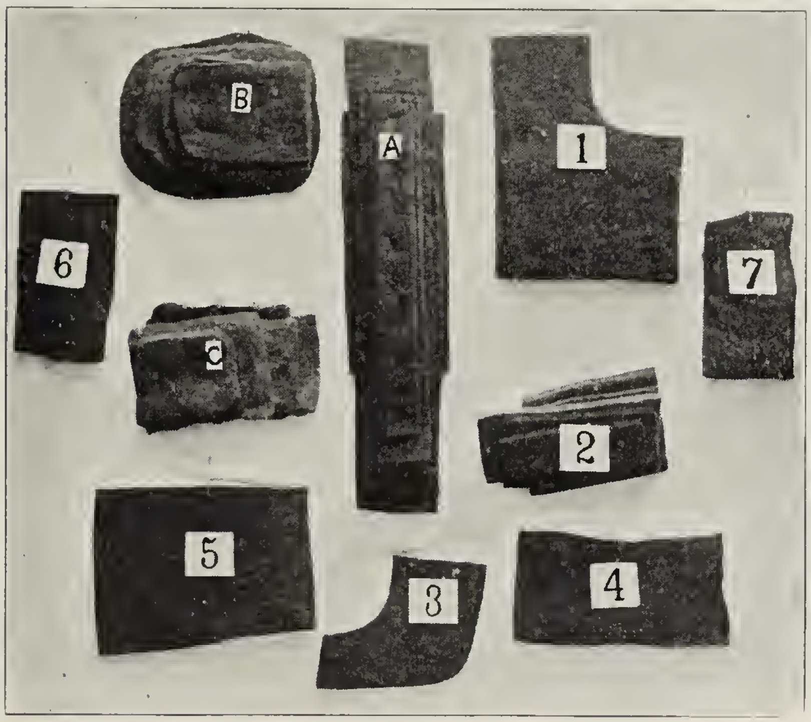

Fig. 1.—Pads used in the treatment of scoliosis.

Scoliosis is developed from a normal physiologic position and becomes pathologic only when the individual is unable to reverse this position at will. Scoliosis in its beginning and through its development to a certain stage is a position of flexion, plus lateral bending plus rotation of the bodies of the vertebrae toward the convexity of the lateral bend.

It is first a normal physiologic position assumed at will, becomes pathologic after habitual assumption and may be easily created in the normal spine.

With a knowledge of the position of the parts in a normal spine, the position of the parts in a scoliotic spine and the arc through which they have traveled in the development of the deformity, it is possible to overcorrect or reverse the deformity, if it is borne in mind that these parts must pass back over the same route which they traversed to a normal position and thence through a similar arc to a position opposite to that of the original. Now the position must not only be understood in a general way, but an exact knowledge of every case must be obtained in order to

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

apply intelligently the necessary force to reduce the deformity. Without this exact knowledge of the position of the parts in scoliosis, the force may be applied so that the deformity is increased rather than lessened.

The spine must be flexed, pressure made laterally against the curve and against the rotation, and if this is done with precision the spine must go into the overcorrected position, unless it is too firmly fixed in its deformity.

The principle is the same in all cases, but its application differs. Let us note at this point what, in a general way, is the position of overcorrection, before proceeding to analyze just how this may be obtained. Using the familiar figure of a boy sitting in an improper attitude at a desk writing, it may be seen that the position is that of flexion, plus lateral bending, plus rotation of the bodies of the vertebrae toward the convexity of the lateral curve, and there may be one or two curves according to the position of the pelvis.

Now, in order to reverse this position we simply turn the child to the other side and the parts reverse their position, but the flexion remains unchanged. This is the position of scoliosis, be it physiologic or pathologic, and all other changes are secondary.

After the patient is placed in the position of flexion and the straps applied to pull the parts toward the position of overcorrection, the corset must be so shaped that the pressure against the fixed points continues to force the parts into an overcorrection. It is scarcely necessary to state that various forms of apparatus for pulling the patient into position might be used, but the exact position into which the patient must be forced must be borne in mind, and it is the application of a corset which will allow of reduction of the deformity that seems to present some difficulties. The corset must be heavily padded with saddler's felt, cut in suitable pieces according to the size of the patient. The technic may, perhaps, best be described by diagrams and illustrations showing just where force is applied, the fixed points in the corset and the necessary pads, both permanent and removable used in the corset. Figure 1 represents all that are usually required, and the permanent ones, or those left in the corset, against which pressure is borne, are numbered and those used to shape the corset are lettered.

The positions which they occupy may be shown by placing them on a patient with scoliosis (Fig. 2). The permanent pads are placed posteriorly as shown in Figure 3, and anteriorly as in Figure 4. The posterior ones are fixed points in the corset. Pad 1 is composed of two pieces of felt placed over the bulging ribs, and so cut that it covers the shoulder blade and passes beneath the axilla. Pad 2 is placed in the lumbar region. It consists of several layers of felt so that firm pressure may be made against the left lumbar curve. Pad 3 is placed under the axilla and over the left shoulder. Pad 4 is placed across the sacrum. These four pads, 1, 2, 3 and 4, are points against which pressure is made and are never changed.

On the anterior surface of the body there are three pads, all permanent. Pad 5 passes across the thorax and Pads 6 and 7 are placed over the anterior superior spinous processes (Fig. 4). The removable pads are placed as in Figure 5. The long pad marked A is about 4 inches in thickness at the center and tapers at the ends. It is for the purpose of allowing more flexion. Pad B is placed over the concave ribs, and shapes the corset so that rotation may be overcorrected in the dorsal region. Pad C is placed in the lumbar region and allows the lumbar spine to overcorrect.

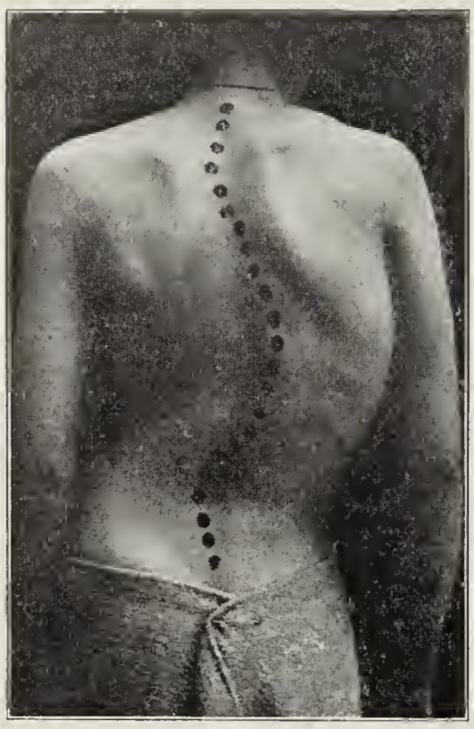
Fig. 2.—Patient with scoliosis.

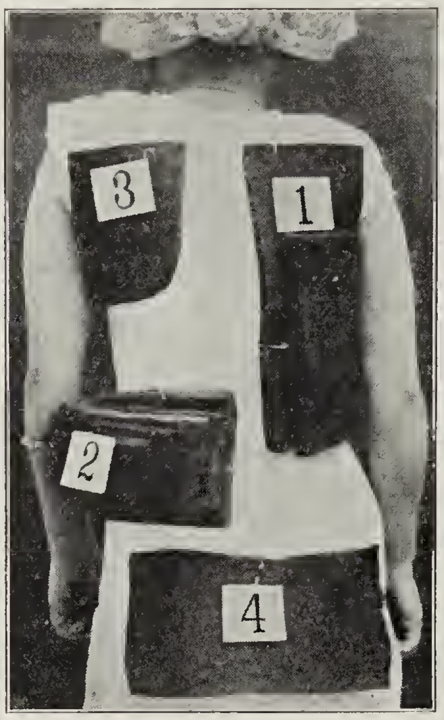

Fig. 3.—Showing method of application of posterior pads.

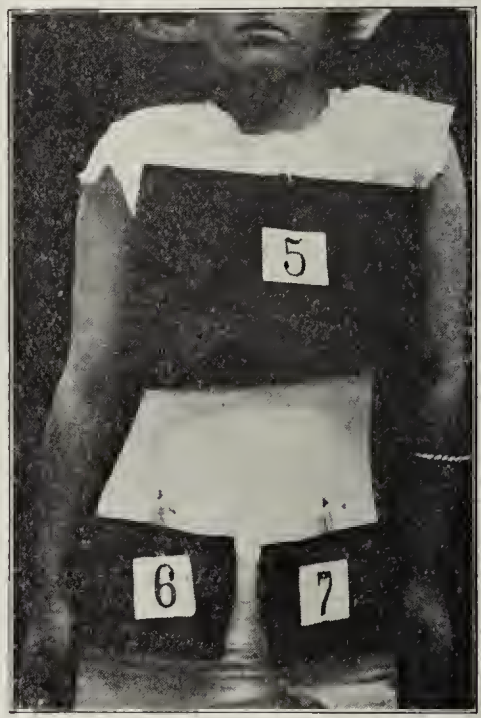

Fig. 4.—Application of anterior pads.

Three undervests, or coverings, are placed on the body. The permanent pads are put between the first and second cover and the removable pads between the second and third. The covers hold the pads in correct position, and also allow of easy removal of those to be taken out after the corset is finished.

Figure 6 illustrates the necessary straps to pull the patient into the proper position in a case such as shown in Figure 1. Strap 1 passes around the axilla, making lateral traction on the upper end of the dorsal curve. Strap 2 encircles the thorax, making traction on the ribs which join the vertebrae at the apex of the dorsal curve. Strap 3 makes lateral traction on the lumbar curve at its apex. Strap 4 passes around the pelvis and pulls against the lower end of the lumbar curve. Strap 5 is a rotator which is attached to Strap 2, and passes across the thorax and directly back. Strap 6 is attached to Strap 1 and pulls the low shoulder forward and upward. Strap 7 passes over the high shoulder and pulls it backward. Strap 8 is attached to Strap 3 and is a rotator which pulls against the thick pad of felt marked 2. Strap 9 tilts the pelvis. With the pads placed on the patient as indicated in Figures 3, 4 and 5, and the straps applied as in Figure 6, traction is made on them and the body is pulled in the direction of overcorrection. The plaster corset is then applied. As soon as the plaster hardens, windows are cut as in Figures 7 and 8. The window or slit in Figure 7 is for the purpose of inserting felt pads to induce further flexion. The windows in Figure 8 are over the removable pads B and C, and allow the depressed ribs and lumbar region to be pressed backward. At Point 1 (Fig. 8) the spine is 4 inches in front of the cast, that is, the spine may be further flexed 4 inches before it comes in contact with the plaster. Points 2 and 3, same figure, are fixed points which cannot change. When felt is inserted over the thorax through the slit or window (Fig. 7), the spine flexes further, carrying with it all of the body except those parts under Points 2 and 3, Figure 8, and if the deformity is not too extreme, it is possible to obtain overcorrection by inserting enough pads over the thorax to force the spine against the corset at Point 1 (Fig. 8). Should the lateral curves still remain, the corset is cut away along the dotted lines under the axilla and hip, and pads are inserted at 4 and 5.

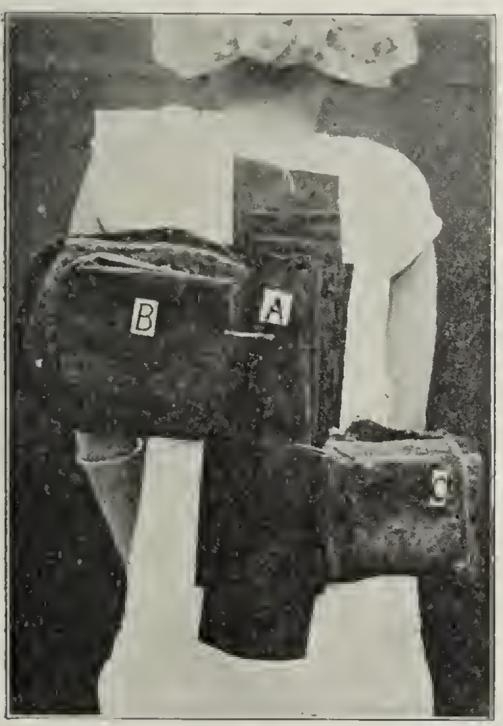

Fig. 5.—Showing position of removable pads.

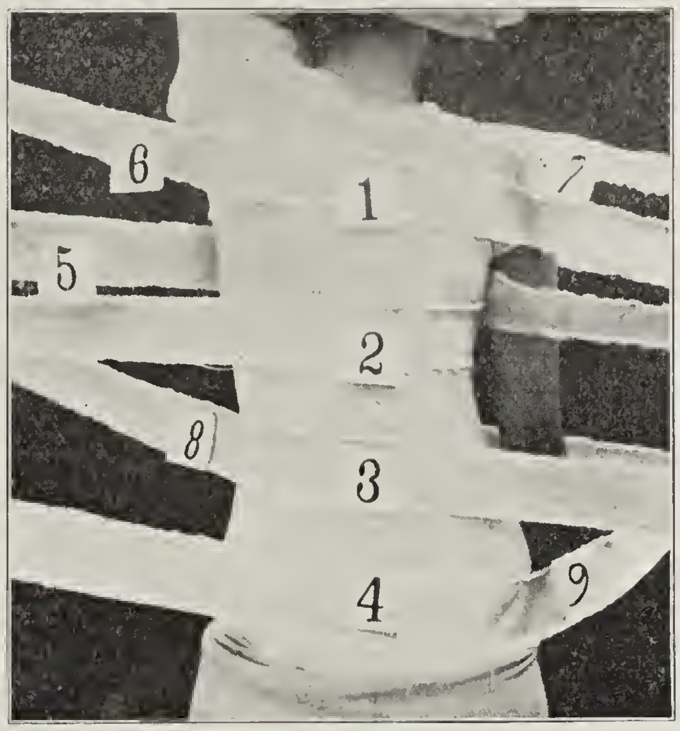

Fig. 6.—Straps used for pulling patient into position.

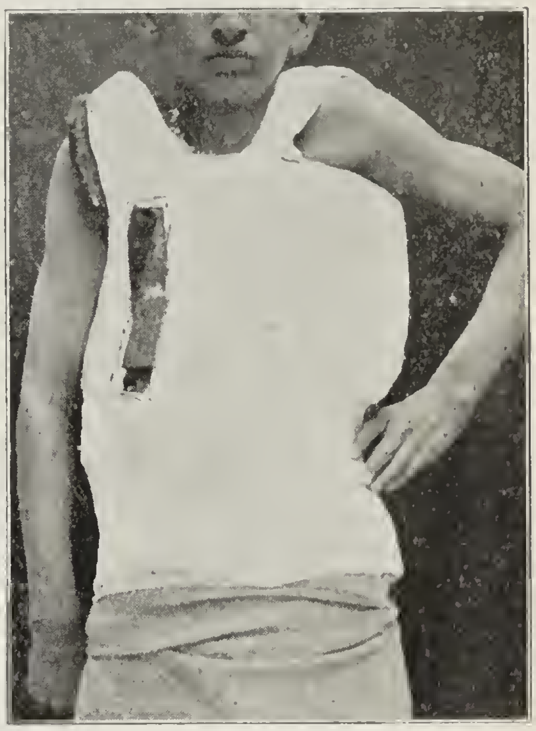
Fig. 7.—Showing window or slit for inserting felt pads to induce further flexion.

Care must be exercised that the traction is applied at the exact point needed. For example, if force is used against points which are apparently opposite the part of the curve against which pressure is needed, the deformity is made worse. It must be borne in mind that the ribs run downward as well as outward, and pressure should be made at proper levels.

As already stated, the position into which the patient must be placed in order to overcorrect must be thoroughly understood in every case, and the force must be applied with precision. Unless such precaution is taken, more harm than good may be done.

## ABSTRACT OF DISCUSSION

Dr. Paul A. McIlhenny, New Orleans: I have not been able to get results, except in those cases in which we have what Dr. Abbott terms a "total scoliosis," or one in which there is only a slight curve in the lumbar region. I have followed, as closely as I could, instructions given in the various publications that I had access to; and I have obtained results in the moderate form of dorsal curve. In the marked cases of structural scoliosis, however, with a marked compensatory curve in the lumbar region, I have found an insurmountable obstacle, so far as I was concerned. Perhaps I am at fault. Other men have obtained these results in the double curves, as Dr. Abbott has, but I have not. There is some point in his technic, I believe, that I have missed; and I should like to get some light on why I cannot get a reduction of that compensatory curve or a correction of the primary curve, when I can get it in what we may term "total scoliosis" of the structural type.

Dr. Roland Meisenbach, Buffalo, N. Y.: Now that we are getting the results in the average type of structural lateral curvature of the spine, it will be necessary for us to consider more at length what can and what cannot be done for the severer types, which are so very common and which certainly require attention. In view of the recent progress in the treatment of scoliosis and the gratifying results obtained by Abbott's method in the average type of fixed lateral curvature, we should not give up the severe types in despair, but should attempt to do something for them. We must realize that the spine is not the only essential part of the patient, but that cardiac pressure, lack of excursion of the ribs, nerve pressure and visceral disturbances should be thought of. In the compound curves, the condition is even more exaggerated, and if carefully followed, much good can be done the patient, not only so far as the general symptomatology is concerned, but also in the actual anatomic straightening of the spine. The questions arise: How far shall we correct, and how much traction shall we apply, and what is the patient's endurance for correction? The last can only be determined by a thorough examination by internists, bacteriologists and pathologists, and by the orthopedist. I have had this emphasized many times, and I seldom undertake a case of a severe type unless I have had complete records of the patient made by a number of men. In the average and severe types more correction can be obtained, with less danger to the patient, if this method is followed carefully by the orthopedist. Not only can more correction of the spine be obtained, but such symptoms as muscular twitching and indigestion will rapidly disappear. I further believe that the cases should be taken early, and also in the severe types should be vigorously treated and not be allowed to become utterly helpless, even though the spine is not replaced in a perfectly straight line.

Dr. Henry W. Frauenthal, New York: I have used the Abbott method in a great many cases and from my experience I think that most men expect to get results too quickly. That is what I tried to do in the beginning, and I found that I was exerting too much pressure. This accounts for the fact that Dr. Abbott has increased the thickness of his pads to 2 or 3 inches. I think that if we have more patience and do not expect a perfect result in too short a time, and if we manipulate the backs very much as we do club feet that we try to correct without cutting, some of these bad backs will make a remarkable recovery. I have treated about a hundred and have got much better results than by any other previous method.

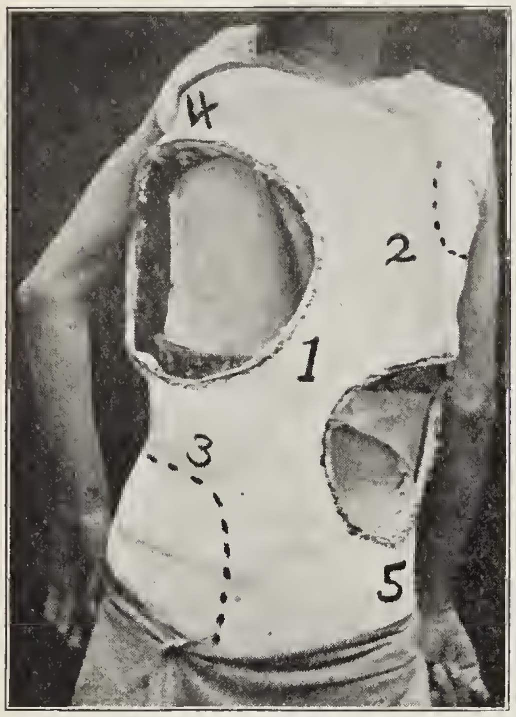

Fig. 8.—Showing windows for the insertion of pads.

Dr. H. Winnett Orr, Lincoln, Neb.: Having had the privilege of acquiring this method directly from Dr. Abbott, two years ago, I have treated more than fifty patients since then by the Abbott method. One thing that I have learned from my experience in these cases is that it is more important to begin an Abbott treatment with a thorough comprehension of Dr. Abbott's principles of pathology and treatment than it is to endeavor to use exactly the same technic as he employs. Dr. Abbott has himself obtained better results with the method up to the present time than has anyone else who has tried to follow him. I venture to say that by mastering the principles of the method and then working out a technic suitable to one's own hands and fingers, the treatment of these patients will give much more satisfactory results than can be obtained in any other way. I have refused no case of this kind since Dr. Abbott showed me how to treat them, not because I felt that I could cure all, but because I found even the worst susceptible of some improvement. I treated over again six or eight patients in whom I had formerly failed to gain improvement by other methods. All these patients are loyal and enthusiastic about the Abbott method.

Dr. Charles A. Parker, Chicago: My experience is not so great as that of some others, yet I have handled quite a number of cases. One sees quite a number of them in Chicago. In the severe types of cases that one most wants to help I have seen improvement, but no cure. I do not want to say this to discourage; it is quite probable that Dr. Abbott has cured many of these patients, but the bad cases, in my experience, do not recover. There are several reasons for that I think. We have been showing the congenital deformities in scoliosis. Scoliosis high up in the neck takes in the upper dorsal region. The inherent conditions constitute another reason in the twisted vertebrae and transverse processes on the convex side. When lateral pressure is made on the ribs of the convex side with the leverage behind the center of the bodies, the tendency is to increase the rotation or flatten the angle of the ribs. The angle of the ribs has been increased in many cases, although the affected portion of the spine may be moved nearer the middle line.

Dr. James K. Young, Philadelphia: Dr. Abbott has a great advantage over other men practicing this branch of the profession because he can keep his patients in his hospital as long as he desires. So long a time is required for a cure that much difficulty is experienced in this respect. I have seen him treat patients in his own hospital and I have much confidence in his method. The mild functional forms of scoliosis do not require forcible correction, as they can be treated best by gymnastics and postural methods which I have been successfully using for over twenty years. I was glad to hear Dr. Abbott say at the meeting of the American Orthopedic Association in Philadelphia, that he took more time to treat severe cases, as this coincides with my experience in using his method. Certain forms of scoliosis are not suitable for this form of treatment, as severe paralytic deformity, supernumerary bones, empyema, rickets and softening of the bones of unknown etiology. Severe cases must be treated by a forcible method and in selected cases there is none so good as that of Dr. Abbott.

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# THE THREE CARDINAL CLINICAL SIGNS OF FRACTURE INTO OR NEAR JOINTS *

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CLEVELAND

The vast majority of fractures seen by the orthopedic surgeon are fractures into or near a joint, and of these too large a proportion are overlooked by the surgeon or practitioner rendering aid and are diagnosed as "sprains" or contusions. Roentgenologists affirm that at least 90 per cent. of all sprains coming to them for roentgenoscopy are really fractures of some sort and not sprains.

Be this as it may, few fractures about joints present all the usual classical symptoms of fracture, namely, crepitus, preternatural mobility or elasticity (Albert), deformity, angulation, shortening, loss of function, etc., either on account of an impaction of the fragments, incomplete fracturing or because one fragment may be too small and too firmly attached to the structures of the neighboring joint or the parts too tender to permit of the necessary motion between the fragments for the elicitation of the foregoing symptoms.

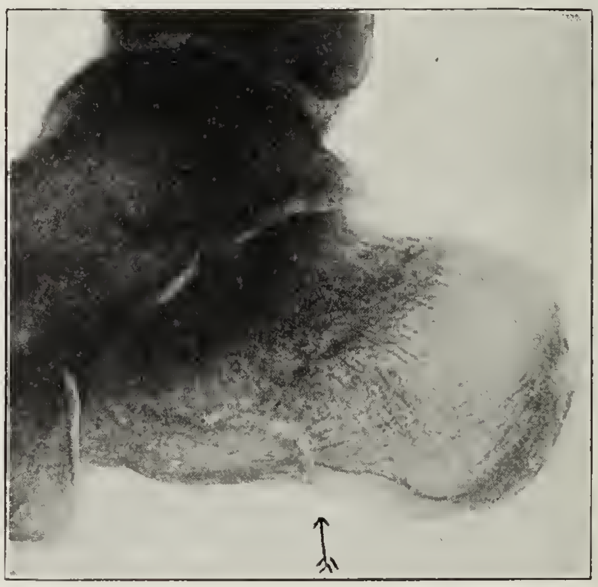

Fig. 1.—Avulsion fracture of os calcis (Case 1). Patient made a sudden jump to avoid being run over by an automobile. Diagnosed as "sprain" despite the pain, tenderness, swelling and ecchymosis which appeared a few hours after injury.

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

While the general surgeons, through whose teaching the practitioners have learned to depend solely on the presence of crepitus, preternatural mobility and loss of function for their ability to make a diagnosis of fracture, are lamely offering such terms as "juxta-epiphyseal sprain" and "sprain-fracture" as stop-gap compromises; and while, for instance, Rose and Stewart state that "the ligament (at the lower end of the radius) is stronger than the bone and in the majority of cases on the cadaver pulls out the bone surface or causes by its stress a 'sprain-fracture' across the impact-receiving area," Helfreich, than whom no one has made better cadaver experiments on this subject, knows nothing of these hybrids and shows such cases to be incomplete, bending, arrachment, compression, fissure or torsion *fractures.*

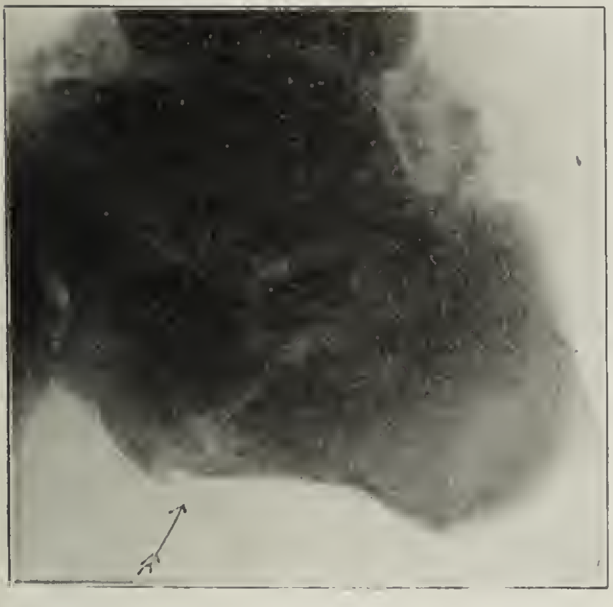

Fig. 2.—Fractures of os calcis (Case 2). Patient walked for two weeks; came to office unaided except by adhesive plaster strapping; foot much swollen and badly discolored when roentgenogram was taken. Pencil tenderness marked.

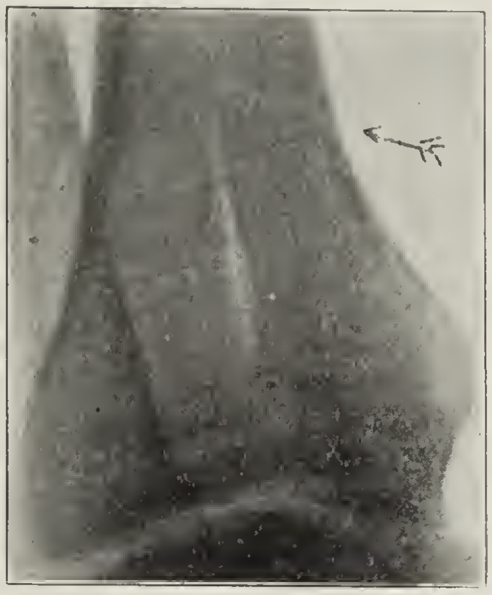

Fig. 3.—A "sprained" ankle now the basis of a malpractice suit (Case 3).

On the basis of a considerable experience with such atypical fractures, confirmed as such by the use of the Roentgen ray, I offer the following triad of symptoms, which I have always found present in the traumatic fractures of healthy bones as sufficient for a diagnosis, even when present alone, without any or all of the usual classical signs:

1. Localized bone tenderness over the fracture point or "pencil" tenderness.
2. Swelling, beginning at and spreading from seat of fracture.
3. Bloody discoloration or ecchymosis, spreading from this vicinity.

The fracturing of healthy bone gives rise to a greater or lesser degree of spontaneous pain, which, however, the fortitude of the patient may completely hide. While the entire member is usually sore to the touch, firm pressure about the seat of fracture will reveal a definite, constant point or line of great bone tenderness over the fracture. Often the tenderness is so exquisite that the patient can bear but the slightest touch to the fractured part of the bone, while pressure elsewhere is noticeably much less painful. It has not been unusual to find fractures so insensitive as to cause little loss of function, exhibiting the same marked bone tenderness. Palpation or pressure with the rubber tip of an ordinary lead-pencil so simplifies the mapping of this symptom that I have chosen the term "pencil tenderness" to describe it. This symptom persists for days and even weeks; in one case of undiagnosed and untreated fracture of the lower end of the radius, it was easily elicited as late as four weeks after the accident. While too much diagnostic importance should not be given to the presence of the bone tenderness alone, in the absence of signs of inflammation it is extremely suggestive of fracture and calls for the use of the Roentgen ray.

The characteristic swelling of fracture appears at once and is at first colorless. It arises and spreads from the injured area. It is doughy yet firm, hard but not inelastic, and is quite unlike the swelling of an inflammatory process.

The ecchymosis is dependent on bone hemorrhage for its production and does not make its appearance for at least twenty-four hours after the injury, in contradistinction to the discoloration caused by the bruising of the skin and soft parts, from trauma. The other structures in the neighborhood of a joint, namely, ligaments, capsule, tendons, bursae, etc., do not possess such a free blood-supply that their injury or rupture should cause this characteristic extravasation of blood. Ecchymosis is said never to occur in the fracture of the bones of the finger. I am positive that I have seen it in the few early cases coming under my observation. The diagnosis of finger fractures, however, should give little or no trouble.

Roentgenograms, taken stereoscopically or at right angles to each other, should always be made to confirm this symptom complex. Even if the plates are good ones, negative roentgenographic findings should not be held to be final *if the clinical symptoms persist,* but another series of plates should be taken from ten to fourteen days later.[1] In preferring to trust the per-

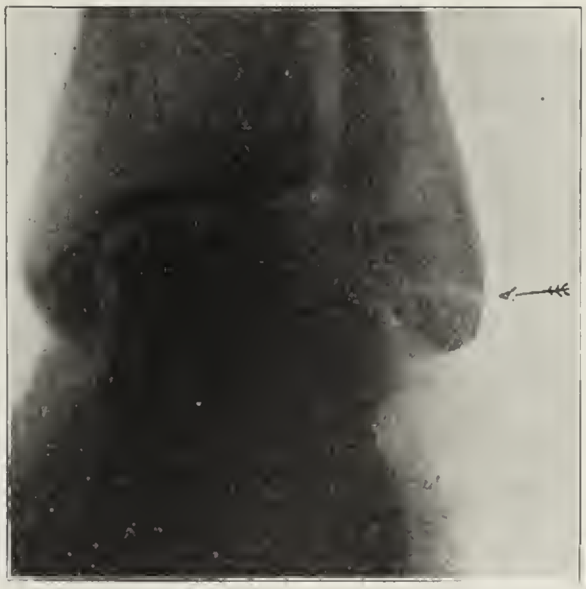

Fig. 4.—Type of injury often diagnosed as sprained ankle (Case 4). Patient twisted ankle getting off of car. No crepitus, etc.

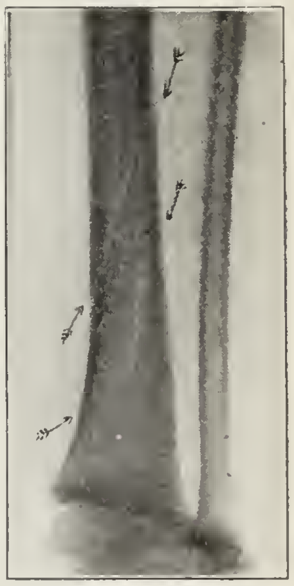

Fig. 5.—Spiral fractures of tibia (Case 5); no crepitus, deformity, etc.; the only symptoms were pain, "pencil tenderness," swelling and discoloration.

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[1] Compare An Interesting Decision of a Law-Court on a Wrong Diagnosis, Vienna Letter, The Journal A. M. A., May 2, 1914, p. 1416. In this case the early roentgenograms showed no fracture; the patient, however, evidently presented the symptom complex herein described, yet he soon walked on his injured foot. Roentgenograms taken some time later clearly showed a fracture of both the tibia and fibula.

sistence of this symptom complex rather than the roentgenographic plates as ordinarily taken, I have in several cases been able to make the correct diagnosis of fracture and have it confirmed later on by other roentgenographic findings. The aspiration of the joint fluid has at times changed the roentgenographic verdict from negative or doubtful to positive.

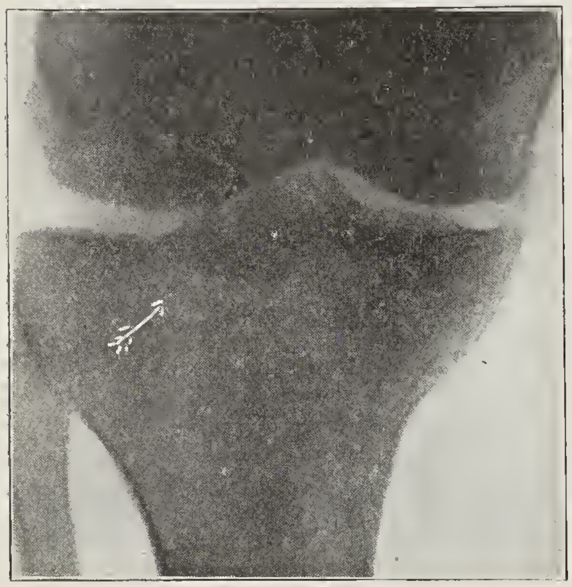
Fig. 6.—Undiagnosed fracture of head of tibia (Case 7).

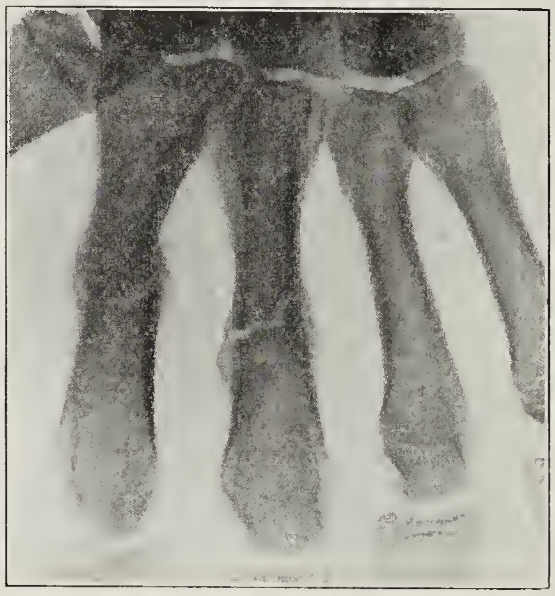
Fig. 7.—Undiagnosed and untreated fracture in hand (Case 9) from baseball.

I have seen fractures of every joint of the body, excepting the vertebral column, in which all the usual classical signs have been absent, which have been correctly diagnosed on the strength of this clinical triad. The following examples will suffice:

Case 1 (Fig. 1).—While jumping out of the way of an automobile the patient felt something give way in the heel. Has some pain, but can walk with a limp: diagnosed as sprained ankle. No crepitus, preternatural mobility, etc. Pencil tenderness, swelling and ecchymosis present six days after injury.

Case 2 (Fig. 2).—Patient had foot caught in an elevator; taken home in buggy; limped from buggy to house; seen soon afterward by a physician. Line of bruise was present in skin; pain and swelling present, but there was no crepitus or preternatural mobility. The following day he walked, with the aid of a cane, one-half mile to the street-car, then one-fourth mile to the company surgeon's office, where he had ankle strapped under diagnosis of contusion and returned the same way he came. Roentgenogram is said to have been doubtful. Clinical triad present at end of second week.

Case 3 (Fig. 3).—Patient fell from scaffold and was taken to hospital. No crepitus or other common signs of fracture. Diagnosed and treated for sprain. Presents pencil tenderness, swelling and ecchymosis.

Case 4 (Fig. 4).—Patient fell from street-car and twisted ankle; can walk with a limp and works daily as a seamstress. There is much swelling, extreme bone tenderness and some discoloration. Case diagnosed by attending physician as a sprain.

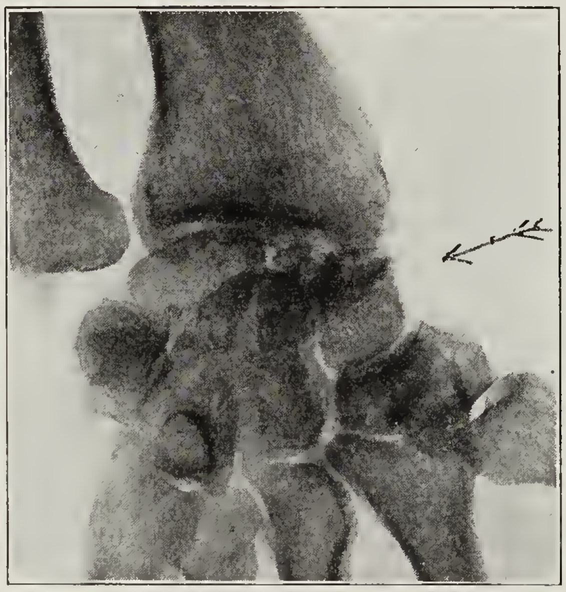
Fig. 8.—"Sprained" wrist (Case 10). Fractured scaphoid. Diagnostic triad present on fourth day.

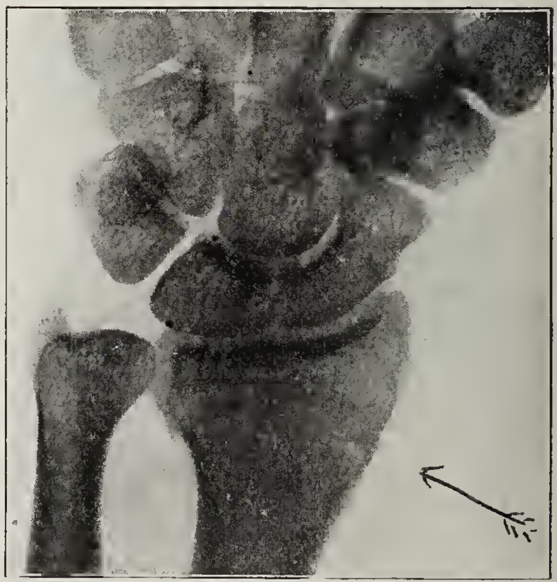
Fig. 9.—"Sprained" wrist from backfire of engine (Case 11). Patient steered large automobile many miles after injury occurred.

Case 5 (Fig. 5).—Spiral fracture of tibia, all classical signs of fracture absent. Exquisite pencil tenderness, marked swelling, slight ecchymosis present.

Case 6.—Patient kicked by a horse. No crepitus, shortening, loss of function, etc. Patient can limp on this leg. Marked pencil tenderness two weeks after injury. Attending physician could not elicit crepitus immediately after injury, and on account of swelling diagnosed periostitis.

Case 7 (Fig. 6).—"Barked shin" in fall from a low buggy. Patient walks with aid of single crutch. No crepitus, preternatural mobility, shortening, etc. There is a tense tumor above and to inside of patella. Motion of knee-joint almost free. Line of tenderness over head of tibia, with swelling and discoloration. Puncture of knee-joint evacuated bloody fluid containing fat globules. Roentgenogram after puncture clearly positive of fracture.

Case 8.—Fracture at surgical neck of humerus; both attending physician and insurance examiner hold case to be rupture of the biceps tendon on account of the absence of all classical signs of fracture.

Case 9 (Fig. 7).—Patient hit by pitched ball; has been able to use hand freely but with some pain; fracture was never suspected. After two weeks clinical triad presented the only symptoms of fracture readily demonstrable.

Case 10 (Fig. 8).—Fractured scaphoid of wrist. Point tenderness, swelling, ecchymosis and immobility of joint are the only symptoms of fracture present.

Case 11 (Fig. 9).—Automobile fracture from backfire. Patient drove automobile several miles to see surgeon, who found none of the ordinary symptoms of fracture present and called condition a "sprained" wrist. Clinical triad present on the third day.

Case 12 (Fig. 10).—Fracture of lower end of humerus, diagnosed as sprain. Patient has limited motion in elbow-joint together with clinical triad. Ordinary attempts to elicit crepitus and preternatural motion unsuccessful.

Case 13 (Fig. 11).—Impacted fracture of humerus diagnosed as "torn ligaments." Shoulder motion quite free. Arm very painful; no shortening, deformity or crepitus. Swelling and bloody discoloration marked to the elbow-joint, which is held very stiff.

Case 14.—Patient was thrown from a swiftly moving car, striking pile of stone with hip. Fluoroscopic examination at a hospital is said to have shown a fracture of the femur just above knee. Patient asserts that knee was less painful than hip "bruise." Had no bloody discoloration about knee, but thigh was discolored and tender for many weeks. Discharged from hospital with plaster cast to knee. Has complained of soreness in the hip for the past two years. Careful roentgenographic examination now shows that there never had been a fracture in the neighborhood of the knee, but there existed an easily diagnosed thickening and fracture of the greater trochanter.

### COMMENT

Granted that crepitus is not essential in making the diagnosis of fracture, violent attempts to elicit same are unjustifiable as well as brutal.

An anesthetic is as unnecessary in making the diagnosis of fracture as it is in arriving at a diagnosis in hip disease.

Every suspected fracture should be roentgenographed.

Cases which will show crepitus and preternatural mobility under an anesthetic will show preternatural elasticity without one (Albert).

Ninety per cent. of all sprains coming for roentgenography or consultation are fractures.

When all the usual classical signs of fracture are lacking, the presence of localized bone tenderness, swelling and bloody discoloration alone is diagnostic of fracture.

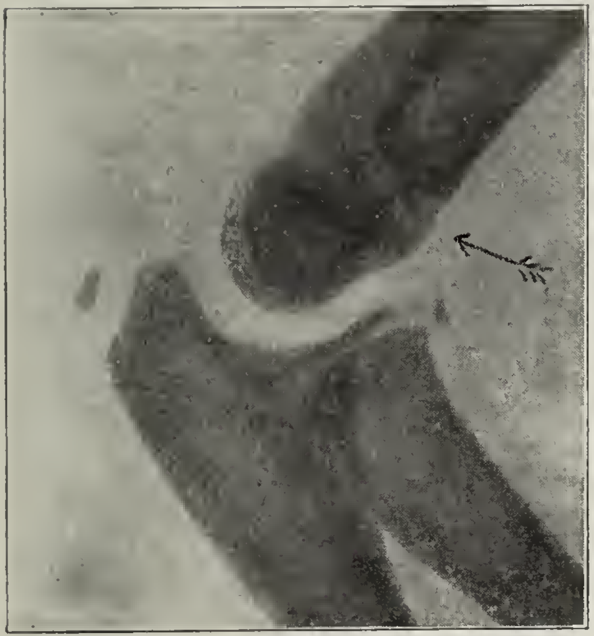
Fig. 10.—"Strained" elbow (Case 12).

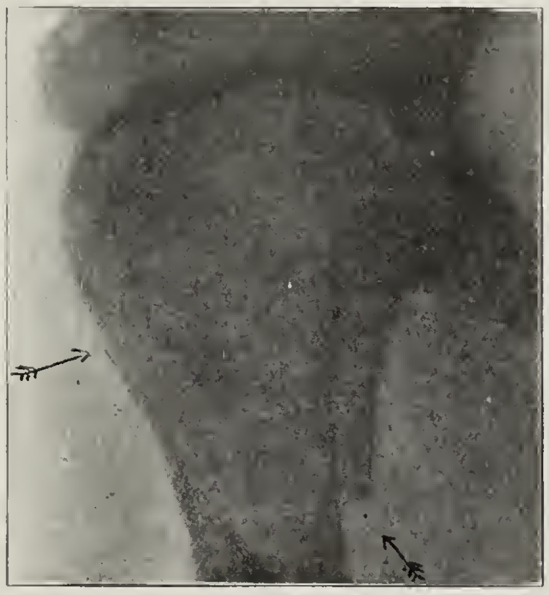
Fig. 11.—Fractured humerus diagnosed as torn ligaments and "sprain" (Case 13). Diagnostic clinical triad marked.

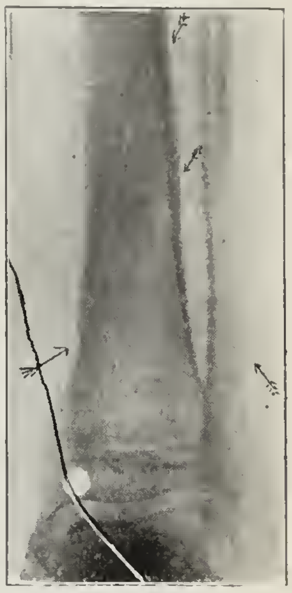
Fig. 12. — Undiagnosed spiral fractures of tibia and fibula. Patient walked into East Side Free Dispensary unaided, two days after injury.

The old adage "a sprain is worse than a break" is based on faulty diagnosis and subsequent lack of proper treatment.

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## ABSTRACT OF DISCUSSION

Dr. F. J. Cotton, Boston: This paper brings out an interesting point relative to the diagnosis in these old cases. A great many cases are overlooked, because we have subconsciously expected to find the ordinary classical signs of fracture. I am going to suggest another phrasing and that is: If there are local signs of injury where there is no reason to think the force of impact took place, it means fracture. This is phrasing backward what Dr. Stern said about the local signs.

If a man falls in a sitting position, and subsequently develops tenderness in the back, it is probable that that man has a broken back. He did not hit his back when he fell, but something in his back gave way. I think that these cases may be more safely tested by that rule than by any other if it is added that it is particularly true in cases in which there are no signs of local impact. One can get the localized tenderness and ecchymosis over the bone, if a patient gets a blow, and can confirm the diagnosis by means of the Roentgen ray. Dr. Stern's paper calls attention to the fact that we are not dealing with sprains but with real fractures. We should have proper terminology for these obscure injuries around the joints.

Dr. Frank E. Peckham, Providence, R. I.: Dr. Stern said that the roentgenologists claim that of the cases presenting themselves for their observation as sprains, 90 per cent. were true fractures. You should not reason from that, however, that 90 per cent. of all sprains were fractures; because the patients presenting themselves to the roentgenologists have already had treatment and the condition has not been recognized. I should not think that 90 per cent. of all sprains—or rather, cases thought to be sprains—were fractures.

Dr. G. W. Stern, Cleveland: I do not think Dr. Cotton has quite made the distinction that I wish to convey between the immediate discoloration of the parts from the bruising of the skin in the cases of fracture from direct violence, and the ecchymosis due to bone hemorrhage which makes its appearance about twenty-four hours after the injury. It is this latter type of bloody discoloration which, with localized bone tenderness and swelling, make up my diagnostic triad. In cases due to indirect violence I believe Dr. Cotton's trite aphorism expresses my thought quite happily. There are certainly such injuries to the ligaments and other soft structures of a joint as are known as "sprains" or "strains;" but the laity and, indeed, most physicians are wont to call any painful injury in the neighborhood of a joint, outside of a most outspoken fracture, a sprain. With such cases my deductions—of 90 per cent. being fractures—do not deal. On the other hand, it is equally true that almost all of the cases that are seen by the roentgenographer or consulting surgeon in which the symptoms of "sprain" have persisted or are severe, are true fractures. This is not only my own observation but also that of the present president of the American Roentgen-Ray Society.

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**The Need of General Culture as a Condition of Progress.**—In the realm of ideas there is no such thing as spontaneous generation. Those who seem the originators of great movements are those who have been brought under great influences. Apparent exceptions to this rule, like Shakespeare or Darwin or Lincoln, prove, on examination, excellent examples. There is little difficulty in tracing historically the continuity of human thought. It follows that we cannot hope for a generation of original thinkers unless we immerse our students in the stream of the world's thought. The most inventive mind must have material on which to react, and cannot strike out in a vacuum.—Walter Libby, *Science*.

# PROPHYLACTIC VACCINATION AGAINST EPIDEMIC MENINGITIS

## A SUPPLEMENTARY NOTE

J. H. BLACK, M.D.
DALLAS, TEXAS

In April, 1912, Dr. Abraham Sophian, then of the Research Laboratory of the New York Board of Health, and I conducted a series of experiments to determine, as well as laboratory methods will permit, the value of prophylactic vaccination against epidemic meningitis. Injections of meningococcic vaccine were made on ten medical students who volunteered for the work. The details of this work with the results obtained were reported in The Journal.[1]

Eleven months later I repeated these experiments to determine what, if any, immunity could be demonstrated after the lapse of this time. Eight of the original ten vaccinated students were accessible. The technic used in the complement-fixation studies was identical with that formerly reported. The results of this study were reported in The Journal.[2]

With the effort to make this work as nearly complete as possible, I undertook in May, 1914, twelve and twenty-four months from the second and first examinations, respectively, a repetition of the complement-fixation studies. Table 1 shows the results obtained. It will be seen that all but one of the seven students at hand gave decided fixation in a dilution of 1 : 20, this, two years after the date of vaccination.

TABLE 1.—COMPLEMENT-FIXATION

| | Dilutions | | | | |
|---|---|---|---|---|---|
| Case No. | 10 | 20 | 30 | 50 | Control |
| 1 | ++ | ++ | — | — | — |
| 2 | +++ | ++ | — | — | — |
| 3 | ++ | ++ | — | — | — |
| 4 | ++ | + | — | — | — |
| 8 | +++ | ++ | — | — | — |
| 9 | + | — | — | — | — |
| 10 | ++ | ++ | — | — | — |
| Pos. con. | +++ | +++ | +++ | ++ | — |
| Neg. con. | — | — | — | — | — |

TABLE 2.—COMPLEMENT-FIXATION

| Case No. | 1 Month | 1 Year | 2 Years |
|---|---|---|---|
| 1 | 200 | 150 | 20 |
| 2 | 200 | 150 | 20 |
| 3 | 100 | 150 | 20 |
| 4 | 100 | 100 | 20 |
| 5 | 30 | * | * |
| 6 | * | * | * |
| 7 | 200 | 150 | * |
| 8 | 250 | 100 | 20 |
| 9 | 100 | 250 | 10 |
| 10 | 200 | 250 | 20 |

* Student not accessible.

Table 2 is a comparison of the fixation of each student at one month, one year, and two years, respectively, after vaccination. The figures in each column refer to the highest dilution at which fixation was obtained.

While it is recognized that experimental vaccination of healthy individuals in the absence of an epidemic and the detection of immune bodies in their blood is an indirect way of proving its efficacy, and that the method must finally be judged by its clinical application, we feel that we are justified in drawing the following conclusions from these studies:

1. Prophylactic vaccination produces a high degree of immunity in most cases, this immunity being demonstrable at the end of two years. It seems a justifiable conclusion that most persons prophylactically vaccinated may safely consider themselves immune for at least two years. Exceptions to this will, of course, be found.
2. Some individuals may show an actual increase in immune bodies at the end of one year over those demonstrable soon after vaccination.
3. Fixation occurred with the serum of the positive control who has recovered from meningitis, but this fixation did not reach as high dilutions as did that of some of those vaccinated.[2] This has previously been found also in some others recovered from the disease.
4. Experimental evidence warrants us in concluding that prophylactic vaccination is a measure of the greatest value in the control of epidemic meningitis.

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[1] 1. Sophian, Abraham, and Black, J. H.: Prophylactic Vaccination Against Epidemic Meningitis, The Journal A. M. A., Aug. 17, 1912, p. 527.

[2] 2. Black, J. H.: Prophylactic, The Journal A. M. A., April 26, 1913, p. 1289.

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# TRICHOTILLOMANIA

Richard L. Sutton, M.D., Kansas City, Mo.

We are indebted to the French school of dermatology, and particularly to Besnier,[1] Hallopeau,[2] Henri Fournier[3] and Brocq,[4] for the recognition and classification of the peculiar family of neurodermatoses which is represented by trichotillomania and dermatothlasia.

Trichotillomania, the *"trichomanie"* of Besnier, is an affection which is characterized by an abnormal desire on the part of an otherwise apparently sane individual to extract forcibly one or more of his own hairs.[5] The impulse is seldom cyclic, but is as sudden as it is uncontrollable, and Raymond's designation of *"tic de l'epilation"* is not an inappropriate one. The scalp, the eye-brows and lashes, and the beard are the parts most frequently attacked.

Dermotothlasia is a somewhat similar morbid state in which the affected individual possesses an ungovernable desire to rub, scratch or irritate the skin on one or several parts of the body.

### TRICHOTILLOMANIA

Recently I had an opportunity to study two typical examples of trichotillomania.

Case 1.—The first case occurred in a married woman of 27, an American by birth and a housekeeper by occupation, referred to me by Dr. Charles W. Gosney of Kansas City. The patient had always been of a nervous temperament, but her family history was negative insofar as nervous or cutaneous ailments were concerned. Two years prior to the time of consultation she first became aware of the fact that she had acquired the habit of frequently jerking hairs out of her eyebrows whenever she was worried or subjected to prolonged periods of excitement. Despite her efforts to combat the practice, the habit grew stronger instead of weaker. She had never suffered from pruritus or other irritation of the supraorbital regions, and could not account for the propensity to remove the hair from these particular localities. The attacks were confined principally to the inner extremities of the brows, where the hairs protruded forward and were easy to grasp. It did not appear to matter which hand was used in the process of extraction. As the patient described it, she would have a sudden, intense desire to pull out one of the hairs (normal individuals probably experience a somewhat analogous sensation at times regarding one of the stiff vibrissae of the nose), and a second later she would be gazing at the freshly extracted appendage with its partially adherent root sheath.

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[1] 1. Besnier, E.: Monatsh. f. prakt. Dermat., 1889, ix, 572.

[2] 2. Hallopeau: Ann. de dermat. et de syph., 1889, Series 2, x, 440; Bull. Soc. franc. de dermat. et de syph., 1891, ii, 157; Ann. de dermat. et de syph., 1894, Series 3, p. 541.

[3] 3. Fournier, Henri: Jour. malad. cutan. et syph., April, 1898.

[4] 4. Brocq: Traite Elementaire de Dermatologie Pratique, Paris, 1907, ii, 398; Jour. des pract., March 26, 1898.

[5] 5. "La trichotillomanie consiste essentielment en une impulsion qui pousse les subjects a arracher des poils; ce besoin de pratiquer l'avulsion constitute une veritable manie, et nous l'avons observee sans qu'il y ait de prurit notable" (Brocq).

The patient was a muscular young woman, with brown hair and eyes. Her chin was firm and well set, and in her general appearance there was nothing suggestive of hysteria or other mental ill-balance. The skin of the face was smooth and unmarked, with but a slight trace of seborrhea. The lower lashes were normal, but the upper were sparse and straggling, and it is exceedingly probable that the patient had removed many of these also. The eye-brows were apparently much abbreviated, and set wide apart, a space of more than 11 cm. separating the inner extremities. At a few meters' distance the impression given an experienced observer was that of a bilateral alopecia areata of remarkable symmetry. On closer scrutiny, however, it was found that a broad, indistinct, bluish band projected inward for a considerable distance from the terminus of each brow. When these areas were examined with a magnifying glass they were found to be thickly studded with new hairs, many of which were just reaching the surface. The patient stated that as soon as a fresh shaft was of sufficient length to be grasped it was promptly extracted. The hairs in the outer portions of the brows were undisturbed, and the smooth, regular manner in which they were arranged, together with the apparently normal condition of the underlying skin, indicated that the patient's statement regarding the absence of pruritus was correct.

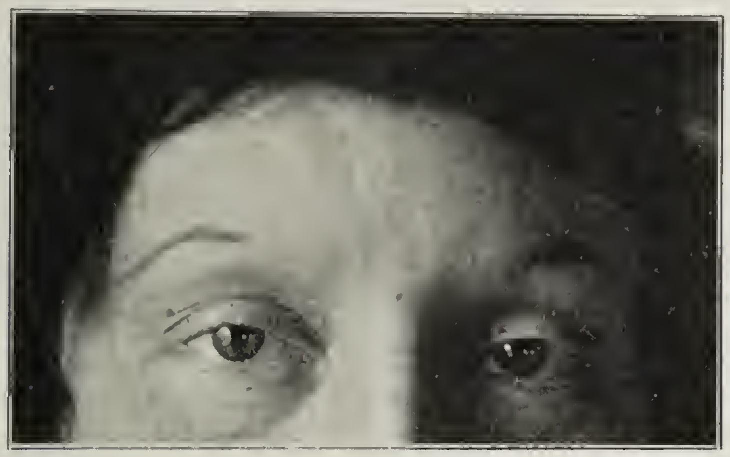

Fig. 1.—Trichotillomania, Case 1, showing absence of upper lashes and inner extremities of eyebrows.

Case 2.—The second patient was a schoolboy, aged 14, a native and resident of Kansas, who was referred to me by Dr. H. P. Ball of Kansas City. This patient has been under the care of Dr. B. M. Barnett of Rosedale, Kansas, for some time, and I am indebted to Dr. Barnett for the privilege of reporting it here. The neurologic history of the family is negative. There is one other child, a boy of 9. He is mentally and physically normal. The patient has always been of a high strung, nervous temperament. When a baby he sucked his fingers incessantly. Later, he chewed his nails. He has been a "mouth breather" nearly all his life. Although not very robust, he escaped the more serious of the diseases of childhood, and has never had a more serious disorder of the nervous system than the "habits" above mentioned. He has never suffered from headaches or eye strain, and there is no history of eczema or pruritus of the scalp.

On examination the patient was found to be a slender, fragile boy, with a shrunken chest and a retreating chin. The palate was arched and misshapen, and the teeth poorly aligned. The eye-brows and lashes were unaffected. The hair on the top and right side of the head was normal, but on the left side practically all of the stiff shafts were gone, and only the soft, fuzzy tips of the downy new growth were to be seen. The denuded skin was soft, smooth and pliable, with no trace of scratch marks.

The little patient stated that it was impossible for him to resist the impulse which occasionally prompted him to jerk out the stiffer hairs. The tendency was greatest whenever he became worried or excited.

### TREATMENT

In the first case, rest and freedom from worry, with liquor potassii arsenitis in gradually increased doses, internally, appeared to benefit the patient's condition. The application of various anti-pruritics, such as phenol, menthol, camphor and tar, apparently had no effect whatever. Hallopeau has suggested the use of gutta percha and similar dressings of an impervious character in these cases. Probably a better plan would be to ameliorate the habit by keeping the hair shaved off for a period of several months. This patient absolutely refused to allow the adoption of this measure, but I hope to give it a trial later on. Dr. Barnett reports that the second patient has been considerably benefited by the use of tonics, principally arsenic.

If one excludes Brocq's *"acne excoriee des jeunes filles,"* as I think we should, true examples of dermatothlasia are exceedingly rare. Occasionally, however, one encounters a case of acaraphobia closely bordering on dermatothlasia. The following is an example:

### DERMATOTHLASIA

Case 3.—M. P., female, spinster, physician, aged 52. This patient first consulted me in October, 1909, regarding a disorder which at first glance appeared to be a generalized pruritus. The disease had begun, three years before, with a slight itching of the skin on various parts of the body, and had continued at irregular intervals ever since. The integument was soft, moist and apparently normal, and there were no signs of senile atrophy. The urine contained considerable quantities of indican, but no albumin or sugar. The blood-pressure was not excessive. The hemoglobin was usually below 70 per cent. The cranial hair was short, dry and matted, and the scalp rough and scaly, probably a result of frequent and violent manipulation with the patient's nails. There were no signs of seborrhea or seborrheic dermatitis on the face or over the sternum. There was no hepatic tenderness, and the patient was not jaundiced. The woman's principal complaint was that she had "bugs" in her skin. She would suddenly pounce on some small area, most often located on the scalp or limbs, rub vigorously for a few moments, and then triumphantly announce that she had captured one or more insects, and that they were contained in the minute, tightly rolled, oat-grain-like mass of epithelial debris that she had detached. Innumerable negative examinations of the material made no impression whatever on her, but left her as firmly convinced as ever that her integument was inhabited by a new species of small but exceedingly industrious insect that would eventually prove her undoing. On subjects other than this ailment the patient's mind was unaffected. She suffered but little from pruritus, but explained that the sudden development of a slight sensation

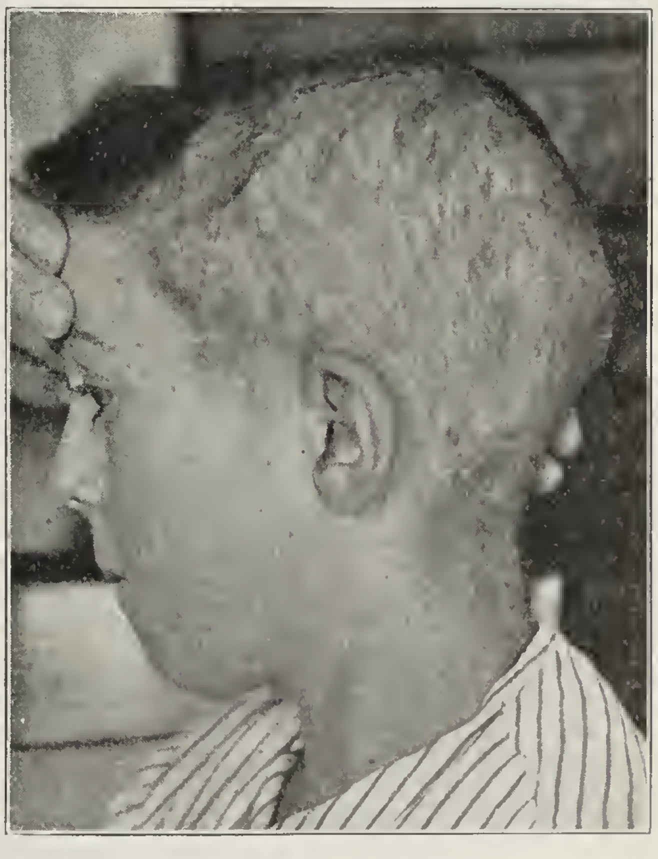

Fig. 2.—Trichotillomania, Case 2, showing extent of hair loss on left side of head.

of formication in the involved areas always precipitated the attack of rubbing. The forcible removal of a few of the outermost corneous layers invariably had a soothing effect on her mind, and after she had carefully burned the material and its supposedly dangerous contents, she was perfectly at ease, sometimes for hours. The patient was under observation for three years, and during that time almost every conceivable remedy was tried, always without relief. When last seen, the patient's condition was practically the same as at the time of the first consultation.

Lathrop Building.

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# DERMATOLYSIS

## WITH REPORT OF TWO CASES

Wm. W. Cadbury, M.D., Canton, China

Recently I have come across two typical cases of the rare affection known as dermatolysis. The condition is defined in Stelwagon's Diseases of the Skin as a hypertrophy and looseness of the skin and subcutaneous connective tissue with a tendency to hang in folds, and has been spoken of as "loose skin," "cutis laxa," "cutis pendula" or "chalazodermia." It may be congenital or acquired. All parts of the skin share in the hypertrophy; it may be located in any part of the cutaneous surface of the body. There are no subjective symptoms and it is slowly progressive. The etiology is obscure though the disease sometimes begins at the site of an injury.

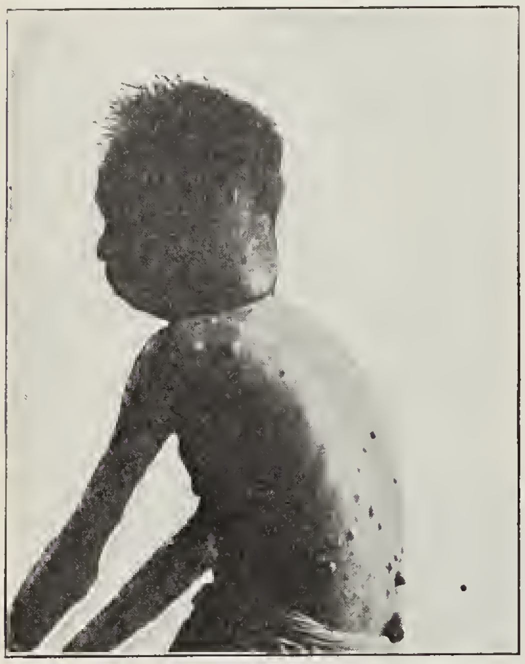

Fig. 1—Patient in Case 1. Note flap of skin and fibrous tumors on back.

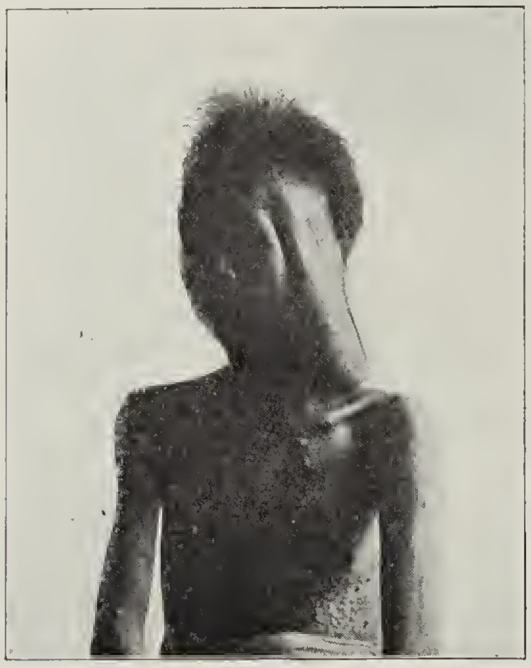

Fig. 2.—Front view of patient in Fig. 1.

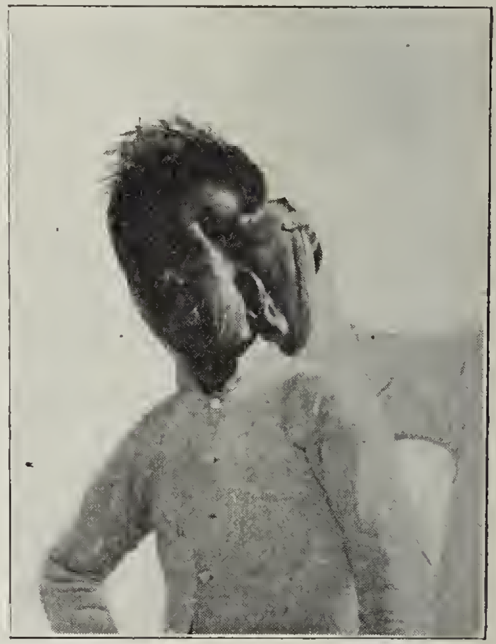

Fig. 3.—Flap of skin lifted to show ear.

The condition shows no tendency to decrease but rather to develop. Operative measures have been employed successfully when the hypertrophied flap of skin was troublesome.

It appears that fibromatosis is sometimes associated with dermatolysis, as in one of the cases cited below. In fact, the relationship of these two conditions seems to be not unusual.

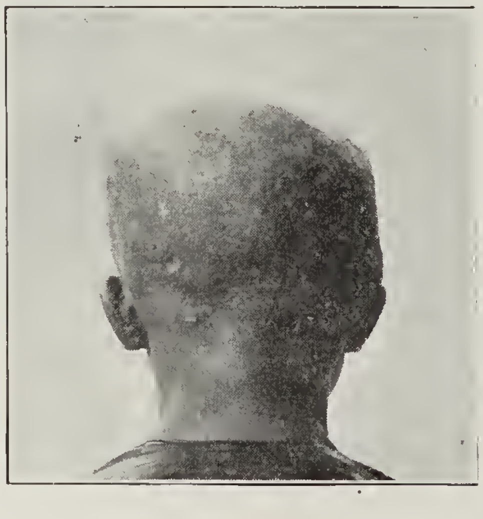

Fig. 4.—Patient in Case 2. Loose flap of skin behind right ear.

Case 1.—P. S. O., a Chinese farmer, aged 33, was admitted to the hospital of the University Medical School, Canton, China, March 25, 1914, complaining of gastric distress, which was later diagnosed as gastric ulcer. Of rather slight build the patient presented a remarkable appearance on account of a large cutaneous flap hanging over the left side of his face. Over the back, chest and abdomen there were numerous fibrous tumors varying in size from that of a millet seed to a diameter of 1½ inches (Figs. 1, 2 and 3). The patient was below the average in intelligence and somewhat self-conscious of his peculiar appearance. He was discharged from the hospital April 7, in practically the same condition as on admittance.

Description of the cutaneous flap: This peculiar hypertrophic growth begins on the left side of the scalp at a point above the level of the eyebrows, falls down over the face entirely covering the left ear, which projects from the inner surface of the flap. It descends to the shoulder on which it rests. The flap measures 9 inches in length by 8 inches in width. The patient declares that at birth the flap was about 2 inches in length and has gradually been extending in size. In every way the skin resembles redundant scalp tissue. The external surface is studded with hair follicles from which recently clipped hairs project. The inner and external surfaces may be readily rubbed over each other. The color of the skin of the flap, like that of the rest of the body, is rather deeply pigmented. The loose skin may be readily raised up and the ear projecting from the inner surface disclosed (Fig. 3).

Case 2.—L. K., Chinese, aged 20, was admitted to the Canton Hospital in May, 1914, in order to care for a relative who was operated on for stone in the bladder. L. K. is not ill. When 5 years old he developed an abscess of the scalp behind and below the right ear and about 3 inches distant from it. The scar of this abscess is still visible. Ten years later he noted swelling of the scalp in this region. This has gradually increased so that at present the loose flap of skin extends 3 inches above the right ear, 2 inches below and is altogether 4 inches wide (Fig. 4). It is continuous with the tissues of the scalp, is slightly elastic and is not pendulous as in the former case. It is covered with hair. Patient feels no discomfort. The flap is said to be gradually increasing in size.

These two cases of dermatolysis, both of the scalp, represent the congenital and acquired form. In both cases the subject was below the average of intelligence. Neither was willing to have the redundant skin removed.

Canton Christian College.

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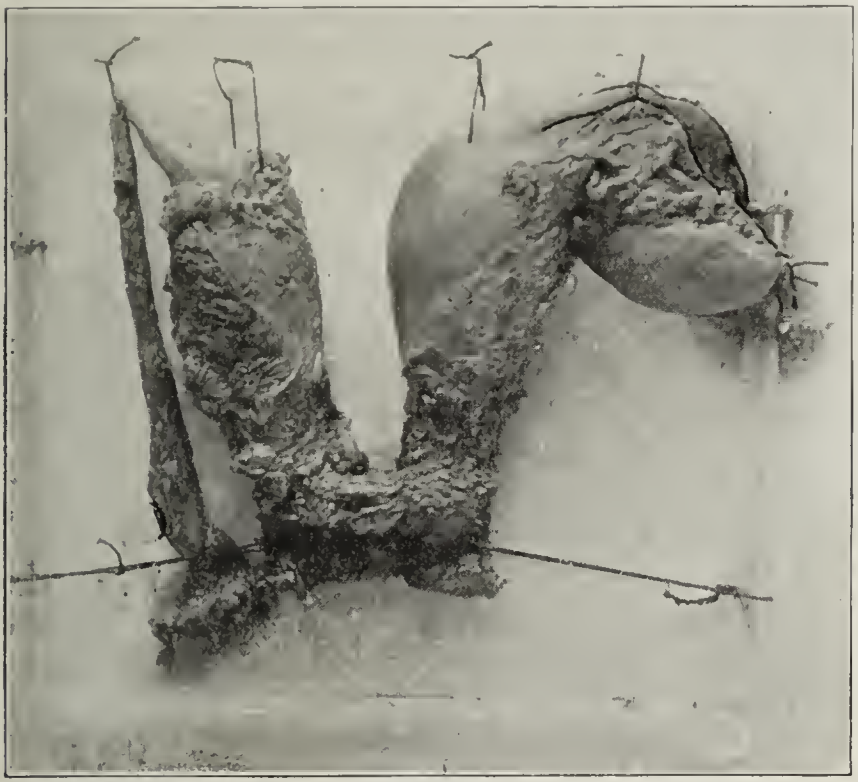
**Preventogram.**—An hour's prevention may save a month of quarantine.—Pittsburgh *City's Health.*

## A BICORNATE UTERUS WHICH CONTAINED THREE PREGNANCIES

Charles H. Parkes, M.D., Chicago

Mrs. H., aged 47, married twenty-five years; had three children and one miscarriage. At the first parturition forceps were used, and the perineum was extensively lacerated. Following the third childbirth prolapse of the uterus began, which increased slowly in degree, until, two years previous to operation, the cervix protruded from the vagina. On examination, a diagnosis of bicornate uterus was evident. The patient was a constant sufferer from the usual pains and from a profuse uterine discharge. Total hysterectomy was performed, followed by a complete recovery.



Bicornate uterus which contained three pregnancies.

25 East Washington Street.

## THE THYROID GLAND IN PELLAGRA

Charles F. Beeson, M.D., Roswell, N. Mex.

Little attention has been given to the condition of the thyroid gland in pellagra. Some text-books do not mention it. According to Niles, in Lombardy, where there is much goiter and cretinism, physicians regard one disease as the cause of the other. He states that in the United States thyroid disease has not been noted in connection with pellagra to any extent. Out of 316 cases of pellagra investigated by a commission appointed by the Tennessee State Board of Health, this commission incidentally gave thyroid diseases as complicating in twenty-five instances, which was more than twice as many as any other complicating condition. The following case raises the question as to an etiologic relation between these two conditions:

The patient, a married woman of 45, presented herself April 13, 1913, and stated that she had always been in robust health until about one year previously. At this time she began having diarrhea with frequent passages accompanied often with colicky pains. This diarrhea has continued with more or less severity up to the present time. About five months ago she noticed that the back of both hands became rough, red and scaly, which she attributed to sunburn. She began having spells of aching, lost weight and became very nervous. She complained of dizziness and at times would walk like a drunken man. She also complained of indigestion accompanied by a sore mouth. A lump came into her throat and she said her neck-band became too tight. She said that her menstrual periods had been very irregular for several months.

Examination showed that the eyes were not noticeably prominent and von Graefe's sign was negative. The tongue protruded in the middle line, and was red and grooved transversely on the dorsum. It showed a bright red line along the under borders and was denuded of epithelium in spots. The tongue showed no tremor, nor was there any tremor of the fingers when extended. The sublingual glands were enlarged, and the ducts of Wharton were red and swollen. The thyroid gland was decidedly enlarged symmetrically. The backs of both hands were rough, scaly and dirty looking, with some redness along the knuckles. This eruption was exactly alike on both hands. Examination of the chest gave negative results. The abdomen was also negative except for some slight tenderness. Temperature, 98; pulse, 95; systolic blood-pressure, 120; hemoglobin, 90 per cent. The patellar reflexes were greatly exaggerated and there was slightly marked ataxia.

Patient was put to bed and fed liberally for about a month and was given iodin and arsenic. Her pulse dropped to normal in a few days and her nervousness gradually subsided. The eruption on her hands cleared up in about two weeks, only to flare up again in a few days, passing through a cycle of redness, roughness and desquamation lasting about three weeks. This eruption did not appear again. During this time the thyroid gland would apparently enlarge and recede. Her attacks of diarrhea gradually ceased and by fall all symptoms except some nervous exhaustion had disappeared. At the present time, Oct. 1, 1914, she is in good health and her thyroid is not noticeably enlarged.

What part did the thyroid play in this case? Was it a mild case of pellagra, simply complicated by an enlarged thyroid, or was the perverted action of the thyroid the cause of the pellagrous symptoms?

## A TACK IN THE EPARTERIAL BRANCH OF THE RIGHT MAIN BRONCHUS

Wilhelm Lerche, M.D., St. Paul

A girl, aged 6 years, six days previous to consultation held an upholstering tack in her mouth, which accidentally found its way into the lung. She choked and coughed up some blood, which was followed by a somewhat persistent cough with expectoration.

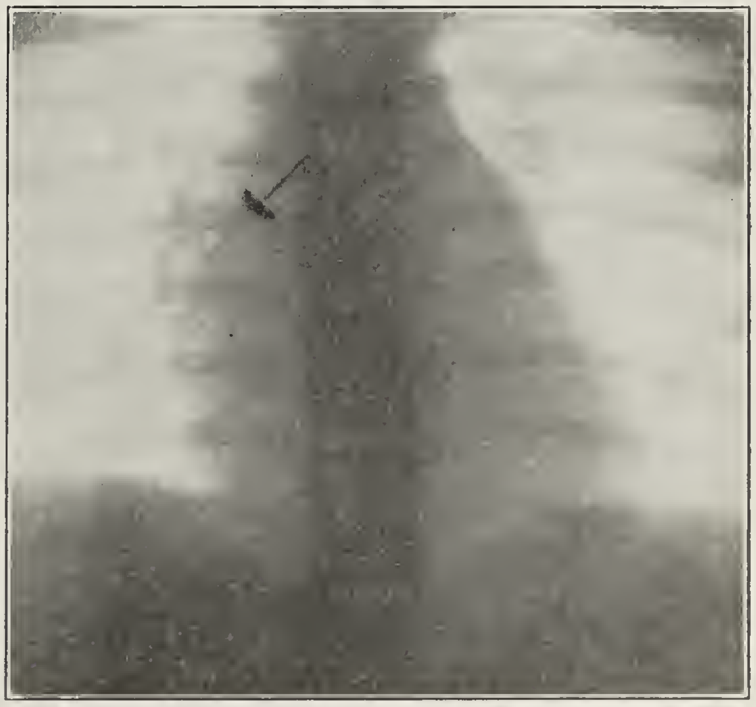


Fig. 1.—Tack in right main bronchus, three days after accident.

A roentgenogram (Fig. 1) had been taken three days after the accident, indicating the presence of the tack in the right main bronchus with the head downward.

There was absence of breath sounds in the upper part of the lung and râles below.

I expected to find the tack in the same position as seen in Figure 1, and did not have another roentgenogram taken, but immediately made a bronchoscopic examination, which revealed the following: About 5 mm. of the sharp end of the tack was seen in the right main bronchus, somewhat posteriorly to the right with the point downward and toward the midline, closely hugging the wall. It appeared as if it had been stuck through the wall from the outside, as there was no trace of the opening to the eparterial bronchus. The forceps was applied and many attempts were made to extract the tack, but the lower part of the lung was simply pulled up with it for a considerable distance before the forceps slipped off. Attempts were made to pull the tack downward but without success. The point could be brought up in the bronchoscopic tube but it required considerable force.

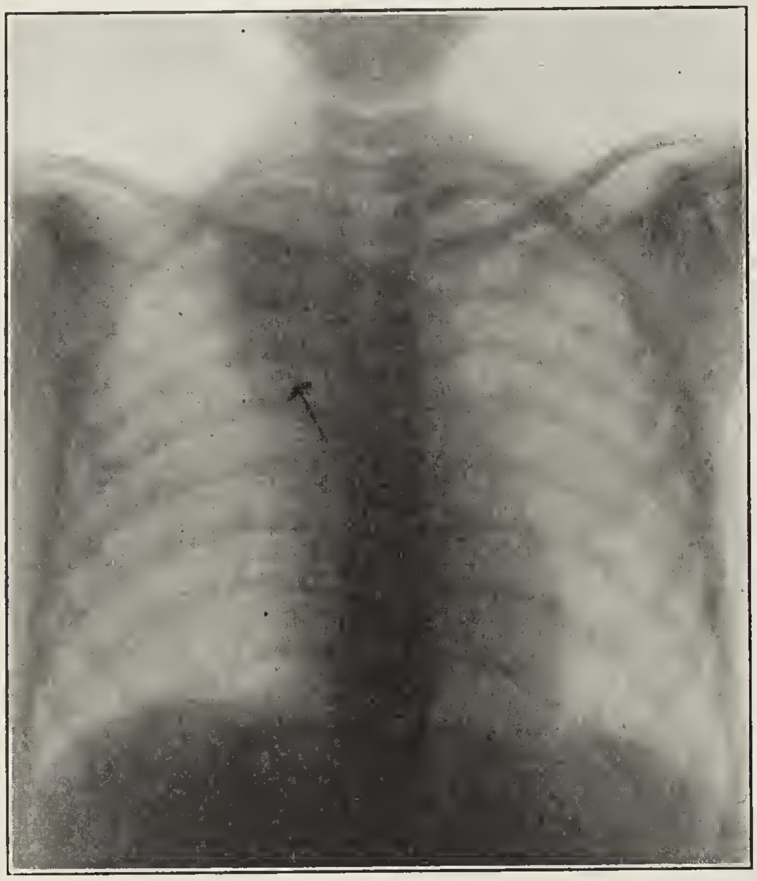


Fig. 2.—Tack in right eparterial bronchus, eight days after accident.

It was evident that the head was up in the side bronchus and that the swelling had completely occluded the lumen of the bronchus around the tack, on which epinephrin had no effect, so that forcible extraction could not be carried out without much destruction. After this attempt there was increase in the cough, pronounced hoarseness, and a temperature varying between 100 and 103.8.

Roentgenoscopy now showed the tack with the head up (Fig. 2), as seen through the bronchoscope.

I decided to incise the neck of the eparterial bronchus to liberate the tack, and to this end had the curved blade (A *b*, Fig. 3) made, which is worked by a lever (A *c*, Fig. 3).

Three days after the first attempt the incision into the neck of the bronchus was made through a 5-mm. bronchoscope. A gush of dark blood poured out, but ceased as soon as the bronchoscope was withdrawn.

The following day there was a marked change in the patient's condition. The temperature was normal, the hoarseness had disappeared, the cough had lessened and she felt very well although the tack was still in the bronchus.

As extraction of the tack was not attempted, and, I think, should not have been attempted in the same sitting, because it might have greatly increased the hemorrhage, I could not be positive that the incision had been sufficient. For the third sitting, therefore, two other methods of attack were prepared. Two long and very slender cannulas were made to fit on ordinary nasal snare handles. The right side of the distal end of one cannula was filed off slanting so that when the tack was snared it would be held as near parallel to the cannula as possible (B *a*, Fig. 3). With another snare one or more wires were to be slipped over the first one and on the tack (B *b-c*, Fig. 3). While one assistant would push downward the point of the tack securely held by the snare, another assistant should pull up on the loose wire, *b-c*. The head of the tack would thus be brought close to the bronchoscopic tube and as near the neck of the bronchus as possible, and with a short straight blade which was made for the purpose or with a cautery, the intervening part could be severed. This could also be done by using the wire as a saw or by threading it on the second snare and snaring it.

In Figure 3 C another method is shown in which by the aid of the snare, *b*, the point of the tack is pulled up into the bronchoscopic tube and with the cautery or knife the neck is to be incised.

Seven days after the incision was made a roentgenogram showed the tack in the same position as in Figure 2. Bronchoscopy likewise demonstrated the tack in the same place and the incision could be seen. When the forceps was applied, however, the tack was found to be entirely loose, and when it was lifted out it fell headforemost into the lower hyparterial bronchus, whence it was quickly picked up and removed.

The tack measured 18 mm. in length and the head 8 mm. in width (D, Fig. 3). The lung cleared rapidly and the patient left the hospital a few days later.

In the first roentgenogram (Fig. 1) the tack was apparently in the right main bronchus, point up, and with the head probably resting in the opening of the eparterial bronchus. By suction it had been advanced up into the latter (Fig. 2).

I have been unable to find any measurements of the eparterial bronchi in children, but according to Engel (*Arch. f. Kinderheilk.*, 1913, p. 60) the diameter of the right main bronchus in a child of 5 years is: sagittal 8.4 mm., frontal 6.9 mm.; in a child of 7 years is: sagittal 9 mm., frontal 9.3 mm.

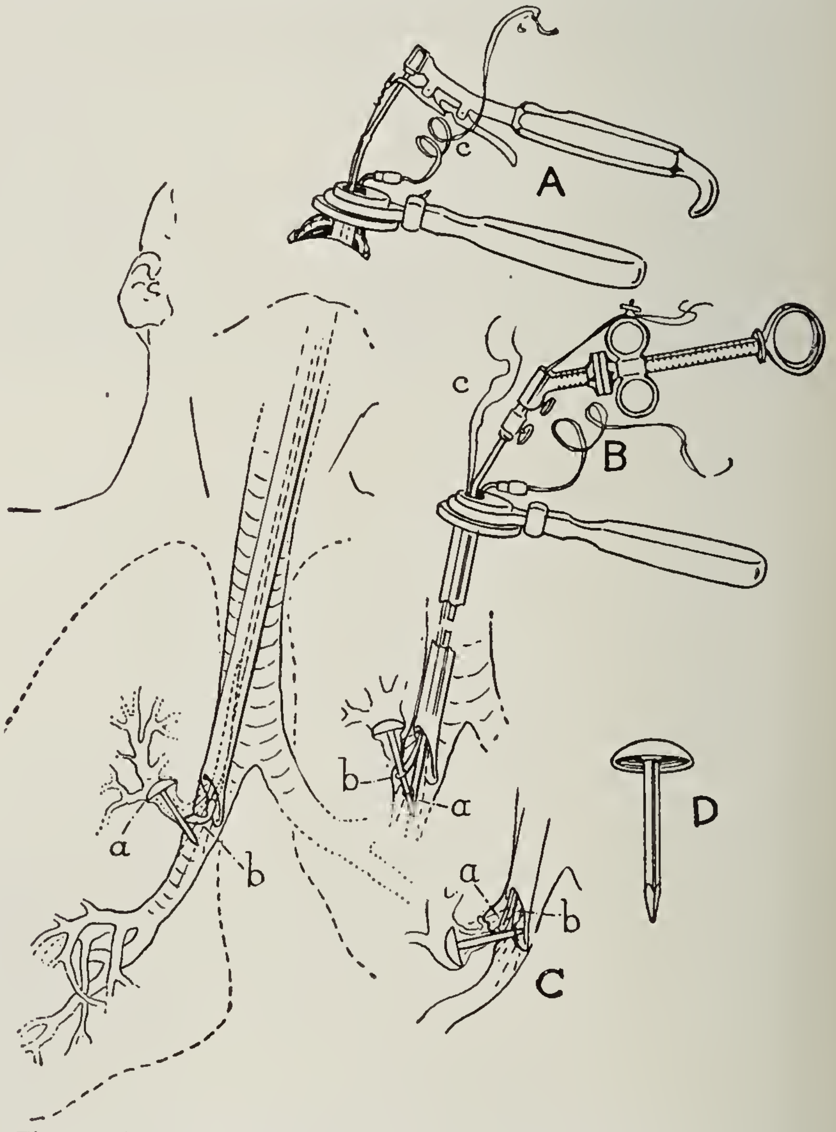


Fig. 3.—A: *a*, upholstering tack; *b*, curved blade; *c*, lever for working the blade. B: *a*, distal end of snare holding tack downward; *b*, *c*, wire for pulling head of tack upward. C: *a*, cautery; *b*, snare. D: Tack (actual size).

The length of the eparterial bronchus: at the age of 5 years 7 mm.; at the age of 7 years, 10 mm.

According to Abey, the diameter of the main right bronchus in men is: from 15 to 21 mm.; in women, from 13.5 to 16 mm. The diameter of the eparterial bronchus in men is from 7 to 10 mm.; in women, from 8.5 to 9 mm.

According to this, roughly estimated, the diameter of the eparterial bronchus would be about half of that of the main bronchus, and the eparterial bronchus in a child of 6 years would very likely be less than 5 mm. in diameter.

Allowing for the individual variation in size of the bronchi, it would seem almost incredible that so large a foreign body could work its way into a side bronchus of a child of that age, and it can readily be understood how firmly it was fixed in place.

Lowry Building.

## A CASE OF CARDIOSPASM, WITH IMPROVEMENT IN METHOD OF DILATATION

T. Arthur Johnson, S.B., M.D., DeKalb, Ill.

*History.*—Dec. 12, 1912, an 18-year-old Finnish girl came to me complaining of being unable to keep anything in her stomach. The interpreter stated that she had not retained any liquid or solid food for over eight days. When she attempted to swallow anything it was immediately returned. This was accompanied by a burning sensation at the pit of the stomach, but the returned food did not taste sour. She felt hungry and dry, and had lost 10 pounds in weight. She had had similar, slight disturbances at intervals for about a year and at these times was relieved by drugs. The previous history is negative with the exceptions that she had an attack of acute articular rheumatism about a year before and she has always been "nervous."

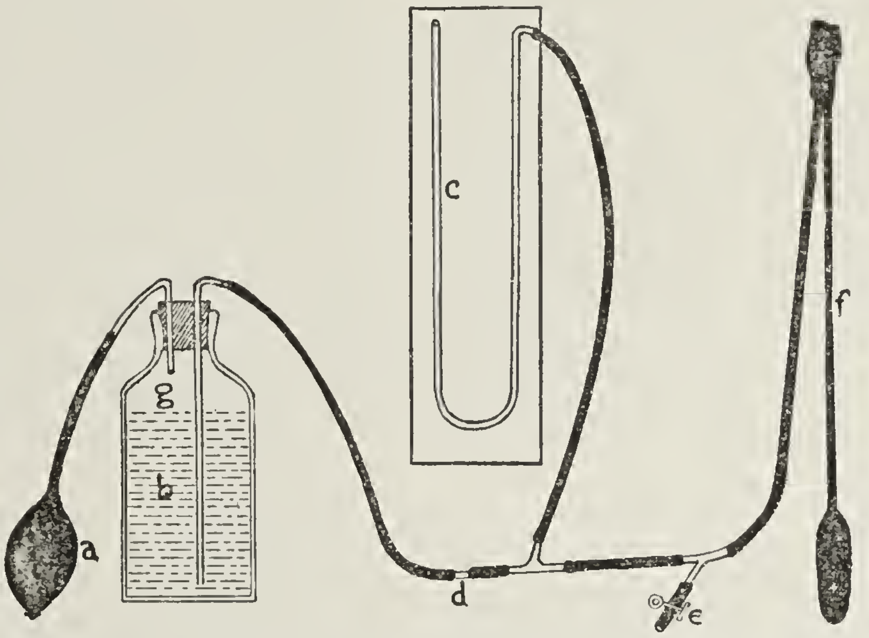


Diagram of the complete apparatus for dilating the cardia: *a*, hand-bulb of mercury manometer; *b*, water in pressure bottle; *c*, mercury manometer; *d*, glass capillary tube; *e*, emergency valve; *f*, Sippy cardiospasm dilator; *g*, compression chamber above water.

Examination shows a fairly well-developed, neurotic appearing girl with very prominent eyes. The faucial and corneal reflexes are practically absent. The thyroid is slightly enlarged, but the pulse-rate is normal. The left border of cardiac dulness extends one finger's breadth to the left of the midclavicular line, the pulmonic second sound is accentuated and a loud systolic murmur is transmitted to the left axilla. There is slight tenderness on pressure over the epigastrium. The hemoglobin is 70 per cent., and the reds and whites are normal in number and type.

*Treatment.*—A stomach-tube reinforced with a piano wire was passed without resistance, and the patient was fed by gavage and placed on bromids and belladonna. In about one week she could swallow without any difficulty. Four weeks later she returned with the same symptoms. I passed a series of olive esophageal dilators into her stomach very easily, the largest one passing as easily as the smallest. At no time could I demonstrate but a small quantity of retained pabulum in the esophagus. At that time I did not have easy access to a Roentgen-ray apparatus.

Jan. 4, 1913, I dilated the cardiac sphincter with a Sippy rubber bag dilator up to 150 mm. of mercury. The patient was free from her trouble for two weeks. At the return of the cardiospasm I again dilated the sphincter to 300 mm. of mercury without causing any pain. Since then there has been no recurrence of her cardiospasm.

### IMPROVEMENT IN METHOD OF DILATATION

In connection with the report of this case I wish to present a slight improvement in the method of forcible dilatation of the cardiac sphincter by means of the rubber balloon dilator. The apparatus used is a combination of the ideas of the pioneers in this work, with the innovation consisting in generating the dilating pressure by compressing the air-chamber of a tightly stoppered bottle—partly filled with water—by means of the hand bulb of a mercury manometer.

With the apparatus arranged as in the diagram, the rapidity of increase and the amount of pressure are at all times under complete control of the operator. The pressure generator can be easily constructed and is extremely portable. The small capillary tube *d* inserted into the lumen of the rubber tube is a further safeguard against too rapid dilatation, and the emergency valve *c* provides for instant release of the water pressure in case that becomes necessary. This provides a more simple, easy and safer method of obtaining the pressure than any that has come within my knowledge.

# Therapeutics

## PREVENTION IS GREATER THAN CURE

*(Continued from page 2043)*

### XI

### AIR CONTAMINATION

Normally the alveolar air of the lungs, that is, the air retained in the lungs for oxygen and carbon dioxid ($CO_2$) exchange, contains about 5 per cent. of the latter. If the amount of this gas in the retained air is diminished below 5 per cent., breathing is slowed until the carbon dioxid has accumulated and this percentage is again reached. If the percentage of the carbon dioxid is increased above 5 per cent. the respiration becomes more rapid, until the amount again becomes normal.

The arterial blood leaves the lungs with the same percentage of carbon dioxid in it as is in the alveolar air, and this carbon dioxid content of the blood stimulates or depresses the respiratory center, depending on the amount of the carbon dioxid in the blood. Therefore, this gas is a regulator of the respiration. Exercise increases the carbon dioxid, and hence the respiration is increased.

The alveolar air contains about 16 per cent. of oxygen, and the red blood-corpuscles in the blood of the left heart normally contain all they will absorb. Crowder[1] says that if the oxygen is diminished in the lungs to 12 per cent. or less the corpuscles will still take up their full quota. He also states that neither a surplus nor a deficiency of oxygen in the air supplied the lungs, unless the difference is extreme, will cause a change in the oxygen content of the red corpuscles. Actual need of oxygen will not increase respiration if at the same time the carbon dioxid in the alveolar air is reduced; that is, the carbon dioxid must equal 5 per cent. for normal respiration to occur. He emphasizes the fact that "with each breath we take back into the lungs the air contained in the nose and larger bronchi

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[1] Crowder, T. R.: On the Reinspiration of Expired Air, Arch. Int. Med., October, 1913, p. 420.

— the 'dead-space' air. This 'dead-space' air constitutes about one-third of the whole volume of quiet inspiration and not less than one-tenth of deep breathing. To all intents and purposes it is expired air which is constantly reinspired."

Hence the degree of contamination of the air in a room with carbon dioxid does not affect the individual, but the amount of water vapor does. It is not rebreathing the same old air, either of our own breath or of others, that mainly affects us, but it is the water vapor which prevents the air exchange on the surface of our bodies, and especially stagnant, overmoist air, that depresses and debilitates us.

Crowder has fully shown that we rebreathe our own inspired air over and over again. Hence it is not pure air we breathe. This is true when at rest, true when in bed, especially true in some confined sleeping positions. It is true with open windows, and in most tents and on verandas, and even in actual open air, unless the wind blows freely across our faces. In the latter case the depth of the breathing is reduced, and we might reexchange the air of the upper air passages more or less all night even while sleeping with the face exposed to the wind.

None of this militates against the value of clean, fresh air as a stimulant to the metabolism, and therefore to health, but it does show that the chemical constituency of the air is not primarily important, while the temperature and moisture are. Dry, cool air is bracing; dry warm air, if in motion, may be comfortable and not depressing; but warm, moist stagnant air is very depressing to metabolism, and hence when such a condition occurs in houses, stores, factories or assemblage halls harm is done to the individual in amount depending on the hours he spends in such an atmosphere. Overheating of houses and schoolrooms is harmful; too great humidity is also bad, although a too dry atmosphere is not desirable.

### DISSEMINATION OF CONTAGION

The wonderful progress in medicine is in no way shown more than by the knowledge acquired by the bacteriologists and by the wonderful experimental work of the laboratory workers. The various funds devoted to this work are paying large dividends in preventive medicine. Experimentation with the higher animals which more closely resemble human beings has disclosed many truths hitherto unknown regarding pathology, bacteriology and contagious diseases.

It was formerly believed that infectious material, which was not then known to consist of micro-organisms, was carried through the air for considerable distances. With small-pox it was believed that infection could travel several thousand feet. It has now been shown that this disease cannot pass through the air more than a few feet.[2]

Infectious material from patients suffering from disease of any kind may adhere to clothing, furniture, books and similar articles and may be carried from one person to another and be a means of infecting other individuals, but this method of transmission is at the present time believed to be uncommon. Ordinarily a contagious disease is acquired by direct contact and largely by the patient breathing in germs or particles of infected matter which have been expelled from the person affected with the disease by sneezing, coughing, or even loud talking.

A frequent means of transmitting disease from one person to another is by so-called "missed cases," that is, patients who have the disease in such a mild form that it is not recognized. This is especially likely to happen with diphtheria and scarlet fever. Another frequent source of acquiring disease is by means of so-called "carriers," that is, persons who have in their throats or other parts of the body the micro-organism of a disease, but who do not know they have the disease and are not made ill by the germs.

Some pathogenic bacteria die so quickly after leaving the body that infection from dust or air contaminated by them is practically impossible. Such are notably the germs of influenza, cerebrospinal fever and gonorrhea. In these diseases direct contact is the only probable method of transmission. This does not detract from the fact that not infrequently contagion is conveyed to well persons who come in contact with mucus or mucopus containing living germs.

Tubercle, diphtheria and typhoid bacilli, on the other hand, may survive drying and be wafted in the dust, but infection by means of such dust is probably very rare. Droplet contamination of air and of articles immediately about a person infected with pulmonary tuberculosis or diphtheria frequently occurs.

The air of sewers has been shown to contain few pathogenic organisms, except in very rare instances. A few colon bacilli have been found, but then in such small numbers that the danger of infection from inhaling such gas is practically nil.

Even if the dust of a room is shown to contain viable tubercle or typhoid bacilli, the number of such in the upper air of the room would ordinarily be so few that infection in this way is practically impossible. Young children playing about the floor of such a room, however, would be in danger of infection, and infection with tuberculosis in children is doubtless frequently thus acquired.

Investigation seems to show that the pathogenic bowel germs are rarely air-borne, and that the infection cannot be thus acquired. Such germs are those of typhoid fever, paratyphoid fever, dysentery, diarrhea and cholera. Typhus fever is not air-borne, but is due to the bites of the infected body- or head-louse. Bubonic plague is transmitted by the bite of an infected flea.

The rapidly spreading influenza (the grip) seemed surely to be disseminated by dust or to be air-borne, but it seems that, like tonsillitis, diphtheria and ordinary colds, it is contracted by contact either with the infected person or with contaminated substances, as clothing, handkerchiefs, furniture, eating and drinking utensils, etc. The same is true of eye inflammations and contagious skin diseases. This has long been known to be true of syphilis and gonorrhea.

Much more difficult for medical men, to say nothing of laymen, to believe is what must now be considered a fact, namely, that the scales of desquamating scarlet fever are not contagious and do not carry the contagium; scarlet fever is spread only by contact with the infected person or with articles infected by the patient having the disease.

Measles, apparently the most readily spread of any contagion, seems to be transferred only by contact. It was suspected that this disease was transmitted by the air because a child could disseminate it so many days before he was actually sick and confined to the house or bed. Whooping-cough, "German measles" and chicken-pox are all probably spread by contact and not by diffusion through the air. Small-pox, as stated above, is spread only by contact.

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[2] Kiefer, G. L.: The Control of Contagious Diseases in a Municipality, The Journal A. M. A., Dec. 7, 1912, p. 2022.

It has been shown in hospitals that if the nurses are careful not to allow contact with other patients, small-pox, measles and scarlet fever, the most contagious of all diseases, may be cared for in adjacent wards, and even, in careful experiments, in adjacent beds, without infection of others. Of course, such close association of a contagious disease with those who have not the disease is absurd on account of the failure, in the routine work, of nurses and attendants to carry out strict measures to prevent contact or the transmission of contaminated articles from one to another. Therefore, there should be separate wards, if not separate buildings, for the different contagious diseases; but the experimentation mentioned above shows conclusively that these diseases are spread by contact only.

It is now recognized in hospital operating rooms that droplet infection is a danger, if all other sources of infecting the wound are excluded, and hence surgeons and their assistants wear mouth and nose covers lest they cough, sneeze or speak energetically, and thus spray the region of the wound.

It is hardly probable that pneumonia and acute rheumatism can be spread in any other way than by contact. It is possible that these more or less constantly present germs may require only a certain condition of the mouth, upper air passages and system to infect us. Cerebrospinal fever and infantile paralysis doubtless require contact, and are probably not air-borne. It should also ever be remembered, in considering the possibility of an air- or dust-borne infection, that it requires a large number of most germs to cause an infection; a few would ordinarily be killed off before infection could occur.

### FLIES

The ubiquitous fly is a menace and a distinct and positive source of danger. He can disseminate typhoid, diarrhea and dysenteric germs, and probably also the germs of tuberculosis, diphtheria, scarlet fever, cerebrospinal meningitis, small-pox, carbuncle, tetanus, rabies, anterior poliomyelitis, and even germs from granular lids. Also these insects can harbor, for long periods, in their bodies the various pathogenic germs. Frozen flies from a hospital, after being externally cleansed and dried and then powdered and cultured, have been shown to harbor staphylococci, streptococci, colon bacilli and about fifty other kinds of bacteria. Experiments have shown that when a fly is fed on such bacteria as the typhoid bacillus and streptococci, and later cultures taken from its dead body, these cultures will show pure growths of the bacteria on which the fly was fed.[3] Consequently, not even a dead fly is a good one, and all dead flies should be cremated if not washed down the sewers.

House and stable flies are not supposed to stray ordinarily more than 500 yards from their breeding-places, but winds may carry them farther. It should be regarded as an axiom that all breeding-places (manure heaps and filth) should be abolished, or receive such treatment as to prevent the growth of the flies, and in this object there should be cooperation of families, tenement owners, towns and cities.[4]

Infected flies may be readily carried on horses or in vehicles of all kinds for long distances, and may be the source of infection of patients far removed from the contagion, and the transportation of germs by flies doubtless accounts for many new foci of disease.

### MALARIAL FEVERS

Thousands of lives are lost in the United States from malarial fever, and many thousands of persons are incapacitated for days and weeks by such fevers.

Although the subject of mosquitoes has already been touched on, it may be again emphasized that the public should know, and children in schools should be taught, that the anopheles mosquito, which inhabits swampy places and does not ordinarily fly far, and only comes out of its lair and bites at night, is the only source, as far as we know, of what is termed malarial fever.

This mosquito is innocent of harm until it has sucked blood infected with malarial plasmodia, capable of development, from a human being. When these germs develop into spores and are excreted by the mosquito's salivary glands she is able to infect an innocent human being. The female mosquito will harbor these germs until she dies, unless she is subjected to a temperature below 60 F. Hence in regions where the temperature falls below this point for a shorter or longer period, these infected mosquitoes are no longer able to infect human beings. The source, therefore, of the next season's infection is in human "carriers" of malarial germs, in most parts of our continent, except where it is always warm.

The question, then, is, Can we eradicate malarial plasmodia from human beings? Probably yes is a correct answer if we follow what has been scientifically ascertained, namely, that quinin in proper dosage will stop acute malarial fever in two or three days. But as this quinin destroys only the asexual forms, that is, the form that causes paroxysms, while the sexual or reproductive forms may live and redevelop for infection of the mosquito, or to cause a reinfection and symptoms in the patient, the drug should be again given for two days of each week for a period of eight weeks to be sure of complete elimination of the germ; or it may be as well to give the patient a daily dose for eight weeks to eradicate the germs and their spores completely and to prevent the infection of future mosquitoes. If every physician carried out this plan, and every patient allowed it, malarial fever would become unusual.

It may again be mentioned that kerosene or crude petroleum sprayed on stagnant water or wet places will prevent the development of mosquitoes. One ounce of kerosene will cover 15 square feet of water surface. Stagnant water should not be allowed.

*(To be continued)*

**Birth- and Death-Rates.**—Records of the Department of Health show that for the past six years the birth-rate of New York City has been steadily decreasing, and that last year the lowest point for the six years was reached. The death-rate had likewise decreased steadily, so that to-day the births exceed the deaths by eleven per 1,000. This city has the second lowest mortality figures among the cities of the world which have a population of 2,000,000 or more. The birth-rate here is 25.15 per 1,000, while in London it is 24.93 and in Berlin 19.61. The death-rate exceeds only that of Berlin, which is 13.48 per 1,000. The deaths from pulmonary tuberculosis number 1.601 per 1,000, while in Paris they are 3.178. Paris has also the highest mortality from typhoid fever.

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[3] Berezoff: Russk. Vrach, June 29, 1913.

[4] For methods of prevention of the growth of flies see Department of Agriculture Bulletin 118, issued July 14, 1914.

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SATURDAY, DECEMBER 12, 1914

## THE PROPER DOSAGE OF DIPHTHERIA ANTITOXIN

At the last session of the American Medical Association, Dr. W. H. Park[1] read a paper in which he reported his experience with Schick's[2] test. This reaction indicates whether or not persons who have been exposed to diphtheria are susceptible to the disease; that is, whether or not prophylactic injection of antitoxin is needed. In the discussion, it was urged that the matter be brought to the attention of physicians as soon as possible, in order to avoid the expense and inconvenience of unnecessary prophylactic inoculations.

Some later studies of Schick[3] which bear on the dosage of diphtheria antitoxin in the treatment of diphtheria patients have recently been reported from von Pirquet's clinic in Vienna. They seem to be of such practical importance for the every-day work of general practitioners as to make it desirable that every physician should become acquainted with them. While all special workers will want to read the full details of the experimental work which has led to Schick's conclusions, in general, it will be sufficient to know the results and that the methods by which they have been reached indicate that we have good reason to believe in their reliability. It is interesting to see how closely the results obtained by Schick correspond to those which followed the careful studies of Park on toxin and antitoxin titration in diphtheria.

Schick and his associates have made use of the now well-known fact that intracutaneous test injections of minimal amounts of diphtheria toxin will cause redness and swelling at the site of injection. In diphtheria patients, they made several such intracutaneous test injections at three-hour intervals for some little time preceding the moment of injecting the curative antitoxin. After injecting antitoxin, they subsequently made intracutaneous test injections of the same minimal amounts of diphtheria toxin at twenty-four hour intervals. The curative dose of antitoxin was given intramuscularly, and varied in size in different patients. The effect of the antitoxic serum is precisely recognizable by the decrease in the diameter of the reactions following the intracutaneous test injections of toxin.

Careful observation showed that the main effect of the antitoxin is one of immunization — that is, a suitable dose of antitoxin renders the individual immune to a dose of toxin administered later. On the other hand, even a large dose of antitoxin has but slight effect on the action of toxin injected previously. To be sure, there is some effect on toxin introduced from three to six hours before the injection of antitoxin, and in exceptional cases an enfeeblement of the effect of the toxin introduced nine hours before the antitoxin was given; in other words, the main effect of antitoxin injection is to protect against toxin arriving after the antitoxin has been introduced.

The experiments have shown that it is necessary to calculate the dose of antitoxin according to the body weight of the patient. When amounts of antitoxin corresponding to 50 units per kilogram[4] of body weight are given, the protective effect against toxin injected simultaneously, and on that injected twenty-four hours later, is demonstrable, but is not satisfactory. On increasing the dose of antitoxin to 100 units per kilogram, the immunizing effect is extraordinarily better, as, in the majority of cases, toxin injected twenty-four hours later produces no effect whatever. In addition, the effects on toxin injected simultaneously is much better than when only 50 units per kilogram are given. On increasing the dose of antitoxin to 250 or to 500 units per kilogram, the influence on simultaneously injected toxin is somewhat improved, but there is no increase whatever in the immunizing effect, for, as has been said, 100 units per kilogram exert a maximal effect on any toxin subsequently introduced.

Further observations showed that a maximal antitoxin effect is obtained with a dosage of 500 units per kilogram; larger doses have no greater influence, either on simultaneously injected toxin or on toxin injected twenty-four hours afterward. The retroactive effect on toxin injected three hours earlier is very slight even when 500 units per kilogram are given, and such large doses have only a slightly better effect than doses of 100 units per kilogram.

In the treatment of human diphtheria, therefore, Schick and his colleagues recommend (1) that the injection be given at the earliest possible moment; (2) that it be given intramuscularly; (3) that in all mild and medium cases of diphtheria (and these make up about 90 per cent. of all cases) a single dose of 100 units of antitoxin per kilogram suffices, and (4) that in the severest cases, 500 units per kilogram may be injected. In other words, in a child weighing 20 kg.

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[1] Park, William H.; Zingher, A., and Serota, M. H.: Active Immunization in Diphtheria and Treatment by Toxin-Antitoxin, The Journal A. M. A., Sept. 5, 1914, p. 859.

[2] Schick, B.; Kassowitz, K., and Busacchi, P.: Experimentelle Diphtherie Serum-Therapie beim Menschen, Ztschr. f. d. ges. exper. Med., 1914, iv, 83.

[3] An Early Test for Susceptibility to Diphtheria, Editorial, The Journal A. M. A., April 11, 1914, p. 1176.

[4] A kilogram is equal approximately to 2⅕ pounds avoirdupois.

(or 44 pounds), 2,000 units will, in 90 per cent. of the cases, suffice, while in 10 per cent. of the cases of the most severe type a dosage of 10,000 units may be given. In an adult weighing 60 kg. (or 132 pounds) a dose of 6,000 units will suffice in all the ordinary cases, whereas in the severest cases a single dose of 30.000 units may be given.

One of the most important of Schick's observations is that repeated injections of the serum are superfluous and not warranted. Even in the severest cases, he asserts that if a dose of 500 units per kilogram be injected immediately the greatest good possible will be obtained. Subsequent injections of antitoxin after six, twelve or twenty-four hours are, he maintains, unnecessary, for any further effect of toxin is prevented by a single dose of the size mentioned. If the diphtheria patient dies, it is because the toxin elaborated by the organisms in his body has had time to act before the antitoxin was injected, and cannot by any means as yet known to us be afterward inactivated. The only circumstance in which a second injection is of value is when the first injection given has been smaller in dose than the optimal doses recommended; then one may give a single dose of 500 units per kilogram.

In exposed persons requiring a prophylactic immunizing dose, a single injection of 50 units per kilogram is sufficient.

If the conclusions drawn by Schick and his colleagues from these interesting studies be correct, it is obvious that the practitioner will, from now on, be provided with a precise method of treating diphtheria patients hitherto much desired. It would appear that the enormous doses sometimes given of 100,000 units, or more, of antitoxin are wholly unnecessary, involving large expense and much inconvenience to the patient, especially where repeated injections have been given. One would, of course, not shrink from the expense or from the inconvenience, could a single life be saved thereby; but Schick's studies seem to indicate that in most cases 100 units per kilogram, and in a few severest cases 500 units per kilogram, given in a single dose, yield the maximal protective effect at present obtainable.

## THE NATURE OF THE NERVE IMPULSE

Many views have been advanced with regard to the nature of the conduction processes in nerves. Naturally so fundamental a phenomenon as the passage of an impulse along a nerve cannot fail to awaken speculation on the part of anyone who is accustomed to think critically about physiologic processes. With the accumulation of new facts bearing on the question old theories have been abandoned and new hypotheses in turn advanced. The mere review of some of these is of interest as an illustration of the way in which science sometimes progresses. Thus, it has been suggested that the whole nerve moved like a bell rope; that the nerve was a tube, and that a biting acid flowed along it; that the nerve contained an elastic fluid which was thrown into oscillations; that it conducted an electric current like a wire; that it was composed of definitely arranged electromotor molecules which exerted an electrodynamic effect on each other; that it was made up of chemical particles which, like the particles of powder in a fuse, underwent an explosive change, each in turn exciting its neighbor; that the irritant caused a chemical change, which produced such an alteration of the electrical condition as to excite the neighboring parts to chemical change and thereby to electrical change, and so alternating chemical and electrical changes progressed along the fiber in the form of a wave; finally, that the molecules of the nerve substance underwent a form of physical vibration analogous to that assumed for light.[1]

Even at present, students of the subject are still divided into two camps, one of which inclines to a physical theory of nerve conduction, the other to a metabolic or chemical theory. We know, at any rate, that there is no mechanical change in the nerve. If the nerve serves merely as a conducting medium in a purely physical sense, one would not expect much, if any, expenditure of energy in the process. The lack of any heat production in stimulated nerves[2] appears like decided evidence against the idea that irritability is primarily a chemical phenomenon. Heat changes are characteristic of metabolism. On the other hand, convincing evidence has gradually accumulated tending to show certain small chemical changes incident to the excitatory processes in nerves from the fact that, in the complete absence of oxygen, the nerve fibers lose their irritability, and that the latter may be restored by readmission of oxygen to the nerve.

By the use of an ingeniously contrived apparatus, the biometer, in which amounts of carbon dioxid as small as 0.000,000,1 gm. can be measured, Tashiro[3] has demonstrated in the laboratories of the University of Chicago not only that all living nerves give off carbon dioxid—a sign of chemical change—but also that their metabolism increases on stimulation. These facts have now been supplemented by Tashiro and Adams[4] in harmony with the argument that the primary basis of protoplasmic irritability must be a chemical one. Their new evidence shows that, in the absence of oxygen, nerves have a far lower output of carbon dioxid than in air, and that stimuli which more than double the output in air fail to give any increase in an atmosphere of hydrogen, that is, an oxygen-free medium. Oxygen is therefore primarily concerned with the metabolism of nerves.

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1. Lombard, W. P.: General Physiology of Muscle and Nerve, American Text-Book of Physiology, edited by Howell, 1896, p. 97.
2. Hill, A. V.: Jour. Physiol., 1912, xliii, 433.
3. Tashiro, S.: Am. Jour. Physiol., 1913, xxxii, 107; ibid., 1914, xxxiii, 38.
4. Tashiro, S., and Adams, H. S.: Carbon Dioxide Production from the Nerve Fiber in a Hydrogen Atmosphere, Am. Jour. Physiol., 1914, xxxiv. 405.

The foregoing facts are no proof that oxidative change or metabolism in the nerve is the forerunner or cause of its conductivity. They might, of course, express the effect of the change in the state of excitability. Whatever the future may finally say to the question whether nerve fibers can function independently of chemical changes, it now seems certain that active metabolism in the nerve fiber is a fact; and, quoting the Chicago investigators, the incorrect assumption of an absence of metabolism can no longer be used by the physical school to support their argument.

## ACETYLCHOLIN AND ERGOT PREPARATIONS

Some time ago, in a discussion of the active principles of ergot,[1] attention was called to the discovery by the pharmacologist Dale and the chemist Ewins of acetylcholin in certain preparations of ergot. The physiologic action of this base had already been investigated by Hunt and Taveau,[2] who pronounced it to be far the most powerful circulatory depressant known. Its occurrence, therefore, in preparations of ergot intended for medicinal use naturally aroused considerable interest, for the question arose whether it might not add to the dangers of this drug. Dale[3] now reports an extensive study of this and of some other derivatives of cholin. He confirms the observations of Hunt and Taveau as to the extraordinary activity of this substance; indeed, he finds it even more active than did these authors, for whereas the latter found 0.000,005 mg. injected intravenously into a rabbit to cause a fall of blood-pressure, Dale reports such a result from "the almost incredibly minute amount of 0.000,001 mg. (the one-millionth part of a milligram)."

Fortunately this extraordinarily active substance is only exceptionally found in medicinal preparations of ergot, and then as a rule only in minute amounts; still Dale found as much as 0.2 mg. per cubic centimeter in one such preparation. This amount injected intravenously into a human being would undoubtedly cause most alarming symptoms; it would be harmless by the mouth and probably if given subcutaneously, for acetylcholin is rapidly destroyed in the tissues. In these days when the administration of drugs intravenously is increasing and when manufacturers are placing so many new preparations for such use on the market it would be well for a physician considering this use of an ergot preparation to bear in mind the possible occurrence in it of acetylcholin. There are no chemical tests by which this substance, even when present in dangerous amounts, can be recognized, but there are physiologic tests by which the most minute amounts may be detected. Any preparation of ergot intended for intravenous use should be subjected to these tests; it might be well also to test those prepared for subcutaneous use, for Hunt and Taveau found doses of 0.1 mg. injected subcutaneously into cats to cause a pronounced fall of blood-pressure.

Aside from this practical aspect of the occurrence of acetylcholin in ergot, the substance itself is of much scientific interest. It is easily prepared from cholin and certain simple derivatives of acetic acid. Cholin is probably a constituent of all living cells; it has been found in the blood and in all organs investigated (beginning with its discovery in the adrenal glands by Hunt in 1902). The animal body always has derivatives of acetic acid available for synthetic purposes; when benzoic acid, for example, is taken it is quickly excreted as hippuric acid, that is, as a compound of benzoic and amino-acetic acids. May not conditions arise in the body under which cholin may unite with acetic acid to form acetylcholin just as this substance is formed by the fungus of ergot? Or is it not possible that the body itself may form such a compound for some of its own purposes just as it forms epinephrin? Some of these questions were raised by Hunt several years ago and are again brought up by Dale. As Dale states, we have in epinephrin a substance having a special affinity for one great division (the true sympathetic) of the autonomic nervous system; it is formed in the body and utilized by it for the purpose of stimulating the endings of the nerves of this system. Acetylcholin, on the other hand, has little or no effect on the true sympathetic nerves, but has a specific action on the other great division of the autonomic nervous system — the cranial and sacral (or parasympathetic) division, which supplies the sphincter of the iris, the inhibitory nerves to the heart, the motor and secretory nerves to the alimentary tract, etc. Epinephrin is a very unstable substance; it is secreted, under certain conditions, by the adrenal glands, fulfils its physiologic functions and is then destroyed. Acetylcholin is a more active substance, but in a different way, than epinephrin; it is even more readily destroyed. May it not function as a hormone in the same, but in a complementary or antagonistic way, as does epinephrin? Its instability may have prevented its detection just as the secretion of epinephrin was long overlooked. As Dale says, these questions are of great interest, but for the discussion of which little evidence is at present available; there is no known depot in the body of cholin derivatives as there is in the case of epinephrin, or indeed any evidence that a substance resembling acetylcholin exists in the body at all. It is true, as Dale recalls, that Hunt[4] found evidence of the existence of a substance in the suprarenal glands which was not cholin itself, but which readily yielded cholin in the process of extraction, and which was from fifty to a hundred times as active as cholin; the nature of this substance has not, however, been determined.

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[1] Active Principles of Ergot, editorial, The Journal A. M. A., June 20, 1914, p. 1969.

[2] Hunt and Taveau: Hyg. Lab. Bull. 73, U. S. P. H. S., 1911; Brit. Med. Jour., 1906, ii, 1788.

[3] Dale: Jour. Pharmacol. and Exper. Therap., 1914, vi, 147.

[4] Hunt: Am. Jour. Physiol., 1899, iii, 18; 1901, v, 11; Brit. Med. Jour., 1906, ii, 1788.

This work illustrates some of the lines of work in modern pharmacology; the results are of immediate practical as well as scientific interest. The best results are obtained when a pharmacologist can cooperate with a skilled organic chemist. It is unfortunate that there are not more laboratories in this country where such cooperation is possible.

## LOSS OF LIFE BY EXPLOSIONS IN THE MILLING INDUSTRY

Statistics sometimes surpass all forms of direct argument in emphasizing the need of reforms relating to the public health. In this belief we cite from a preliminary report published by the Millers' Committee of Buffalo[1] the fact that in thirteen investigated explosions which have occurred in grain mills and similar industrial plants in very recent years in this country, at least seventy-eight men were killed and 119 injured. Incidentally, the total damage to property exceeded $2,000,000. In four explosions in Europe since 1911 — two in dextrin works, one in a provender mill grinding peas, beans and wheat, and one in a linseed mill — the human loss is expressed by forty-seven killed and 119 injured.

Surely some consideration of methods pertaining to the prevention of such explosions is called for. It has already developed from Dr. Brown's laboratory study of the problem[1] that most, if not all, grain dusts are more inflammable than standard coal dust (which has long been recognized as a source of danger in the industries). Grain dusts in most cases develop higher pressures on explosion, especially at the lower temperatures. The preliminary observations seem to indicate that the dusts from oats and yellow corn are more inflammable than those from wheat and other grain.

The investigations of the Millers' Committee indicate a difference in the inflammability of dried and undried dusts. In nearly every case the pressure developed on explosion was increased appreciably after drying. The result of a decrease in the humidity of the air is thus suggested.

Various causes have been assigned to many of the explosions in milling plants in this country and abroad, among them the use of open lights, or naked flames, such as lamps, torches, gas jets, lanterns, candles, matches, etc.; property fires; introduction of foreign material in grinding machines; electric sparks from motors, fuses, switches and lighting systems, and static electricity produced by friction of pulleys and belts, grinding machines, etc.

The field-engineering inquiries of the Buffalo investigators indicate that a large number of the recent explosions and fires have been caused by the introduction of foreign material into grinding machines. It would appear that a possible means of prevention would be to devise some system by which the foreign material might be removed before it reached the mill. For the present, it is recommended in a practical way that prevention of explosions may be assisted by complete electric-lighting systems, the use of portable electric lamps instead of lanterns or naked lights, the enclosing of the electric-light bulbs in strong wire guards or protectors, and the possible use of vapor-proof globes, and the locating of all fuses, switches, starting-boxes, motors, etc., at points where no dust is present. It is also advised to have the receiving bins from the grinding machines as small as practicable with the operations, as increased size gives increased space for dust clouds and, therefore, opportunity for a more violent and destructive explosion.

## THE MOVEMENTS OF THE VILLI OF THE SMALL INTESTINE

In addition to their epithelial covering and their vascular and lymphatic arrangements, the villi of the small intestine contain masses of unstriated muscle fibers. These pass up from the muscularis mucosae through the villus, to be attached partly to the outer surface of the central lacteal, partly by expanded extremities to the basement membrane covering the surface of the villus. This combination of contractile structures, of which some run longitudinally along the lacteal spaces and others circularly about them, appears to afford an efficient mechanism whereby pressure can be exerted on the contents so that they are pumped into the communicating lymph spaces. Contractions of these muscle fibers are thus believed to tend to empty the central lacteal into the deep plexus of lymphatics and perhaps also to cause an expulsion of the contents of the spaces of the retiform tissues of the villus into the central lacteal.

For the most part the description of the function of the muscular mechanism of the villus has been limited to probabilities suggested by the facts of its anatomic structure. Direct observations of the motion of intestinal villi have lately been made by Hambleton[1] in the physiologic laboratory of the medical department of Vanderbilt University of Nashville. In animals that have been fasting the villi are generally found, on suitable microscopic examination, to be extended, fallen over in various directions, and covered with a mucus-like substance. Local application of solutions of a great variety of substances, for example, peptone, glucose, bile, saline, etc., is promptly followed by a rising of the villi and the beginning of lashing-like movements in various directions. Soon a second distinct movement begins, consisting in an alternating shortening or retraction and an extension of the villi. These movements are independent of peristalsis. They may be checked by local application of 0.1 per cent. hydrochloric acid and influenced by the introduction of drugs into the circulation.

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[1] Brown, H. H.: The Explosibility of Grain Dust, Jour. Indust. and Engin. Chem., 1914, vi, 934.

[1] Hambleton, B. F.: Note on the Movements of the Intestinal Villi, Am. Jour. Physiol., 1914, xxxiv, 446.

The observations, which have been quite constant on all animals examined, lead Hambleton to conclude that the "lashing" movements, which are not stopped by atropin, may aid in the mixing of the intestinal contents and thus promote the action of the digestive secretions as well as the process of absorption. The other forms of movement—retraction and extension—are probably of special value in the act of absorption, particularly through the lacteals. This type is abolished by both nicotin and atropin, a sign that it is under the control of the peripheral nervous mechanism. It seems strange that activities which can apparently be observed so easily have attracted so little attention on the part of investigators.

## Current Comment

### ARE THERE EXPECTORANT DRUGS?

When one stops to consider the prescriptions of alleged expectorants which are written literally by the hundreds day after day it may seem somewhat captious to ask whether the practice has any admitted scientific basis. Expectorants have been defined as agents which facilitate the removal of secretion from the air passages. This is accomplished by the movements of the cilia in the bronchial passages, by the act of coughing, or by the combined action of these agencies. The expectorant can facilitate the desired process by inducing a more abundant secretion into the respiratory passages or one which serves to dilute, as it were, a tenacious mucus and render it more easily transported out of the recesses to which it adheres. An even more effective participation in the expectorant process lies in the possibility of stimulating the musculature of the bronchi and thus accelerating the mechanical features of the act. By analogy this might be looked on as a sort of peristalsis of the contractile tissues involved. Wherever one turns, in the text-books and scientific journals, there is an extreme dearth of trustworthy information as to the mode of action of even the most widely used expectorants. This fact has been emphasized anew by Miller[1] of Chicago, who has searched for accurate bedside observation on the value of this class of drugs. The present situation may be summed up by admitting that the bedside study of the action of expectorants offers at present insurmountable difficulties. Admixture of saliva, the loss or gain of water in the respiratory tract, and other factors influencing the amount and viscosity of sputum, apart from the spontaneous changes that may occur as an incident of disease, offer variables too complex to untangle in human patients. Observations on animals, particularly on the exposed bronchial mucosa, have furnished the chief reliance for evidence of positive effects.[2] Miller has interpreted the available results with the conclusion that ammonium carbonate and ammonium chlorid and the emetic group of expectorants, as apomorphin and ipecac, when given in sufficiently large doses to animals, increase bronchial secretion. Ammonium salts by mouth in moderate doses do not increase bronchial secretion in the dog. Apomorphin and emetin when given to dogs in quantities considerably greater than the ordinary therapeutic dose for man do not excite increased bronchial secretion. In view of so much negative evidence it may be worth while again to investigate the evidence on which is based the custom of giving this class of drugs.

### THE COLLOIDAL GOLD REACTION IN EXAMINATION OF THE CEREBROSPINAL FLUID

Within recent years the examination of the cerebrospinal fluid has become of importance in conditions in which the meninges are involved, particularly if syphilis of the central nervous system is suspected. The information thus obtained is valuable as an index to the efficiency of treatment and also as an aid to diagnosis. The value of the Wassermann test and of determination of the cell-content of the cerebrospinal fluid in such cases is established. Abderhalden's method for the detection of certain ferments has not been perfected to the point which makes it practical for general diagnostic purposes in this field. The importance of the colloidal gold reaction, otherwise known as Nonne's or the gold chlorid test, has been recognized for some time, but until recently few have known within what limitations its value lay. It is essentially a test for an increase in the globulin content of the cerebrospinal fluid, using delicate color reactions in a standardized solution of colloidal gold as an indicator. The requisites for the test are cerebrospinal fluid obtained without a trace of blood, scrupulously clean glassware, and a colloidal gold solution prepared with extreme care. With these essentials at hand the performance of the test is comparatively simple. Miller and Levy[1] give explicit directions for preparing the solutions and performing and interpreting the results, together with an extended series of observations in which the results of Wassermann test on the blood and cerebrospinal fluid, cell and globulin estimation on the fluid and the colloidal gold reaction are compared in a great variety of clinical conditions. These tables show that normal cerebrospinal fluid gives negative reactions, but that in inflammatory conditions of the meninges, as tuberculous and purulent meningitis, the test is positive; hence it is of no value in distinguishing between these and syphilis. The reaction is inconstant in secondary and tertiary syphilis, and has no advantages over other diagnostic procedures in these conditions. The evidence seems to show that the colloidal gold reaction is most constant in general paresis and hence will be found of most value in the differentiation of this condition from others with which it might be confused. The authors suggest that this test may be found more sensitive than others now employed for indicating the results of specific therapy in syphilitic diseases of the central nervous system. The report is an example of what should be done with every new procedure either curative, prophylactic or diagnostic. Tests should be made in large numbers of diverse conditions and conservative conclusions drawn from the results as to the value and limitations of the procedure in question.

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[1] Miller, J. L.: The Clinical Value of Expectorants, Am. Jour. Med. Sc., 1914, cxlviii, 469.

[2] The work of V. E. Henderson and A. H. Taylor (Expectorants, Jour. Pharmacol. and Exper. Therap., 1910, ii, 153) deserves especial mention in this field.

[1] Miller and Levy: Bull. Johns Hopkins Hosp., 1914, xxv, 133.

## SUGAR UTILIZATION BY DIABETIC ORGANS

The successful employment of surviving organs of the body in the study of the functions of the living cells has given an impetus to the investigation of problems which seemed impossible of attack by the older methods. Glandular structures like the kidneys, muscles like the heart, and complexes of tissues like the intestines—all continue their usual performances for some time when they are supplied artificially with aerated blood or physiologic saline solution. It is now understood that such functioning tissues may use sugar which is supplied with the nutrient perfusion liquid. This fact has given an opportunity to compare the sugar-consuming capacity of organs from normal animals and those which have been rendered diabetic. The question to be answered is this: Have the tissues of diabetic individuals lost the capacity to utilize sugar in the usual manner? Hitherto the attempts to answer this question by studying the metabolism of isolated organs have been confined essentially to the perfused heart. The results have been quite uncertain, owing perhaps to wide variations in the stored carbohydrate of the cardiac muscle which could not be estimated in advance. Newer investigations, on surviving intestine, conducted in some of the university laboratories at Budapest[1] have failed to evidence any difference between the intestine of the normal and the diabetic with respect to the utilization of sugar in the way indicated. Even after removal of the pancreas and the initiation of severe glycosuria the isolated tissue can still cause the usual disappearance of sugar from the medium that bathes it. It is important, at this stage of our knowledge of diabetes, not to consider the disappearance of sugar as identical with an actual combustion thereof to its ultimate products of metabolism, carbon dioxid and water. There are too many facts which speak against the retention of a normal capacity to burn up carbohydrates in pancreatic diabetes.[2] For the present we may reconcile the findings by the hypothesis that the katabolism of sugar occurs in stages. The oxidative stage is presumably interfered with by the diseased condition; a preliminary alteration of the sugar molecule may still be possible even in the pathologic organism.[3]

## HEALTH CONDITIONS IN THE NAVY

According to the annual report of the Surgeon-General of the Navy,[1] this branch of our national defense, from a medical point of view is prepared to meet at least all peace-time demands. A summary of conditions during the year includes, among other important problems, the outbreak of small-pox on the *Ohio*, which was particularly noted by the lay press at the time. It will be remembered that there were twenty-nine cases of small-pox with five deaths. No cases occurred on the *Vermont*, although her men, examined and vaccinated just before sailing, were exposed in the same manner as those of the *Ohio*. An investigation showed, however, that no vaccination had been done on the *Ohio* for two years before the outbreak, and vaccination of the crew immediately after gave almost 90 per cent. of takes, about what would be expected in an unprotected community. Among 100 recruits received on the *Ohio* shortly before sailing for Europe and vaccinated at that time, not a single case occurred. The report mentions also a slight increase in malaria, which is accounted for by the cases occurring on ships in Mexican waters. The Surgeon-General suggests that the white uniforms of the "bluejackets" be replaced by something of a more serviceable nature, for example, khaki or forestry green. He comments frequently on the need for a hospital ship to accompany each fleet, especially in relation to the operations at Vera Cruz, and the lessons to be gained by their study. This report represents an accurate and informative discussion of the high quality of work in this service.

## A NOTE ON THE NON-SPECIFICITY OF CYTOTOXINS

It has been demonstrated that the injection of certain cells into an animal of a foreign species results in the production of cytotoxins in the serum of that animal, but the opinions still differ as to whether or not these cytotoxins are specific for the particular tissue constituting the antigen. Lambert,[2] investigating this question, used tissues growing *in vitro*, which has the advantage over the other methods used by previous investigators of eliminating agglutination, thrombosis and hemorrhages, factors to which Pearce attributed some of the most striking lesions found in organs and tissues after the injection of cytotoxic serums. Rat sarcoma and embryo skin of rats, being suitable for this method, were injected into guinea-pigs, and the serum tested as to its inhibitive action on the growth of these tissues. Lambert found no specificity in the action of cytotoxins. The serum of animals injected with rat sarcoma inhibited the growth of this tissue as well as of the skin of embryo rats and vice versa. The injection of rat blood resulted in the production of substances toxic to these same tissues also, though to a less marked degree. Using the same technic, Lambert obtained similar results with tissues from the embryo chick.

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[1] Verzár, F., and Krauss, J.: Die Verbrennung des Zuckers im Pankreasdiabetes. III. Mitteilung. Der Zuckerverbrauch des überlebenden Darmes von pankreasdiabetischen Hunden, Biochem. Ztschr., 1914, lxvi 48.

[2] Variations in the Content of Sugar in the Blood, editorial, The Journal A. M. A., Jan. 10, 1914, p. 131; Dictary Treatment and the Sugar Content of the Blood in Diabetes, ibid., Aug. 22, 1914, p. 688; Where is Sugar Burned in the Body, ibid., Dec. 6, 1913, p. 2072.

[3] Cf. Verzár, F.: Die Verbrennung des Zuckers im Pankreasdiabetes. V. Mitteilung. Biochem. Ztschr., 1914, lxvi, 75.

[1] Annual Report of the Surgeon-General, U. S. Navy, for the fiscal year, 1914. Government Printing Office, Washington, 1914.

[2] Lambert: Jour. Exper. Med., 1914, xix, 277.

## *Medical News*

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

### ARKANSAS

**Hookworm Infection in Howard County.**—In the southern part of Howard County 22 per cent. of 300 people examined are reported infected with hookworm.

**Personal.**—Dr. Charles W. Garrison, Little Rock, head of the Rockefeller Hookworm Commission work in Arkansas, and assistant secretary of the State Board of Health, has been elected secretary and state health officer to succeed Dr. Frank B. Young, Springdale, who resigned to take the superintendency of the State Hospital for Nervous Diseases. Dr. Garrison has just been appointed collaborating epidemiologist for the government public health service for Arkansas.——Dr. James L. Greene, superintendent of the State Hospital for Nervous Diseases, Little Rock, has resigned. In a statement published by Dr. Greene, it is stated that the cause of his resignation was the enmity of the secretary of the State Charities Board, the reason for this enmity being that Dr. Greene refused to allow a tent to be installed on the hospital premises for the use of a brother-in-law of the secretary of the board, who is suffering from tuberculosis. Resolutions deploring the opposition of members of the State Board of Charities, which resulted in the resignation of Dr. James L. Greene as superintendent of the State Hospital for Nervous Diseases, were adopted by the Social Service Club of Pulaski County and the United Charities of Pulaski County, November 25.

### CALIFORNIA

**Medical Department Reorganized.**—In accordance with regulations, an order was issued November 27, by the adjutant general dividing the medical department of the National Guard of the state into a medical and a hospital corps.

**Personal.**—Dr. Curtis H. Castle, Merced, a practitioner of the city since 1887, and once congressman from the district, has retired and his practice has been taken over by Dr. Edwin R. Fountain of Portland, Ore.——Dr. Frederic E. Shaw, city commissioner of finance of Sacramento, is reported to be seriously ill.

**Mayor Must Be Physician.**—Under the new charter amendments which were voted on favorably at Santa Monica, December 2, the city has adopted the commission form of government and the provision is made that the mayor shall serve as health officer. Under the old charter it is provided that the health officer shall be a graduate of a reputable medical college and that he shall practice medicine for at least five years. The first municipal election, under the new form, will be held in December, 1915.

### GEORGIA

**New Baptist Hospital.**—The plans for the new Georgia Baptist Hospital, Atlanta, have been prepared. The new building will cost about $500,000 and will be composed of five units, each containing about 100 beds. One of the units is to be devoted exclusively to the treatment of children.

**Personal.**—In a $200,000 fire, at Eastman, November 24, the office of Dr. John Cox Wall was burned and a building owned by Dr. John B. Clark was also destroyed.——Dr. James T. Ross, Macon, has been elected chairman of the Bibb County Board of Health.——Dr. James D. Weaver, Eatonton, has been appointed a member of the State Board of Health.——Dr. William C. Thompson, Dublin, has opened the new Thompson Private Sanitarium at Dublin.——Dr. Wyman W. Pilcher, Warrenton, has been appointed official district examiner by the board of trustees of the State Sanatorium.

### ILLINOIS

**Personal.**—Dr. George G. Craig, Jr., has resigned as city physician of Rock Island.——Dr. Cyrus T. Foster, Rock Island, was seriously injured in a collision between his automobile and a trolley car, November 20.

**New Hospital.**—Dr. James W. Pettit and associates, Ottawa, announce that the Illinois Valley General Hospital will be built on the South Bluff, west of the Ottawa Tent Colony, during the next year, at an expenditure of from $50,000 to $75,000. The first three buildings are to be the administration building which will be flanked on either side by an annex connected by corridors. Especial attention is to be given to the open-air treatment, and all classes of ailments will be treated at the institution.

#### Chicago

**Public Health Exhibit.**—A public health exhibit was opened at the City Club, 315 Plymouth Court, November 30, and will remain open until January 16. The exhibits include infant welfare, showing what it adds to the health of the community by the prevention of infant mortality and the limitation of illness; tuberculosis and the life-saving tendency of the education of the people; school hygiene, showing the protection and conservation of the younger generation; food inspection and the method in which food inspection protects against infection, dirty food and harmful adulterants; patent medicines and the good work of the crusade against these harmful products; environmental conditions and the dependence of the people for life and welfare on good surroundings, and that of the Chicago Department of Health and the Municipal Tuberculosis Sanatorium, showing how the administration of public health acts as an instrument for bettering the physical condition and health environment of the community. The greater part of the exhibit is devoted to pictorial charts and maps, graphic representations, etc. The display of the environmental conditions exhibit is one of the most effective: tiny models show a schoolroom with blackboard properly and improperly lighted with good and bad service; proper and improper lighting of a machine in a factory; the living room with four systems of lighting illustrated one after the other; good and bad printed paper, etc. Taken as a whole, the exhibition is creditable but would be more valuable were it less didactic and more pedagogic.

### INDIANA

**Tuberculosis in Richmond.**—A special committee for Earlham College, Richmond, as the result of a sanitary survey, in reference to tuberculosis conditions in Wayne County, ascertained that there are more than 500 cases of tuberculosis in the city of Richmond alone.

**Hospital Units Opened.**—Two new units of the Indianapolis City Hospital were formally dedicated November 29, the principal address at the ceremony being delivered by Dr. Charles A. L. Reed, Cincinnati. These units have been named the Burdsal Units as they were donated to the city by the late Alfred Burdsal. They have been erected at a cost of $250,000, are three-story structures and provide accommodations for 250 patients. In order to furnish and equip these units, it has been necessary for the city board of health to negotiate a loan of $65,000.

**Personal.**—Dr. Abner H. Chaffee, Huntington, 86 years of age, was elected treasurer of Huntington County, at the November election and will assume the duties of his office January 1, next. Dr. Chaffee has been practicing medicine in Huntington since 1856, and during the Civil War he served as surgeon to the Seventy-Fifth Indiana Volunteer Infantry.——Dr. Paul E. Bowers, physician in charge of the Indiana State Prison, Michigan City, has delivered a series of lectures on clinical criminology at Valparaiso University.——Dr. Charles P. Cook, New Albany, was operated on for appendicitis at St. Edward's Hospital in that city, November 26.——Dr. Mavity J. Spencer has been appointed police surgeon of Indianapolis, succeeding Dr. Thomas L. Sullivan, Jr., who has been appointed superintendent of the City Hospital.

### IOWA

**Testimonial Dinner to Mayo.**—The Des Moines Pathological Society gave a testimonial dinner to Dr. William J. Mayo, Rochester, Minn., November 28, at which more than

200 physicians were present. In the evening Dr. Mayo delivered an address on "The Septic Factors in the Three Great Plagues."

**Personal.**—Drs. Joseph C. Powers and Claude F. Osborne, Hampton, announce that they are about to discontinue the practice of medicine in order to prepare themselves for special work in connection with the new Lutheran Hospital. Dr. Osborne is to be surgeon in charge of the new hospital and Dr. Powers is to specialize on diseases of the eye, ear, nose and throat.——Dr. James Alderson, Dubuque, was seriously injured in a collison between his buggy and an automobile, November 21.——Dr. William A. Guild, Des Moines, has arrived in Paris and joined the medical staff of the American Hospital.

**Annual Clinic at Medical College.**—The physicians of the state were invited to attend the sixth annual clinic of the College of Medicine of the State University of Iowa, Iowa City, December 8 and 9. They were welcomed by the president of the university and on the first day clinics were conducted by Dr. Lee W. Dean of the university, and Dr. Reuben Peterson of the University of Michigan; in the afternoon laboratory demonstrations were given by the following members of the faculty: Drs. Henry J. Prentiss, John T. McClintock, Charles S. Chase and Henry Albert; a clinic on internal medicine was held by Dr. Campbell P. Howard, and after this a visit was paid to the new wing of the University Hospital. On the second morning clinics were given by Drs. Clarence E. Van Epps and John B. Kessler of the university faculty and Dr. Dean D. Lewis, Chicago; and in the afternoon a clinic was given by Dr. Charles S. Grant of the medical faculty, after which an inspection of the university buildings was made.

## MINNESOTA

**Personal.**—Dr. George H. Freeman gave a dinner at the St. Louis Hospital for Inebriates, Willmar, November 24, in honor of Dr. H. W. Hill, executive secretary of the Minnesota Public Health Association. After the dinner an address was given by Dr. Hill before the Commercial Club.——Dr. Gertrude Booker Granger has succeeded Dr. John E. Crewe as whole-time health officer of Rochester.

## MISSOURI

**Physicians Fill Pulpits.**—It is planned to have physicians occupy the pulpits in all the churches of St. Joseph on the Sunday in May next, immediately preceding the meeting of the State Medical Association.

**Free Clinic Opened.**—A free medical clinic is to be opened in a short time at Admiral Boulevard and Harrison Street, Kansas City. The institution will be a revival of the old Post-Graduate Hospital, which was discontinued some time ago. Dr. C. Lester Hall is president of the new organization.

**State to Sell Diphtheria Antitoxin at Low Price.**—The State Board of Health has made arrangements for distributing antitoxin at prices ranging from 40 cents for 500 units to $4 for 10,000 units. The city of St. Louis already distributes antitoxin free to persons who cannot afford to buy it, but it is said that many who cannot afford to pay the prices charged by druggists for antitoxin, hesitate to apply for it as paupers. The number of cases of diphtheria reported in St. Louis for five weeks up to November 23 was 546.

**New Hospital.**—The plans for the Public Hospital bequeathed to St. Joseph by the late Charles W. Noyes have been completed. Mr. Noyes left a bequest of $250,000 to be applied to the erection and maintenance of a hospital to bear his name and the hospital is to be located at Frederick Avenue and Twenty-Fourth Street.——Papers of incorporation of St. Joseph's Hospital, Kansas City, were signed November 30. The building is to cost $500,000 and will be of brick and stone, six stories in height and in the form of an X, and will accommodate about 250 patients.

### St. Louis

**Leper Found in St. Louis.**—The city bacteriologist has diagnosed leprosy in the case of a Greek who came to America in 1912. It is expected that he will be deported by the immigration authorities.

**Preventive Medicine Lectures.**—A series of lectures on preventive medicine is being given by the Social Service Department of the St. Louis Children's Hospital in the lecture room of that institution on Tuesday afternoons. The series began November 24 and will end January 5.

**Free Antitoxin.**—Health Commissioner Max C. Starkloff announces that he will apply to the municipal assembly for an appropriation of $3,600 to cover the expense of the free distribution of diphtheria antitoxin by the city. He also states that he will prepare and have presented before the legislature at the January session, a plan providing for the erection of a state bacteriological laboratory in which diphtheria antitoxin will be made and distributed free or at cost.

**Medico-Historical Loan Exhibit.**—The St. Louis Medical History Club opened a loan exhibit at Jefferson Memorial, December 5. The exhibit is to remain open for two weeks and includes many matters of historical interest, not only to physicians, but to all citizens. Among these are, an autographed letter from Dr. Moses L. Linton in 1847 accepting the professorship in obstetrics and diseases of women in St. Louis University; another from Dr. William Beaumont in 1836, accepting the chair of surgery; other documents of interest are, a petition presented in 1836 appealing for financial assistance for the medical department and an autographed letter from Dr. Daniel Brainard, accepting the chair of anatomy and another autographed letter from William Greenleaf Eliot, accepting as trustee for the medical department; valuable portraits were contributed by Washington University; rare old books have been loaned by Dr. Edward C. Streeter, Boston, and the John Crerar Library, Chicago; and valuable documents have been contributed by Dr. William Pepper, Philadelphia, and the Surgeon-General of the Army.

## NORTH CAROLINA

**Personal.**—Dr. Claude L. Pridgen, Kinston, formerly connected with the State Board of Health, has located in Wilmington.——Dr. Clyde H. Hemphill, Drexel, has returned from New York and will locate in Goldsborough, limiting his practice to diseases of the eye, ear, nose and throat.

**Hospital Notes.**—Irvin Memorial Hospital, Mount Airy, was formally opened November 12. The building has been erected by Mrs. A. B. Irvin as a memorial to her son, Leonard Irvin. It is a two-story and basement building, fully equipped and has accommodations for thirty patients.——Rex Hospital, Raleigh, held its annual remembrance or donation day, November 11.

## NEW JERSEY

**Personal.**—Dr. Frank H. Carber, Newton, has succeeded Dr. Edward A. McLaine as chief resident physician to the Scranton State Hospital.

**Medical Staff Resigns.**—The medical staff of All Souls Hospital, Morristown, has resigned in a body to take effect January 1, unless the board of managers make certain changes which the physicians assert are necessary for the proper conduct of the hospital.

**Diphtheria.**—To November 17, 119 cases of diphtheria had been reported in Jersey City. Dr. Frank H. Edsall, Wilmington, Del., city health superintendent, stated that the city board of health was handicapped by the lack of a well-equipped laboratory and city bacteriologists.

**Precautions in Construction of Water Reservoir.**—Atlantic City is now building an addition to its storage water reservoir, and in order to protect the water-supply is making a test of its workmen on the job. Dr. Edward Guion, chief of the health department, is making Widal tests in order that no typhoid carrier shall take part in the work on the reservoir.

## NEW YORK

**New Counsel for Medical Society.**—The Medical Society of the County of New York has appointed George W. Whiteside as its counsel. He has been on the staff of the district attorney for seven years.

**Personal.**—The trustees of the Clifton Springs Sanitarium Company have elected Dr. Malcolm S. Woodbury, superintendent, vice Dr. James G. Mumford, deceased.——Dr. Orie M. Grover, Dunkirk, has been appointed associate physician to the State Reformatory for Women, Bedford Hills.——Dr. Joseph E. Clark has entered on his work as sanitary superintendent for the counties of Oneida and Herkimer.——Dr. Clinton P. McCord, Albany, has been appointed chairman of a committee to organize the open-air-school workers of the state. This movement is closely associated with that for medical examination of schoolchildren and school buildings.

**Physical Educators Organize.**—At the annual convention of the New York State Teachers' Association in Albany, N. Y., November 23-25, the school medical inspectors and physical educators of the state gathered in the Section on Hygiene and Physicial Education and presided over by Dr. Thomas D. Wood of Columbia University, effected a formal organization to be known as the New York State Association of School Medical Inspectors and Physical Educators. Dr. Clinton P. McCord, health director of the schools of Albany, was elected president and Mr. Edward F. Brown, superintendent of Child Welfare of the Charity Organization Society of New York City, was elected secretary. It is the plan to meet in conjunction with the State Teachers' Association each autumn and to hold another meeting or school health convention at some other season of the year, supplemented by local meetings on school health in various sections of the state at various times through the year. New York state has a mandatory law on medical inspection of schools which is most comprehensive in its provisions and applies to the entire state outside of the three cities of the first class.

### New York City

**Herter Lectures.**—The faculty of the University and Bellevue Hospital Medical College announce that the annual course of lectures under its Herter Foundation on "Aspects of the Physiology and Pathology of Growth" will be delivered by Prof. Lafayette B. Mendel, Ph.D., of Yale University, New Haven, Conn., December 10, 11, 14 and 15, at the Carnegie Laboratory, New York City.

**Safety and Sanitary Exhibit.**—The American Exposition of Safety and Sanitation will hold an exposition in New York City, December 12 to 19, under the auspices of the American Museum of Safety. Among the topics which have prominent place on the program are those for which special days have been set aside, namely, fire prevention, sanitation, building safety and employees.

**Society Repudiates Compensation Law Fee Schedule.**—At a meeting of the Medical Society of the County of New York held November 23, a motion was unanimously adopted providing "that the schedule of fees for physicians working under the workman's compensation law, is insufficient compensation and is hereby repudiated by the Medical Society of the County of New York and that its delegates to the state society are instructed to introduce a resolution to the same effect at the next meeting of the state society and to support it in every way possible."

**Extension of Public Health Education Work.**—The Bureau of Public Health Education, recently organized under the department of health, is cooperating with a number of teachers in the training schools and high schools in giving their students an insight into the work of the department. The students use one of the bureau's monographs as a textbook in their work in hygiene and in municipal government, following their studies by a visit to the health exhibit in the building of the department of health. In addition, to this the bureau has arranged for extension lectures to the students in their schools similar to those given the employees of the department.

**Tuberculosis Week.**—The week, November 29 to December 5, was "Tuberculosis Week" in this city. The department of health supplied special tuberculosis talks in fifty-six lecture centers of the lecture bureau of the board of education. The records show that the death-rate from tuberculosis in New York City has fallen from 2.37 in 1900 to 1.60 in 1913. It is observed that the enthusiasm that marked the earlier campaigns against this disease is on the wane, and if progress is to be made, more must be done to strike at the underlying causes of tuberculosis. Hence the present efforts are laying emphasis on the housing problem, the necessity for more institutional accommodations for advanced cases, the provision of proper employment and remuneration proportionate to the patient's needs and not merely to his earning capacity, and the advisability of periodic physical examinations of all employees.

## PENNSYLVANIA

### Philadelphia

**Nurses Have Diphtheria.**—Seven nurses of the Polyclinic Hospital are being treated at the Philadelphia General Hospital for symptoms of diphtheria. Several wards of the Polyclinic are under quarantine.

**Memorial to Morgan.**—A meeting of the John Morgan Memorial Committee of the Philadelphia Alumni Society, Medical Department, University of Pennsylvania, was held November 19, when further plans were made and discussed looking toward the main object of the committee, the erection of a suitable memorial which shall do proper honor to the man who was the founder of medicine in the United States—Dr. John Morgan.

**Medical Society Banquets.**—The tenth annual banquet of the West Philadelphia Medical Association was held at the Hotel Rittenhouse, November 24. Dr. Benjamin F. Wentz, president of the society, was toastmaster, and the speakers were Dr. William L. Rodman, president-elect of the American Medical Association; Dr. William Duffield Robinson, president of the Philadelphia County Medical Society; Drs. Edward E. Montgomery, Samuel D. Risley, William S. Wray and Abram B. Hirsh.

**Personal.**—Dr. Alfred E. Cohn, of the Rockefeller Institute, will lecture before the College of Physicians, December 14, on "Clinical Electrocardiographic Studies on the Action of Digitalis."——Dr. Peter N. G. Schwenk resigned November 30 from the medical staff of the Pennsylvania Hospital after thirty-two years of service as surgeon in the eye clinic of the outpatient department. A silver loving cup was presented to Dr. Schwenk by the staff of the hospital.——Dr. George S. Crampton has been elected attending surgeon to the eye department of the Pennsylvania Hospital to fill the position left vacant by the resignation of Dr. Schwenk.

**Woman's College News.**—The Woman's Medical College of Pennsylvania has come into possession of two small houses. This enables the college to vacate rooms now occupied by nurses and will add to the capacity in the maternity department, making it possible to accommodate ninety-four patients in all departments.——The maternity of the college has been moved to Twenty-First Street and North College Avenue, immediately adjoining the college.——A moving-picture film has been prepared illustrative of college and hospital life of women medical students. This film is to be exhibited at the Panama Exposition, San Francisco.

## SOUTH CAROLINA

**Continuation of Thompson-McFadden Pellagra Commission Work Desired.**—At the request of the grand jury and the Spartanburg County Medical Society, Dr. James L. Jefferies, Spartanburg, has taken up with the State Board of Health the advisability of urging a legislative appropriation for the continuation of the Thompson-McFadden Pellagra Commission at Spartanburg. It is said that it would be an irretrievable loss to the state to lose the work of the commission.

**Medical College Building Ready.**—The new building for the Medical College of South Carolina, Charleston, was formally transferred to the board of trustees of the institution, November 18. The address of the occasion was made by Dr. William S. Currell, president of the University of South Carolina. The building is three stories in height. On the first floor are the faculty rooms, the administration room, assembly hall, the clinical laboratories and library. The second floor is devoted to the pharmaceutical and pharmacological, anatomical and pathological and the dissecting room, while on the third floor are located the lecture rooms and the laboratories of chemistry and bacteriology.

## TEXAS

**Association Changes Name.**—The Texas Antituberculosis Association of Austin has filed an amendment changing its name to the Texas Public Health Association of Austin.

**Personal.**—The house of Dr. W. D. Poe, Sherman, was damaged by fire November 8.——Dr. Alonzo A. Ross, Lockhart, sustained a lacerated wound of the face in an automobile accident, November 8.

**Hookworm Campaign to Be Extended.**—Dr. Morris H. Boerner, Austin, state director of the Texas Hookworm Commission, announces that Gregg and Harrison counties have each made an appropriation of $200 to aid the state in eradicating hookworm; work will commence during the early part of December. Upshur and Rusk counties also are expected to make appropriation soon. Dr. Knight W. Field, county health officer of Dallas County, plans to test each child in the county schools for hookworm, to give stereopticon lectures on health and to establish medical stations in the county where treatment may be given for hookworm. The commissioners' court has appropriated $300 for medicine.

## WISCONSIN

**Personal.**—Dr. Louis Schapiro, Milwaukee, has accepted an appointment on the International Health Commission of the Rockefeller Foundation. After traveling through the southern states with other members of the commission, Dr. Schapiro will go to Costa Rica. After initiating work in the eradication of intestinal parasites, he will leave it in charge of local physicians and then probably will take charge of work in northern Egypt.——Dr. Peter J. Christofferson, Waupaca, had a finger amputated at St. Mary's Hospital, Oshkosh, as the result of an infected wound.——Dr. Henry A. Peters has been elected vice-president, and Drs. Michael R. Wilkinson and Walter S. Wing have been elected directors of the Oconomowoc branch of the Wisconsin Antituberculosis Association.——Dr. Sidney H. Wetzler, Milwaukee, sustained severe burns of the shoulders and chest by the overturning of his automobile, November 7.

**Report on Tuberculosis Sanatorium.**—The third biennial report of the Wisconsin State Tuberculosis Sanatorium has just been issued. There has been a marked increase in the number of patients treated during the last two years, during which time the capacity of the sanatorium has been increased by the erection of two new patients' cottages and an infirmary, having a combined capacity of fifty-five beds. A new two-story cottage is now being built, which will increase the capacity of the sanatorium to 170 beds. The superintendent recommends a still further increase by the building of another unit of twenty beds for women, and enlarging the infirmary, so as to make a complete capacity for 200 patients. Other improvements are recommended to cost approximately $61,000.——The new Brown County Tuberculosis Sanatorium has been completed and was opened to receive patients December 1. The construction of the sanatorium came within the appropriation of $22,000. The site and 26 acres surrounding it cost $3,000 and the Brown County board has made an appropriation of $4,000 for interior fittings and furnishings. The institution has twenty bedrooms for patients and two wards.——Kenosha has voted for an appropriation of $20,000 for the erection of a tuberculosis sanatorium for Kenosha County.——Of the $30,000 bond issue for the construction of the Winnebago County Tuberculosis Sanatorium, all but $7,500 has been subscribed.

## CANADA

**Personal.**—Dr. Watson Dykes, Duncan's Station, B. C., has been appointed medical officer of health of South Cowichan, Victoria, B. C.——Drs. John Taylor Fotheringham, James A. Roberts, William B. Hendry and Arthur C. Hendrick are among the Toronto physicians who will go abroad with the second Canadian contingent.——Dr. Albert G. Nicholls, Montreal, McGill University, assistant in pathology and clinical medicine, has been appointed to the chair of pathology in Dalhousie University, Halifax, N. S.

**Hospital Reports.**—At the seventieth annual meeting of the Montreal Maternity Hospital it was reported that during the last year 1,169 patients were treated as compared with 1,243 the previous year. During the year a nurses' home had been purchased at a cost of $50,000 through a bequest of the late Mr. James Ross. The expenditures and revenue for the year were $40,384 and $41,124, respectively, showing a deficit of $740. The superintendent, Dr. William Bauld, having departed for the war, Dr. C. E. Holbrook has been elected in his stead.

**Montreal Vital Statistics for 1913.**—After considerable delay the report of the medical officer of health for the year 1913, Montreal, has appeared. In spite of persistent efforts to check infant mortality, the report shows that it increased over 1912 by 1.73 per cent. During 1913 no fewer than 5,732 children died in Montreal under 5 years of age, or 51.65 per cent., of the total mortality. Montreal's infantile mortality rate is one of the highest in the world, being nearly double that of Baltimore, a city approximately of the same size. The deaths due to contagious diseases showed a large increase, as follows: measles, 136; scarlet fever, 184; diphtheria, 173; typhoid, 106; tuberculosis, 897. The deaths in 1912 from these diseases were 14, 80, 77, 94 and 894, respectively.

## GENERAL

**Correction.**—The notice in The Journal of December 5, entitled "Experimental Biologists to Meet," stated erroneously that the name of the federation was the "Southern Experimental Biologists." The correct title of the organization is "The Federation of American Societies for Experimental Biology."

**Experimental Biologists to Meet.**—The Federation of American Societies for Experimental Biology composed of the American Physiological Society, the American Society of Biological Chemists, the American Society for Pharmacology and Experimental Therapeutics, and the American Society for Experimental Pathology, will hold its next annual meeting at Washington University Medical School, St. Louis, Mo., December 28 to 30.

**Red Cross Seals Having Wide Sale.**—The Red Cross Seal for 1914 is a reproduction of the jovial Santa Claus. It is having a wide sale. The stamps make a desirable addition to every gift package and represent a thought for those sufferers who should not be overlooked, amid the great disasters occasioned by the war.

**Bequests and Donations.**—The following bequests and donations have recently been announced:

Home for Destitute Crippled Children, and Mary Thompson Hospital of Chicago for Women and Children, each $100,000 by the will of Alexander A. McKay.

Rockefeller Institute, New York City, $200,000 to be used in research work leading to a cure for cancer, by the will of Henry Rutherford.

University of Pennsylvania, $10,000 for the endowment of a room in the Agnew Pavilion of the hospital connected with that institution, in memory of her husband, Dr. Molton H. Forrest, by the will of Mrs. Emma L. Forrest.

Germantown Hospital, $1,000 by the will of Jenny E. Disston.

Presbyterian Hospital, Philadelphia, $1,000; Philadelphia Society to Prevent Children from Cruelty, $2,000; Philadelphia Society for Organizing Charity, $1,000, by the will of Miss Augusta Tabor.

Nursery and Child's Hospital, New York City, $1,500 by the will of J. Howard Wright.

Eastern District Hospital and Dispensary, Brooklyn, $5,000, by the will of Frederick B. Mollenhauer.

**Awarding of Nobel Prizes Postponed.**—It is announced from Stockholm that the distribution of the Nobel prizes has been postponed to next fall. After that year, the date of awarding the five prizes is to be changed from December 10 to June or July 1. This will bring the prizes for both 1915 and 1916 into the latter year; they amount to about $38,000 each. As it will be so long before we hear from these prizes again, it may be interesting to recall that to date the prize in medicine has been awarded in turn to Behring, Ross, Finsen, Pawlow, Koch, Ramon y Cajal and Golgi, Laveran, Ehrlich and Metchnikoff, Kocher of Switzerland; Kossel, professor of physiology at Heidelberg; Gullstrand, professor of ophthalmology at Upsala, Sweden; Alexis Carrel and to Richet of Paris. The prize has thus gone to Germany and to France twice each, once each to England, Denmark, Russia, Switzerland, Sweden and America (Carrel), and been divided once between Spain and Italy and once between Germany and France—a truly international list.

**Disbanding of Rockefeller Sanitary Commission.**—The Rockefeller Sanitary Commission which has had in charge the eradication of hookworm in the southern states under the fund of $1,000,000 granted by John D. Rockefeller in 1909, will disband at the close of the present year. The forces of the commission at that time will be withdrawn from all the states in which they have been working except eight, and the work in these will be taken over by the Rockefeller Foundation, a separate organization. The foundation will close up the work in five of the eight states March 1, 1915, and the remaining three on June 30. Under the foundation there has been created an International Commission on Health which will undertake work for the promotion of health in all parts of the world in cooperation with health departments of all countries, and especially will cooperate in the constructive development of state health forces, not alone with reference to hookworm, but in connection with other health conditions.

**Dr. Knopf's Prize Essay as Aid to Tuberculosis Campaign.**—Dr. S. A. Knopf informs us that Dr. S. Breitenfeld's Bohemian translation of the seventh American edition of Dr. Knopf's international prize essay, "Tuberculosis as a Disease of the Masses and How to Combat It," has just appeared in book form. The translation appeared first in serial articles in the Bohemian Daily, *New Yorske Listy*. On account of there being many large Bohemian colonies throughout the United States, the appearance of the translation is welcomed by all who are interested in the tuberculosis problem, and particularly by physicians practicing in Bohemian colonies. The latest American edition of this essay is now also being translated into Spanish by Dr. Jesus E. Monjaras of Mexico City. The translation of the essay into various European and Asiatic languages since its original appearance in Germany some ten years ago, speaks well for the universal interest now taken in the antituberculosis campaign throughout the civilized world.

## FOREIGN

**Death of Spanish Physician Aviator.**—Dr. Cortijo, who recently lost his life in an accident to his aeroplane, was a medical officer in the Spanish army and member of the aviation corps.

**Malaria in Italy.**—The report of the Italian Red Cross for 1912-1913 states that six units were sent into new territory and four into the Pontine marshes and one to the Campo Soriano. The number of cases in the district near Rome was only 5.1 per cent. and in the Pontine marshes 4.9 per cent., the lowest figures yet reached. Dr. P. Postempski is the medical inspector in chief for the service.

**Typhoid at Barcelona.**—Our Spanish exchange, the *Siglo Medico* of November 7, states that the severest epidemic of typhoid Barcelona has ever known is prevailing there now, although the mortality is not very high. One daily estimates that there have been 30,000 cases, and a communication from a local physician places the number as much above 15,000, while the authorities have over 5,000 registered cases. The hotels were crowded with refugees from the war zone, but the city is now deserted by all of them who can leave. Notwithstanding vigorous sanitary measures the epidemic shows no signs of abating, 400 cases a day being still reported.

**Hookworm in Iquitos, Peru.**—Dr. George B. Converse, U. S. Public Health Service, has returned to San Francisco from Iquitos, Peru, where, at the request of the Peruvian government, he has spent almost three years investigating the death-rate of about 50 per 1,000 and instituting sanitary reforms. Yellow fever and hookworm were the diseases responsible for the greatest amount of the mortality and morbidity. His work was hampered by lack of hospital facilities. Before he left, however, he had succeeded in reducing the death-rate to 21 per 1,000 and had established a well-equipped clinic.

## WAR NOTES

**Lack of Medical Supplies in Servia.**—Servian hospitals are said to have run short of anesthetics early in November. There is also a shortage of surgical instruments in the field hospitals.

**Queen Visits War Hospital.**—Queen Mary of England visited the American Hospital at Paignton, England, November 29, and commended most highly the administration of the institution.

**Graduating Class Volunteers as a Body.**—Every member of the graduating class of the medical school connected with Dalhousie University, Halifax, N. S., has volunteered for service in the European war.

**More Surgeons Needed for Russians.**—In response to an appeal from Russia for surgeons, the American Red Cross has arranged to send two more surgeons to reenforce the units already on duty with the Russian forces.

**Anesthetics Still Needed.**—The British War Relief Association, Washington, has sent five cases of chloroform to the American ambassador in Paris, and letters from France appeal for still further contributions for anesthetics.

**Scientist Taken Prisoner.**—Dr. Albert Calmette, director of the Pasteur Institution at Lille, a staff officer in the French medical service, who has been missing for some time, is now said to be a prisoner of war at Munster, Westphalia.

**Decorations for German Medical Officers.**—The *Münchener med. Wochenschrift,* November 10, states that the iron cross has been conferred on 920 physicians to date. The iron cross of the first class was awarded during the Franco-Prussian War only to Langenbeck, Wilms and Bardeleben.

**Change from Quarterly to Monthly.**—On account of the rapid increase of membership of the American Red Cross and the broadening of its field of usefulness, the *American Red Cross Magazine* will hereafter be issued monthly instead of quarterly, beginning with the January number.

**Medical Officers in German Army.**—The surgeons with the German army rank as officers and are entitled to wear sidearms. The authorities have also recently announced that civilian medical men serving in the field are entitled to a pension if incapacitated by wounds or sickness and the family to a pension in case of death.

**Dissolution of the International Public Health Office at Constantinople.**—Our German exchanges state that the government of Turkey has suspended the operations of the *Internationale Sanitätsrat* and invited the members to join the medical corps of the Turkish army. The International Health Office was mainly engaged in supervising the pilgrimages to Mecca and preventing the importation of epidemic disease into Europe.

**War News In Germany.**—Germany seems to be in part shut off from communication with France and England. According to the *Deutsche med. Wochenschrift* of November 12, nothing has been heard from its London correspondent since the war began, and its Paris correspondent is at work in an ambulance in Germany. It reproduces entire the long Paris Letter in The Journal of September 19, and the London Letter in the issue of September 26. War makes strange arrangements necessary and it is interesting to find a German periodical printing from an American publication news of English and French activities.

**Clothing Gifts for Europe.**—The American National Red Cross requests that all gifts of clothing, and hospital garments and supplies for the distressed people of Europe, be forwarded freight prepaid, to the American Red Cross, Bush Terminal, Thirty-Ninth Street and Second Avenue, South Brooklyn, N. Y., and that the Bureau of Medical Service, Washington, be notified of the number of suit cases, packages, etc., with approximate contents and day on which they were forwarded. Bills of lading should be sent to the address at South Brooklyn. Second-hand clothing is not acceptable, but new clothing, hospital garments and hospital supplies, such as sheets, pillow cases, towels, etc., are always useful.

**Behring and Metchnikoff.**—Metchnikoff will be 70 years old next year, and a *Festschrift* for him has been in preparation at Paris for this anniversary. Behring had intended to contribute an article to it, but the breaking out of the war prevented his article reaching the publishers on time, that is, before September 1. He now publicly announces (November 12) that he hopes "before the anniversary in question, next May, to manifest in some other way my respect and unwavering friendly sentiments for Metchnikoff on the occasion of his seventieth birthday." Metchnikoff is a Russian, and has devoted the last twenty-six years of his life to research at the Pasteur Institute at Paris. His discovery of the phagocyte was made before he went to Paris. Like Pasteur, he never completed the medical course.

## LONDON LETTER

London, Nov. 15, 1914.

### The Kind of Nurses Wanted at the Front

Sir John French has made it known that no one is wanted near the fighting line except fighting men and fully trained men and women pledged to devote themselves to the duty of healing and nursing the wounded for the duration of the war. The amateur nurse is of no use there. He very wisely adds that women who want to enlist in the great army of nurses that will be needed before the war is finished should be learning their profession at home till their services at the front are asked for. "The standard of British hospitals here," he is reported by the special correspondent of the *Daily Call* as saying, "is so high and admittedly so far above that of all the rest, that women chosen to serve with British comrades on this side of the channel should lack no qualification she can with diligent effort acquire. The thoughtful skill of a few seconds may save a life. There is never a moment to be lost in these crowded nights when the lives of a hundred poor victims hang by a thread and the watchful zeal of a patient, resourceful woman alone can avail." Sir John French concludes with the warning that it is time that every woman in Britain who has intelligence and the requisite earnestness should begin, if she has not yet done so, to learn the elements of nursing, if only "first aid," for the war must be long and there will be many gaps to fill.

### Aid for Our Belgian Colleagues

Physicians have suffered like the rest of the Belgians, and those who have survived have been completely ruined. According to Professor Jacobs of the University of Brussels, who is now in this country, some have had to work as navvies in order to obtain a few pence. Others have not seen bed for a fortnight and have lived exclusively on potatoes. Some have had a bunch of straw and lie on the ground, and they and their children are dressed in rags. A professor of a university was bereft of everything and in dire want of a bed. Another was seen wandering haggard over the countryside searching in vain for his family. Some have been taken as hostages; others have been shot and their widows and orphans left destitute. Of the 4,800 physicians of Belgium, 1,000 are absolutely destitute and most of the remainder are suffering cruelly. In my last letter I announced the formation of a committee of the leaders of the medical profession for the aid of our Belgian colleagues. It has been decided to dispatch to Belgium packets of medical and pharmaceutical material which will be received by the American ambassador.

The committee appeals to the medical and pharmaceutical professions in this country for funds to enable their Belgian colleagues to begin work as soon as military circumstances permit. It also asks for surgical instruments, not necessarily of the latest pattern. The following are especially required: scissors, dressing and artery forceps, syringes and midwifery forceps. Further, money is wanted to help the refugee physicians and pharmacists in this country who have nothing left in the world. It is proposed to associate our work with corresponding efforts in the United States and other countries. Subscriptions may be sent to Dr. H. A. Des Voeux, 14 Buckingham Gate, London, S. W. Many physicians in this country are offering hospitality to their colleagues, and the British Medical Association has given the use of the office as a clearing house for collecting their names through the *British Medical Journal.*

### Sanatogen and the War

The government has prohibited all trading with the enemy and the carrying on of any business in this country which is the property of enemies resident in Germany. This has proved a blow to one of the most successful of the fraudulent nostrums of the day, Sanatogen. As it is a German preparation it can no longer be sold. An attempt has been made to evade this prohibition. An application was made to the Home Secretary for permission to convert the business into an English limited company. He refused to sanction such an arrangement and directed that steps should be taken to prevent any profits being transmitted to the proprietor during the war. A British company has now been formed for the sale of a product termed "Sanaphos," which is wholly British owned and British made. It is being widely advertised in the daily press as displacing Sanatogen. The public is informed that "Britishers and their allies are now independent of Sanatogen." "All patriotic men and women," it is said, "will welcome an opportunity of obtaining a British product instead of benefiting an alien enemy by taking a German-owned preparation." "Sanaphos is an all-British preparation, and the fact that the company producing it is under the chairmanship of Sir William Taylor, K.C.B., the late Surgeon-General of H. M. forces, and that the article is produced under the direct supervision of a distinguished analyst, are sufficient guarantees of its efficacy and superiority. Sanaphos has its basis in English milk, and, unlike Sanatogen and its imitations it retains all the active enzymes of milk, and is not a mere dried casein preparation. The extravagant prices at which Sanatogen was sold not only enriched its German owner, but prevented its use among those who could not afford such prices. Those who see, in themselves or in members of their families, the results of the new cares, new duties and general strain of war-time, involving nervous or mental depression or physical exhaustion should take steps at once to procure a supply of Sanaphos to be used as an addition to ordinary diet." Evidently the same old game. The Germans have no monopoly in fraudulent claims.

## PARIS LETTER

Paris, Nov. 12, 1914.

### The Waterproofing of Military Clothing

Ever since the war of 1870 chemists have proposed a method of waterproofing military clothing by the use of watery solutions of aluminum acetate. The objection has been raised that the results are not sufficiently permanent, for the waterproofing disappears under repeated friction, as by the straps of the haversack, etc. Moreover, if the metal braid and buttons of the uniform are not detached before the treatment, they will be covered with verdigris; besides the procedure spoils the looks of the clothing, which requires a long time to dry. M. G. A. LeRoy has reported to the Académie des sciences a process of waterproofing which seems free from these objections. It is based on a very light impregnation of the fibers of the cloth with anhydrous wool fat (adeps lanae anhydrosus) dissolved and diluted in a neutral and volatile anhydrous vehicle. Wool fat is first liquefied by means of a little chloroform, carbon bisulphid or carbon tetrachlorid and then diluted and dissolved in automobile gasoline or the benzin employed by cleaners. The proportions employed are from 5 to 10 parts of wool fat and from 90 to 95 of solvent. The whole uniform, with its braid and buttons, is immersed in the liquid for a few minutes, then wrung out and placed in the air to dry. The fat, fixed in the fibers and pores of the cloth on the evaporation of the solvent, cannot be removed by friction like the particles of the aluminum acetate. The waterproofing is perfect and the appearance of the cloth, its porosity, its color and its elasticity are not modified. An important hygienic advantage is that the cloth remains permeable to air and perspiration.

### Treatment of Gangrenous Military Wounds

Apropos of the paper by Professor Quénu on the treatment of gangrenous military wounds by opening up and sterilizing with hot air (The Journal, Nov. 28, 1914, p. 1967), Dr. Paul Thiéry, surgeon of the hospitals of Paris and agrégé of the Faculté de médecine, recommends the use, in serious cases of septicemic military wounds, of hypodermic injections of from 0.01 to 0.02 gm. of pilocarpin repeated daily. The profuse perspiration caused by the pilocarpin, together with the ingestion of abundant liquid, sometimes even with intravenous injection of a physiologic solution of sodium chlorid, produces a veritable lavage of the blood, which is less depressing than bleeding and which relieves the blood of toxins while preserving the blood corpuscles. This procedure is capable of giving good results even in desperate cases. Thiéry insists, moreover, on the necessity of return to the most energetic measures of the old antiseptic surgery (concentrated solutions of zinc chlorid).

## BERLIN LETTER

Berlin, Nov. 3, 1914.

### The War

The effort of the head of the army medical service to care for the enormous number of wounded as quickly and as well as possible has caused the enrolment of a constantly increasing number of physicians in the army. Physicians who belong to the military reserves have already been employed. Physicians who, for physical reasons, have never undergone military service have also been enlisted, in some cases at the seat of war and to a greater extent in the hospitals in their home towns. In this way also some relief has come to many physicians whose practice has been diminished through the departure for the seat of war of a large number of men, among whom are workmen who are exposed to industrial diseases and accidents. This circumstance alone does not explain the fact that many gynecologists and pediatrists complain of a striking lack of professional work; other causes must be found. In the first place, the war may be considered as occupying our minds so completely that in many cases it has crowded out complaints which affect the welfare of men in normal times and cause them to seek medical aid. This applies, particularly, to the large mass of nervous complaints of women but also to the milder organic diseases, which lose importance in comparison with the great tension and the not inconsiderable care for the welfare of the fatherland and for relatives in the field. In addition, there is doubtless an economic factor, the necessity to limit expenses as much as possible in view of the lessened income. Even in times of peace, physicians are well acquainted with the fact that avoidance of a physician's fee is regarded as preferable to the restriction of food or similar demands. Finally, there has been no epidemic of importance. While in autumn, we are often enough sufferers from measles, scarlet fever, typhoid, etc., these diseases so far have not appeared in any notably greater degree than in the summer months.

### Epidemic Diseases

From the point of view of the public health and the psychic and economic life of our city, the absence of epidemics is most gratifying. Their importation, so liable to occur in war, has not taken place. In this respect we are better off than our ally, Austria-Hungary. There an invasion of cholera has occurred, both from the Servian and the Russian troops; in Hungary and Galicia several hundred cases have been observed. In view of the nearness of the two allied countries, of course, the danger for us of seeing the unbidden guest on our boundaries is not slight. But we may hope that the excellent organization of our sanitary service will be able even under the present serious condition to protect our boundaries, and even if a transmission of the disease should occur, to restrict it to sporadic cases. Although the war has already lasted three months, and the conditions of the weather in the last month have not been favorable, other war pestilences which, in former times, have demanded an enormous number of victims, so far have not occurred to an extent worth mentioning. Already in the East, where we have come into such unpleasant contact with the permanent epidemic foci of Russia, the number of typhoid cases observed is so small that it has scarcely exceeded the first hundred, and in the same manner dysentery is confined to very moderate limits. It is noticeable, moreover, that affections of the intestine accompanied by bloody diarrhea have been observed in which the germ of dysentery could not be demonstrated. In the West, the prevalence of typhoid seems to be somewhat more marked, but there also are apparently only a few hundred cases, which is also true of dysentery. Whether the typhoid preventive vaccination, which has been carried out to a great extent in our various armies, is of any essential importance in causing this restriction of typhoid, cannot at present be decisively determined. In this respect, a more definite idea will be obtained by comparison of the typhoid cases which occur without prophylactic inoculation with those which occur in spite of it. Small-pox has not hitherto been observed. This fact is not remarkable, for our army, even in time of peace, has been free from small-pox and now all troops have been vaccinated previous to going to the front. Moreover, among the French, vaccination has been better carried out than in the war of 1870-1871; at that time, as is well known, both the civil population and also the army was attacked with small-pox and many deaths occurred in the army. Also among the French prisoners of war who were confined in Germany, small-pox prevailed at that time to a considerable degree, and the disease was communicated by them to the German civil population.

### The Number of Wounded

It is not generally known to what extent the weather has had an influence on the origin of colds, especially on pneumonia. So far as I know, large numbers of these cases have not been observed in the hospitals. An estimate of the number of wounded can be made from Berlin alone, where, in the hospitals and in the private clinics, casinos, restaurants and other buildings devoted to hospital purposes, more than 12,000 beds for the wounded have been provided. The arrangements are in general, as I have been able, personally, to convince myself, of the model kind. Even the improvised hospitals have quickly met the highest demands for comfort and for the care of the sick. Roentgen apparatus is generally in use with good operating rooms, individual rooms, etc. The course of wounds and diseases remains in general very favorable, and even severe wounds heal in part without disturbance of function, and the convalescents are anxious to return to the front as soon as possible. In this way, place is found for fresh cases. As I learn, 5,073 men have been already dismissed from one of the Berlin convalescent stations since its institution, August 30. Of these, 1,899 (37.5 per cent.) went immediately to the front, 2,854 (56 per cent.) were transferred to the reserve department of the army and only 322 (6.5 per cent.) were incapable of service. As the reserve department of the army naturally very soon dismisses to the front the majority of those sent to it, and as the figures quoted refer only to one of the many stations for those slightly wounded, an approximate estimate may be made of the enormous number of wounded and sick soldiers who have recovered and who are now fighting again in the ranks of the army. The same is true of the hospitals of other countries, and thus it is possible for the stream of transports for the wounded to pass without disturbance and without stopping, from the field of battle to their homes where, it is easy to understand, the patients are better taken care of than in the field hospitals. It is also evident that in this way the origin and spread of diseases is limited. Recovery also is favored by the better provisions for nursing in the home towns. Several head surgeons of the hospitals have described to me how the wounded who were brought here directly from the field of battle and who came here exhausted, not only as the result of their wounds but also from the severe strain of the battle, took a new appearance of life after twenty-four hours of rest in a good bed and careful feeding and were scarcely recognizable. Everything that human care and gratitude is capable of is done for the restoration of the wounded. It is touching and inspiring to see how rich and poor, high and low, compete to show their love for those who have given their blood for the fatherland. In the hospitals, concerts are given by noted artists, declamations, humorous performances and, of course, divine service—everything that will have a favorable psychic influence on the sick. If they are able to go they are taken to the theater, to the zoological gardens and to other places of recreation. One might almost get the impression that the wounded were being coddled and that they would feel so much the more severely the contrast between the agreeable home land and the rough war to which they return. However, this objection is of little consequence in comparison with the strengthening of the spirit which must be accomplished by the activity in the general undertaking. That this activity for our soldiers is expressed also by the amount expended for presents is natural.

## Marriages

Kenna Jackson, M.D., Richwood, W. Va., to Miss Neva Bernice McMillion of Love Ridge, W. Va., at Washington, D. C., November 4.

Mary Catherine Couch, M.D., Chicago, and Mr. Tomas T. Mora of Fajardo, P. R., at Rio Piedras, P. R., November 19.

Lieut. George Corwin Beach, M. R. C., U. S. A., to Miss Jessie Spencer of National Soldiers Home, Va., November 16.

Rafe Chester Chaffin, M.D., Los Angeles, Cal., to Miss Marion Quinn of Ottawa, Ont., at Los Angeles, November 17.

Walter Chafey Moodie, M.D., Newcastle, Neb., to Mrs. Mabel Odom of Walthill, Neb., at Macy, Neb., November 7.

Colonel James Edson Miller, M.D., Brooklyn, N. Y., to Miss Lucy Regina Berry of New York City, November 14.

Harry Leslie Franklin Locke, M.D., to Miss Katherine Elizabeth Entress, both of Hartford, Conn., November 11.

Thomas Francis Henry, M.D., Salem, Mass., to Miss Jennie Frances Moore of Woburn, Mass., November 11.

Charles Patton Blair, M.D., Monmouth, Ill., to Miss Lena Blanche Wilson of Des Moines, Ia., October 10.

Ernest Henry Gruening, M.D., Boston, to Miss Dorothy Elizabeth Smith of Norwood, Mass., November 19.

William George Patton, M.D., to Miss Emma Elizabeth Giessing, both of Farmington, Mo., November 17.

Charles Hartwell Cocke, M.D., Asheville, N. C., to Miss Amy Grace Plank of Philadelphia, November 12.

Robert Vincent Williams, M.D., to Miss Matilda Reinhart, both of College Point, N. Y., November 19.

Lieut. Chester R. Haig, M. C., U. S. A., to Miss Hilda Morse of Merchantsville, N. J., November 11.

Charles P. Renner, M.D., to Miss Gertrude Harst, both of Belleville, Ill., at St. Louis, November 17.

Herbert C. Blake, M.D., Baltimore, to Miss Helen Niely of Paradise, Catonsville, Md., November 14.

Claude Carlisle Caylor, M.D., to Miss Alice Donnelly, both of Washington, D. C., November 18.

Walter Wilson Griffin, M.D., Manhattan, to Miss Mattie Fox Vaughan of Brooklyn, November 16.

Henry Gifford Bull, M.D., Ithaca, N. Y., to Helen Dudley, M.D., of Brooklyn, November 21.

Clyde Earl Wilson, M.D., to Miss Caroline Grace Geyman, both of Blue Earth, Minn., November 12.

Robert Emmett Flannery, M.D., to Miss Mary Kearns Black, both of Chicago, November 11.

## Deaths

**Charles Wood McMurtry, M.D.** Harvard Medical School, 1897; a Fellow of the American Medical Association; a member of the New York Academy of Medicine and many dermatological societies; instructor in dermatology in the College of Physicians and Surgeons in the City of New York; assistant dermatologist to the Vanderbilt Clinic and St. Luke's Hospital, New York City; for eleven years connected with the Dermatological Clinic at Breslau, Germany; died at his home in New York City, November 26, after an operation for appendicitis, aged 42.

**Henry X. Bonebrake, M.D.** Bellevue Hospital Medical College, 1865; a Fellow of the American Medical Association and formerly president of the Medical Society of Franklin County; for many years in charge of the State Tuberculosis Dispensary, Chambersburg, Pa.; visiting physician to the Chambersburg Hospital and Franklin County Almshouse, and county inspector for the State Department of Health; died November 22, at the State Sanatorium, Markleton, Pa., from chronic nephritis and arteriosclerosis, aged 71.

**Sherbourne William Dougherty, M.D.** University of Pennsylvania, Philadelphia, 1894; a Fellow of the American Medical Association; instructor in physical diagnosis in his Alma Mater and chief of the medical clinic at the German Hospital, Philadelphia; later assistant physician at the Methodist Hospital and physician to the Society for the Prevention of Cruelty to Children; died at the home of his sister in Philadelphia, November 23, aged 45.

**William Wightman Mangum, M.D.** Atlanta (Ga.) Medical College, 1893; a member of the Medical Association of Georgia; and formerly president of the Butler County, Ala., and Floyd County, Ga., medical societies; local surgeon at Rome, Ga., for the Nashville, Chattanooga and St. Louis Railway; medical director of the Cherokee Life Insurance Company; died in the Grady Hospital, Atlanta, Ga., November 18, aged 47.

**Clark M. Galloway, M.D.** Medical College of Ohio, Cincinnati, 1877; of Xenia, Ohio; a member of the Ohio State Medical Association; chief of staff of the Old Sailors' and Soldiers' Home, Xenia; a veteran of the Civil War, and medical director for the Department of Ohio of the Grand Army of the Republic in 1890-91; died at the home of his brother in Dayton, November 20, aged 70.

**James W. Gaines, M.D.** Medical College of Ohio, Cincinnati, 1886; a Fellow of the American Medical Association; professor of otology in the Medical Department of the University of Kansas; laryngologist and rhinologist to St. Joseph's Hospital, Kansas City, Mo., and consultant to St. Margaret's Hospital, Kansas City, Kan.; died at his home in Kansas City, Mo., November 22, aged 51.

**William Henry Baker, M.D.** Harvard Medical School, 1872; founder of the Gynecological School for Advanced Students at Harvard; founder of the Free Hospital for Women, Brookline, Mass., and surgeon emeritus of that institution; a member of the Massachusetts Medical Society; died at his home in Waltham, November 26, from heart disease, aged 69. (Bu)

**Evan Cameron, M.D.** Medical School of Maine, Brunswick, 1869; Bellevue Hospital Medical College, 1872; of Elyria, Ohio; a Fellow of the American Medical Association; founder and formerly president and treasurer of the Lorain County Medical Society and coroner of Lorain County; died in the Memorial Hospital, Elyria, October 8, from pneumonia, aged 65.

**James Leeworthy Camp, M.D.** Rush Medical College, 1879; a member of the Minnesota State Medical Association and of the Advisory Commission of the Minnesota State Sanatorium for Tuberculosis, Walker; for thirty years a resident of Brainerd, Minn.; was found dead in his bed in Brainerd, November 22, from heart disease, aged 59.

**Harold Willis Hartwell, M.D.** University of Michigan, Ann Arbor, 1883; New York Homeopathic Medical College, New York City, 1884; died at his home in St. Louis, November 17, from heart disease, aged 56.

**Philip G. Creveling, M.D.** Pennsylvania Medical College, Gettysburg, 1858; for more than half a century a practitioner of New Jersey; died at the home of his daughter in Broadway, N. J., November 5, aged 80.

**Andrew S. Low** (license, years of practice, Pennsylvania, 1888); for forty-three years a practitioner of Pennsylvania and a veteran of the Civil War; died at his home in Philadelphia, November 9, aged 77.

**J. M. Pounds,** a pioneer practitioner of Hays County, Texas, and a veteran of the Mexican and Civil wars; died at his home near Dripping Springs, Texas, October 20, from arteriosclerosis, aged 87.

**Andrew J. Jackson, M.D.** University of Buffalo, N. Y., 1873; a Fellow of the American Medical Association; died at his home in Matawan, N. J., November 17, from pneumonia, aged 72.

**Thomas W. Botkin** (license, Indiana, 1897) for forty-five years a practitioner of Farmland, Ind.; died at the home of his son in that place, November 19, from cerebral hemorrhage, aged 70.

**James C. McIntosh, M.D.** University of Pennsylvania, Philadelphia, 1846; one of the oldest practitioners of Knoxville, Tenn.; died at the home of his son in that city, November 8, aged 89.

**J. H. Sensabaugh** (license, Tennessee, 1889); a Confederate veteran and formerly a clergyman of the Methodist Episcopal Church; died at his home in Knoxville, November 8, aged 69.

**Erving Asa Libbey, M.D.** Medical School of Maine, Portland, 1897; a member of the Providence (R. I.) Medical Society; died at his home in Cranston, R. I., October 7, aged 39.

**O. M. Humston, M.D.** Louisville (Ky.) Medical College, 1874; a member of the Kentucky State Medical Association; died at his home in Campbellsburg, Ky., November 14, aged 63.

**Samuel P. Brundige, M.D.** Medical College of Ohio, Cincinnati, 1872; a veteran of the Civil War; died at his home in Marion, Ind., November 10, from cerebral hemorrhage, aged 77.

**Isaac N. Smith, M.D.** Medical College of Ohio, Cincinnati, 1874; of Greenfield, Ohio; died at the Good Samaritan Hospital, Cincinnati, November 6, from carcinoma, aged 67.

**Charles S. Morris** (license, Colorado, ten years practice, 1900); formerly of Snyder and Julesburg, Colo.; died in his home in Brush, November 11, from pneumonia, aged 70.

**Charles Eugene Harvey, M.D.** Bellevue Hospital Medical College, 1889; Medical School of Maine, Brunswick, 1889; died at his home in Bristol, Vt., September 26, aged 51.

**Alexander McCully, M.D.** Washington University, St. Louis, 1902; formerly of Wellsville, Mo.; was found dead at his home in Nooksack, Wash., October 27, aged 36.

**Carl Edward Maaser, M.D.** University of Iowa, Iowa City, 1914; of Waverly, Ia.; died in the General Hospital, Montreal, Que., October 18, from septicemia, aged 26.

**Thomas W. Hightower, M.D.** Southern College of Medicine and Surgery, Atlanta, Ga., 1914; died at his home in Atlanta, August 18, from pneumonia, aged 32.

**Daniel Kingsbury, M.D.** Metropolitan Medical College, New York City, 1852; died at his home in Glastonbury, Conn., November 16, from senile debility, aged 86.

**Pierce Tyrrell, M.D.** Eclectic Medical Institute, Cincinnati, 1866; one of the oldest practitioners of Illinois; died at his home in Elgin, November 19, aged 85.

**Robert Emmett Foley, M.D.** Bennett Medical College, Chicago, 1880; died at his home in Stockton, Cal., October 28, from disease of the heart and liver.

**Allen J. Alston, M.D.** Howard University, Washington, D. C., 1890; a colored practitioner of Boynton, Okla.; died at his home in that place in August.

**Joseph R. Blackford, M.D.** University of Tennessee, Nashville, 1895; died at his home in Linton, Ky., November 4, from cerebral hemorrhage, aged 42.

**Charles M. Eaton, M.D.** Medical College of Indiana, Indianapolis, 1878; died at his home in Robinson, Ill., September 10, from nephritis, aged 68.

**Joseph Lowman Campbell, M.D.** Western Pennsylvania Medical College, Pittsburgh, 1889; died at his home in Chicora, Pa., November 9, aged 53.

**Thomas Rud Wingo, M.D.** Jefferson Medical College, 1860; a Confederate veteran; died at his home near Trezevant, Tenn., November 5, aged 88.

**Alonzo William Morelen, M.D.** Medical School of Maine, Brunswick, 1902; of Cherryfield, Maine; died in Bangor, Maine, October 11, aged 43.

**B. Blake Minor, Jr., M.D.** McDowell Medical College, St. Louis, 1866; died at his home in Beaumont, Texas., November 1, from cerebral hemorrhage.

**Thomas M. Howard, M.D.** Louisville (Ky.) Medical College, 1878; died at his home in Boonville, Ind., November 17, from asthma, aged 68.

**Milton Covert** (license, Ohio, 1896) for twenty-six years a practitioner of Youngstown, Ohio; died at his home, November 15, aged 61.

**James William Bryant, M.D.** University of Louisville, Ky., 1873; died at his home in Lyerly, Ga., November 10, from tuberculosis, aged 54.

**Amos H. Farrish, M.D.** Atlanta (Ga.) College of Physicians and Surgeons, 1901; died at his home in Perry, Ark., November 3, aged 45.

**Thomas N. Moxon, M.D.** Central Medical College, St. Joseph, Mo., 1896; died at his home in Salida, Colo., November 8, aged 50.

**Elmer Dallus Snyder, M.D.** Louisville (Ky.) Medical College, 1892; died at his home in Radnor, Ind., September 5, aged 49.

**Joseph Arrington Blick, M.D.** Jefferson Medical College, 1859; died at his home in Petersburg, Va., November 3, aged 78.

**John S. Wilson** (license, Missouri, 1883); died at his home in Deepwater, Mo., November 8, aged 66.

**Jason Roberts, M.D.** Medical College of Ohio, Cincinnati, 1865; died at his home in Osceola, Ia., November 5, aged 77.

**James Leslie, L.R.C.S. Edin.,** 1858; died at his home in Hamilton, Ont., October 18, aged 82.

# *The Propaganda for Reform*

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

## THE EDITORIAL DR. JEKYLL AND THE ADVERTISING MR. HYDE

While The Journal has devoted more space to criticizing the lack of consistency between the editorial and advertising departments as it appears in medical journals, its existence in the lay press has not been overlooked. Franklin P. Adams who conducts a "colyum"—"The Conning Tower"—in the New York *Tribune* thus sums up the case as it applies to newspapers:

The Double Standard

"Important is the nation's health
Naught is the question of the shekel.
Ill fares the land that worships wealth!"
Says Editorial Dr. Jekyll.
**"Do you get up with pains or cricks?**
**Do you have stitches in the side?**
**BUY DR. KILLMAN'S VI-TE-LIX!"**
Says Advertising Mr. Hyde.

"Down with the greedy grafters who
The land's escutcheon do bespeckle!
Three cheers for the Red, White and Blue!"
Says Editorial Dr. Jekyll.
**"Does zero weather give you chills?**
**Insomnia leave you weary-eyed?**
**BUY PHAKEM'S PHONY PURPLE PILLS!"**
Says Advertising Mr. Hyde.

"Better than gold an honest name."
"Be true, and let the envious heckle."
"Be fair, whoever wins the game,"
Says Editorial Dr. Jekyll.
**"Lost energy? Ambition? Calm?**
**GET DR. FIERCE'S GILDED GUIDE**
**REMEMBER BIDDY BUNKEM'S BALM!"**
Says Advertising Mr. Hyde.

## ARTICLES REFUSED RECOGNITION

### Reports of the Council on Pharmacy and Chemistry

[Below appear abstracts of the Council's action on articles refused recognition which were not deemed of sufficient importance to require a lengthy report. Articles with the titles starred will be printed in full in the Reports of the Council on Pharmacy and Chemistry for 1914. A reprint of any of these unabridged reports will be sent on receipt of a two cent stamp. Previous instalments of abstracts appeared in The Journal, November 14 and November 21.]

### Alborum

The Whitehouse Chemical Company, Inc., Lynchburg, Va., gives the ingredients of Alborum (without specifying the proportions), as boric acid, alum, phenol and oil of peppermint, and its properties as antiseptic, germicide, deodorant, astringent, hemostatic and prophylactic. The manufacturers recommend it:

> ". . . In the treatment of Leucorrhoea, Pruritus, Vaginal Catarrh, Gonorrhoea, Inflammation of the Genital Organs, and the various Diseases of the Vagina and Uterus . . . In burns, irritable painful lacerations, and in infected wounds, Alborum is often very serviceable."

Such recommendations for its use can only result in injury to the public health. The preparation lacks originality and is unscientific; its exploitation for the purposes suggested in the advertising matter submitted is contrary alike to the best interests of the public and to scientific medicine. The Council, therefore, held Alborum to be ineligible for inclusion with either New and Nonofficial Remedies or the appendix.

The Council's action was transmitted to the Whitehouse Chemical Co. for comment. Instead of objecting to the report, the company asked the Council to "cancel" the application for the examination of the product. Believing that the medical profession is entitled to the facts in the case the Council directed publication of this report.

### Betul-ol *

Betul-ol (E. Fougera and Co., New York) is a methyl salicylate preparation advertised to physicians (and indirectly to the public) as an external analgesic and antirheumatic. The statements regarding its composition are vague, misleading and, as shown by examination in the Chemical Laboratory of the American Medical Association, untrue. The therapeutic claims are based on discarded theories. Although the alleged superiority of natural over synthetic salicylates has been disproved, physicians are urged to use Betul-ol because it contains, or is alleged to contain, a natural salicylate. Another discarded theory is pressed into service in the claim that the chloral in the mixture will be absorbed and converted into chloroform in the blood. The recommendations for the use of Betul-ol in rheumatism are likely to lead the public to the self-treatment of rheumatism. In view of the serious complications and sequelæ of rheumatic fever this recommendation is utterly unjustifiable and a danger to public health—even if the external application of this mixture in uncertain doses were as effective as a proper internal use of salicylates—a theory contrary to experience and unsupported by adequate evidence.

### Cystogen, Cystogen Aperient and Cystogen-Lithia*

Cystogen is the therapeutically suggestive name applied to hexamethylenamin by the Cystogen Chemical Company. While investigation has shown that hexamethylenamin yields formaldehyd only in the presence of an acid and consequently can produce an antiseptic effect only in the gastric juice and in the urine, it is claimed that Cystogen is an "intestinal antiseptic" and that it "bears its disinfectant and antitoxic qualities into well-nigh every important bodily cavity."

As the sale of a simple drug even with the aid of the most extravagant claims probably did not offer sufficient opportunity for an extensive proprietary propaganda, the Cystogen Company has put out two other preparations, Cystogen Aperient and Cystogen-Lithia, and finds it an easy matter by means of extravagant claims, unwarranted assertions and pseudo-scientific arguments to recommend the use of one or another, or often all three, in a well-nigh endless number of diseases.

As the continued patronage of the medical profession cannot be relied on for proprietaries of this sort, the Cystogen Chemical Company takes good care that every Cystogen prescription is likely to spread the Cystogen gospel among the people. The Council has directed publication of its report on the Cystogen products to call attention to the way in which a simple drug of established value may be made the basis of an extensive proprietary propaganda. A conservative discussion of the action of hexamethylenamin appears in the Council's publication "Useful Drugs."

### Cysto-Sedative

Cysto-Sedative is sold by Strong, Cobb and Company, Cleveland, Ohio, with the claim:

> "Each fluid ounce represents:
> Thuja Occidentalis, 3½ grains.
> Pichi, 18 grs.
> Saw Palmetto berries, 36 grs.
> Triticum Repens, 36 grs.
> Hyoscyamus 8 grs.
> All inert extractive matter being eliminated."

The therapeutically active constituents of arbor vitæ, pichi, saw palmetto and couch grass have never been isolated—indeed, it has not been proved that all of these drugs contain any therapeutically active constituents. Yet the absurd claims are made that all inert matter has been eliminated and each lot of drug used in the preparation of Cysto-Sedative is "tested in reference to its medicinal activity." Equally preposterous is the claim:

> "In formulating Cysto-Sedative each drug entering into its composition was subjected to careful study clinically to determine the exact proportion required when combined to increase their efficiency as a whole. Cysto-Sedative is scientifically prepared, the proportion of each individual drug being so finely adjusted as to increase their therapeutic action in the conditions for which they are intended, forming a preparation always reliable and of the very highest medicinal activity."

Some other extravagant claims made for this complex unscientific mixture are:

> "It gives relief in almost every form of cystitis and prostatitis . . ."
> "The best results are obtained in the worst chronic cases of cystitis and prostatitis . . ."
> "In Cystitis, Urethritis, Prostatitis, Inflammation of the Vesicle Neck, complicated with Gonorrhoea, Enuresis, Painful Micturition, the action of Cysto-Sedative is prompt."

The Council voted that Cysto-Sedative be refused recognition.

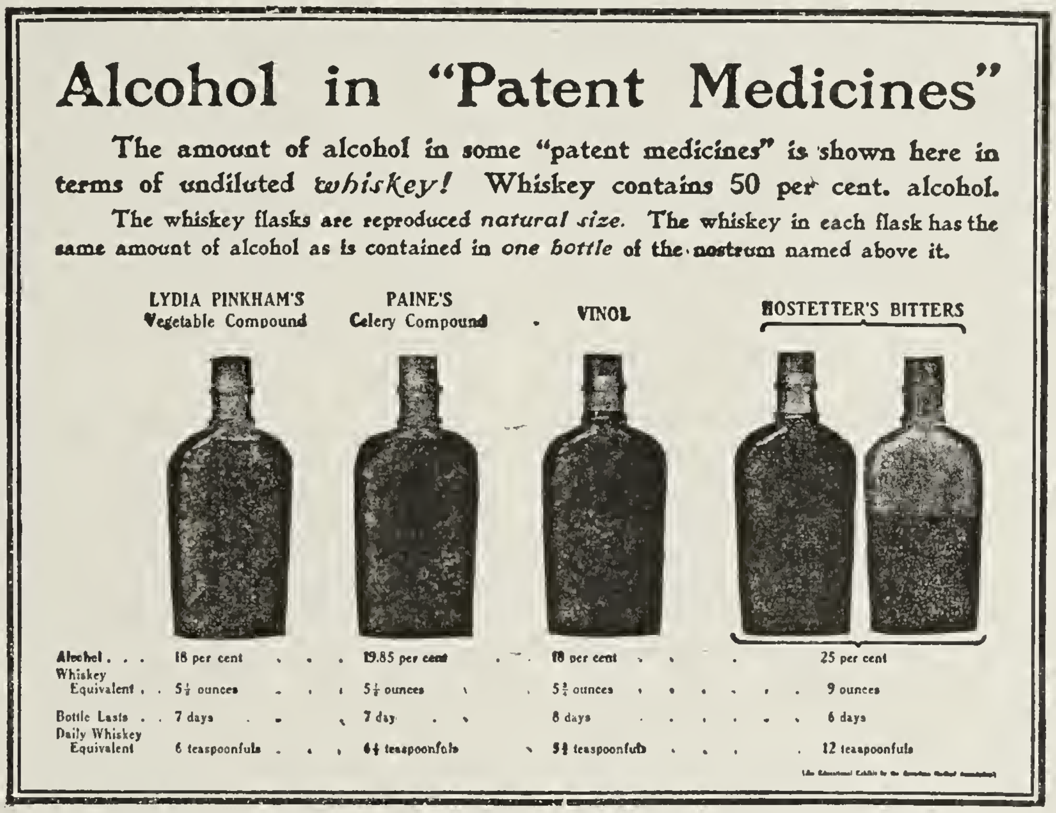
### Ergoapiol*

Ergoapiol (Martin H. Smith Co., New York) is a mixture put up in capsules each of which is said to contain

| | | |
|---|---|---|
| Apiol (Special M. H. S.) | 5 | grains |
| Ergotin | 1 | grains |
| Oil Savin | ½ | grain |
| Aloin | ⅛ | grain |

Examination discloses the fact that, contrary to the claim made, each capsule, instead of containing 5 grains of Apiol, really contains some liquid preparation of the type of oleoresin of parsley seed. Ergoapiol is recommended (on the label) for such diseases as "Amenorrhea, Dysmenorrhea and other Menstrual Disorders," while a circular enclosed in the package contains many suggestions that may be counted on to lead to its indiscriminate and uncritical use.

Ergoapiol is an unscientific, shot-gun mixture of drugs having widely different therapeutic effects. Where the action of parsley is desired, the effects of ergot would ordinarily, be contra-indicated; furthermore, neither aloin or savin would be called for in conditions that demanded the effects of apiol. It would be impossible to predict the action of a mixture of this kind in the varying conditions for which its use is advised by the manufacturers. To combine four drugs of dissimilar action in fixed proportions for the routine treatment of conditions which have little in common except that they involve the female generative organs, is unscientific and absurd. The Council refused admission to Ergoapiol.



**Alcohol in "Patent Medicines"**

**The amount of alcohol in some "patent medicines" is shown here in terms of undiluted *whiskey!* Whiskey contains 50 per cent. alcohol.**

**The whiskey flasks are reproduced *natural size.* The whiskey in each flask has the same amount of alcohol as is contained in *one bottle* of the nostrum named above it.**

| | LYDIA PINKHAM'S Vegetable Compound | PAINE'S Celery Compound | VINOL | HOSTETTER'S BITTERS |
|---|---|---|---|---|
| Alcohol | 18 per cent | 19.85 per cent | 18 per cent | 25 per cent |
| Whiskey Equivalent | 5⅓ ounces | 5¼ ounces | 5¾ ounces | 9 ounces |
| Bottle Lasts | 7 days | 7 day | 8 days | 6 days |
| Daily Whiskey Equivalent | 6 teaspoonfuls | 6¼ teaspoonfuls | 5¼ teaspoonfuls | 12 teaspoonfuls |

Miniature reproduction of an educational poster prepared by the Propaganda for Reform Department. Twenty-eight different posters already prepared, illustrate various phases of the evils of nostrums and quackery. In the original the placards measure 22 by 28 inches. A catalog of the complete set will be sent on request.

### Apergols*

Apergols, put out by H. K. Wampole Co., Inc., is alleged to be a "Uterine Stimulant." Apergols is apparently an inversion of the name Ergoapiol and the preparation appears to have essentially the same formula, namely:

| | | |
|---|---|---|
| Apiol | 5 | min. |
| Oil Savine | ½ | min. |
| Ergotin | 1 | gr. |
| Aloin | ⅛ | gr. |
| Aromatics | | q. s. |

As in Ergoapiol, the constituent referred to in the formula as "Apiol" appears to be oleoresin of parsley-seed instead of the definite substance apiol described in New and Nonofficial Remedies. In general the claims made for Apergols are the same as those made for Ergoapiol. The Council refused admission to Apergols because they are advertised indirectly to the public, because of unwarranted therapeutic claims, because of the non-descriptive name and because the product is unscientific.

### Gastrogen Tablets

The Bristol-Myers Co., Brooklyn, N. Y., sells Gastrogen Tablets which are described as "A Neutralizing Digestive" to be "used in connection with Sal Hepatica." Sal Hepatica, it will be remembered, is another product of the Bristol-Myers Company and has been the subject of previous unfavorable comment. The label on a recently purchased package of Gastrogen Tablets contains the following:

> "For gastric distress, weak stomach and dyspepsia, one to two tablets after eating; repeat in half an hour if needed.
> "Also indicated in nausea, flatulence, sour stomach and heartburn."

While these recommendations sound as if they were addressed to the public, Gastrogen Tablets are advertised in medical publications and hence come within the scope of the Council. Gastrogen Tablets are said to be composed of pepsin, calcium carbonate, calcium phosphate and "aromatics." As each tablet, according to the label, contains 7 grains of calcium carbonate (chalk), the recommended dosage would in most cases be sufficient to neutralize the gastric fluids in the stomach and would thus tend to prevent the pepsin from exerting its digestive effects. The means adopted to relieve one symptom of dyspepsia, in other words, defeats the action of the means for relieving the indigestion. The fact is that patients who need an antacid do not need pepsin, while those who need pepsin will be harmed by the administration of an antacid. Gastrologists hold that, except in rare cases, the evidence tends to show that wherever there is a sufficiency of hydrochloric acid there is a sufficiency of pepsin. When pepsin is lacking it should be administered along with hydrochloric acid to make it effective. The Council voted that Gastrogen Tablets be refused recognition.

### Iodalia *

Iodalia is sold by Geo. J. Wallau, Inc., with the claim that because of the peculiar combination in which it contains iodin it is a valuable and efficient substitute for iodids. The preparation was examined in the Chemical Laboratory of the American Medical Association, which reported to the Council that, contrary to claim, iodin in the form present in Iodalia, would when administered, act like an ordinary iodid. Further the proportion of iodin present was so small that to administer the equivalent of 20 grains of potassium iodid it would be necessary to give the contents of a one-dollar bottle of Iodalia. In view of this report it is evident that the claim that Iodalia is "always well tolerated" and that it cannot produce "symptoms of iodism" is true only because of the small percentage of iodin it contains. The claims made in the advertising matter, that Iodalia is an efficient iodin medication in the treatment of syphilis, that it is a suitable substitute for cod-liver oil and that it may be used in anemia, dysmenorrhea, dyspepsia, malaria and diseases of the heart, are entirely unwarranted.

Iodalia is exploited in a way to suggest its use to the public for a host of diseases. Particularly reprehensible are the recommendations contained in a circular which accompanies the trade package that Iodalia:

> ". . . offers the same protection against grippe, bronchitis, pneumonia, tuberculosis, pleurisy and other infectious diseases that vaccine does against small pox . . ."
> "It is also the best preventive against the slight infections and ailments to which debilitated and delicate children are subject."

The Council voted that Iodalia be refused recognition.

### Iodotone*

Eimer and Amend, New York, who market Iodotone, state that it is a solution of hydrogen iodid (hydriodic acid) in glycerin, containing 1 grain of iodin to each fluidounce. The unwarranted assertion is made that Iodotone

> ". . . will produce the constitutional effect of iodine in a shorter time than other preparations . . ."

This cannot be true, for it is certain that, because of the alkaline reactions of the tissues, iodids, whether administered as hydrogen iodid or as alkali iodids, must circulate in precisely the same form and therefore exert the same therapeutic effects in precisely the same way.

Eimer and Amend further assert that the ordinary iodids may to advantage be replaced by Iodotone. The absurdity of this claim is apparent when it is considered that it will be necessary to administer nearly one fluidounce of glycerin to obtain an amount of Iodotone equivalent to a 10-grain dose of potassium iodid. The additional claim that Iodotone will not disturb the stomach or produce the usual disagreeable symptoms of iodism is evidently unwarranted, for it is generally conceded that symptoms of iodism can be avoided only at the risk of insufficient iodin medication. Because of these unwarranted and misleading claims and because the name Iodotone would tend toward the uncritical use of the preparation as a general tonic, the Council voted that Iodotone be refused recognition.

### Nourry Wine*

Nourry Wine (E. Fougera and Co., New York) is a proprietary iodin preparation said to contain 12 per cent. of alcohol and 1½ grains of iodin in combination with tannin to the fluidounce. Experiments made in the A. M. A. Chemical Laboratory demonstrate that the iodin contained in Nourry Wine is present either in the form of iodid ions or in a form very readily yielding iodid ions and that therefore its action will be that of ordinary iodid. Yet a circular asserts:

> "The Nourry Wine is the one preparation . . . able to introduce into the organism the active metalloid liberated little by little from the organic combination . . ."

While Nourry Wine contains but an insignificant proportion of iodin, the circular claims that "Nourry Wine presents a high dose of iodin." Further, the label on Nourry Wine and the circular which is wrapped with it suggests its use in a number of diseases in which iodin medication is considered of minor importance. These recommendations, bolstered up by testimonials from twelve to twenty-five years old, are likely to lead the public if not the medical profession to use this weak iodid wine where efficient treatment is called for. The attempt is made to give a further false value to Nourry Wine in the minds of those who prize everything that is foreign by the suggestion that it comes from France when in reality it is made in New York. In conclusion the Council held that, though the alcohol of the wine is the most potent constituent, the constant use in the advertising matter of the term "Nourry Wine," unqualified by the adjective "Iodinated," was mischievous as likely to lead to the thoughtless use of the preparation in cases unsuitable for iodin medication. The Council refused recognition to Nourry Wine.

## Correspondence

### Postgraduate Study; Foreign Realities Versus American Remedies

*To the Editor:*—We all know the enthusiasm with which American physicians have sought the European clinics of Berlin and Vienna for postgraduate medical work. Hundreds of physicians each year flock thither. They stay varying lengths of time but generally are content with a few weeks or two or three months at the most. To the average layman such study in Europe casts a halo of superiority about the physician possessing it. It is a matter of common parlance to say, "Dr. So and So, yes, he has studied abroad, in Vienna." Most physicians in this country who are doing serious work and who are unable to go abroad for study look on Berlin or Vienna as their Carcassonne. If they never attain it, it remains a source of lasting regret or constant longing. Physicians will often make great sacrifices in order to visit the foreign clinics. Many of them are uncritical and easily persuaded of the tremendous advantages of the work. Some are frankly doing it just for a good time and for the advertisement which they know such a vacation will bring them on their return. But I am convinced that there is an ever-increasing number of physicians who go with all enthusiasm and expectation and who come back disappointed and disillusioned about foreign study. This in no way is a reflection on the medical profession in Germany, for they are only supplying the demand of the American physician and giving him what he wants. Neither does this statement apply to those who spend a year or more in serious work in a foreign clinic. But *they* are relatively few. They generally remain at one clinic and do not put in an appearance at the large centers.

The Germans are just beginning to appreciate American medicine and to read American literature. Why they have been so slow in recognizing the high standard of our work may be partly constitutional, but is, I think, much more directly due to the impression which American physicians studying abroad make. They are undoubtedly not representative of the best in the profession in America. The Anglo-American organization in Berlin and the American Medical Association of Vienna are partly responsible, in that they encourage the quick-lunch variety of study and have so organized special monthly courses for foreigners that it is almost impossible to make the Germans believe that we are not all quasi-quacks. The physician receives his medical pabulum as rapidly and in as large doses as he can pay for it. Go to any lunch counter at home and you may see a similar sight. All the crudities and mannerisms for which we are caricatured are in evidence, from the method of handling table utensils to the manner of stoking food and the peculiarities of our national tastes. Go to Vienna and you can see the same phenomena at the medical lunch counter. Some are there for one month and they gorge themselves, eating much and digesting little. Others are there for the side shows and the beer and take only food enough to get their certificate, which the University of Vienna issues to any one who can pay the price of a course whether he attends or not. Generally courses are served up in German and so rapidly served that the average American loses the meat and gets only the names. Sometimes the attempt is made to furnish English dishes, and then the job is generally botched. The German language alone is an all-sufficient argument against postgraduate study for the average American physician. All the teaching is didactic, and this again condemns it from the point of view of serious work in modern medicine. The laboratory method is after all the only safe one. In Vienna, you find men taking the most indigestible mixtures. Surgeons "brushing up" in neurology, gynecologists taking a little dab from the "Freudian School," many men listening to the refinements of differential diagnosis, who know almost nothing of the fundamentals. Most of the patrons of this great medical lunch counter get wildly enthusiastic, but they understand little of what they are eating and you are reasonably certain that they will have mental indigestion of the worst kind if they do not actually become seasick on their return and lose it all. What few misgivings they may have are obliterated by the general air of enthusiasm and the thought that nobody at home is any the wiser.

Without the slightest danger of being called snobbish, the average American physicians in Vienna most of us wish to avoid. Their absence is more flattering to our pride than their presence. Many of them are avowedly on a vacation. Others frankly say that their community only needs to be told that a man studied in Berlin to increase its respect for him. One man told me that he must visit Berlin before he returned as it was regarded as *the* center in his community. I suggested in joke that it might be enough to ride through and he acquiesced in all seriousness and I afterward learned that he spent one afternoon in Berlin on his way home. Such instances are not uncommon. A larger number, however, are perfectly sincere, but do not recognize how little they are really getting for their money and how infinitesimal is the knowledge which they carry home with them. These physicians go because it is the thing to do and they stay when they get there because they are uncritical and do not realize the absurdity of it all.

Physicians at large do not as yet appreciate the laboratory method in medical education and still cling to didactic teaching. It is a much easier thing to eat a meal set before you than to prepare the meal for your own delectation. But you cannot learn cooking from eating; neither can you learn medicine from hearing it taught.

A further reason for the continued popularity of foreign study is the fact that the general public is also in ignorance of its real value. It is our duty to set the facts before the public and enlighten them so that the name of "specialist" appended to one who has lived in Vienna for a few weeks will not be the open sesame to a lucrative practice.

Our other clear task lies before us: the efficient organization of postgraduate study here at home. We have all the facilities but lack organization. Now that the foreign market is closed, this is not only a duty but an imperative necessity and will be an opportunity for advancement and growth in this country to which the opprobrium of self interest cannot be attached. Whatever outside commercial advantages may come to us through the war they are far less important than the development of our own resources through cooperation and organization within our own borders.

The impetus given to postgraduate education in this country by the European war will be tremendous. Foreign centers of education will inevitably lose prestige. The tide will turn so that we may be the recipients of the European student as we are now of the European laborer.

Let us at once set to work and organize ourselves for this task and give to American physicians practical postgraduate work in *our own* language and with our own *trade-mark*.

Hugh Payne Greeley, Boston.

### Traffic Officers' Neuroses

*To the Editor:*—In looking over medical literature for the past ten years, I can find no records of any trouble with the traffic officer which may be due directly to his occupation. Within the last year a few cases came under my observation, and I will only refer to them here preliminary to a more complete report in the future. It would be interesting to know if men in other cities have observed symptoms similar to those I mention here. This being an age of prevention rather than cure, I believe we may possibly do something for the poor traffic officer who stands on a dusty, busy corner all day long blowing an "ear-splitting," mouth-irritating, and if I may use a harsher term, "saliva-slobbering" whistle. The symptoms reported here usually disappear after the first six months of the officer's duty, with the exception of the chronic bronchitis and tendency to deafness. The syndrome which was uniformly present in the few patients who have consulted me so far is as follows:

Pain in the sternomastoids and soreness in the masseter muscles; also pains radiating to the shoulder via the trapezii, and soreness in the epigastrium, noticed particularly on pressure or when the patient sits down. There was tinnitus aurium and slight deafness. There was ptyalism and mild parotitis, but I could elicit no crepitus in the parotids such as we find in glass-blower's or musician's disease. There was pharyngitis, bronchitis and cough in the morning. All complained of intense hunger, stating that they had to eat five or six times a day. As to the etiology of the foregoing symptoms, I will say without hesitation that the whistle is either directly or indirectly responsible. I believe the pains radiating to the shoulders and back of the neck by way of the trapezii are due to the fact that the officer takes a sudden inhalation before blowing so many times a day, always bringing these muscles into play. The pain in the masseters is due to the officer developing a habit of holding the whistle between his teeth between times.

So far I have found soreness in the epigastrium only in stout men, which I think is due to sudden jarring of the stomach when blowing the whistle. The ptyalism and mild parotitis I think is chiefly due to the parotids and other salivary glands being constantly stimulated by the metal whistle. The tinnitus aurium and slight deafness is probably due to the officer ballooning the ear-drums and eustachian tubes so often during the day, and also to noise. One man, who had been on the force on a prominent corner for seven years, complained of gradual and progressive deafness.

The irritated mouth is directly due to the whistle, and who knows, as those men get older, but that a more malignant trouble may develop? I mean epithelioma of the lip. The bronchitis is due to sudden inhalations of dust particles directly into the bronchi with the mouth open just before the officer blows the whistle.

The hunger is probably due to the ptyalism, and also of course to the officer being in the fresh air.

I will state here that those who have consulted me so far declare that they never had any of those troubles before they became traffic officers, and on resting and withdrawing the whistle for a few days most of the symptoms disappeared.

A. J. Caffrey, M.D., Milwaukee, Wis.

### Crotalin in Epilepsy

*To the Editor:*—The concluding paragraphs of the article on "Crotalin in Epilepsy," by C. L. Jenkins and A. S. Pendleton (The Journal, Nov. 14, 1914, p. 1749), indicate that the convulsions of epileptics are increased by its use and that it has no beneficial effect on the mental condition of the patient. In spite of this, and in spite of the dangers pointed out by Anderson and others, the wording of the authors might be interpreted to mean that they condone or perhaps even invite its use because it satisfies "the abnormal craving for medicine which all epileptics have." I feel certain that this was not their intention, and that they really wished to explain that any apparent benefits are due simply to the psychic effects of "doing something"; but unless they state their position more clearly, it may be feared that it will lead to the uncritical use of crotalin and to the haphazard, ill-considered use of medicine in general. C. W. Stone, M.D., Cleveland.

[This letter was referred to the authors who replied:]

*To the Editor:*—In reply to the comment regarding our paper on "Crotalin in Epilepsy," we wish to say in no uncertain terms that it was not our purpose either to condone or to invite the use of this substance.

The sentence criticized was added to account for the apparently good effects occasionally seen in the beginning of its use in certain isolated cases.

In our experiments we believe that a sufficiently large number of cases were treated over a sufficiently long period to eliminate possible sources of error, and our conclusions as stated were that the drug did harm and, so far as we could determine, no good. The sentence was added as a warning to those who might imagine that they were obtaining good results in the beginning of treatment.

C. L. Jenkins, M.D., and A. S. Pendleton, M.D.,
Raleigh, N. C.

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**The New Conception of the Family Physician.**—While I realize that it is the ultimate aim of public hygiene to make the physician in the sense of a pill peddler superfluous, I appreciate equally well that he will be all the more needed to practice medicine in the modern sense of the word. . . . But where is the field of the general practitioner, I hear some ask. He is the family adviser as he has been in the past but on a more scientific basis—he is the family health adviser if not the family physician and his relation to each of "his families" is even more sacred than in the days of old. He is expected to keep the baby well, not merely to give it medicine when ill; he is called in to examine the children of school age from time to time and to give advice as to their work and play; he is asked to pass on the health of the youthful son and daughter and find out why this loss of weight or want of appetite, and he must keep track of father and mother to see that they do not work and worry so much that their health may be impaired or their lives shortened.—Guy L. Kiefer, *Jour. Mich. State Med. Soc.*

# *Queries and Minor Notes*

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### HAND LOTIONS AND CHAPPED HANDS

*To the Editor:*—Please furnish me a formula for a hand lotion to be used in offices where it is necessary to wash frequently. I do not mean an antiseptic, but something to prevent chapping and irritation of the skin.

R. S. Goux, M.D., Detroit.

Answer.—Hand lotions are generally of two types: (1) glycerin solutions of the glycerin, rose water and benzoin kind, and (2) gelatinous liquids made with tragacanth, quince seed, or some other water-soluble colloid. The glycerin lotions work well with some skins and are the most satisfactory to an occasional individual, but as a rule they are not the best, first, because the glycerin tends to make drier a skin already too dry, and, second, because these lotions have little or no detergent effect and do not clean the skin.

The tragacanth and quince seed lotions are better, and of these the tragacanth lotions are certainly as good as any other and are very cheap and easy to make. A formula for such a lotion given by Pusey is as follows:

| | |
|---|---|
| Tragacanth | gr. 80 |
| Glycerin | ℥ ss |
| Boric acid | ℥ ss |
| Water ....q. s. | Oi |
| Oil of bergamot | ♏ iv |
| Oil of lavender | ♏ ii |
| Oil of rose | ♏ i |

The oils mentioned being added as a perfume might be omitted, one or all of them, according to the wish of the prescriber.

The boric acid, glycerin and waters are first mixed, the tragacanth added and the mixture agitated until the tragacanth is dissolved. This makes a rather thick mucilage; it can be changed to any consistency desired by slight increase or decrease in the amount of tragacanth.

A lotion like this has a considerable detergent effect; it is a tolerable substitute for soap, and if it is freely rubbed over the hands and wiped off, either with or without the use of water, cleans the skin of all but the most tenacious dirt. It, of course, cannot be effectually used as a complete substitute for soap. Such a lotion has the advantage over soap that it not only is not irritating to sensitive skin but also is bland and soothing. It thus tends to prevent and eventually to cure chapping of the hands.

The chief reason for chapping of the hands is the lack of fat in the skin in cold weather. Fat production in the skin is at a minimum in cold weather, because of the diminished sebaceous and sweat secretion. This and the dry air of winter make the skin dry and vulnerable at the very time when the cold air is itself irritating. This combination leads readily to chapping, if the hands must be exposed much to soap and water, and particularly if the irritation of antiseptics is added, as in the case of physicians and nurses.

The first thing to do to prevent or overcome the condition is to supply, by greasing the skin occasionally, the lacking fat in the skin. Almost any bland fat or semisolid hydrocarbon will do for this purpose, but nothing is better than a well-made cold cream. The next and the more difficult thing to do is to avoid soap and water—especially soap—as much as possible; and it is here that hand lotions serve a very useful purpose.

### LITERATURE ON MENSTRUATION

*To the Editor:*—Please let me know of any small works there may be on the subject of menstruation.

D. A. S., M.D., Manitoba.

Answer.—The following is a list of references on this subject:

Jacobi, M.: Question of Rest for Women During Menstruation, G. P. Putnam's Sons, 27 West Twenty-Third Street, New York City, price, $2.

Gengenbach, F. P.: Precocious Menstruation, The Journal, Aug. 23, 1913, p. 563.

Galloway, D. H.: Unique Case of Vicarious Menstruation, The Journal, Nov. 22, 1913, p. 1897.

Dannreuther, W. T.: Corpus Luteum Organotherapy in Clinical Practice, The Journal, Jan. 31, 1914, p. 359.

Mosher, C. D.: Physiologic Treatment of Congestive Dysmenorrhea and Kindred Disorders Associated with Menstrual Function, The Journal, April 25, 1914, p. 1297.

Chisholm, C.: Menstrual Molimina, *Jour. Obst. and Gynec. of Brit. Emp.*, May, 1913; abstr., The Journal, July 26, 1913, p. 309.

Hansen, T. B.: Premenstrual Rise in Temperature, *Beitr. z. Klin. d. Tuberk.*, 1913, xxvii, No. 3; abstr., The Journal, Sept. 13, 1913, p. 903.

Wiese, F. W.: Menstrual Rise in Temperature with Pulmonary Tuberculosis, *Beitr. z. Klin. d. Tuberk.*, 1913, xxvi, No. 4; abstr., The Journal, July 12, 1913, p. 154.

Passow, A.: Psychoses and Menstrual Disturbances, *Med. Klin.*, March 22, 1914; abstr., The Journal, April 25, 1914, p. 1367.

Driessen, L. F.: Necrobiotic Endometritis from Abnormal Menstruation, *Zentralbl. f. Gynäk.*, April 18, 1914; abstr., The Journal, May 23, 1914, p. 1700.

# *Medical Education and State Boards of Registration*

## COMING EXAMINATIONS

Alabama: Montgomery, Jan. 5, 1915. Chairman, Dr. W. H. Sanders, Montgomery.

Alaska: Juneau, Jan. 5, 1915. Sec., Dr. H. C. DeVighne, Juneau.

Arizona: Phoenix, Jan. 5-6, 1915. Sec., Dr. John Wix Thomas, 200 Nat'l Bank of Ariz. Bldg., Phoenix.

Illinois: Chicago, Jan. 13-15, 1915. Sec., Dr. C. St. Clair Drake, Springfield.

Indiana: Indianapolis, Jan. 12-14, 1915. Sec., Dr. W. T. Gott, State House, Indianapolis.

Iowa: Des Moines, Jan. 19-21. 1915. Sec., Dr. Guilford H. Sumner, Capitol Bldg., Des Moines.

Kentucky: Louisville, December 16-18. Sec., Dr. A. T. McCormack, Bowling Green.

Maryland: Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton, Baltimore.

Minnesota: Minneapolis, Jan. 5-8, 1915. Sec., Dr. Thomas McDavitt, 814 Lowry Bldg., St. Paul.

Missouri: St. Louis, December 14-16. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

New Hampshire: Concord, December 29-30. Regent, Mr. H. C. Morrison, Concord.

New Mexico: Santa Fe, Jan. 11, 1915. Sec., Dr. W. E. Kaser, E. Las Vegas.

North Dakota: Grand Forks, Jan. 5, 1915. Sec., Dr. G. M. Williamson, Grand Forks.

Oklahoma: Oklahoma City, Jan. 12-14, 1915. Sec., Dr. John W. Duke, Guthrie.

Rhode Island: Providence, Jan. 7, 1915. Sec., Dr. Gardner T. Swarts, State House, Providence.

South Dakota: Pierre, Jan. 12, 1915. Sec. Dr. P. B. Jenkins, Waubay.

Utah: Salt Lake City, Jan. 4-5, 1915. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Vermont: Montpelier, Jan. 11-13, 1915. Sec., Dr. W. Scott Nay, Underhill.

Virginia: Richmond, December 15-18. Sec., Dr. J. N. Barney, Fredericksburg.

Washington: Walla Walla, Jan. 5, 1915. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

Wisconsin: Madison, Jan. 12-14, 1915. Sec., Dr. John M. Beffel, 3200 Clybourn St., Milwaukee.

### Idaho April Report

Dr. John F. Schmershall, secretary of the Idaho State Board of Medical Examiners, reports the written examination held at Wallace, April 7-8, 1914. The total number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 15, of whom 13 passed and 2 failed. Two candidates were licensed through reciprocity. The following colleges were represented:

| College | Year Grad. | Per Cent. |
|---|---|---|
| PASSED | | |
| University of Colorado | (1912) 80; (1913) | 84.5, 87 |
| George Washington University | (1910) | 89 |
| College of P. and S., Chicago | (1902) | 80 |
| Jenner Medical College | (1897) | 83 |
| Northwestern University | (1909) | 86.7 |
| Rush Medical College | (1904) | 83 |
| University of Illinois | (1913) | 89.9 |
| University of Louisville | (1912) | 82 |
| University of Maryland | (1884) | 88 |
| Detroit College of Medicine | (1895) | 86 |
| Albany Medical College | (1910) | 82 |
| FAILED | | |
| Ensworth Medical College | (1908) | 73.7 |
| Royal College of Surgeons, Edinburgh | (1910) | 71 |

| LICENSED THROUGH RECIPROCITY<br>College | Year Grad. | Reciprocity with |
|---|---|---|
| College of P. and S., Baltimore | (1903) | Utah |
| University of Toronto | (1892) | Utah |

### Georgia June Report

Dr. C. T. Nolan, secretary of the State Board of Medical Examiners of Georgia, reports the written examination held at Atlanta and Augusta, June 3-5, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 80. The total number of candidates examined was 173, of whom 161 passed and 12 failed. Seven candidates were licensed through reciprocity. The following colleges were represented:

| College | Year Grad. | Per Cent. |
|---|---|---|
| PASSED | | |
| Birmingham Medical College | (1913) | 87 |
| Medical College of Alabama | (1896) | 82 |
| University of Alabama | (1914) | 94 |
| Atlanta College of Phys. and Surg. | (1912) | 86, 88 |
| Atlanta Medical College | (1914) | 80, 80, 81, 81, 81, 82, 83, 83, 83, 84, 84, 84, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 86, 86, 86, 86, 86, 86, 86, 86, 86, 87, 87, 87, 87, 87, 87, 88, 88, 88, 88, 88, 88, 88, 88, 88, 88, 88, 88, 88, 88, 89, 89, 89, 89, 89, 89, 89, 89, 89, 89, 89, 89, 89, 89, 89, 90, 90, 90, 90, 90, 90, 90, 90, 91, 91, 91, 91, 91, 91, 91, 91, 92, 92, 92, 92, 92, 92, 92, 92, 92, 92, 93, 93, 93, 93, 93, 93, 93, 93, 93, 93, 94, 94, 94, 95, 95, 96, 96. |
| Atlanta School of Medicine | (1908) 80; (1910) | 80 |
| Georgia College of Eclectic Med. and Surg. | (1914) | 80, 81, 81, 84 |
| University of Georgia | (1912) 84; (1913) 86; (1914) | 81, 84, 85, 86, 86, 86, 87, 88, 88, 89, 89, 90, 90, 92, 92, 93, 93, 94, 95. |
| Bennett Medical College | (1912) | 82 |
| Chicago College of Med. and Surg. | (1913) | 85, 85 |
| Johns Hopkins University | (1913) | 93 |
| University of Maryland | (1913) | 90 |
| New York Homeo. Med. Coll. and Flower Hosp. | (1913) | 87 |
| North Carolina Medical College | (1905) | 82 |
| Medical Coll. of the State of S. C. | (1913) | 90 |
| Meharry Medical College | (1913) 80; (1914) | 80, 80, 81, 83 |
| Memphis Hospital Medical College | (1913) | 82 |
| Vanderbilt University | (1913) | 87, 92 |
| FAILED | | |
| Georgia College of Eclectic Med. and Surg. | (1914) | 65, 69, 71, 73, 73, 74.6, 75, 76. |
| Southern College of Med. and Surg. | (1913) | 74, 76 |
| Knoxville Medical College | (1908) | 71 |
| Meharry Medical College | (1908) | 70 |

| College | LICENSED THROUGH RECIPROCITY Year Grad. | Reciprocity with |
|---|---|---|
| Kentucky University | (1904) | Kentucky |
| Johns Hopkins University | (1911) | Maryland |
| Maryland Medical College | (1908) | Maryland |
| Univ. of Michigan, Dept. Med. and Surg. | (1911) | Nebraska |
| University of Nebraska | (1912) | Nebraska |
| Eclectic Medical College, Cincinnati | (1913) | Missouri |
| Baylor University | (1913) | Maryland |

### Illinois June Report

Dr. C. St. Clair Drake, secretary of the Illinois State Board of Health, reports the written examination held at Chicago, June 23-25, 1914. The total number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 229, of whom 163 passed and 63 failed. Three candidates did not complete the examination. The following colleges were represented:

| College | Year Grad. | Total No. Examined |
|---|---|---|
| PASSED | | |
| Bennett Medical College | (1913, 3) (1914, 11) | 14 |
| Chicago College of Med. and Surg. | (1913, 2) (1914, 39) | 41 |
| Hahnemann M. Coll. and Hosp., Chicago | (1900, 1) (1914, 6) | 7 |
| Jenner Medical College | (1914) | 2 |
| Northwestern University | (1914) | 19 |
| Rush Medical College | (1914) | 15 |
| University of Illinois | (1912, 1) (1914, 57) | 58 |
| Central College of P. and S., Indianapolis | (1897) | 1 |
| Johns Hopkins University | (1914) | 1 |
| St. Louis University | (1914) | 2 |
| Fordham University | (1912) | 1 |
| Ohio-Miami Medical College | (1914) | 1 |
| Western Reserve University | (1914) | 1 |
| FAILED | | |
| Bennett Medical College | (1912, 1) (1913, 1) (1914, 6) | 8 |
| Chicago Coll. of M. and S. | (1909, 1) (1911, 1) (1914, 24) | 26 |
| Hahnemann Med. Coll. and Hosp., Chicago | (1914) | 6 |
| National Medical University, Chicago | (1909) | 1 |
| Northwestern University | (1914) | 3 |
| Reliance Medical College, Chicago | (1911) | 1 |
| Rush Medical College | (1911, 1) (1913, 1) (1914, 1) | 3 |
| University of Illinois | (1914) | 8 |
| Louisville and Hospital Med. Coll. | (1908) | 1 |
| American Medical College, St. Louis | (1914) | 1 |
| St. Louis University | (1914) | 1 |
| Meharry Medical College | (1908, 1) (1914, 3) | 4 |

### Iowa June Report

Dr. Guilford H. Sumner, secretary of the Iowa State Board of Medical Examiners, reports the written examination held at Iowa City, June 11-13, 1914. The total number of subjects examined in was 8; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 53, of whom 52 passed and 1 failed. Seventeen candidates were licensed through reciprocity. The following colleges were represented:

| College | Year Grad. | Per Cent. |
|---|---|---|
| PASSED | | |
| Bennett Medical College | (1914) | 89, 90.1 |
| Chicago Coll. of Med. and Surg. | (1913) 89.6; (1914) | 89.4, 92.7, 93.1, 93.4. |
| College of Phys. and Surgs., Chicago | (1911) | 91.6 |
| Hahnemann Med. Coll. and Hosp., Chicago | (1911) | 80.1 |
| Northwestern University | (1911) 93; (1914) | 86.1, 86.9, 91.6 |
| Rush Medical College | (1911) 92.1; (1912) 85; (1913) 86; (1914) | 88.5, 89.9, 95.6. |
| University of Illinois | (1914) | 95.2 |
| State University of Iowa, Coll. of Med. | (1914) | 85.5, 86.6, 88, 88.2, 88.7, 89.1, 89.4, 91.1, 91.1, 91.4, 92.5, 92.6, 92.9. |
| University of Michigan, Dept. of Med. and Surg. | (1914) | 87.4 |
| American Medical College | (1914) | 90.6 |
| Barnes Medical College | (1899) | 78 |
| Ensworth Medical College | (1914) | 87.5, 89 |
| St. Louis University | (1913) 86.2; (1914) | 87.7, 91.5 |
| Washington University | (1914) | 89.1 |
| John A. Creighton Medical College | (1914) | 86.1, 87.5, 88.1 |
| Western Reserve University | (1914) | 92.7 |
| Jefferson Medical College | (1914) | 84.6 |
| University of Pennsylvania | (1909) | 83.6 |
| Woman's Medical College, Phila. | (1914) | 84.9 |
| Memphis Hosp. Med. Coll. | (1912) | 89 |
| Vanderbilt University | (1910) | 81.5 |
| Western University, Ontario | (1912) | 82.2 |
| FAILED | | |
| St. Louis College of Phys. and Surgs. | (1906) | 70.2 |

| College | LICENSED THROUGH RECIPROCITY Year Grad. | Reciprocity with |
|---|---|---|
| Chicago College of Med. and Surg. | (1910) Colorado; (1913) | Missouri |
| Hahnemann Med. Coll. and Hosp., Chicago | (1912) | Indiana |
| College of Phys. and Surgs., Baltimore | (1912) | W. Virginia |
| American Medical College, St. Louis | (1908) | Missouri |
| Kansas City Hahnemann Medical College | (1912) | Kansas |
| St. Louis University | (1910) | Missouri |
| University Medical College, Kansas City | (1902) (1904) | Kansas |
| John A. Creighton Medical College | (1912) (1913) | Nebraska |
| Lincoln Medical College | (1902) (1904) | Nebraska |
| University of Nebraska | (1913) | Nebraska |
| Starling Medical College | (1898) | Ohio |
| Marquette University | (1913) | Wisconsin |
| Trinity Medical College, Toronto | (1894) | Michigan |

### Kansas June Report

Dr. H. A. Dykes, secretary of the Kansas State Board of Medical Registration and Examination, reports the written examination held at Kansas City, June 9-11, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 24, all of whom passed. Thirteen candidates were licensed through reciprocity. The following colleges were represented:

| College | Year Grad. | Per Cent. |
|---|---|---|
| PASSED | | |
| Chicago College of Medicine and Surgery | (1914) | 82 |
| University of Kansas | (1914) | 78, 81, 81, 82, 82, 82, 82, 83, 85, 85 |
| Ensworth Medical College | (1914) | 75 |
| Kansas City Hahnemann Medical College | (1914) | 77, 79, 79, 79, 79, 81, 82, 85. |
| University of Oklahoma | (1914) | 82, 88 |
| University of Pennsylvania | (1914) | 81 |
| Meharry Medical College | (1913) | 75 |

| College | LICENSED THROUGH RECIPROCITY Year Grad. | Reciprocity with |
|---|---|---|
| Denver College of Medicine | (1899) | Colorado |
| University of Colorado | (1897) | Missouri |
| Rush Medical College | (1912) | Illinois |
| Keokuk Medical College | (1900) | Ohio |
| Barnes Medical College | (1911) | Missouri |
| Kansas City Homeopathic Medical College | (1898) | Missouri |
| Kansas City Medical College | (1895) (1901) | Missouri |
| Univ. Med. Coll., Kansas City | (1901) (1906) (1912) | Missouri |
| Pulte Medical College | (1880) | Nebraska |
| Fort Worth School of Medicine | (1913) | Texas |

# Book Notices

Blood-Pressure: Its Clinical Applications. By George William Norris, A.B., M.D., Assistant Professor of Medicine in the University of Pennsylvania. Cloth. Price, $3 net. Pp. 372, with 99 illustrations. Philadelphia: Lea & Febiger, 1914.

The advance of medical knowledge and the more intimate correlations of experimental and clinical observations are evident in the books recently published on the subject of blood-pressure. The work of Norris is an attempt to exhibit this subject in a thorough manner with reference to its scientific relations. The facts of physiology are briefly given and these are followed by a thorough explanation of the methods of determining blood-pressure. Various instruments are described, the relative advantages of the different methods shown and some advice given as to the choice of an instrument. Venous and capillary pressure are discussed briefly as befits their minor clinical importance. Methods of determining functional efficiency of the circulation are described at considerable length. The rest of the book, comprising about one-half of the volume, is concerned with the clinical applications. Hypotension and hypertension are discussed. Here the author shows his conservatism in that he insists that neither of these conditions is per se an indication for therapeutic interference. Low blood-pressure may be a provision of nature for economy of energy and demands no treatment unless there is evidence of a progressive condition. Similarly, he insists that hypertension is an adjustment of nature which should not be interfered with directly, but changes should be effected by reaching the cause of the hypertension. "We must never thoughtlessly or ruthlessly interfere with Nature's delicately balanced mechanism of compensation. Only in the face of impending circulatory failure of vascular rupture or temporary pain is direct treatment indicated. . . . Just how much pressure lowering is possible and desirable must be determined for each individual case, and in no instance is such an effect to be sought merely by the administration of drugs." The hypotensive action of radio-active substances is briefly described. Chapter 14 gives an alphabetical list of remedies, drugs and glandular extracts, describing their effect on arterial tension and their therapeutic use. This list seems to be especially complete as it includes some drugs like mistletoe which are not described in ordinary books on pharmacology. Throughout the clinical part the discussion is conservative and judicial, while at the same time it exhibits an amount of research which inspires confidence in its reliability. We believe that this thoroughness and exactness, together with the practical treatment given various subjects, will secure for the present work a place in the first rank of treatises on this important subject.

The Cure of Alcoholism. By Austin O'Malley, M.D., Ph.D., LL.D. Cloth. Price, $1.25. Pp. 312. St. Louis: B. Herder, 1913.

The subject of alcoholism is viewed by the author from a broad point of view more as a moral and religious defect than as a purely physical ailment. Hence, he insists that the cure of alcoholism can be achieved only by the cultivation of the virtues, of which sobriety is only one manifestation which cannot be expected to exist alone.

Only a small part of the book is devoted to the medical aspects of the subject. The physiology and pathology are given more with reference to the instruction of lay readers than to physicians. A large space is given to the discussion of the relations of alcoholism to heredity and alcoholic imbecility. The physical treatment of alcoholism is considered in Chapter 5 and is in accord with the best modern treatment. The rest of the book is given to religious and theologic discussions which take a somewhat wider range than the mere consideration of drunkenness. The author seems liable to occasional, rather sudden, digressions. For instance: In the chapter on the ethics of drunkenness, several pages are given to the description of poisonous serpents and the treatment of snake poisoning in which other measures are recommended, but not alcohol. The author discusses moral means for the cure applicable to non-religious or non-Catholic individuals and the supernatural control of intemperance in which the cooperation of religion is discussed. An appendix is devoted to the subject of opium and other drugs. While not all readers may be disposed to agree with the author's theology, a perusal of this book cannot help but call attention to phases of the treatment of alcoholism which are apt to be much neglected.

Nutrition. A Guide to Food and Dieting. By Charles E. Sohn, F.I.C., F.C.S. Cloth. Price, $1.25. Pp. 256, with illustrations. New York: E. B. Treat & Co., 1914.

This book appears to be intended as an elementary treatise on dietetics. The author seems to be strongly impressed with the danger in the United Kingdom from the prevalence of dyspepsia. He states that it is calculated that there are in the United Kingdom at least 8,000,000 persons suffering from dyspepsia in some shape or form. This is a strange admission in view of the frequent characterization by English writers of the United States as a nation of dyspeptics. The statement of facts in the book is in general correct and clear. Ventilation is discussed from the point of view of the contamination of air by products of respiration. In this section the author seems to have taken no notice of modern teaching with regard to the nature of foul air. The book seems to be quite free from any tendency toward fads and there is no evidence of the influence of proprietary interests. The author notices the standard of protein requirement advocated by Chittenden but does not favor its adoption. The consideration of alcohol is apparently entirely favorable to its use as a food. The book contains a large amount of valuable information and, while it is not complete as a medical text-book on dietetics, it would be of great value for the use of intelligent laymen.

The Problem of the Nations. A Study in the Causes, Symptoms and Effects of Sexual Disease and the Education of the Individual Therein. By A. Corbett-Smith, M.A., F.R.G.S. Cloth. Price, $1 net. Pp. 107. New York: Paul B. Hoeber, 1914.

This is an English publication embracing a study of the causes, symptoms and effects of sexual disease and the necessity of the education of the individual therein. As the author states in his introduction, it is not intended as a scientific research but is an effort to place before the lay reader a plain straightforward account of the dangers of venereal infections. The fact that the writer is a lawyer and not a physician really increases the strength of the appeal, while the facts are presented in an entirely different manner from any of our American publications in this field. The facts themselves are naturally very much the same. Probably the method of presentation will make more of an impression on young men than anything which American writers have evolved. It is written specially for the young man beyond the schoolboy age. The style is plain, straightforward and thoroughly manly throughout without any moralizing, unnecessary sentimentality or undue appeal to fear. The writer knows the class to whom he appeals and his book is more like a personal, free conversation or letter than like a moral pamphlet.

I. K. Therapy with Special Reference to Tuberculosis. By W. E. M. Armstrong, M.A., M.D., Bacteriologist to the Central London Ophthalmic Hospital. Cloth. Price, $1.50 net. Pp. 83. New York: Paul B. Hoeber, 1914.

The paucity of references to I. K. in the literature of the past three years would seem to justify the conclusion that Spengler's method had failed to make good. The sporadic appearance of a few articles from American authors seems to have aroused no general interest. The method seems to have been imported into England, and the present work represents an effort to popularize it in that country. The author takes the part of an advocate. Considerable space is given to an exposition of the well-known principles of immunity. When special reference is made to I. K. he seems to be content with assertion merely. No proof is given of the statements of Spengler. It is assumed as a fact that the red blood-cells contain the bulk of the immunizing substances in the tissues of immune animals. The clinical results are detailed without a hint that any unfavorable results have been obtained. There is no notice of the controversy which has occurred regarding this treatment or of the published statements of its worthlessness. The author gives a bibliography which includes a number of authors who have given unfavorable reports, but nothing is said of their reports. The book must be regarded as non-critical and chiefly useful as giving an idea of the theory and method of Spengler which could be given for intelligent medical men in much less space.

Rose and Carless's Manual of Surgery for Students and Practitioners. Ninth edition. Revised by Albert Carless, M.B., M.S., F.R.C.S., Professor of Surgery, King's College Hospital, London. Cloth. Price, $6 net. Pp. 1408, with 609 illustrations. New York: William Wood & Co., 1914.

The eighth edition of this book appeared in 1911, and as the author states, the three years since have not been characterized by any revolutionary or wonder-working novelty. However, "salvarsan and radium in particular may be mentioned as subjects to the consideration of which a vast amount of work has been devoted. Salvarsan stands as the conqueror of the worst ill effects of syphilis, if only it be employed in time; radium has proved itself a potent agent for good in many cases, but the magniloquent prophets who hailed it as the victor of cancer have not yet proved their claims." A new chapter is added on the use of heat, light, electricity and radium, as well as new illustrations and colored plates. The book is printed on thin paper, making the volume light in weight and convenient for handling. The author adds a personal note by saying:

> "I trust that this edition may prove even more helpful than those which have preceded it, and pray that when the tenth edition is required the sounds of war strife, which boom on the ear as these lines are penned, may long have ceased, and that a righteous peace leading to a happy competition of race with race in the effort to promote, not the destruction, but the welfare of mankind of all nationalities may have been established."

Let us hope with him that not too long a period passes before the tenth edition appears.

Tropical Diseases. A Manual of the Diseases of Warm Climates. By Sir Patrick Manson, G.C.M.G; M.D., LL.D., Lecturer in the London School of Tropical Medicine. Fifth edition. Cloth. Price, $5 net. Pp. 937, with 255 illustrations. New York: Williaim Wood & Co., 1914.

The fourth edition of this work appeared in 1907. Since that time great advances have occurred in the field of tropical medicine, relating to beriberi, yaws, verruga, sleeping-sickness and pellagra. In the preface the author states that while tropical pathology has been actively and successfully studied, prevention and treatment of tropical diseases have also not been neglected; such newer investigations of a practical nature are also included in the new edition. A few which are mentioned for example are the treatment of yaws and relapsing fever by salvarsan, the treatment of trypanosomiasis by antimony, and perhaps the most important of all, the substitution of emetin for ipecac in the diagnosis and treatment of amebiasis. The work is full of valuable illustrations, including colored plates and instructive charts. The parasites and various flies which act as carriers are fully illustrated. American and English surgeons and physicians whose work carries them into these tropical zones, as well as those men of broad knowledge who follow the entire field of medicine, know the valuable nature of this work.

Life and Law. The Development and Exercise of the Sex Function, Together with a Study of the Effect of Certain Natural and Human Laws and a Consideration of the Hygiene of Sex. By Maude Glasgow, M.D. Cloth. Price, $1.25 net. Pp. 194. New York: G. P. Putnam's Sons, 1914.

This is another of the numerous books recently written for women on sex and its various problems. The point of view of the writer is that of a moderate feminist. The attitude of the writer can best be illustrated by a quotation from Chapter 12, in which the development of women and her social and legal status is under discussion: "Even as late as the present century a male writer declared that 'the function of reproduction alone excused or explained woman's existence.' The writer to whom reference has been made apparently was not aware that biologic research had shown that it was the male sex that was created solely to save the race and as an afterthought of nature." While the book gains some novelty on account of this point of view and is worth reading by the careful student of present-day problems, it does not contain any original material or anything that is a special contribution to the discussion.

Infection and Resistance. An Exposition of the Biologic Phenomena Underlying the Occurrence of Infection and the Recovery of the Animal Body from Infectious Disease. By Hans Zinsser, M.D., Professor of Bacteriology at the College of Physicians and Surgeons, Columbia University, New York, with a Chapter on Colloids and Colloidal Reactions by Prof. Stewart W. Young. Cloth. Price, $3.50 net. Pp. 546. New York: The Macmillan Company, 1914.

The practical importance of the subject of immunity, in both the prophylaxis and the treatment of disease, is calling forth a number of excellent works on the subject. The present book must be reckoned among the best of those that have appeared for the use of the physician. The study of the subject is both thorough and practical. The method of vaccine therapy is discussed and in many cases the evidence for the value of this method of treatment is given at some length. The book, however, does not quite take the place of a comprehensive work on vaccine therapy. In addition to the discussion of the subject of anaphylaxis, supplementary chapters are given on Abderhalden's work on protective ferments and on colloids. The statement of facts in general is concise and clear. The book is well illustrated with drawings, several of which are colored.

The Next Generation. A Study in the Physiology of Inheritance. By Frances Gulick Jewett. Cloth. Price, 75 cents. Pp. 236, with illustrations. Boston: Ginn & Co., 1914.

This is one of the Gulick Hygiene series. Its dedication to boys and girls, the guardians of the next generation, as well as the specific statement of the author in the introduction that the purpose of the book is to let young people know the perils which threaten them and how to avoid them, place the book in the rapidly growing group of publications for the sex education of boys and girls. Mrs. Jewett's antecedents, training and experience have given her an unusual equipment for such a task. This book is perhaps from a constructive point of view the best prepared of any of the recent publications in this field. It is well illustrated, unusually well printed and should prove a valuable addition to the series to which it belongs.

A Manual of Physiology with Practical Exercises. By G. N. Stewart, M.A., D.Sc., M.D., Professor of Experimental Medicine in Western Reserve University. Seventh edition. Cloth. Price $4 net. Pp. 1132, with 467 illustrations. New York: William Wood & Co., 1914.

The period of use represented—from 1896 on—has shown that Stewart's text-book may be depended on to keep pace with modern advances in this particular field. The seventh edition has been extensively revised. The chapter on metabolism has been enlarged and much of it rewritten. Great changes have been made in those portions devoted to the blood-gases, enzymes, nervous system, etc. A change in arrangement is made by dividing the longer chapters into sections and increasing the number of chapters. Many new illustrations and new drawings of old illustrations add in the improvement of an already good work.

A Text-Book of Pathology. With a Final Section on Post-Mortem Examinations and the Methods of Preserving and Examining Diseased Tissues. By Francis Delafield, M.D., LL.D., Emeritus Professor of the Practice of Medicine, College of Physicians and Surgeons, Columbia University, and T. Mitchell Prudden, M.D., LL.D., Emeritus Professor of Pathology, College of Physicians and Surgeons, Columbia University. Tenth edition. Revised with the cooperation of Francis Carter Wood, M.D., Director of Cancer Research, Columbia University. Cloth. Price, $6 net. Pp. 1116, with 708 illustrations. New York: William Wood & Co., 1914.

The latest issue of this well-known book embodies recent advances in pathology. It quotes numerous references from recent literature and in its illustrations and arrangement maintains the excellent standard of previous editions.

# Miscellany

## Source and Supply of Drugs

We have previously commented on the likelihood of a shortage in drugs and the consequent increase in prices to be expected as a natural outcome of the European war. In *Public Health Reports* for October 9, Wilbert says that probably the chief reason for the rapid rise in prices was the fact that the available stocks of many of the staple articles during the summer months are usually at a rather low level, and that practically all of the great drug markets of the world are in the war zone, so that stocks on hand in these ports are not available for shipment. By far the greater number of drugs sold throughout the world are marketed via London, Hamburg or Trieste. A few products of the Dutch colonies are sold through Amsterdam, and some of the drugs produced in Turkey and Western Asia come directly from Constantinople. Many vegetable drugs deteriorate on keeping. These, known as botanicals, are usually kept on hand only in small quantities, and supplies are not kept over from year to year. The greatest difficulty in securing supplies of drugs during the coming year, however, will no doubt be encountered, Wilbert thinks, in connection with the so-called "synthetics." Practically from its beginning this business has been monopolized by European manufacturers. Even the simplest drugs, like benzol, anilin oil, phenol (carbolic acid), salicylic acid and benzoic acid, are produced almost exclusively in Europe. Benzoic acid is being quoted at ten times the price at which it could be purchased a month before the war. Salicylic acid is five times higher, and phenol ten times the price asked before hostilities began. Another example of this type is thymol. This article was quoted in July at approximately $2 per pound, while in October $15 a pound is asked, and the available stock is practically exhausted. This is true despite the fact that in this country there are unlimited amounts of the raw material. Much domestic coal-tar was previously sent to Europe to be there manufactured into numerous products, which were sent back to America with enhanced value. Farmer's Bulletin 188, entitled "Weeds Used in Medicine," contains illustrations of a number of drug plants and the necessary directions for gathering and curing many of the drugs which are now scarce. This pamphlet may be obtained by addressing the Superintendent of Documents, Washington, D. C. Needless to state, many of the alkaloids, such as cocain, morphin and quinin, will be widely used in the countries now at war, and the increased demand will result in higher prices. It is to be hoped, says Wilbert, that this particular burden of the war may have a remedying feature in that it will teach us to exercise greater care in the use of these commodities, will tend to encourage their production in this country, and will suggest the practicability of establishing for ourselves, and for the American community generally, a distributing center for the drug products of the world that will be independent of the now existing drug depots in European ports.

## Treatment of Diabetes Fifty Years Ago

It is interesting occasionally to "hark back" and see behind the scenes fifty years ago. Occasionally such opportunities are offered in letters that were written "not for publication." Dr. R. L. Wilbur of San Francisco forwards us a copy of a letter written to his father by Dr. A. B. Palmer, a member of the Medical Department of the University of Michigan. Dr. Palmer held various positions in that university; according to our records he was professor of anatomy in 1852-1854; of materia medica, therapeutics and diseases of women and children, 1854-1860; of the theory and practice of medicine, pathology and materia medica, 1860-1861; of the theory and practice of medicine, and of pathology, 1861-1864; of pathology, the practice of medicine and of hygiene, 1864-1869; of pathology and the practice of medicine, 1869-1880, and of pathology and the practice of medicine and clinical medicine, 1880-1887. Dr. Palmer was a graduate of the College of Physicians and Surgeons of the Western District of New York in 1839, and died Dec. 23, 1887.

Dr. Vaughan, in a communication to the editor, states that Dr. Palmer, in his time, was a strong man in the profession, a thorough student, and availed himself of every opportunity to increase the width and scope of his professional knowledge, and that he was a great teacher, and always stood for the best in the profession.

Following is the letter:

D. L. Wilbur, Esq.

*Dear Sir:*—Your letter is at hand asking advice about your brother, who you say is affected with diabetes. It is always very unsatisfactory to treat a patient without seeing him, and you are not very full in your description of the case. I assume, however, that he has diabetes, passes a very large quantity of urine loaded with sugar, etc., and that there is no particular complication requiring attention. The disease, you are aware, is a very severe one, often—I may say generally—proving fatal sooner or later, and very soon in rapid and severe cases. The pathology and treatment (medicinal) is not as well established as in most other diseases, but the dietetic treatment is most important and is pretty well settled. The patient must avoid sugar and starchy foods as much as possible. All forms of sugar must be discarded entirely and bread, potatoes and fruit containing starch and sugar must be avoided as much as possible. He should live on fresh meat, eggs, soups, cheese (if it agrees), butter. Milk contains sugar, and much of it would be objectionable on that account.

Some persons cloy on these articles readily and need something in addition. The following kind of bran bread may be taken with the meat diet; Put 1 pound of bran in an oven, hot, for one-fourth hour; when warm and crisp grind in a fine coffee mill or pepper mill; mix with it half a pound of butter and the yolks of six eggs, 1 teaspoonful of bicarbonate of soda, and milk enough to make into a paste. Divide into cakes and bake in a quick oven. These cakes may be taken with butter or cheese.

Or another: 3 ounces of bran, 3 eggs, 1½ ounces of butter, 7 fluidounces of milk. Mix for a loaf. Just before putting it into the oven, add, mixing in with it, 35 grains of bicarbonate of soda and 3 drams of dilute hydrochloric acid. Bake in a basin well buttered for an hour or more. One of these kinds of bread to be used with the meat in place of ordinary bread or potatoes. There would be no objection to occasionally taking some tomatoes, or greens in the proper season. If vegetable substances be much craved for and the stomach seems suffering for them, a baked apple may be taken once in a few days. The skin should be kept warm, well clothed (flannel), and the warm bath—or quite as well warm sponge bath—should frequently be practiced. Must not remain in a warm bath too long as it debilitates—10 minutes or more—friction of skin after. The hot air baths with frictions agree better with some.

In the way of medicine I would advise that 30 grains of bicarbonate of soda be taken four times a day, as far as may be from the time of meals—say an hour or more before breakfast, an hour and a half before dinner, the same time before supper, and at bedtime. If very restless, an opiate may be taken at bedtime, and the bowels kept open by the mildest means if necessary. If much debility some tonic may be needed, as moderate doses of quinin and iron before each meal. This general plan is applicable to most cases. If there are special symptoms or complications, special methods of treatment would be indicated besides. This is the best that I can advise without more precise knowledge of the case. A moderate use of buttermilk occasionally might be indulged. The diet is most important and must be persisted in. I have known some cases apparently much benefited by using working cider. A variety of meats may be indulged—beef, poultry, venison and fish as well. It would be best perhaps to put this letter into the hands of some physician—as I suppose he has some attendant—to carry out. Should he find it convenient to visit me I could be more sure of adapting remedies properly to his case. I have been thus full in my directions as the case is one of great importance, and you would not have written me, had you not wished me to give it all the attention necessary, expressing myself as fully as I profitably could.

I would like to hear from you again as to results, etc. My usual fee for a professional letter on an unusual case of this kind—varying with the means of the patient—is from five to fifteen dollars. About ten dollars in this case would be right. Should you write me again about the case I will answer your letter briefly, if necessary, without additional fee.

Yours truly,

A. B. Palmer.

Ann Arbor, Nov. 2, 1865.

## Kala-Azar in Madrid

Del Diestro reports what he says is the first case of kala-azar published in Madrid. The patient is a boy of 14 months, of healthy parents and antecedents. The family is living now in a healthy third-floor apartment but until the last three months they lived in a cottage with many trees in an unhygienic quarter. He comments on the unusual circumstance of kala-azar developing so far inland and at an altitude of nearly 2,000 feet and in a child who has always lived there and has not been in known contact with persons or animals who could have imported the disease, but there is a suspicious case of febrile splenomegaly in a child near the family's former home. His illustrated article is published in the *Revista Clinica de Madrid,* Sept. 30, 1914.

# Medicolegal

### Unlawful Prescribing and Sale of Morphin—Validity of Indictment and Statute—"Legitimate Use"

*(Commonwealth vs. Gabhart (Ky.), 169 S. W. R. 514)*

The Court of Appeals of Kentucky reverses a judgment which sustained a demurrer to an indictment that charged the defendant, a regularly licensed and practicing physician, with unlawfully prescribing for, procuring for, selling and dispensing morphin to another person for purpose other than legitimate use. The indictment was found under the act of 1912, entitled "An act to regulate the sale of opium or its alkaloidal salts, or their derivatives or any admixture thereof." The court says that the demurrer to the indictment was sustained on the ground that the facts therein alleged failed to charge an offense under the statute. This conclusion was based on the theory that, as the indictment failed to charge that the morphin prescribed for and sold the purchaser by the defendant was an alkaloid or derivative of opium or an admixture containing opium, and that the court could not judicially know or say that such was its character, that omission rendered the indictment fatally defective.

While, however, morphin is not named in the statute as an alkaloid, derivative, or admixture of opium, the court does not suppose there is a person of ordinary intelligence or common understanding residing in the state but has familiar knowledge of its power as a narcotic, its deadly effect as a poison, and that it is an alkaloid or derivative of opium. The word "morphin" has as well-defined a meaning as the word "whisky," and its qualities and effect are as well known to the generality of the people of the state as are those of the intoxicant known as "whisky," and manifestly it would be a work of supererogation to allege in an indictment charging one with the unlawful sale of whisky that it is a spirituous liquor or intoxicant. The validity of the indictment was not affected by its failure to state that the morphin sold by the defendant under the circumstances therein alleged was an alkaloid or derivative of opium.

Nor does the court agree with the contention that the failure of the statute to define the words "legitimate use" renders it void for uncertainty. The word "legitimate," in the statute, is not used in its original sense of lawful, but in its secondary sense of proper or warranted, as when we speak of a "legitimate conclusion" or a "legitimate argument." Morphin is sold for legitimate purposes under the statute when, under the facts, a druggist or physician, acting according to the ordinary usage of the profession and exercising ordinary care, would have made the sale. This is a question for the jury. If, on the trial, the defendant makes the defense that the sale of morphin with which he is charged in the indictment was made for a legitimate use, it will be competent for him to show by the evidence of physicians or druggists that the use for which he sold the morphin to the purchaser was a legitimate one. On the other hand, the commonwealth may also introduce evidence to show that the use was not a legitimate one. After that, the court should instruct the jury so as to enable them to determine whether or not the sale was for a legitimate use as contemplated by the statute.

### Provision as to Funds of Board of Medical Examiners

*(Kenehan, State Treasurer, vs. Barber et al., State Board of Medical Examiners (Colo.), 143 Pac. R. 370)*

The Supreme Court of Colorado says that it would seem that the clear intent of the statute of that state is that the board of medical examiners shall deposit all its receipts with the state treasurer at the end of each month, and that it may withdraw from the treasury such sums as may be necessary to meet its fixed obligations, either contracted or performed, within a given biennial period, but that its financial affairs must be closed at the end of each of such periods, as in the case of other state officers, so that the definite amount, if any, which shall then become the property of the state may be determined and transferred to the state fund. It is clearly within the power and authority of the board to determine absolutely the question of expenditure of the funds arising within the lawful discharge of its duties, except only that, in case of any balance remaining in the custody of the treasurer at the close of any biennial period, such balance shall be transferred to the general fund of the state, and become the property of the state at that time. Clearly the board may not withdraw such funds at a time near the close of one biennial period for the purpose of again depositing the same during a succeeding biennial period to defray expenses and obligations occurring in and during such succeeding period. But the treasurer has no other power or authority in this respect than to make the transfer of such funds, and only such funds, as shall appear to be in his custody at the close of a biennial period. He is not given any authority or power to review in any manner or pass on any of the official acts of the board. The statute confers on the board exclusive powers, not only in this matter, but in all others covered by the statute creating the board of medical examiners. The members of this board are made public officials, and must be presumed to have discharged their duties honestly and within the scope of their authority. That the board may have exceeded its powers or abused its discretion, or may have wilfully violated the law and abused the trust imposed, and in so doing may have deprived the state of a sum rightfully belonging to it under the law, is not a matter for the arbitrary determination of the state treasurer, to be disposed of by an entry on his books. The members of the board are answerable for their official conduct to the chief executive of the state, and their civil or criminal liability is a question for judicial determination, on a full and complete hearing in the light of the law and the facts.

### Federal Court Without Power to Order Physical Examination

*(Brace et al. vs. Central Railroad Co. (U. S.), 216 Fed. R. 718)*

The United States District Court in Pennsylvania says that this was a common-law action to recover damages for alleged injuries sustained by a passenger on one of the defendant's trains. It was claimed that he had suffered a fracture of the skull, resulting in permanent injuries to his brain and mind. On a refusal to have him examined by disinterested physicians to determine the state of his mind and the extent of the injury, the defendant sought to have such an examination ordered under the direction of the court. But such an action is subject to the local law concerning matters of evidence. No power to make an order for the examination of the person of the plaintiff in a case like this is to be found at common law; hence in the absence of a state law the power does not exist. The question has been variously decided in the lower courts of Pennsylvania, but it nowhere appears that it has been considered by the state supreme court. And while the decision of the Supreme Court of the United States in the Botsford Case, 141 U. S. 250, has been slightly modified by the court in the later case of Camden Sub. Ry. Co. vs. Stetson, 177 U. S. 172, in holding that a statute enacted by the state of New Jersey regulating the practice should be enforced, it still remains that short of statutory authority the courts are powerless. Wherefore the order asked for is denied.

### Physicians May Testify as to Usual Effect of Nervous Shock—Test of Admissibility of Opinion Evidence

*(State vs. Wilson (W. Va.), 83 S. E. R. 44)*

The Supreme Court of Appeals of West Virginia holds that the testimony of physicians as experts concerning the usual and ordinary effect of the severe nervous shock incident to a rape committed on a woman, the manifestations thereof, and their duration, as bearing on her credibility as a witness and the truth of her accusations, is admissible; but, it is not in character exclusively expert, the rejection thereof is harmless error. The test of the admissibility of opinion evidence, whether expert or non-expert, is the competency or incompetency of unskilled men, constituting a jury, to form as accurate and reliable an opinion on the subject-matter of the testimony as persons having special knowledge of the subject, from their learning, professions, and experience, or their possession of such knowledge of the subject-matter as it is impossible fully and completely to communicate to the jury. Physicians are students of human anatomy, and of the qualities, characteristics, and functions of the human body and all of its parts. Their knowledge of the nervous system, its functions, strength, weakness, and the effect of influence thereon of any character is obviously more extensive and reliable than that of persons who have never studied or had occasion to observe them, in the pursuit of their vocations. Physicians come in contact with them and have them under observation almost daily. Of course, non-experts, such as men constituting a jury, would have some knowledge of the subject, and know that a shock to the nervous system would produce effect; but their knowledge as to its forms, extent, and duration is certainly not as full and complete as that of a physician of recognized ability, and the litigant is entitled to submit to the jury all the relevant material evidence he has. In the cases of non-expert witnesses, they are allowed to express their opinions on the subject-matter of their evidence when they cannot put the jury in full and complete possession of all they observed, even though they are able to lay before the jury the substance of their observations.

# *Society Proceedings*

## COMING MEETINGS

American Association of Anatomists, St. Louis, Dec. 28-30.
American Physiological Society, St. Louis, Dec. 27-30.
Society of American Bacteriologists, Philadelphia, Dec. 29-31.
Southern Surgical and Gynecological Assn., Asheville, N. C., Dec. 15-17.
Western Surgical Association, Denver, Dec. 18-19.

## SOUTHERN MEDICAL ASSOCIATION

*Eighth Annual Meeting, held at Richmond, Va., Nov. 9-12, 1914*

(*Concluded from page 2069*)

### Treatment of Syphilis

**Dr. E. H. Martin**, Hot Springs, Ark.: Apart from idiosyncrasy to the drug in a few cases, a dose of salvarsan has no physiologic effect on the body temperature or intestinal elimination. Therefore we must judge that the disturbances consistently observed after its administration are due to endotoxins released from the killed organisms causing the disease. If there are many bowel movements, there is not much rise in temperature, and the converse is also true. Nausea and emesis are probably drug effects and seem to be dependent on personal idiosyncrasy.

The cure of a majority of cases of secondary syphilis may be accomplished by three intravenous doses of salvarsan. Some secondary cases have been fully sterilized of the spirochetes by one dose, as proved later by genuine reinfections; many secondary cases are cured by two doses, but to be safe three doses should be given in all cases, and if the slightest endotoxin reaction occurs after the third dose the weekly doses should be continued until it is lacking. The fact that more than three doses are frequently necessary in secondary syphilis can be explained by the probable existence of tertiary colonies which have given no symptoms. The treatment of tertiary syphilis is the same as that of the secondary stage except that here we have to repeat the doses until all of the colonies are broken up and killed. Usually from five to seven doses suffice except in cases of cerebrospinal lues, which will be considered later. Some cases of bone syphilis require more treatment, and a few cases of old tertiary ulceration of the skin are peculiarly intractable. The treatment of the fourth class of cases, tertiary infection of the cerebrospinal system, does not differ from that of other cases of syphilis except as to the greater persistence required. The final results and the degree of restoration to health will depend on the extent of damage done by the disease to nerve or brain tissue before treatment is instituted. Nothing anatomic can be restored, nor can scar tissue be removed.

### Treatment of Tabes Dorsalis and Specific Paresis

**Dr. Estill G. Holland**, Hot Springs, Ark.: I have had six cases of tabes dorsalis and paresis which were greatly improved by intravenous injections of salvarsan.

#### DISCUSSION

**Dr. E. G. Ballenger**, Atlanta, Ga.: I have given 2,975 injections, but I have not seen secondary or other manifestations of syphilis follow in those patients who were treated before the secondary manifestations had developed.

**Dr. J. K. Hall**, Richmond, Va.: Syphilis ought not to be a genito-urinary disease or a disease that should come under the observation of the neurologist; it ought to be a disease for the general practitioner to discover and to treat early. In spite of the hopeful attitude of some observers, I am convinced that paresis is essentially an incurable disease.

**Dr. A. J. Crowell**, Charlotte, N. C.: I have used considerable salvarsanized serum in the treatment of paresis, and I think it is perfectly rational and scientific to employ this plan of treating syphilis.

### Campaign Against Malaria

**Dr. L. O. Howard**, Washington, D. C.: The advance of civilization has increased, rather than decreased, the spread of the disease, because of the construction of ponds and stone quarries, in the still water of which the mosquito has found a favorable breeding ground. The present prophylactic measures are too general to be standardized. There are 79,000,000 acres of swamp-land country, of which 65,000,000 are in the Southern states. In addition to this vast territory of swamp acreage, there are 150,000,000 acres that need drainage.

### Effects of Impounded Water in the Production of Malaria

**Dr. H. R. Carter**, Washington, D. C.: The great increase in impounded water in the South has resulted in a corresponding increase of mosquitoes, which, however, can be avoided if the ponds and artificial lakes can be so constructed as to be drained or be cleared of surrounding brush so as to have wind and wave action. I should suggest that all such impounded waters be placed under the control of boards of health.

### Malaria Carriers and the Important Rôle They Play in Persistence and Spread of Malaria

**Dr. C. C. Bass**, New Orleans: Persons who are not ill and who have not been ill of malaria are the chief malaria carriers. Persons who have recovered from an attack of malaria frequently remain carriers for many months and, perhaps, years. The ideal way to deal with the situation would be to examine the blood of all persons in the house and treat the carriers. This will not be practicable in most instances, and the next best thing would be to consider all members of the household probable carriers and treat them as such. These measures carried out during the cold season are more successful because mosquitoes are not active at that time.

### Malaria and Quinin

**Dr. Thomas E. Wright**, Monroe, La.: I have treated thirty patients with malaria of the estivo-autumnal type, with quinin intravenously. The intravenous use of quinin, in doses of 15 grains, in a dilution of from 250 to 300 c.c. of saline solution, in the hands of a careful, competent physician, is safe. The discomfort to the patient is so slight that it becomes a matter of small importance, and in this respect, when compared with quinin by mouth or hypodermically, is much to be preferred. The relief from the symptoms in malaria, so often jeopardizing life, may be attained promptly, safely and constantly by this method.

### Intestinal Parasites in Adults

**Dr. H. L. McNeil**, Houston, Tex.: Indefinite and unexplained abdominal pains or tenderness should make one suspicious of intestinal parasites. Parasites should be suspected in all cases of chronic or subacute appendicitis. Many apparently normal men, who harbor parasites, are subject to certain indefinite complaints, diagnosed usually as indigestion, cramps, biliousness, mild diarrhea, malaria, febricula, grip, which are really symptoms of the parasitic infections. An otherwise unexplained eosinophilia is good evidence of parasitic infection, even though the parasites are not discovered at the first stool examinations; but an absence of eosinophilia does not rule out parasitic infection.

### The Public Health

Dr. R. M. Cunningham, Birmingham, Ala.: All sanitary regulations among and between the states should be under the laws of the United States. Governmental direction and control is the only feasible method in which a proper regulation for the country at large can be evolved and put into execution. The federal government has jurisdiction over all matters ceded to it by the states, and all of these matters concern the common welfare. Public sentiment is necessary to procure proper laws, and to arouse public sentiment there must be education. Sanitary measures must be made political issues. So long as the people are silent, so long will the statesman fail to take the initiative. If there be a popular demand for sanitary laws, those running for office will make it one of the reasons for their election to office.

### Heart Arhythmias

Dr. E. C. Thrash, Atlanta, Ga.: The principal extracardial causes of arhythmia are cortical, toxic, mechanical, reflex from pathology in other organs, and vagopathic. The treatment of arhythmias is as varied as their causes. The treatment of the ones produced by factors external to the heart itself must be based on methods which will relieve these disturbances. The neurasthenic must be relieved of his neurasthenia, the sufferer from visceral ptosis must have his condition relieved, and the mechanical disturbances which interfere with the heart's action must be diagnosed and relieved, if possible. Atropin will not only temporarily relieve these functional disorders, but the fact that it does relieve them aids one in making a diagnosis, as this drug will not relieve those of extracardial origin, but will make them worse, as it has a slightly paralytic effect on the vagus. The lesions which are intracardial must be treated by directing the attention toward the heart itself. If there are any luetic complications they should be treated. It is erroneous not to give salvarsan in this form of syphilis. Arteriosclerosis, atheroma, calcareous infiltration and toxemias play an important rôle in producing the latter lesions and they should be treated according to classic methods for handling such conditions. Digitalis is the remedy *par excellence* to restore the heart to its normal tone, and it should never be overlooked in the treatment of organic arhythmias.

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**Habit as an Aid to Progress.**—Students of Prof. H. S. Jennings' admirable work on the "Behaviour of the Lower Organisms" will remember that his experiments have led him to the conclusion that certain Protozoa, such as *Stentor*, are able to learn by experience how to make prompt and effective responses to certain stimuli; that after they have been stimulated in the same way a number of times they make the appropriate response at once without having to go through the whole process of trial and error by which it was first attained. In other words, they are able by practice to perform a given action with less expenditure of energy. Some modification of the protoplasm must take place which renders the performance of an act the easier the oftener it has been repeated. This same is of course true in the case of the higher animals, and we express the fact most simply by saying that the animal establishes habits. From the mechanistic point of view we might say that the use of the machine renders it more perfect and better adapted for its purpose. In the present state of our knowledge I think we cannot go beyond this, but we must content ourselves with recognizing the power of profiting by experience as a fundamental property of living protoplasm.—Arthur Dendy, *Medical Journal of Australia.*

# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Anatomy, Philadelphia

*November, XVII, No. 1, pp. 1-160*

1 Comparative Distribution of Mitochondria in Spinal Ganglion Cells of Vertebrates. E. V. Cowdry, Baltimore.
2 Anatomy of 17.8 mm. Human Embryo. F. W. Thyng, Boston.
3 Stature and Eruption of Permanent Teeth of American, German-American and Filipino Children. R. B. Bean, New Orleans.

### American Journal of Public Health, Boston

*November, IV, No. 11, pp. 965-1126*

4 Shellfish Conservation and Sewage Disposal. G. A. Johnson, Colorado Springs, Colo.
5 Germicidal Action of Sunlight on Bacterial Spores. J. Weinzirl, Seattle, Wash.
6 *Destruction of Bacteria Through Action of Light. C. B. Bazzoni, Philadelphia.
7 Antityphoid Vaccination. J. H. Townsend, Hartford, Conn.
8 Experimental Study of Relative Efficiencies of Certain Fermentation Tubes. R. E. Lee and W. H. Fegely, Meadville, Pa.
9 *Viability of Typhoid Bacillus in Sour Cream. C. Krumwiede, Jr., and W. C. Noble, New York.
10 *Ice Cream Studies in Cincinnati. C. Bahlman, Cincinnati.
11 Swimming Pool with Return Purification System. J. F. Norton, Boston.
12 Future of Milk Industry. F. E. Fronczak, Buffalo.
13 Influence of Financial Stimulus in Improvement of City Milk Supply. H. A. Harding, Chicago.
14 Municipal Versus Contract Street Cleaning in Washington, D. C. J. W. Paxton, Washington, D. C.
15 *Typhoid Epidemic—Centralia, Washington. E. R. Kelley, Seattle, and S. Macomber, Centralia, Wash.
16 Formaldehyd Fumigation. W. Dreyfus, New York.
17 Determination of Minute Quantities of Nitrates, Particularly in Potable Waters. A. H. Gill, Boston.
18 Inhibiting Action of Colored Well Water on Bacteria and Study of Inhibiting Effect of Some Inorganic Salts. E. J. Tully, Madison, Wis.
19 Referendum for Winnebago County Tuberculosis Hospital. O. F. Bradley, Winnebago, Wis.
20 Creating a Municipal Tuberculosis Sanitarium by Referendum. F. E. Wing, Chicago.
21 Seattle Referendum Appropriating One Hundred and Twenty-Five Thousand Dollars for Municipal Sanitarium. J. Weinzirl, Seattle, Wash.
22 Account of Referendum on Proposition to Establish Tuberculosis Hospital in and for County of St. Lawrence, New York State. G. J. Nelbach, New York.
23 Examination of River Bottoms at Philadelphia. W. L. Stevenson, Philadelphia.
24 Water Softening and Decolorization. W. A. Sperry, Grand Rapids, Mich.
25 Effect of Renovation of Butter on Reichert Meissl Number and Saponification Value. F. O. Tonney and F. W. Stockton, Chicago.
26 Decolorization of Little River Water Supply in Connection with Filtration at Springfield, Mass. E. E. Lochridge, Springfield, Mass.
27 Rational Basis for Sanitation of Rivers and Harbors. G. A. Soper, New York.
28 Effect of Waters of Different Quality on Longevity of some Pathogenic Bacteria. E. J. Tully, Madison, Wis.

6. **Destruction of Bacteria Through Action of Light.**—Bazzoni summarizes his work as follows: The full radiation of certain sources containing waves below 250 microns in length will kill bacteria certainly and rapidly. Isolated ultraviolet rays of length 250 to 280 microns will not affect bacteria in one drop of water in a four-hour exposure. Isolated ultraviolet rays as short as 220 to 250 microns will kill only after several hours exposure even when the isolated radiation is of the same intensity as that contained in the rapidly destructive full radiation. The destructive power increases rapidly with decrease in wave length. The final conclusion is that the destructive effect of ultraviolet light is in some measure dependent on its association with longer radiations.

9. **Viability of Typhoid Bacillus in Sour Cream.**—The results of Krumwiede and Noble's experiments were as follows: The typhoid bacillus is gradually killed in sour cream by the acids produced, the rate of destruction being proportional to the degree of acidity and the number of typhoid bacilli present. The apparent disappearance of typhoid bacilli in sour cream in which the normal flora are present

is due in part to the overgrowth of the typhoid bacillus by these bacteria and the difficulty of finding by their present methods the proportionately few typhoid bacilli remaining. With a moderate contamination, the typhoid bacilli are killed in about four days. With a heavy contamination or in which the initial multiplication has taken place, a longer time may be required. For this reason a clean cream which soured slowly would be more dangerous if contaminated, as an initial multiplication of the typhoid bacilli would occur and a longer time would be required to destroy the bacilli. Whether under ordinary conditions the overgrowth by the bacteria of the cream is a factor in the death of the typhoid bacilli cannot be determined by their present methods.

10. **Ice Cream Studies in Cincinnati.**—The bacterial content of ice cream is so high, says Bahlman, that studies of the cause are imperative. Cream is obviously the source of the great majority of bacteria found in ice cream. Proper pasteurization of the cream and enforcement of sanitary regulations, Bahlman claims, will reduce the bacterial count in ice cream. Pasteurization of the mixture just before freezing would bring about a still greater reduction. Pasteurized cream does not affect the taste of ice cream. Sanitation at the dairy must not be neglected, but proper refrigeration and transportation facilities in large cities are far from satisfactory. A perfect product at the source of supply may be teeming with bacteria by the time it reaches its destination, and under the present conditions pasteurization is the only remedy.

15. **Typhoid Epidemic.**—Certain striking features present themselves in relation to the epidemic studied by Kelley and Macomber which are sufficiently out of the ordinary to warrant calling particular attention to them. They are: (a) Coincidence of practically complete cessation of new cases at the end of average incubation period, following the installation of the hypochlorite plant. (b) Extent of vaccination proportionate to the total population and certain failures and complications of vaccination. (c) Efficiency of the Emergency Hospital care and low Emergency Hospital mortality. (d) The small number of secondary cases. (e) The resulting sanitary improvement in the town.

### Archives of Diagnosis, New York

*October, VII, No. 4, pp. 301-400*

29 Prognosis of Chronic Myocardial Insufficiency. H. L. Elsner, Syracuse.
30 Diagnosis of Abnormalities of Myocardial Function. T. S. Hart, New York.
31 Austin Flint Murmur—Its Mode of Production, Recognition and Importance. R. Abrahams, New York.
32 *Ptyalism—Danger Signal in Renivascular Disease. H. Stern, New York.
33 Diagnosis of Cancer of Common Duct. W. F. Cheney, San Francisco.
34 *An Aid in Early Diagnosis of Pulmonary Tuberculosis. A. F. Beifeld, Chicago.
35 Roentgen Examination of Gall-Bladder. W. H. Stewart, New York.
36 Gall-Stones Ejected Through Mouth. A. R. Carman, New York.
37 Posture and Kidney Disease. S. Epstein, New York.
38 Immediate Diagnosis of Birth Canal Lacerations. W. P. Manton, Detroit.
39 Symptoms and Signs in Diagnosis of Diseases of Chest. J. Epstein, New York.
40 Diagnosis of Carcinoma. M. Kahn, New York.

32. **Ptyalism Danger Signal in Renivascular Disease.**—Profuse salivation has been encountered by Stern in three cases of renivascular disease. The increased secretion of the saliva occurred first at a period when there existed no alarming symptoms on the part of the renal apparatus, when in fact the kidneys, as evidenced by metabolic and functional tests, and the determination of urinary solids, were performing their work in the same manner as months previously. It was thus clear that the ptyalism in these cases could not have been caused by a renal insufficiency, and that the blood-vessel disease itself should be held responsible for the salivary increase.

Stern says that the excessive production of saliva may last for from two to three days, or even from eight to ten days, and may then cease entirely for one or two weeks and reappear in a lesser degree (mostly); or the secretion may soon become less profuse, but continues in larger than normal amounts. Paralytic phenomena were not present in any one of the author's three cases prior to the establishment of ptyalism, but they made their appearance in two of them within a few months after the hypersecretion had supervened. In the third case very frequent (often after each meal or every drink of water) projectile vomiting, and other reflex manifestations of cerebral involvement set in soon after the advent of ptyalism. Inasmuch as such definite aggravation of the patient's condition was in none of the cases noted prior to the onset of the ptyalism Stern feels justified in denominating the appearance of the latter a danger signal in the course of the vascular deterioration process. A relationship between hypersalivation and hyperhydrosis did not exist in any case. While one of the patients inclined to perspire freely, the secretion of his sweat glands was neither profuse, nor was there any direct or inverse demonstrable analogy between the two secretions. The activity of the sweat glands of the remaining two patients seemed entirely normal.

34. **Early Diagnosis of Tuberculosis.**—As an aid in the eliciting of râles over the apex Beifeld (and others to whom he has communicated the finding) has had success with what he terms the whispered-voice method. It consists in having the patient whisper in an emphatic way, repeating "One, two, three" a number of times, following which he is instructed to inspire deeply. It is a frequent observation that when other methods fail, this procedure is successful in bringing out the significant apical râles.

### Arkansas State Medical Society Journal, Little Rock

*November, XI, No. 6, pp. 133-153*

41 Spinal Analgesia. Report of Cases. R. A. Hilton, El Dorado.
42 Nasal Septum. R. Caldwell, Little Rock.
43 Metastatic Infections. B. D. Luck, Pine Bluff.
44 Injuries to Skull and Brain. Report of Cases. W. A. Snodgrass, Little Rock.

### Boston Medical and Surgical Journal

*November 26, CLXXI, No. 22, pp. 803-838*

45 *Laboratory in the Study and Treatment of Crime. V. V. Anderson, Boston.
46 *Some Conditions that Influence the Mortality after Prostatectomy. A. L. Chute, Boston.
47 *Magnesium Sulphate in Purulent Cerebrospinal Streptococcic Meningitis. W. S. Bryant, New York.
48 Modern Treatment of Amebic Dysentery. E. F. Haines, Fort Leavenworth, Kan.
49 Intestinal Putrefaction with Convulsions. W. L. Thompson, New York.
50 Two Unusual Traumatic Cases. F. H. Lahey, Boston.
51 Case of Rotary Dislocation of Atlas. J. J. Morton, Jr., Boston.
52 Shaft of Radius as Pin Cushion. H. F. R. Watts, Dorchester.

45. **Laboratory in the Study and Treatment of Crime.**—Three hundred and fifty cases from the first and second criminal sessions of the municipal courts, as well as a few from the domestic relations courts of Boston are analyzed by Anderson. There were 140 men and 210 women. Of the men offenders, only 16 per cent. were mental defectives, while 35 per cent., or more than twice as many, were psychopaths. Of 62 cases men arrested for drunkenness 12.9 per cent. were mental defectives, while 40.3 per cent. were constitutional psychopaths. Of 21 individuals arrested for non-support, 9.5 per cent. were mental defectives, while 66⅔ per cent. were constitutional psychopaths.

Among the female offenders there were 40.95 per cent. mental defectives. There were 17.14 per cent. constitutional psychopaths among the females. Of the women arrested there were 105 cases of drunkenness. Of these, 43.8 per cent. were mental defectives, and 27.62 per cent. constitutional psychopaths. A study of those women arrested for offences against chastity shows that 48 per cent. were mental defectives, 28 per cent. were subnormal, while only 3.84 per cent. were psychopaths. In general Anderson's studies bear out the conclusions of other investigators in regard to women offenders, that they are differentiated from non-criminals by a lack of intellectual development; that mental deficiency is the problem here. In regard to criminals as a whole, however, they contradict certain reports, for the psychopath is almost as frequent as the defective and among men recidivists is of larger magnitude.

Anderson concludes that there is a type of individual passing through the courts who form a group of as serious proportions as the feeble-minded; who furnish as much if not more trouble to the social worker and probation officer than the defective, often suspected by the layman of being insane and diagnosed occasionally by experts as suffering from psychoses, or as mental defectives, defective delinquents, emotional defectives, moral imbeciles, and what not. These individuals when studied intensively by exact methods show no real defect in the intellectual field; they give no evidence of insanity, but seem to have certain anomalies of character, a certain lack of personality—adjustments, unstable, neurotic individuals, whose adaptation is inadequate and inefficient. They easily become disordered under the influence of emotion, alcohol, etc.

46. **Some Conditions that Influence the Mortality After Prostatectomy.**—The high mortality following prostatectomy, Chute says, is unnecessary and is to be avoided in two ways: First, by getting kidneys that are not doing their work into a condition in which they are acting efficiently; second, by avoiding injury to embarrassed or susceptible kidneys at the time of operation.

47. **Magnesium Sulphate in Cerebrospinal Meningitis.**—The diagnosis in Bryant's case—cerebrospinal meningitis—was established by symptoms and lumbar puncture. A decompression operation gave immediate relief from intracranial pressure. Toxemia was combated by magnesium sulphate, water and drainage. Cure of the cerebrospinal meningitis followed in a few days. Infection of the cranial wound followed contamination of the dressings. Result, a recurrence of toxemia together with encephalitis, with death on the 190 day from time of decompression operation. Cause of death, encephalitis and toxemia, not cerebrospinal meningitis.

### Bulletin of Johns Hopkins Hospital, Baltimore

*November, XXV, No. 285, pp. 323-350*

53 *Experimental Production of Amebic Dysentery by Direct Inoculation into Cecum. A. W. Sellards and W. A. Baetjer, Baltimore.
54 Analysis of Case of Psychasthenia. H. Flournoy, Baltimore.
55 *Fibrinolysis in Chronic Hepatic Insufficiency. E. W. Goodpasture, Baltimore.
56 High Incision in Cesarean Section. W. L. Thompson, New York.
57 *Nitrogen Metabolism Before and After Splenectomy in Case of Pernicious Anemia. G. R. Minot, Baltimore.

53. **Production of Amebic Dysentery in Direct Inoculation Into Cecum.**—The inoculation of kittens per rectum, or the feeding of dysenteric stools rich in ameba was used by Sellards and Baetjer for the production of dysentery with widely varying degrees of success, but, in general, about 50 per cent. of infections was obtained. It has not been possible by either of these methods to propagate a strain of pathogenic ameba beyond a very limited number of passages. Inoculation of eight strains of dysentery, some of which were distinctly atypical cases, directly into the cecum, in ten kittens produced an infection in all instances. In some of the subinoculations considerable difficulty was experienced with bacterial septicemia.

Some of the factors bearing on the high rate of amebic infection following intracecal inoculations are as follows: 1. Absence of tendency to expulsion of injected material. 2. Optimum utilization of infective material and the avoidance in a large measure, of deleterious diluting agents. 3. Precision of the site of injection in the bowel. Definite evidence was obtained that the ameba are able to injure and penetrate the healthy mucosa. Unrestricted growth of bacteria in the intestine seems to be unfavorable to the entameba. A marked suppression of bacterial growth in the amebic lesion appears to be necessary for the best development of the pathogenic ameba. Animal inoculation by intracecal injection has been of assistance in the (1) propagation of a strain of ameba through a series of animals for a period of several months; (2) determination of the etiology of some obscure diarrheas; (3) study of the morphology of some atypical ameba of low virulence.

55. **Fibrinolysis in Chronic Hepatic Insufficiency.**—Specimens of blood from four cases of atrophic hepatic cirrhosis examined by Goodpasture possessed the property of completely digesting their clot within a few hours, at body temperature. Normal blood will not digest its clot for days or weeks. Dissolution of clot in the blood of cirrhosis cases, Goodpasture thinks, is due to an enzyme. Its activity is destroyed by heat, inhibited by normal serum and diminished in old plasma. The fibrinogen content of the blood in each case has been below normal. Hydremia was a constant feature. One patient exhibited a low phenoltetrachlorphthalein output. Goodpasture says that digestion of clots in vivo explains in part the hemorrhagic tendency present in these patients.

57. **Nitrogen in Case of Pernicious Anemia.**—In a case of pernicious anemia showing no improvement for three months, splenectomy was performed, after which the patient's general condition and blood-picture improved. Coincident with this improvement the urobilinogen disappeared from the urine, a more favorable nitrogen balance occurred, and a rise in per cent. of urea nitrogen, which previously had been below normal.

### Colorado Medicine, Denver

*November, XI, No. 11, pp. 403-444*

58 Treatment of Weak and Flat Feet. G. B. Packard, Denver.
59 Chronic Polyarthritis in Children. S. F. Jones, Denver.
60 Chronic Intestinal Indigestion in Children; Its Rôle in Production of Epilepsy. J. W. Amesse, Denver.
61 Contagious Diseases in Denver During 1913. C. E. Low, Denver.
62 Inoculation Against Typhoid in National Guard of Colorado. W. A. Jolley, Boulder.
63 Value of Organization in Medical Profession. I. Knott, Montrose.
64 Closure of Vesicovaginal Fistula which had Followed Hysterectomy. C. M. Stewart, Glenwood Springs.
65 Problems of Teaching Dispensary. J. Shapiro, Boulder.

### Florida Medical Association Journal, Jacksonville

*November, I, No. 5, pp. 129-160*

66 Surgical and Conservative Treatment of Joint Tuberculosis. R. Duffy, Tampa.
67 Diagnosis and Treatment of Pulmonary Tuberculosis. R. H. McGinnis, Jacksonville.
68 Renal Tuberculosis. J. K. Simpson, Jacksonville.
69 Laboratory Diagnosis of Tuberculosis. H. Hanson, Jacksonville.

### Indiana State Medical Association Journal, Fort Wayne

*November, VII, No. 11, pp. 507-550*

70 Goiter: Differential Diagnosis. R. B. Wetherill, Lafayette.
71 Pathology of Goiter. L. T. Rawles, Fort Wayne.
72 *Goiter: Selection and Preparation of Surgical Risks. G. K. Throckmorton, Lafayette.
73 Goiter; Surgical Treatment. H. H. Martin, Laporte.

72. Abstracted in The Journal, Oct. 24, 1914, p. 1499.

### Journal of Abnormal Psychology, Boston

*October-November, IX, No. 4, pp. 217-295*

74 *Mental Tests of Dementia. B. Hart and C. Spearman, London.
75 *Criticism of Psychoanalysis. J. V. Haberman, New York.

74. **Mental Tests of Dementia.**—The experimental results obtained by Hart and Spearman, they say, are incompatible with the current view that dementia consists in large "defects," "gaps," "hyperfunctions" or "ataxias" in mental power, such as "disturbed association," "faulty judgment," "weak power of conception," "poverty of ideas," "loss of memory," etc. The authors believe that the method of mental tests appears to be already capable of accurately determining any person's general level of intellectual power. But before accurately measuring the impairment (especially in slight cases) one should know how great this power was in health.

75. **Criticism of Psychanalysis.**—Haberman sums up his criticism of the so-called Freudian psychanalysis as follows: Let us have some carefully and scientifically worked-out studies given to us—not "statements" erroneously called "studies" which go on without the slightest attempt to substantiate the principles employed. Let us have some wholesome and conservative investigation of such mechanisms as Verdrängung, of the carrying over of "affect" experienced in association with an incident, on concepts not originally associated with such "affect" (Hellpach makes an attempt to explain this mechanism without Freud's aid of the "unconscious"). Or again let us see to what degree personality may be laid bare by judicious anamnestic probing,

"anamnestic analysis," Haberman has called it to differentiate it from the sexuo-analysis of the Freudians, incorrectly termed psychanalysis. This is a type of inquiry always essayed to some extent by psychiatrists and neurologists, but now more carefully and thoroughly undertaken because of the renewed interest in the psyche and the psychic—a probing without the use of symbolism or interpretation or translation. Let the psychanalyst in such a procedure show how much of the past makes up mind-tendencies of the present, to what degree past "affects" can produce negative influence in the present, to what degree the sexual (as found—not interpreted) plays a part, whether the incident causing such "affects" can drop out of memory, be forgotten, and the "affect" still live on (Ranschburg, for instance, one of the foremost authorities on memory studies to-day, denies that it can), how symptoms may be explained without symbolism (for surely even the Freudist will admit that some can, by suggestion, for instance, and imitation), or if he needs his symbolism, first give some adequate proof of it, or show how it may be scientifically employed.

### Journal of Infectious Diseases, Chicago

*November, XV, No. 3, pp. 417-614*

76 Metabolism of Saprophytic Human Tubercle Bacilli in Plain, Dextrose, Mannite, and Glycerin Broths. A. I. Kendall, A. A. Day and A. W. Walker, Chicago.
77 Metabolism of Certain Rapidly Growing Human Tubercle Bacilli. I. In Broth Free from Lipoids and Fatty Substances. A. I. Kendall, A. A. Day and A. W. Walker, Chicago.
78 Id. II. In Modified Uschinsky Medium. A. I. Kendall, A. A. Day and A. W. Walker, Chicago.
79 *Id. III. In Media with Inorganic Salts as Sources of Nitrogen. A. I. Kendall, A. A. Day and A. W. Walker, Chicago.
80 *Metabolism of Lepra Bacillus, Grass Bacillus and Smegma Bacillus in Plain, Dextrose, Mannite and Glycerin Broths. A. I. Kendall, A. A. Day and A. W. Walker, Chicago.
81 Occurrence of Soluble Lipase in Broth Cultures of Tubercle Bacilli and Other Acid-Fast Bacteria. A. I. Kendall, A. W. Walker and A. A. Day, Chicago.
82 Relative Activity of Soluble Lipase and Lipase Liberated During Autolysis of Certain Rapidly Growing Tubercle Bacilli. A. I. Kendall, A. W. Walker and A. A. Day, Chicago.
83 Specificity and Thermostability of Lipase Developed During Growth of Rapidly Growing Tubercle Bacillus in Media of Varied Composition. A. I. Kendall, A. W. Walker and A. A. Day, Chicago.
84 Comparison of Curves of Lipolytic Activity and Proteolysis of Certain Rapidly Growing Human Tubercle Bacilli in Media of Varied Composition. A. I. Kendall, A. W. Walker and A. A. Day, Chicago.
85 Comparison of Curves of Lipolytic Activity and Proteolysis of Certain Acid-Fast Bacilli in Nutrient Broths. A. I. Kendall, A. W. Walker and A. A. Day, Chicago.
86 *Effect of Cholesterol on Phagocytosis. K. Dewey and F. Nuzum, Chicago.
87 Formation of Chlamydospores in Sporothrix Schenckii. D. J. Davis, Chicago.
88 *Experimental Study of Influence of Iodin and Iodids on Absorption of Granulation Tissue and Fat-Free Tubercle Bacilli. E. F. Hirsch, Chicago.
89 Antigenic Properties of Glycoproteins. C. H. Elliott, Chicago.
90 *Therapeutic Value of Copper and Its Distribution in Tuberculous Organism. H. J. Corper, Chicago.
91 *Relation Between Allergic Intracutaneous Reaction and Symptoms of Anaphylaxis. G. L. Meigs, Chicago.
92 Protein Poison of Tonsil. W. H. Burmeister, Chicago.
93 Histologic Differentiation by Means of Anilin Stains in Association with Regressive Mordanting, with Special Reference to Elastic Tissue. H. F. Harris, Atlanta, Ga.
94 *Effect of Gentian Violet on Bacillus Tetani, Tetanus Toxin and Certain Laboratory Animals. I. C. Hall and L. B. Taber, Berkeley, Cal.
95 Production of Acid by Bacillus Coli Group. W. W. Browne, Providence, R. I.

79. **Metabolism of Tubercle Bacilli in Simple Mediums.**—A rapidly growing strain of human tubercle bacilli (597) was grown by the authors in a medium of known and very simple composition, consisting essentially of diammonium-hydrogen-phosphate, as a combined source of nitrogen and phosphorus, and dextrose, mannite, and glycerin, respectively, as sources of carbon. At the end of two weeks, 4.2 mg. of nitrogen, that is to say, 10 per cent. of the total nitrogen of the uninoculated medium, has been so changed by the growth of this organism that it cannot be recovered as ammonia. This loss of ammonia is most plausibly explained on the assumption that it has been built up into the bodies of the newly developed bacteria. At the end of four weeks, between 40 and 50 per cent. of this lost nitrogen has reappeared in the clear medium underlying the pellicle of the tubercle bacilli in such a form that it can again be determined as ammonia. The period during which the disappearance of nitrogen from the culture fluid is the greatest corresponds with the period of maximum vegetative activity in the culture. Coincidently with the reappearance of this nitrogen, which can be detected as ammonia in solution, there are evidences of a cessation of vegetative activity. This strongly suggests that the reappearance of this ammonia is associated with a certain amount of autolysis of the bodies of the bacteria.

80. **Metabolism of Lepra, Grass and Smegma Bacilli.**—The authors found that the metabolism of the smegma and grass bacilli resembles that of the rapidly-growing, human tubercle bacilli, described previously, in two important particulars; neither dextrose, mannite, nor glycerin, exhibits any appreciable sparing action for the protein constituents of the broth, the amounts of ammonia produced being practically the same in these media as in plain broth; and their cultures present a gradual increase in proteolysis to a maximum which is followed by a clearly-defined recession of the metabolism indicated by a gradual decrease in the ammonia content. The lepra bacillus does not present this metabolic phenomenon. This would suggest that this bacillus was entirely distinct in its cultural relationships from the grass and smegma bacilli, which follow more closely the metabolism of the tubercle bacillus.

86. **Effect of Cholesterol on Phagocytosis.**—It appears from Dewey and Nuzum's experiments that cholesterol in colloidal suspension, injected into guinea-pigs and rabbits, has a depressing effect on phagocytosis. They believe that this action is probably chiefly on the leukocytes; for the opsonic index of normal serum with the washed leukocytes of an animal injected with cholesterol is lower than that of the same serum with washed normal leukocytes, and the index of the serum containing cholesterol with the washed leukocytes of the same blood shows a reduction in phagocytosis more than twice as great as that of such serum with washed normal leukocytes. The fall of the total phagocytic index, that is, of the serum of the animal injected with cholesterol acting on its own washed leukocytes, is 65 per cent. after one hour and 43 per cent. seventy-two hours after one small dose and 62 per cent. twenty-four hours after one large dose of cholesterol.

The chief difference in the results from injections of small and large amounts of cholesterol and of doses of higher and lower concentration seems to be, as far as the range of these experiments indicates, a more marked immediate effect from the large dose and from that of higher concentration. This inhibitory action of cholesterol, the authors suggests, is perhaps due to the presence of free cholesterol in the blood. Simultaneous injections of immunizing doses of streptococci with cholesterol result in an opsonic curve which is almost identical with that of the serum of an animal injected only with cholesterol. This apparent neutralizing effect of cholesterol on the formation of antibodies is marked when cholesterol is injected twenty-four hours after the animal has received the immunizing dose.

88. **Effect of Iodin on Absorption.**—The use of iodin and iodids in facilitating the absorption of necrotic material and organization of tuberculous and other granulation tissues, Hirsch says, has no experimental proof. The daily administration of potassium iodid does not hasten the removal of foreign substances, like tubercle bacilli, by stimulating the phagocytic properties of the endothelial cells. The presence of free iodin in such areas may influence the process only by favoring an inflammatory reaction, if the amount of iodin is sufficient, but has no effect in promoting absorption. Iodized fat-free tubercle bacilli are absorbed no faster than are the non-iodized.

90. **Copper in Tuberculosis.**—Corper's experiments showed that copper in simple salt form (sulphate, acetate, oleate and copper amino-acid mixture prepared from hydrolyzed egg albumin), injected intramuscularly into normal and tuberculous guinea-pigs in total amounts from 0.75 mg. up to

about 19.0 mg. for about two to one hundred days, enters the animal organism and is found mainly and in largest amounts in the liver, in small amounts in the kidneys, in traces in the spleen, lungs and blood, and not at all in the tuberculous lymph-glands and pus. After cessation of injections the copper slowly but gradually decreases in amount in the liver.

Copper, in simple salt form, injected intramuscularly in guinea-pigs, in amounts varying from 2.7 to 22.1 mg. during a period of thirteen to thirty-four days, previous to (nineteen days), coincident with (two days before), or after (eleven days) infection with tubercle bacilli, has appreciable effect on the progress of the tuberculosis, as indicated by the lesions present after death.

Copper, in simple salt form fed to rabbits in amounts up to 1,380 mg. of copper, during a period of ninety-seven days, and injected (copper sulphate and copper amino-acids) intramuscularly into rabbits, in amounts up to 55.1 mg. of copper, during periods of ninety days, enters the blood and is found mainly and in largest amounts in the liver, in small amounts in the kidneys, in traces in the lungs and blood and not at all in either the tuberculous or normal eyes. Copper, in the form of copper sulphate, fed to rabbits in amounts of 1 to 2 c.c. of a 1 per cent. solution daily for up to one hundred days, begun five days before infection, and copper in simple salt form injected intramuscularly into rabbits in amounts of 12 to 42.9 mg. copper, for thirty-seven days, begun on the eleventh day after the infection, has no appreciable effect on the course of tuberculosis of the eye as indicated by the development of the disease in the eye.

Colloidal copper, prepared electrolytically by Bredig's method injected intravenously into normal and tuberculous rabbits in amounts totalling 9.6 mg. from four to twelve days, is found mainly and in largest amounts in the liver, in smaller amounts in the kidneys, in traces in the lungs and not in the normal or in the tuberculous eyes. Copper, in the form of copper amino-acid mixture, does not differ greatly in its systemic (tested in mice with the lethal dose intraperitoneally and intramuscularly, about 0.05 to 0.1 mg. copper per mouse of 10 gm.) and local (tested intracutaneously in guinea-pigs) toxicity from that of copper sulphate when equal copper contents were compared. Locally, however, a difference existed in the fact that the copper amino-acid mixture produced a hemorrhagic necrotic lesion, whereas the copper sulphate produced a single necrosis. The local nonnecrotizing concentration proved to be 0.01 per cent. copper, while 0.001 per cent. copper still produced a slight duration.

Copper, in the form of copper oleate (50 per cent.) in lanolin by inunction, and copper amino-acid mixture applied to the skins of guinea-pigs, is absorbed, but only to a slight extent and with uncertainty, as shown by the presence of small amounts of copper in the liver.

91. **Relation of Cutaneous Allergy to Anaphylaxis.**—On the ground of the conception that the anaphylactic reactions are caused by substances in close relation to the parenteral splitting of protein, Meigs' experiments speak in favor of the hypothesis that the intracutaneous reaction of the sensitized animal is not caused by the same split-products which lead to the general symptoms of anaphylaxis on the reinjection of the allergen into the blood-stream.

94. **Toxicity and Antitetanic Action of Gentian Violet.**—According to Hall and Taber gentian violet distinctly inhibits the growth of the tetanus bacillus when 1 part saturated solution is added to 10,000 of dextrose agar. In dextrose broth, however, exposure for twenty-four hours at 37 C., at this concentration, has no perceptible effect on subcultures; the cultures failed from broth containing 1 part in 100. The organisms are not destroyed, however, as can be shown by animal inoculations. One part saturated solution in ten of broth destroys the virulence of a toxic culture. At this concentration more than 99 per cent. of the toxin is destroyed by contact at 37 C. for twenty-four hours. One part in 100 has no perceptible effect. The necessity of using more than 1 per cent. saturated solution for devitalization precludes the employment of gentian violet for the practical purpose attempted through excessive soiling of laboratory ware. Within the limits tested, the toxin appears to be destroyed under practically the same conditions as the spores. Guinea-pigs and rabbits withstand considerable injections of gentian violet in 0.85 per cent. NaCl. Distilled water solutions appear to be more toxic than those in salt solution and subcutaneous injections less than intravenous injections.

### Lancet-Clinic, Cincinnati

*November 21, CXII, No. 21, pp. 549-574*

96 *Public and Profession: A Criticism. D. Hecht, Chicago.
97 Purpura Rheumatica Associated with Genito-Urinary Lesions A. W. Nelson, Cincinnati.
98 Surgical Authority. F. Fee, Cincinnati.

96. Also published in the *Medical Record*, Nov. 21, 1914, and abstracted in The Journal, November 21, p. 1877.

### Laryngoscope, St. Louis

*October, XXIV, No. 10, pp. 837-900*

99 Deaf Child—Plea for Cooperation. M. A. Goldstein, St. Louis.
100 Anatomy of Tympanic Cavity. R. Butler, Philadelphia.
101 Vaccine Therapy in Ear Disease. V. Dabney, Washington, D. C.
102 Tuberculosis of Parotid Gland. T. E. Carmody, Denver.
103 Affections of Lingual Tonsil and Their Treatment. C. C. Biedert, Philadelphia.
104 *An Uncommon Case of Nasal Hemorrhage. J. A. Thompson, Cincinnati.

104. **Nasal Hemorrhage.**—There were two unusual features in Thompson's case. The right inferior turbinate body was all angiomatous tissue and when it started to bleed the hemorrhage could be controlled only by the complete removal of the tumor. The second unusual feature was the method of cure, a submucous resection. The septal cartilage was found to be softened and it was believed that the condition of the cartilage prevented a cure of the inflammation in the overlying mucosa.

### Medical Record. New York

*November 28, LXXXVI, No. 22, pp. 909-950*

105 Radium Beta Rays. R. Abbe, New York.
106 *Imbedded Radium Tubes in Treatment of Cancer. W. J. Morton, New York.
107 Microscopic Traumatic Lesions of Mucosa Found in Some Cases of Appendicitis. C. Savini, New York.
108 Case of Myxedema Allied to Infective Exhaustive Group. E. F. Leonard, Chicago.
109 Annular, Serpiginous, Bullous Eruption Complicating Vaccination. C. A. Simpson, Washington, D. C.
110 Case of Acute Myelogenous Leukemia. W. B. Stone and A. S. Fay, Schenectady.
111 The Load Our Students Bear. W. F. Waugh, Chicago.
112 Case of Retroperitoneal and Extensive Subcutaneous Emphysema Following Intratracheal Anesthesia, with Recovery. S. D. Ehrlich, New York.

106. **Imbedded Radium Tubes in Treatment of Cancer.**—Morton makes a further report of a case of a spindle cell sarcoma of the humerus remaining cured nine years after radium treatment. He also reports a case of primary carcinoma of the breast of the size of a large egg into which he inserted a tube containing 10 milligrams of pure radium bromid of an activity, of 1,800,000. The tube was left in place sixteen hours. A severe radium necrosis ensued, very slow to heal. Some time later on it was thought best on account of the slow healing of the wound simply to remove surgically the mammary gland involved. The patient at this date (1914) seven years later has never shown any signs of recurrence of the disease and remains in perfect health.

### New Jersey Medical Society Journal, Orange

*November, XI, No. 11, pp. 545-596*

113 Hospitals and Their Superintendents. G. K. Dickinson, Jersey City.
114 Hospital and Physician. E. J. Ill, Newark.
115 Efficiency of Hospital Service. E. Marvel, Atlantic City.
116 Hospital and Its Nurses. J. C. McCoy, Paterson.
117 *Standing-Order Evil in Hospitals from Surgical Viewpoint. F. H. Glazebrook, Morristown.

117. **Standing-Order Evil in Hospitals.**—The standing order is regarded by Glazebrook as a decided evil in the hospital management of operative cases, and in his opinion should be eliminated. He advises that the administration of alkaloid drugs especially morphin and atropin, commonly used in connection with operative cases, should be more

cautiously administered, and never given unless the indication for their use is positive, whereas the routine preanesthetic administration of morphin and atropin is, he says, an unsound and unscientific practice, the advantages claimed for the method not being enough to offset the risk involved.

### New York Medical Journal

*November 28, C, No. 22, pp. 1049-1096*

118 Phlegmons of Upper Respiratory Tract. Report of Cases. J. O. Roe, Rochester.
119 Intestinal Stasis. B. Robinson, New York.
120 Convulsions During Pertussis. L. Fischer, New York.
121 Sciatic Pains. A. M. Forbes, Montreal.
122 Epithelioma Varium. W. P. Cunningham, New York.
123 *Parageusia and Its Treatment. T. F. Reilly, New York.
124 Voice Fatigue in Singers and Speakers. I. W. Voorhees, New York.
125 Post Partum Hemorrhage and Treatment. J. Gardiner, Toledo, O.
126 A Stamp Bracelet Aid to Auscultatory Blood-Pressure Test. F. A. Faught, Philadelphia.
127 Determination of Exceptional Development in Children. M. P. E. Groszmann, Plainfield, N. J.
128 Garcia Fernandez. W. B. Jennings, Scarsdale.

123. **Parageusia and Its Treatment.**—As a result of a year's close questioning of patients on the subject, Reilly is convinced that persistent bad taste in the mouth is a symptom of much importance; that it is always an expression of a serious toxemia, and is frequently of great service in the early diagnosis of disease. In the early stages of chronic interstitial nephritis the patient complains of the bad taste only on arising in the morning and says that it disappears after breakfast. As the disease advances, often, but not always, it reappears later in the day, in some cases, particularly of the cardiorenal type, it reappears after exercise or at the close of the day. In one case, the ingestion of a meat meal caused a taste described as rubberlike to appear regularly two hours after eating and to persist for about two hours. In general, the prognosis seems to be worse the more constantly the taste is present.

In many instances bad taste was the only symptom the patient complained of, and Reilly suggests as a working rule that when any one, particularly a person of 45 years or upward, complains of persistent bad taste, a blood-pressure examination be made at once. This sign often precedes the appearance of other symptoms by a month or more. Next in frequency Reilly found this complaint associated with gallstones and cholecystitis. During an attack of cholelithiasis a large number of patients complain of bad taste, which is generally ascribed to coincident gastric disturbance or to the morphin given to relieve pain. In most instances, the taste is described as bitter, like gall. During the diminution of the attack, namely, after the colic has subsided while yet the pain and soreness remain, the taste is sometimes described as dry, but quite often the "gall" taste remains. In a few cases, the taste was described as being like musty eggs.

### New York State Journal of Medicine

*November, XIV, No. 11, pp. 513-553*

129 Correction of Nasal Deformities by Mechanical Replacement and Transplantation of Bone. W. W. Carter, New York.
130 Recent Developments in Otology. T. J. Harris, New York.
131 Clinical Irregularities of Heart Beat. A. Lambert, New York.
132 Various Methods of Blood Transfusion and Its Value. J. A. Hartwell, New York.
133 Removal of Facial Blemishes and Epitheliomata. E. W. Ruggles, Rochester.

## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### Brain, London

*September, XXXVII, No. 1, pp. 1-198*

1 *Clinical Aspects of Syphilis of Nervous System in Light of Wassermann Reaction and Treatment with Neosalvarsan. H. Head and E. G. Fearnsides.
2 *Comparison of Lesions of Syphilis and "Parasyphilis" Together with Evidence in Favor of Identity of these Two Conditions. J. McIntosh and P. Fildes.

1. **Syphilis in Light of Wassermann Reaction and Treatment with Neosalvarsan.**—All manifestations of syphilis of the central nervous system, according to Head and Fearnsides, are consequent on the direct activity of the *Spirochæta pallida*. The clinical picture evoked depends on the situation of this activity and on the susceptibility of the tissues. When the lesion lies mainly within the essential structures of the central nervous system, both neuroglia and the nerve elements participate in the tissue reaction. This results in the death and degeneration of certain systems of cells and fibers; to these secondary consequences may be due the greater part of the clinical manifestations. The more closely clinical signs and symptoms point to pathologic changes in the meninges and vessels, the more certainly will the disease yield to adequate treatment. On the other hand, the more nearly the clinical manifestations point to one or more foci of syphilitic activity within the parenchymatous tissue of the central nervous system, the less will they yield to the present methods of antisyphilitic treatment.

In syphilis meningovascularis the character of the Wassermann reaction in the cerebrospinal fluid depends on whether the spinal or basal meninges are affected. Should clinical evidence point to affection of the contents of the spinal canal, and occasionally when the basal meninges alone appear to be affected, the reaction is positive in the cerebrospinal fluid. When, however, the disease seems to be limited to the intracranial contents, the reaction in the cerebrospinal fluid tends to be negative or weakly positive. In cases of syphilis centralis, such as dementia paralytica, tabes dorsalis, muscular atrophy and primary optic atrophy, the Wassermann reaction in the cerebrospinal fluid is strongly positive so long as the disease is active. When, however, it has come to an end, leaving behind it a greater or less amount of irreparable degeneration, the Wassermann reaction may diminish in strength or even become negative in the cerebrospinal fluid. Under treatment with salvarsan or neosalvarsan, the Wassermann reaction in cases of meningovascular syphilis, if at first positive, will usually become negative in the cerebrospinal fluid within six months. On the other hand, the more the clinical manifestations point to syphilis centralis the less will they yield to any of the present forms of antisyphilitic treatment. No complete diagnosis or prognosis can be made until the patient has been under observation and treatment for at least six months, and the cerebrospinal fluid has been examined systematically from time to time.

Whatever the situation and nature of the lesion which is responsible for the clinical manifestations, some secondary degeneration must almost certainly result. Many of the signs and symptoms in cases of syphilitic disease of the central nervous system are therefore not amenable to any form of antisyphilitic treatment. It is, therefore, most important to make the diagnosis of syphilis early in the disease of the central nervous system, so that treatment may be employed before the advent of these secondary changes.

2. **Comparison of Lesions of Syphilis and "Parasyphilis."**—The progressive character of "parasyphilitic" lesions, McIntosh and Fildes claim, is due to a continuation of the syphilitic process in spite of treatment, and not to a progressive primary degeneration of the neurons. The degeneration passively extends to the limits of the neuron, but does not actively spread to other neurons. Treatment is ineffective in resolving the inflammation because drugs in the bloodstream are unable to pass from the capillaries into the nervous substance in order to destroy the spirochetes. If by some method salvarsan succeeds in penetrating into the brain or cord, it produces such toxic symptoms as make its use impossible.

### British Medical Journal, London

*November 14, II, No. 2811, pp. 821-864*

3 Borderland of Disease. G. Rankin.
4 *Present Knowledge of Thyroid. M. Mamourian.
5 Nicolle and Blaizot's Vaccine in Treatment of Gonorrhea. R. Donaldson.
6 *Blood-Platelets in Treatment of Disease. L. Dimond.
7 Insects and War: Ticks. A. E. Shipley.
8 Epidemic Poliomyelitis. A. A. Pim.
9 Treatment of Certain Cases of Appendix Abscess. C. M. Page.
10 Some Practical Considerations in Diagnosis and Treatment of Abscess of Cerebellum. W. Milligan.

11 Treatment of Vesical Papillomata by High-Frequency Current. A. Fullerton.
12 Operative Treatment of Abdominal Aneurysm. W. I. de Courcey Wheeler.

4. **Present Knowledge of Thyroid.**—A 4-year-old typical cretin was treated with thyroid extract for about three years without intermission. He came under Mamourian's care in January, 1910, and he continued the treatment for over six months, prescribing 20 grains of the dry extract per day. Neither his physical nor mental condition underwent any appreciable change. Mamourian then decided to try grafting. He had a sheep killed in the hospital while the patient was being anesthetized, removed the thyroid, placed it in hot saline and after incising it in several places planted it into the child's omentum, which was scarified with a needle. The patient made wonderful headway. Four years after the operation the boy has entirely lost his repulsive countenance, and looks pleasant and intelligent. He can read and write, tell the time and recognize coinage. He has grown to the extent of 10 inches in four years. Since the operation he has very occasionally had a 5-grain tablet owing to a stutter which he develops at times, and which, according to the observation of the boy's mother, completely disappears when a small dose of extract is given.

6. **Blood-Platelets in Treatment of Disease.**—Though good results are obtained from small doses of platelets and their plasma, such as from 1 to 5 c.c., Dimond has in particular cases, according to the indications, by means of 20 c.c. Record syringes, administered as much as 30 to 40 c.c. directly into the connective tissues under the skin between the shoulder blades. During an experience of many hundreds of injections, varying from 1 c.c. to 40 c.c., he has never yet seen any untoward result apart from a slight reddening of the skin for a few centimeters around the puncture, which clears up in from twenty-four to thirty-six hours. The patients have never complained of any pain as an immediate or after result of the injections, and in the majority of cases the hyperemia of the skin is simply accompanied by a slight sensation of itching.

When vaccines are administered either with the platelets or after sensitization by means of the platelets and their plasma, more definite local signs are the result, but never so marked or so intense as when the vaccine alone is injected. Having treated with platelets a large number of acute and chronic pulmonary conditions, as well as numerous cases of the secondary infection in phthisis, Dimond has found that for the organisms noted below the most suitable time for isolation of the platelets is, as a rule, as follows: *Diplococcus pneumoniae*, platelets withdrawn fifth day after injection. *Micrococcus catarrhalis*, platelets withdrawn third day after injection. Friedlander's bacillus platelets, withdrawn eighth day after injection. *Bacillus influenzae*, platelets withdrawn second day after injection. *Streptococcus pyogenes*, platelets withdrawn third day after injection. *Bacillus septus*, platelets withdrawn sixth day after injection. *Bacillus pertussis*, platelets withdrawn third day after injection. Regular estimations of the opsonic index in certain of these cases have shown that when the platelets are withdrawn after the above interval following the vaccine injection the best immunizing response is obtained.

### Edinburgh Medical Journal

*November, XIII, No. 5, pp. 361-440*

13 *Four Cases of Tuberculosis Treated with Béraneck's Tuberculin. R. A. Fleming.
14 Passing of Vesalius. G. M. Cullen.
15 Simple Form of Dressing Sterilizer. C. W. Cathcart.
16 Case of Intracranial Traumatic Arteriovenous Aneurysm Affecting Both Eyes. W. George and A. Miles.

13. **Cases Treated with Béraneck's Tuberculin.**—The first case cited by Fleming was one in which there were innumerable caseous cervical glands, so extensive as to preclude the possibility of their being removed by operation in the usual way, and Roentgen-ray examination demonstrated that the glands extended into the mediastinum. The second case was a tuberculous pleurisy with effusion, which had persistently resisted other treatment, and in which the swinging temperature, rising sometimes to 100 F., sometimes as high as 101 F., fell at once after the first dose of tuberculin, and did not rise again above normal. The third case was that of a boy aged 13½, suffering from tuberculous glands in the abdomen, attended by a great deal of abdominal discomfort. He had no pyrexia, but his increase in weight, and the general improvement in the condition of the abdomen which followed treatment, were alike remarkable.

The fourth case is interesting because, although under the effect of tuberculin, the temperature suddenly ceased to swing; there was no improvement in the patient's condition as regards the tuberculous lesion. While under tuberculin treatment, the boy started what was proved pathologically to be an extensive miliary tuberculosis and died of tuberculous meningitis. Small doses of Béraneck's tuberculin, given during the period when the meningitic symptoms were most marked, did not have any effect either in reducing temperature or in alleviating symptoms.

### Glasgow Medical Journal

*November, LXXXII, No. 5, pp. 321-399*

17 Six Cases of Disease of Lower Abdominal Organs, Some of Which Simulated Tumors of the Uterus and Adnexa. J. M. M. Kerr.
18 Two Cases Illustrative of Splenic Anemia and Splenectomy. W. R. Jack and D. T. C. Frew.
19 Practical Points in Abdominal Surgery. T. K. Dalziel.

### Indian Medical Gazette, Calcutta

*October, XLIX, No. 10, pp. 377-416*

20 Meaning of Insanity. G. F. W. Ewens.
21 Comparison between Mental Processes in Sane and in Insane. O. A. R. Berkeley-Hill.
22 Prevention of Mental and Nervous Diseases. A. Overbeck-Wright.
23 Ganja as Cause of Insanity and Crime in Bengal. A. S. M. Peebles and H. V. Mann.

### Journal of Tropical Medicine and Hygiene, London

*November 2, XVII, No. 21, pp. 321-336*

24 Meteorology of Malaria. M. D. O'Connell.
25 Case of Leishmania Tropica with Fatal Termination. A. R. Neligan.
26 Babesia or Piroplasma. A. J. Chalmers and R. G. Archibald.
27 Useful Prescription in Chronic Malaria with Enlarged Spleen. J. Cantlie.

### Lancet, London

*November 7, II, No. 4758, pp. 1079-1132*

28 Recent Advances in Science and Their Bearing on Medicine and Surgery. R. Ross.
29 Wounded in War: Some Surgical Lessons. D. Power.
30 Intratracheal Administration of Chloroform. W. D. Mart.
31 Ether Anesthesia by Intratracheal Method. Report of Forty-Nine Cases. R. L. Jones.
32 *Accessory Spleen Causing Acute Attacks of Abdominal Pain. R. C. Alexander and A. Romanes.
33 Action of Drugs on Plants. J. C. Bose.

32. **Accessory Spleen Causing Acute Attacks of Abdominal Pain.**—In the case which Alexander and Romanes observed the patient was a young woman aged 25, who three years previously had had her right kidney removed for calculous pyonephrosis. A year previously to her admission to the hospital she was suffering from an attack of tonsillitis, and while her medical attendant was treating her for that condition she complained of abdominal pain. Alexander, who saw her at that time, discovered a mass about the size of a golf ball in the left upper quadrant of the abdomen. This mass could be freely moved about all over the upper abdomen and was somewhat tender to touch. The only other clinical facts of note were a greatly enlarged left kidney, possibly a compensatory hypertrophy, and a considerable degree of albuminuria. A few days later another examination was made, and this time the lump could not be felt until the patient sat up in bed, when it was easily palpated. She was sent to the surgeon who had previously removed her kidney, but owing to her general health being below par, he was unwilling to operate. She returned home and improved in general health, but was subject to frequent attacks of pain of a dragging nature in the upper abdomen, this pain having no relation to the taking of food. The pain was usually rendered worse when the patient stooped, and was unaccompanied by other symptoms. These attacks of pain occurred

almost daily, coming on suddenly, lasting for one or two hours, then passing off and leaving her quite well.

In August, 1912, with the exception of the enlargement of the left kidney, nothing abnormal was detected on examination. The spleen was normal in size. Her general health was good and the amount of albumin in the urine very small. The tentative diagnosis of mesenteric or omental cyst was made, and as the patient said that the pain was exceedingly severe when it occurred and that it made her miserable, under a general anesthetic an incision was made through the upper part of the left rectus muscle. The viscera appeared normal and no trace of any tumor could be found till the hand was passed up under the diaphragm on the left side and a rounded mass was felt. This proved to be an accessory spleen about the size of a small tangerine orange situated at the lowest part of the great omentum. There were several large vessels running toward it. The omentum was ligated and the splenculus, which was entirely surrounded by omentum, was removed. The stump of the omentum was carefully stitched to prevent adhesions forming and the abdomen closed. No other accessory spleens were seen. Convalescence was uninterrupted and the patient had no recurrence of symptoms. Microscopically, its structure resembled that of the spleen, except that the lymphoid follicles were not so well developed and that there was considerable fibrosis of the whole organ with recent and old hemorrhages. The authors regard that cause of the pain to have been congestion of the viscus from torsion of the omentum obstructing the return of the blood-flow. There was no necrosis visible and there had been apparently no arterial obstruction.

### Presse Médicale, Paris

*October 29, XXII, No. 73, pp. 657-664*

34 Improvised Arrangement for Treatment with Electricity in Military Hospitals. (Moyen tres simple d'électrisation pour hôpitaux militaires.) H. Bordier.

*November 5, No. 74, pp. 665-672*

35 Prophylaxis of Epidemics during Wartime. (Conseils pratiques aux soldats et aux populations.) A. Martinet. (Prophylaxie et traitement du choléra.) L. Lagane.
36 The Wounded and the Base Hospitals. (Nos blessés et les formations sanitaires d'arrière.) F. Jayle. Commenced in No. 73.

### Correspondenz-Blatt für Schweizer Aerzte, Basel

*October 3, XLIV, No. 40, pp. 1249-1280*

37 Biologic Variability as Factor in Myopia. (Die Variabilität als Grundlage einer neuen Myopietheorie.) A. Steiger.
38 Compulsory Insurance of the Working Classes. (La loi des assurances et sur son application.) Pometta.

*October 10, No. 41, pp. 1281-1312*

39 Heat and Vital Energy. (Die Wärme im Energiehaushalt des Organismus.) W. R. Hess.
40 Protective Ferments in Eye Diseases. (Vorkommen von Schutzfermenten bei Augenerkrankungen.) C. A. Hegner.

### Deutsche medizinische Wochenschrift, Berlin

*October 22, XL, No. 43, pp. 1881-1896*

41 Infected Wounds. (Wundinfektionskrankheiten.) G. Jochmann.
42 Care and Treatment of the Feet on Marches. (Die Marschkrankheiten, ihre Entstehung, Verhütung und Behandlung.) P. Schuster.
43 Apparatus for Local Anesthesia on Large Scale. (Feld- und Lazarettapparat für Lokalanästhesie in Massenanwendung.) P. Kuhn.
44 Lint, etc., as Substitutes for Ordinary Dressings. (Ersatz von Verbandmitteln im Kriege.) Momburg.
45 *Gap in Motor Nerve Bridged by Stretch of Sensory Nerve from same Trophic Center. (Neue Methode der Transplantation bei Nervendefekten.) F. Cahen.

**45. Transplantation of Nerve.**—In the case reported by Cahen a gap of 12 cm. was left in the ulnar nerve after removal of a neurofibroma. The patient was a woman of 48 and the gap was bridged with the medial cutaneous nerve of the forearm. It was easily separated from the ulnar nerve in front of the axillary vein, and divided on a level with the peripheral stump of the ulnar nerve. The central stump of the cutaneous was then joined by a perineural suture to the peripheral end of the ulnar nerve. The central end of the ulnar nerve was then sutured to the trunk of the cutaneous nerve. The functional use of the nerve became restored surprisingly soon. By the fifth week the interossei muscles were functioning, and within six months the hand was being used practically normally. Sensation returned on the ulnar side of the fourth finger. Light pressure on the little finger still causes a slight tingling to run up the forearm.

### Deutsche Zeitschrift für Chirurgie, Leipzig

*August, CXXX, Nos. 5-6, pp. 433-640*

46 Pathologic Hernia Content. (Zur Pathologie des Bruchinhaltes.) S. Pollag.
47 *Importance of Positive Luetin Reaction in Diagnosis of Surgical Affections. W. Keppler and E. Herzberg.
48 *Splenectomy in Hemolytic Jaundice. (Zur chirurgischen Therapie des hämolytischen Ikterus.) P. Graf.
49 *Dermoid Tumors in the Mediastinum. W. Pohl.
50 *Mechanical Predisposition of the Apex of the Lung to Disease. (Experimentelle Untersuchungen über die mechanische Disposition der Lungenspitze für Tuberkulose.) K. Iwasaki.
51 Formation of Gas in Open Abdominal Cavity. (Gasbildung in der freien Bauchhöhle.) H. Fründ.
52 *Accessory Thyroid at Base of Tongue. (Die Zungenstruma.) R. Asch.
53 Cystic Disease of the Kidney Simulating Rupture. N. Paus.

**47. Luetin in Differentiation of Surgical Processes.**—A positive reaction testifies with practical certainty that the affection in question is of syphilitic origin, according to the experiences related in this article. If there is no pronounced reaction, the test should be repeated a week or ten days later; it may then prove positive. Negative findings by no means exclude syphilis. The reaction is more constantly positive in the third phase of syphilis, and especially when there are manifest surgical lesions. In these conditions the luetin test was found more reliable than the Wassermann.

**48. Splenectomy in Jaundice from Excessive Destruction of Blood.**—Graf comments on the familial character of this disease, and the absence of detectable bile pigment in the urine while it is present in the blood. The second generation feels the effects, generally, more severely than the first generation known to be affected. Some are born with the jaundiced tint; others develop it later. Hemolytic jaundice differs from Banti's disease chiefly by its familial character and the exceptional fragility of the red corpuscles. In Banti's disease, further, the jaundice stage is comparatively brief. Graf reports the case of a family with thirteen living children in which the father and six of the seven younger children present the typical syndrome of hemolytic icterus. The others have escaped it, and the jaundice was never very pronounced and in some has retrogressed. The enlargement of the spleen preceded the jaundice by several months, and the general health fluctuated with the size of the spleen. The two girls who seemed most seriously affected were treated by splenectomy with great benefit. The spleen was removed also from a man of 38 with typical hemolytic jaundice. The family history in this case was not known, but the jaundice had been noticed for nine years. The results a year after the splenectomy in these cases confirm the advantages of this procedure in hemolytic jaundice in adults. In the girl of 12 the reds have increased until they now number almost seven millions, and time alone will tell how the child is going to bear this polycythemia. Splenectomy therefore should not be advised for a child unless forced by severe disturbances. In the above-mentioned family the physical development of one youth of 17 was below par, and in the last few months he has had pneumonia and articular rheumatism. On this account splenectomy was advised, but the family refused.

**49. Mediastinal Dermoids.**—Pohl summarizes six additional cases found in the literature since Dangschat's compilation in 1903. The list includes Ceelen's case in which cancer had developed in the dermoid tumor. Pohl then reports the fifty-second case. It was a typical teratoma found in the anterior mediastinum of an otherwise healthy girl of 7. She died about a year after a contusion of the chest during play, followed by various respiration and heart disturbances from the injury to the teratoma.

**50. Mechanical Predisposition to Apical Disease.**—Iwasaki's extensive experimental research failed to confirm the alleged anatomic and pathologic bases on which Freund founded his operation of chondrectomy and Bacmeister his induced stenosis of the upper aperture.

52. **Lingual Goiter.**—Asch removed a small tumor from the base of the tongue which the patient, a healthy woman of 28 with three healthy children, first noticed two weeks before. It caused no disturbance except some interference with breathing as she lay in bed. What seemed to be the thyroid gland could be palpated deep in the neck, so no danger was anticipated from removal of this tumor even if it proved an accessory thyroid gland. The microscope revealed that the tumor was made up of both thyroid and parathyroid tissue. The woman felt well for a fortnight and then developed postoperative tetany and myxedema in a pronounced form, and by the end of six months she presented typical cachexia thyreopriva and parathyreopriva. She failed to take the thyroid treatment that had been advised, but the disturbances gradually subsided spontaneously. At present, four years since the operation, there are no symptoms except a slight myxedematous condition. The literature on lingual goiter is reviewed, with 133 bibliographic references. Among the 95 cases on record are 35 in which signs of thyroid insufficiency had been noticed before the operation (21) or necropsy (14). Only 12 per cent. of the total cases were in males. These tumors are always on the median line of the tongue, and generally fluctuate in size. In one case iodin treatment caused the tumor to increase in size while the general health suffered. Palpation of the thyroid region is not always very reliable, and in Asch's case had probably given misleading findings. In 9 per cent. of the total 95 cases of lingual struma, myxedema followed its removal. It would be better not to remove the whole of the tumor in case of doubt. In 4 cases another operation was required later; in a few other cases the tumor returned but subsided spontaneously later.

### Medizinische Klinik, Berlin

*November 1, X, No. 44, pp. 1633-1654*

54 *Dysentery. G. Singer.
55 *Symptoms and Treatment of Tetanus. F. Blumenthal.
56 Exanthematous Typhus. (Flecktyphus.) A. Frisch.
57 *Genital Hemorrhage in Newly Born Girl Babies; Ten Cases. (Genitalblutungen neugeborener Mädchen.) E. Zacharias.
58 Treatment of Arteriosclerosis and Obesity. C. H. Wedekind.
59 *Action of Epinephrin. (Zur Frage der Adrenalinwirkung.) J. Löwy.

54. **Dysentery.**—In the course of this discussion of the present status of dysentery Singer emphasizes that it must be managed on surgical principles. That is, we must appreciate that there is a large area of pathologic surface, and that the task is to keep this surface well drained and prevent accumulation of secretions at any point. The diarrhea is Nature's effort to accomplish all this, and we must aid this by copious flushing out of the bowel. He uses a soft two-way tube for this, and can thus flush the bowel with three or more liters, without discommoding the patient, until the fluid comes away clear. He commends bolus alba or charcoal as an important aid. In conclusion, he warns that the bacilli are liable to settle down and hibernate, as it were, for years. This is probably the true cause of chronic ulcerative colitis in some cases.

55. **Tetanus.**—Blumenthal, in commenting on the importance of an early diagnosis of tetanus, says that pains and twitching in the muscles around a wound liable to be infected with tetanus germs should give the alarm at once and call for preventive injection of antitetanus serum. These slight pains in the region are usually ascribed to rheumatism. We must constantly be impressed with the fact that trismus is by no means the first sign of tetanus, although it is of course the first unequivocal sign.

57. **Genital Hemorrhage in the Newly Born.**—Zacharias reviews the literature on this subject and reports ten cases from Zweifel's service at Leipzig. The hemorrhage does not seem to have any practical importance, and it subsides spontaneously after a day or so, although in some of the cases on record there was scant oozing of blood from the vagina for four to eight days. No symptoms accompanied the genital hemorrhage. Halban ascribes it to hyperemia of the uterus induced by the action of some hormone from the placenta, but Zacharias remarks that it must be more than a casual coincidence that his ten cases were all in unusually large children. At any rate, he adds, the unusual size of the child predisposes to the phenomenon. These ten cases represented 2.5 per cent. of the 400 girl babies systematically examined to detect the tendency.

59. **Dangerous Action of Epinephrin in Addison's Disease.**—In Löwy's case of advanced Addison's disease an intravenous injection of epinephrin caused sweating over the entire body and then sudden arrest of both the heart and the respiration. Only after half an hour's vigorous artificial respiration was the patient revived. In another case there were signs merely of irritation of the left sympathetic. An intravenous injection of epinephrin was followed by intense tremor and pallor, and the left side of the face alone was bedewed with sweat.

### Münchener medizinische Wochenschrift, Berlin

*October 27, LXI, No. 43, pp. 2125-2160*

60 Specificity of the Protective Ferments. (Experimentelle Untersuchungen über die Spezifität der Abwehrfermente mit Hilfe der optischen Methode.) H. Jaffé and E. Pribram.
61 The Casein-Splitting Ferments. (Bedeutung der kaseinspaltenden Fermente.) M. Kastan.
62 *Cardiac Asthma in a Child. P. Rohmer.
63 *Restriction of Fluids in Treatment of Edema not Traceable to Heart or Kidney Disease. (Durstkur bei Oedemen nicht-renal-kardialer Natur.) W. Nonnenbruch.
64 *Roentgen Treatment of Exophthalmic Goiter. (Zur Behandlung der Basedowschen Krankheit mittels Röntgenbestrahlung.) R. Sielmann.
65 Isolated Perichondritis of the Ensiform Process. E. Ruediger.
66 Diagnosis of Tuberculosis in Children. K. E. Ranke. Commenced in No. 42.
67 Gunshot Wounds of the Intestines. (Schussverletzungen des Darmes.) E. Enderlen.
68 *Tetanus. F. Voelcker and K. W. Eunike.
69 Experiences with the Wounded. (Die ersten Kriegsverletzungen im Vereinslazarett Schwenningen a. N.) K. Kolb.
70 Experiences of a Surgeon on the Firing Line. (Erlebnisse und Beobachtungen im Felde.) C. Thomalla.
71 Aviator's Arrow Pierces Shoulder and Peritoneum. (Tödliche Verletzung durch Fliegerpfeil.) Grünbaum.
72 *The Supply of Dressings. (Verbandstoffe sparen!) D. Krecke.
73 Mental Disease in the War. (Geisteskrankheiten im Kriege.) W. Weygandt. Commenced in No. 42.
74 Orthopedics for the Wounded. (Die Orthopadie im Kriege.) F. Lange. Commenced in No. 42.

62. **Cardiac Asthma in a Child.**—As arteriosclerosis is so rare in children, cardiac asthma is correspondingly rare, but Rohmer reports a typical case in a girl of 6 subject to recurring articular rheumatism. There was also heart disease and a tendency to dropsy when the child was first seen. The failing compensation was restored by suitable treatment and the ascites was absorbed. The fifth week, however, severe dyspnea developed like a bolt from a clear sky; the contrast was striking between the extreme difficulty in breathing and the negative physical findings. After a few days pulmonary edema ensued, speedily fatal. The necropsy findings confirmed the explanation of the syndrome as true cardiac asthma.

63. **Restriction of Fluids in Treatment of Edema Not Due to Heart or Kidney Disease.**—Nonnenbruch's experience has confirmed the assumption that the edema with kidney disease is the result of factors outside the kidneys. In a recent case of lymphatic leukemia in a man of 53 with edema in the left leg for six months and of both for three weeks, he kept down the intake of fluids. The output of water was increased materially by not allowing the patient more than from 700 to 1,100 c.c. of fluids during the twenty-four hours, and finally not over 600 c.c. With this the urine totaled systematically from 1,020 c.c. to 1,500 c.c. The edema subsided and the patient felt immeasurably relieved and was able to walk once more. In a case of pleurisy with effusion in a man of 25 similar benefit followed reduction of the intake of fluid to 500 or 600 c.c.; the amount of urine increased and the specific gravity ran up from 1.020 to 1.028. The area of dulness grew smaller and there was considerable subjective relief. In two other cases the benefit was also striking when the intake of fluids was restricted to 500 c.c. or less. In one patient the edema accompanied a cancer in the stomach; the other patient, a woman of 43, had an ovarian cyst, extreme ascites and pleurisy. Twelve liters of ascitic fluid were

drawn and the intake of fluids restricted for two weeks to about 400 c.c. When more was taken, the weight rapidly increased and was brought down to normal only by keeping the intake at 200 or 300 c.c. for several days. This patient died soon after of pulmonary edema. These cases amply confirm the beneficial influence of restricting the intake of fluids in dropsy from any cause.

64. **Roentgen Treatment of Exophthalmic Goiter.**—Sielmann has given twenty-one Basedow patients systematic Roentgen treatment in the last five years. The total duration of treatment was from six weeks to six months, and he never allowed the exposures to reach the point of inducing a dermatitis. His experience was so favorable that he urges this as the routine method of treatment after failure of medical measures. If this fails, then an operation should be considered. It may prove useful likewise to supplement operative treatment if this does not realize a complete cure. Only one of his patients failed to show benefit from the Roentgen treatment and required an operation. One patient was a young man with palpitations for a period of eight years, developing into pronounced typical Basedow's disease, was remarkably improved by four exposures, and by the end of three months, interspersed with three weeks' pauses, he was practically cured. The neck was 4 cm. smaller in circumference and the pulse, formerly 120 or 160, was permanently 80 and the exophthalmos and tremor had entirely disappeared. Another case teaches that an operation on the thyroid gland is not always a complete cure. The improvement for a few months after the Roentgen treatment yielded to a stormy recurrence of the syndrome and operative treatment was applied. This was followed by apparently a complete cure for a year, but then the whole syndrome returned again, but was banished anew by a few Roentgen exposures. Another lesson from this case is that the ovaries, the pituitary body or other glands evidently cooperate in bringing on Basedow's disease, and thyroidectomy does not remove all the cause.

68. **Tetanus.**—Voelcker reports encouraging success with a combination of antitetanus serum, subcutaneous injection of 5 c.c. of a 2 per cent. solution of phenol, plus local cauterization of the wound with concentrated phenol. This does not produce an eschar at once, to impede its action on the tissues, so it burrows deep and effectually sterilizes. He reports four cases of tetanus after shrapnel wounds in which this method of treatment was successfully applied. The trismus came on from the ninth to the fourteenth day after the injury. He gave the subcutaneous injections once or twice a day at first, increasing to five or six a day.——Eunike reports ten cases of tetanus among the 3,000 wounded in his charge at Ludwigshafen. The incubation was from nine to twenty-one days, and five of the men died. He warns that the early symptoms are liable to be ascribed to rheumatism or be disregarded, and thus precious time is lost.

72. **Losses in the War.**—Krecke's text is the necessity for economy in dressings for wounds, and he suggests various fiber-woven materials that might be used instead of cotton for dressings. To emphasize the need for economy, he remarks that losses up to 50 per cent. must be reckoned with in this war. In the Franco-Prussian war the losses averaged 18 per cent.; in the Manchurian campaign the Russian loss was 29 per cent. and the Japanese 40.9 per cent., but in the present war, he continues, "With 2,000,000 fighting, we must look for losses of 1,000,000. How large a proportion of this will be composed of wounded we have no means of estimating, but it is certainly not exaggerating to say that we can reckon with a half million wounded in the course of the first year of the war."

### Wiener klinische Wochenschrift, Vienna

*October 29, XXVII, No. 44, pp. 1399-1442. Wagner von Jauregg Number.*

75 *Chronic Veronal Poisoning. (Ueber chronischen Veronalismus.) O. Glaser.
76 *Psychic Changes after Resuscitation after Hanging. (Psychische Veränderungen bei wiederbelebten Erhängten.) H. Herschmann.
77 Traumatic Paradoxic Cerebral Embolism. (Paradoxe Hirnembolie als Unfallsfolge.) M. Infeld.
78 Progressive Paralysis under Tuberculin Treatment; Ten Cases. (Ueber zehn Fälle von geheilter Paralysis progressiva nach Behandlung mit Tuberkulin.) A. Joachim.
79 Paralysis of the Musculocutaneous Nerve; Two Cases. H. Müller.
80 Hysteria. (Zur Hysteriefrage.) E. Raimann.
81 *Etiology of Nervous and Mental Diseases in Private and Hospital Practice. (Statistisches zur Aetiologie der Nerven- und Geisteskrankheiten.) E. Redlich.
82 Dermographism. R. Reznicek.
83 *Tardy Tetanus of Gastric Origin. L. E. Wexberg.
84 Care of the Wounded. (Verwundetenfürsorge im Kriege.) v. Eiselsberg. Commenced in No. 43.

75. **Chronic Veronal Poisoning.**—Glaser summarizes from the literature nine cases of chronic veronal poisoning and adds a tenth case to the list. The drug had been prescribed for a temporary condition and the patient had continued its use for several months. Even when the single doses are small, the continued use in this way is liable to entail serious symptoms. The central nervous system is affected by it, and predominantly the cerebellum and the vestibular portion of the cochlea. The gastro-intestinal tract and vascular apparatus do not seem to be affected except as the drug depresses the action of the bowels and kidneys. This, with the euphoria and the habituation to small doses, tend to magnify the toxic influence of the veronal. The experiences related warn of the necessity for care in prescribing veronal for patients with a tendency to nervous or mental asthenia, and in any event to see that the drug is not taken continuously.

76. **Psychic Changes After Resuscitation of the Hanged.**—This number of the *Wochenschrift* is dedicated to von Wagner in honor of the twenty-fifth anniversary of his incumbency of the chair of nervous and mental diseases at the University of Vienna. He published about that time two cases in which women had been resuscitated after apparent death by hanging. Herschmann here reviews the similar cases on record and describes four unpublished cases. The upset of the circulation in the brain by the hanging causes a reactional functional hyperemia with concomitant physical-chemical phenomena which, in a number of cases, either completely cured a preceding psychic affection or aggravated it to complete mania. Redlich has witnessed a similar complete cure of extreme melancholia after recovery from a suicidal dose (3 or 4 gm.) of tincture of opium. Pötzl has observed a similar transformation after sunstroke in several instances.

81. **Etiology of Nervous and Mental Disease.**—Redlich compares 6,000 cases from his private practice with the statistics from a number of hospitals in Vienna and Berlin. In 14 per cent. of his 6,000 private cases syphilis could be incriminated. Multiple sclerosis was much more frequent in women than in men, while tabes affected 364 men to only 37 women. General paresis affected 39.7 of the men and only 4.4 of the women among his 890 patients with mental affections. In the hospital patients there was not this discrepancy, the figures being here 23.7 per cent. of the men and 11 per cent. of the women. The large percentage of syphilogenous affections and the evidence of the predominance of arteriosclerosis of the cerebral vessels, are interesting facts demonstrated in his private practice as compared with the hospital patients. In his 59 exophthalmic goiter cases, the women outnumbered the men 2.2 to 1, but of the 145 neurasthenics, there were 100 men to each 41.7 women.

83. **Tetany of Gastric Origin.**—Wexberg's patient was a woman of 56 who since the age of 37 had had more or less "stomach trouble" and at 48 attacks of tetany came on and recurred during the following eight years, at intervals of from three to six weeks. Wexberg's diagnosis was true tetany of gastric origin, and he gave the woman hydrochloric acid and pepsin to supplement the deficient gastric digestion, the test breakfast having shown apparently total lack of acid and pepsin in the stomach content. This treatment restored clinical conditions to normal; all the stomach symptoms subsided and with them the signs of tetany, including Trousseau's phenomenon. For the first time in eight years there have been no spasms for more than two months to date. The literature on the subject of gastric tetany is reviewed.

### Zeitschrift für klinische Medizin, Berlin

*LXXX, Nos. 5-6, pp. 381-550. Last indexed August 8, p. 518.*

85 Metabolism of Albumin in Experimental Pancreas Diabetes. II. (Eiweissstoffwechsel beim experimentel Pankreasdiabetes.) A. Galambos and B. Tausz.
86 *Cholesterin Esters in the Urine. (Ausscheidung anisotropen Fettes mit dem Harn in Zusammenhang mit dessen Ablagerung in den Organen.) A. Lawrynowicz.
87 Blood-Pressure with Arteriosclerosis and Nephritis. (Blut- und Pulsdruck bei Arteriosklerose und Nephritis.) W. Janowski.
88 *Classification of Uremia. (Zur Klinik und Einteilung der Urämie.) E. Reiss.
89 Influence of Secretions of Ductless Glands on Purin Metabolism. Fleischmann and Salecker.
90 Accessory Murmurs Heard over the Aorta. (Nebengeräusche über der Aorta.) Külbs.
91 Metastatic Obstruction of the Esophagus by False Membrane in Fatal Case of Diphtheria. W. Ceelen.
92 Double Arterial Wave with Aortic Insufficiency. (Anakroter Puls an der Arteria carotis und Arteria subclavia bei Aorteninsuffizienz.) M. Ludin.
93 Elimination of Creatin and Creatinin in Diabetes and Nephritis. D. Lampert.
94 Myeloma. H. v. Bomhard.
95 Intracranial Murmurs. (Kranielle Geräusche.) H. Köster.

86. Reviewed in The Journal, Oct. 31, 1914, p. 1615.

88. **Classification of Uremia.**—Reiss presents evidence to prove that uremia occurs in three principal types, with mixed forms. The first type, asthenic uremia, is characterized by drowsiness and apathy, physical fatigue and liability to sudden death from heart failure. The elimination of salt, nitrogen, etc., by the kidneys is defective. In the blood the osmotic pressure and the residual nitrogen are abnormally high. The second type is that with a tendency to convulsions and paralysis of speech and limbs. The external secretion of the kidneys is normal and likewise the blood findings in this form of uremia. The third type is characterized by psychic disturbances, confusion, hallucinations, visual and other delusions and profound coma. These conditions are generally transient. With this type also there does not seem to be any retention of normal waste products, but the arteries of the brain show signs of sclerosis in these cases, and this possibly favors the trouble. Mixed forms with one or the other of these types predominating are most common. Pure examples of the first and third types are comparatively rare. The trouble in uremia seems to be mainly an inability to dilute properly the juices and fluids in the body. The normal relations between the water and the dissolved substances are upset. The blood-serum shows the albumin content constantly within or above normal range, even when by intake of large amounts of fluid and venesection efforts are being made to dilute it.

### Zeitschrift für Urologie, Berlin

*August, VIII, No. 8, pp. 609-698*

96 *Diagnosis and Treatment of Movable Kidney. (Wanderniere.) W. V. Simons.
97 Large Ureter Stone. P. A. Specklin.
98 *Primary Cancer of the Ureter. O. M. Chiari.

*September, No. 9, pp. 699-738*

99 Pyelitis in Pregnant Women. K. Franz.
100 Factors Influencing Secretion-Pressure in the Kidneys. (Experimentelle Beobachtungen über den Sekretiondruck der Nieren.) Hammesfahr.
101 The Normal Bladder and Its Sphincters; Changes Following Suprapubic Prostatectomy. A. Hyman (N. Y.).

96. **Wandering Kidney.**—This long article from Küttner's service at Breslau is based on 48 cases. Operative treatment was applied in 25; on both sides in 4. There was ptosis of other organs in 12 and trauma was incriminated in 12; 22 of the 40 women had borne children and there was intermittent hydronephrosis in 9 cases, and 18 of the patients had had attacks of local pain. One patient died within a year of uremia and one succumbed to hemophilic hemorrhage after the operation, and another was saved only by nephrectomy. Recent data from 16 of the 19 nephrectomized patients show that 4 were cured, 5 improved, 5 unimproved and 2 have died; from 8 of the 17 given conservative treatment, only 3 are cured and 2 improved; 3 were not benefited, and one of the improved has to wear a bandage. Küttner suspends the kidney from the twelfth rib, passing one or more suture threads through the parenchyma of the superior pole and suturing the capsule with silk to adjacent muscle or fascia; sometimes one drain; bed-rest for eighteen or twenty days.

98. **Cancer of the Ureter.**—From a woman of 54 Chiari successfully removed 15 cm. of the left ureter containing a papillary cancer, the eighth he has found on record. He compares his case with others of cancer of the ureter, the literature showing seventeen cases of primary malignant disease in the ureter. The diagnosis in his case was rendered practically certain by catheterization of the ureter, showing the bleeding obstruction.

### Zentralblatt für Chirurgie, Leipsic

*October 31, XLI, No. 44, pp. 1633-1656*

102 *Economy in Dressings. (Ueber Sparsamkeit beim Gebrauch der Verbandstoffe.) F. Franke.

102. **Economy with Dressings.**—Franke protests against too frequent change of dressings, and says that the dressing material often is not utilized to the utmost. Unless there is danger that the scar may be disfiguring, he does not change the dressings as early as some do, seldom before the ninth day after amputation of the breast, for example, which he always drains now since he had disagreeable experiences in a few cases with retention of blood. He insists on having the dressings applied in his service in such a way that they can be unwound and placed to soak till next day in the already used lye in the laundry. Then they are washed in fresh lye, rinsed, dried and sterilized. By this means they can be used over again, six or seven times or more. Gauze sponges are used over again in the same way—eight layers are overcast to make a sponge; when they grow too ravelly, a number of them are wrapped in a square of mull and used for a dressing pad. The outer bandage can be made of thicker mull or cambric and lasts indefinitely. The dressings can thus be utilized to the last scrap, and end by doing good service in the form of sterilized lint. He has never had any harm result from this economy in dressings, no infection among the washerwomen. The ironing is done by convalescents.

### Zentralblatt für Gynäkologie, Leipsic

*October 31, XXXVIII, No. 44, pp. 1369-1392*

103 Importance of Distinguishing the Lower Segment of the Uterus; the Uterus Isthmus. (Das untere Uterinsegment.) J. Veit and P. Zweifel.

### Zentralblatt für innere Medizin, Leipsic

*October 31, XXXV, No. 44, pp. 969-984*

104 Staphylococcus Erysipelas. F. Reiche.

### Gazzetta degli Ospedali e delle Cliniche, Milan

*August 9, XXXV, No. 95, pp. 993-1008*

105 Cholesterinemia in Pulmonary Tuberculosis. A. Farini.

*August 11, No. 96, pp. 1009-1016*

106 Fecal Concrements Cause of Appendicitis; Nine Cases. C. Scandola.

*September 6, No. 106, pp. 1121-1136*

107 Vaccination against Small-Pox. C. S. Materazzi.

*October 25, No. 120, pp. 1845-1860*

108 Early Syphilitic Phlebitis; Two Cases. V. Fisichella.

### Pediatria, Naples

*November, XXII, No. 11, pp. 803-880*

109 Blue Spot in Children. (Frequenza delle macchie mongoloidi nella popolazione infantile di Cagliari.) O. Cozzolino.
110 Relations between Alexin Content of the Blood Serum and Phenomena of Anaphylaxis in Tuberculous Children. S. Maggiore.
111 Kala-Azar in Children in Naples District. (Nuovi casi di Leishmaniosi infantile osservati a Napoli e dintorni.) G. Gatti.
112 *Diagnostic Importance of Enlarged Glands in Axilla with Glandular Tuberculosis in Infants. (Il segno di Hochsinger nella diagnosi di adenopatia tracheo-bronchiale nel lattante.) A. Corica.

112. **Diagnostic Importance of Enlarged Glands in Axilla with Glandular Tuberculosis in Infants.**—Corica found the skin tuberculin reaction pronounced in thirty-three of forty infants with enlarged glands in the axilla. This evidence of glandular disease—to which Hochsinger first called attention—is thus an important sign of tuberculous tracheobronchial glandular trouble.

### Policlinico, Rome

*November 1, XXI, No. 44, pp. 1537-1568*

113 Sterilization of Intestine against Cholera; Post-Mortem Experiments. C. Fermi and U. Cano.

*October 15, Surgical Section, XXI, No. 10, pp. 461-508*

114 Separation of Lower Epiphysis of the Femur and Operative Treatment. (Il distacco epifisario inferiore del femore e la sua cura cruenta.) O. Uffreduzzi.
115 Hernia of the Appendix. (Dell'appendicocele comune e dell' appendicocele semplice con sacco in parte aderente.) R. Mosti.
116 Interposition of Fat or other Substance in Operating on Joints, etc. (Di una eccezionale indicazione alla impiombatura per la guarigione di una lesione suppurativa della tiroide e dell'uso della impiombatura nella moderna chirurgia.) I. Scalone. Commenced in No. 9 and continued.

### Riforma Medica, Naples

*August 29, XXX, No. 35, pp. 953-980*

117 *Quantitative Test for Stercobilin in Feces. (Urobilina nelle feci.) G. Gastaldi.
118 Glycosuria and Diabetes in Railroad Employes. C. Rubino.

*September 2, No. 36, pp. 981-1008*

119 Virulence of Micrococcus of Undulant Fever. G. Lucibelli.
120 Direct Visual Inspection of Abdominal Cavity and Chest. (Laparotorascopia diretta.) A. Roccavilla.
121 Blood Findings in Acute and Chronic Benzol Poisoning. P. Secchi.
122 Kala-Azar. P. Verrienti and P. Russi.

*September 12, No. 37, pp. 1009-1036*

123 Nutrient Intravenous and Subcutaneous Injections of Sugar According to Kausch; Experimental Research. L. Eustachio.

117. **Stercobilin in the Stools.**—Gastaldi remarks that exact findings are not attainable even with the most complicated usual tests for determination of bile pigment in the feces, while the simple method he uses is accurate enough for practical purposes. He dissolves 0.01 c.c. from the twenty-four hours stool in 50 c.c. of 95 per cent. alcohol and adds 1 c.c. of Obermeyer's reagent, stirring it well for twenty minutes. It is then filtered, evaporated down to 10 c.c. and the Nencki reagent is added until there is a pronounced green fluorescence. The amount of dilution required for this is the quantitative index. At the same time he examines the urine in the same way, stirring 0.01 c.c. from the twenty-four hours urine into 10 c.c. of chloroform; sets it aside to settle, decants the urine, and adds 5 or 6 drops of fuming nitric acid. He then adds alcohol to the chloroform extract thus obtained until the fluid becomes limpid; evaporates down to 10 c.c. and then dilutes with the Nencki reagent until the green fluorescence develops. He tabulates the findings with these tests applied parallel to both urine and stool. In normal conditions the average dilution required is 1 : 350 and never more than 1 : 500. In cirrhosis of the liver, fluorescence was apparent even with a dilution of 1 : 1,300 in one case and the range in five cases was from 500 to 1,300. In seven cases of pernicious anemia the range was from 1 : 1,000 to 1 : 4,250. (The Obermeyer reagent is the familiar 2 per thousand solution of ferric chlorid in concentrated hydrochloric acid. By the Nencki reagent Gastaldi probably means the test for indol with nitric acid plus a little nitrous acid.)

### Brazil-Medico, Rio de Janeiro

*October 1, XXVIII, No. 37, pp. 349-356*

124 Case of Cancerous Meningo-Myelitis. A. de Carvalho.

*October 8, No. 38, pp. 357-364*

125 Acromegaly and Tabes. A. de Castro.

### Russky Vrach, Petrograd

*XIII, No. 26, pp. 901-932*

126 *Abderhalden's Test for Serodiagnosis. G. G. Tara and N. P. Kochneva.
127 Poisonous Action of Extracts of Organs. L. G. Gutman.
128 Antigonococcus Serum. V. Berezoff.
129 *Prognosis in Pneumococcus Meningitis. A. R. Krever.
130 *The Chemical Action of Chymosin. V. M. Sudakova. Commenced in No. 25.

126. **Serodiagnosis.**—Tara and Kochneva compared the dialysis and the optic methods for the Abderhalden test, their findings showing that placenta tissue is not digested by the serum of normal persons, but is digested by that of nephritics. The serum of a pregnant woman digests placenta, carcinoma and lung tissue. The serum in progressive paralysis digests brain tissue, which is not digested by serum from patients with functional psychoses or neuroses. Placenta extract digests placenta and lung tissue, but not that of cancer.

129. **Prognosis in Pneumococcus Meningitis.**—Krever distinguishes two forms of pneumococcus meningitis which differ according to the place of origin, and which give a different prognosis. One form is a pneumococcus meningitis as the result or complication of some other pneumococcus infection, such as croupous pneumonia, otitis media, sinusitis, or endocarditis, etc. This form gives a decidedly unfavorable prognosis. The other form of meningitis is caused by pneumococcus infection from the nasopharynx, when the micro-organisms invade the blood. This form has a comparatively favorable prognosis. The difference in the prognosis is due, Krever thinks, to the varying virulence of the virus which is more active in the former type, leading to a purulent meningitis which usually proves fatal. Coming from the nasopharynx, the virulence of the micro-organisms is somewhat attenuated, causing only a serofibrinous or hemorrhagic inflammation with a better outlook.

130. **The Chemical Action of the Milk-Curdling Ferment of the Gastric Juice.**—This ferment, chymosin, commonly occurs together with the proteolytic ferment, and produces a sediment from solutions of peptonized products. Sudakova studied the chemistry of this ferment experimentally and came to the following conclusions: During the action of chymosin on solutions of peptones there occurs a change of their ability to bind acids and alkalies. These changes depend on the degree of acidity of the medium. Greater acidity of the medium (0.3 per cent.) diminishes the binding ability of the peptones; a lesser acidity (0.04 per cent. and 0.14 per cent.) increases same. The amount of the ferment apparently plays some rôle, but there does not seem to be any direct correlation between the amount of the ferment and the change in the properties of the proteins to bind acids and alkalies.

### Hospitalstidende, Copenhagen

*November 4, LVII, No. 44, pp. 1321-1344*

131 Artificial Heliotherapy for Lupus and Bone and Joint Tuberculosis. A. Reyn and N. P. Ernst. Commenced in No. 43.

### Hygiea, Stockholm

*LXXVI, No. 19, pp. 1073-1135*

132 Connection between the Pituitary Body and Diabetes Insipidus. (Om diabetes insipidus och dess förhållande till hypofysen.) G. Kahlmeter.
133 Present Status of Cultivation of Tissues Outside of the Body. (Om odling av vävnader in vitro.) F. Henschen.

### Norsk Magazin for Lægevidenskaben, Christiania

*November, LXXV, No. 11, pp. 1249-1368*

134 Atypical Reactions to Alcohol and Their Medicolegal Importance. R. Vogt.
135 Diagnostic Measures in Sensory Disturbances of Tabes. (De sensible forstyrrelser i tabes: maal for ledsansen.) G. H. Monrad-Krohn.
136 Mushroom Poisoning. (Fluesopforgiftning.) K. Motzfeldt.
137 Vocal Fremitus with Pleural Effusion. (Et tilfælde av sterk stemmevibration ved pleuraekssudat.) S. Høyer.
138 Treatment of Empyema of the Pleura; Twenty-One Cases. S. Widerøe.
139 *Gummatous Myocarditis. (Gummøs hjertesyfilis.) F. Harbitz.

139. **Gummatous Myocarditis.**—In Harbitz' case a man of 38 who had contracted syphilis fifteen years before, suddenly developed dyspnea and cyanosis and died the fourth day. Necropsy disclosed adherent pericardium and total obstruction by gummas of the superior vena cava for a distance of 1 cm. The lumen was completely obliterated. In this segment and also in the wall of the right auricle and left ventricle there were several gummatous formations. There were also syphilitic changes in the small branches of the coronary artery, in the pleura and the adjacent lung tissue. This is the third case of gumma in the myocardium ever encountered at the Pathologic Institute at Christiania. Syphilis as a direct cause of death, as in this case, is comparatively rare.

### Ugeskrift for Læger, Copenhagen

*October 29, LXXVI, No. 44, pp. 1893-1930*

140 Age at Onset of Menstruation. (I hvilken Alder indtræder Menstruationen hos Kvinder her i Landet?) O. Helms.
141 Spread of Diphtheria by Milk. (Difteritisepidemi foranlediget ved smittebærende Mælk.) V. Holm.

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# THE SOCIAL STATUS OF MEDICAL PRACTICE*

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MINNEAPOLIS

This is a significant occasion. Here sit the senior class of St. Louis University, School of Medicine. for the last lecture which they as students will ever listen to. Here are gathered the faculty to lend emphasis to this last lecture. Here stand I who have taught these students and now am chosen to speak last for this faculty to this class. Here on the table are rolls of parchment—the visible tokens of years of toil, of a task accomplished and of this strong, old university's stamp of approval. You, my boys, will presently come up here to receive these diplomas. You will cease to be students in the technical sense. You will become Doctors of Medicine. It is a good time for "balancing the books," for inventory, for forward-looking.

From the army of men of your age you have been picked out. You are a favored few of a large social group. You have received the discipline of a useful and honorable profession. You have been prepared for work in the world. You may think you have done this yourselves, but you have not. Your ancestors who passed on to you choice gifts of heredity have done it. Your fathers and your mothers who denied themselves for you have done it. The race of doctors from the nameless founder of medicine far back in the dark of prehistoric time has made it possible for you to sit here. Large-hearted philanthropy has done it. Wise statesmanship has done it. Broad-minded municipal spirit has done it. The mighty power of human society has done it. Admitting that you have done your share and done it well, the question nevertheless confronts you, "How will you repay these priceless gifts which humanity has conferred on you?"

Now I warn you that I am not going to tell you how to repay. I am not going to lecture you on your duties. This is not going to be a sermon. You are old enough to decide for yourselves. The sentiment I am going to set before you is this from Thomas Huxley: "Learn what is true in order to do what is right."

*Knowing What is True*: That is where the shoe pinches. Life is very complex. The world is full of people. Interests are multiple and conflicting. Vision is partial and fleeting. Do the best you may, nevertheless the life of each of you is bound to be, in a measure, "A Doctor's Dilemma." If you succeed here, you must fail there. If you master this, you must let that other go. If you save this man's life, you must leave that other perhaps to die.

No one can deliver you from these alternatives. You must make your own judgments. They are what make life worth while. You must stiffen your backbone and carry your own load of responsibility. You must for your own selves "learn what is true in order to do what is right." This address is intended to direct your eyes toward some of the great problems concerning which you must learn the truth, if you are to lay out your lives as physicians along broad and satisfying lines; if you are to be "doctors" in the fullest sense.

### EGOISM AND ALTRUISM

At the start I wish to remind you of the two motives which knowingly or not will rule the life of every one of you. First is the egoistic or individualistic motive. This begins with the fact that each one of us is a unit, a single separate animal. Each must live his own life. Each must breathe for himself, eat for himself, sleep for himself, think for himself, enjoy for himself, be sick for himself, die for himself. We cannot get around or deputize these inexorable necessities. Consequently the egoistic motive from the birth of humanity has always been very powerful. It says: "Push forward. Overcome obstacles. Drive off opposition. Overwhelm competitors. Grasp and do not let go. Take wherever ye find. Grow fat, for it is your right. Live your own life fully, for it is all you have. Let others look out for themselves." Thus speaks individualism. Its battle-cry is the Survival of the Strongest. Its prototype is the Superman.

Over against this is the altruistic or group motive. It begins with the fact that each one of us had human progenitors. Our mothers bore us into the world. Our fathers protected us in early life. But all humanity has done in a measure what our fathers and mothers have done. We are members of a great community. We have inherited and must bequeath. The race is more than the individual. We *cannot* live for ourselves alone. We ought *not* to live for ourselves alone. Hence arises the altruistic philosophy, and it says, "Do unto others as ye would they should do unto you." Its battle-cry is Human Brotherhood. Its prototype is Jesus of Nazareth.

Thus are and thus speak the two great motives, egoism and altruism. They seem antagonistic, unlike, far apart as the poles. Yet from a practical point of view we see both acting together in every human being. No man can live absolutely by or for himself. The hermit hunter of the mountains comes down for bullets and gunpowder. The all-conquering Napoleon must make dukes and kings of his generals. On the other hand, no man can live wholly for others. In the first place he cannot get around the imperative necessities of his own body. He must provide for himself. The merchant who gives away his goods soon has no goods to give. The missionary who goes unprotected among cannibals is eaten. To come nearer home, the doctor who does not charge for service will not long be able to serve. It amounts in the end to this: A reasonable regard for self is indispensable that we may serve others. A reasonable service for others is indispensable that we may truly serve ourselves.

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* Address before the graduating class, St. Louis University School of Medicine, June 1, 1914.

I have led up to this thought with three objects in view: First, to make clear to you that knowingly or unknowingly each of you is bound to adjust his life between the ideals of egoism and altruism. Should it not be knowingly? Should not each move in your career be determined after consideration from both points of view? For one I trust that the latter may be your method of planning your lives—thoughtfully, courageously, with due regard for yourselves and others.

Secondly, I wish you to see that more and more through the ages the altruistic note has become dominant in human affairs. First it was the family for which man limited his individual freedom. Next it was the neighborhood. Next, the tribe. Next, the nation. And with each recognition of altruistic obligation has come further surrender of the individual and further advance of civilization. To-day it may be prophesied safely that no individual right, whether of property or person, will be allowed permanently to stand which conflicts with the prosperity, happiness or health of the organized whole. You will note that I have used the word health here for the first time. The right of society to health is one of the latest rights to be recognized. The right and duty of society to secure and protect health are bound more and more to come to the front as prime motives in limiting the individual. This is a fact of growing significance. It is bound to affect your lives. I shall return to this topic later in this address. For the present I wish to advance my third reason for discussing individualism and altruism. It concerns your chosen profession. Medicine began and has continued until recently quite strictly as an individualistic calling. The nature of the profession led inevitably to this history. Men are sick as individuals. Treating their ailments began as a personal service. As society advanced the intimate relation of patient and physician came more and more to be emphasized. Reasons of business expediency, of personal modesty and of family intimacy made the relation confidential. The individualistic desire to get well is an instinct ever clamorous and insistent, whereas the social value of health is an intellectual concept only slowly gaining acceptance and still more slowly becoming a moving force. We willingly pay to be relieved of individual pain and immediate bodily embarrassments. We have not yet achieved such breadth of vision as to pay to be protected from that which threatens the social body, but may not come to us individually.

Thus medicine grew up and is to-day very largely a personal service. Each of you in a certain sense is going into business. You have something to sell. You will look for a market. You will sell to him who desires to buy. You will take your pay. You will sell to some who cannot pay; to some who will not pay. And just as in every other business, you will make those who do pay pay also in the long run for those who fail to pay. This is the rule of trade. It must be followed if you would succeed financially. It is the inevitable result of the individualistic position of medicine at the present day.

With the knowledge, however, of the nature and cause of disease acquired in the last half century, a change has begun whose effects are already plainly perceptible and whose eventual far-reaching results over your profession no one at present can foresee. We know now that disease is never wholly an individual matter. Some diseases are predominantly social. Consequently your relation as physician, to persons afflicted with these diseases must involve a relation to the whole social body. You cease to be merely a seller of merchandise. Your dealing is no longer exclusively with the individual. You become the servant of the whole people. Society already places explicit duties on you, and by implication requires many more. As time goes on it will demand still others. Medicine is losing its individualism. This you must recognize and you must adjust yourselves to the new condition. More than that, you must lead, if you are men worthy of these diplomas, you must lead society in the great movement to eliminate disease. You must become less and less the sellers of healing and more and more the captains of health. This means in the end a broader responsibility and a more dignified station. But meanwhile it means readjustment and possible hardship. How are you of the next generation of doctors going to face this great social movement? Are you going to sit back on the cushions of ancient privilege? Are you going to rest content on ideals of personal service? Or will you rise to the concept of higher duty? Surely these things are worthy your best thought as you enter and carry forward the work of your profession.

It is therefore not in any ordinary spirit of interest but rather with high inspiration that you are asked to consider more specifically, for these last few minutes, some of the movements and signs of the times.

### THE PUBLIC HEALTH CAMPAIGN

First there is the wonderful and far-reaching activity known as public health or preventive medicine. This movement finds its scientific foundation in Pasteur's demonstration of the cause of disease and the nature of infection. It finds its mathematical verification in vital statistics. It finds its financial justification in the value of the human animal. But it finds its moral justification in the altruistic ideal of race welfare and community happiness.

It is hard to discuss this question without resort to statistics. We might show that the average length of human life in Europe has increased from eighteen or twenty years to over forty years. We might quote the death-rate in New York City as 36 per thousand in 1866 and 14 per thousand in 1913. We might estimate what this means to the wealth of the world, when considered "in conjunction with the simple proposition that *wealth is always and only the result of human labor.*"

On the other hand, we might point to the enormous work yet to be done. We might dwell on our national crime of 1,100 preventable deaths a day—fifty lives, perhaps a hundred, in this land of ours, snuffed needlessly out while we sit here during these exercises.

However, figures are dry; statistics do not comport well with commencement joys. I shall content myself with authoritative quotations which ought to stimulate the thought and arouse the activity of every person present.

Says Disraeli:

> The public health is the foundation on which reposes the happiness of the people and the power of the country. The care of the public health is the first duty of a statesman.

Says Pasteur:

> It is within the power of man to make all the infectious diseases disappear from the world.

The significance of these statements for every man and every woman everywhere is easily appreciated. If there is such a thing as social consciousness, then each of us contributes to that consciousness. If there is such a thing as group activity, then each of us must either engage in that activity or act as a drag on social progress. If there is such a thing as group responsibility, then each one of us is responsible. Who shall doubt that there is such consciousness, such activity, such responsibility? Only he who denies absolutely the altruistic ideal. It behooves us, therefore, each and every one to study, endorse, support and actively engage in the public health campaign. If we do less we are false to our duty as men. This applies to all men. It applies particularly to physicians.

But wherein lies the special plea to the medical profession and to this graduating class? Exactly in this: The doctors must be the explorers and pioneers of this great movement for race betterment. This mission they are attempting in every way to accomplish. They *ought*, further, to be the active leaders of public sentiment, the molders of political action and the most scrupulous supporters of every legal regulation. Can the doctors qualify for the latter high offices? I regret to confess my belief that they cannot so qualify.

It is true that physicians as a whole give assent to the principles of preventive medicine. They endorse the health movement, although they know it means diminution of their business. Moreover, practically without exception, they practice those methods of routine in their professional work which are calculated in a measure to limit the spread of disease. Through their associations they carry on an active and valuable campaign of education, and assist in the indispensable political propaganda.

It is as individuals that they fail. And they fail because they still take the narrow individualistic view of their work. They get the patient so close to their eyes that they cannot see the public. They consider their trade and fail to recognize their profession. How many of them, for example, find it convenient to fail to report cases of infectious disease? How many connive at violation of quarantine? How many give weak support to public officials in health matters? I may be wrong in the impression that the number guilty of all these offenses is large. But I am not wrong in the observation that far too few physicians are accurately informed on matters of public health. Far too few are leaders of public sentiment. Far too few even make serious effort to educate their own patients in their public duties. Many valuable measures fail through the indifference of the profession. Many reforms are delayed for years because the doctors are afraid to be reformers. Moreover, one need not search far to discover evidences of active opposition. In England the medical association opposed to the last moment the great insurance act.

You may say that one should not expect the doctors to be different from other people when they see their business involved. But these are educated men and should be alive to the spirit of the times. Many of them are behaving at present much as did the spinners and weavers when power machinery was introduced. Surely the most highly trained profession should rise above the motives of ignorant workmen.

Says Macilwaine:

> The overwhelming majority of the profession do not concern themselves with prevention.

Says Ditman:

> Disease, crime, pauperism, insanity and preventable accidents are the foulest blots on the modern civilized state, and the responsibility for the amelioration of these curses must be faced on the last analysis by the medical profession.

You may point to the important accomplishments in sanitation and public hygiene, and claim the credit for the medical profession. I grant the importance of the achievements and acknowledge in large measure the justice of the claim. These accomplishments, however, involved for the most part, the control of matter and natural forces—what has aptly been termed the "non-human environment." They were largely engineering problems such as water-works, filtration plants, sewers and garbage incinerators. Or they involved control of lower forms of life such as mosquitoes, ticks and rats. The things that are to be done are vastly more difficult because they involve the human animal. Every step from now on must begin with a limitation of individual freedom and individual rights to property. Inherent and heedless egoism is the great barrier to progress in preventive medicine. Not bricks and cement, but human psychology is the material henceforth to be worked on in public health. Only by the painfully slow process of education can the altruistic motive gain ascendancy, and only as such ascendancy is gained will control of the preventable diseases be realized.

In this tremendous but not superhuman task of education the doctors must take the lead. And in proportion as they realize the task and work on it with all their strength, privately and collectively, with their patients as individuals and with the public at large, only thus will they realize the fulness of the term "doctor," which means primarily *one who teaches*. Remember this all ye physicians. And you who to-night receive your diplomas, whenever you look at those documents framed on your office walls, translate in your hearts the words *Medicinae Doctor* into "Teacher of Medicine," and exalt your profession thereby.

One might easily fill a longer time with the enticing theme of public health, but I desire only to hint at things which should stand in large outline as you begin your careers and leave to you to fill in the details. I pass to the related topic of social service.

### SOCIAL SERVICE

This too is a pregnant subject. There is a little book by Richard Cabot which every one of you should read. The title is "Social Service and the Art of Healing." You should read that book, I repeat; and if for two years you have passed from clinic to clinic and have not learned how the problem of disease links up inevitably with the problem of poverty and the problem of crime and the problem of ignorance and the problem of heredity and all the other great sociologic problems—then, I say, you are already suffering from that medical blindness which Cabot so clearly portrays. He shows how even in the narrow duty of doing your best for the patient you must look at the background of social conditions. You must look back of the *patient* and see the *man*.

Somewhere else I have read how the physician's classification of diseases according to tissues or poisons or micro-organisms tends to blind the vision to the true causes lying back of all in social and industrial conditions. I need not give examples to prove to you that this statement is true, but I do wish to emphasize its importance. "It is quite clear," says one writer, "that, practically, the elucidation of antecedent conditions may often be vastly more important than the immediate and individual problem of diagnosis." Think of the absurdity of that procedure to which many have called attention, but which exists everywhere in public hospitals and private practice alike—I mean that procedure by which a patient, at large expense of money and effort, is brought to a condition of health and is then turned back into the environment which was the real cause of his disease. This procedure, narrow and unwise in the case of an adult who may be able in some cases to modify his environment, change his employment or his habits of living, becomes actually a social crime when the patient is a little child.

If you are to succeed in medicine even in the narrow individualistic measure which has constituted success in the past, you must cure people so that they will stay cured. Therefore, you must not fail to look at the social background. You must learn to deal with the whole man physically, environmentally, psychologically. You must become proficient in the "study of character under adversity and of the influences that mold it for good or ill;" and that, if we accept Cabot's definition, is to be a social worker. Moreover, you whose *chief* business, admittedly, is the diagnosis and treatment of the ills of the body, will join hands with that new expert who diagnoses and treats the ills of environment and of state. You will call on him for assistance as on any specialist. You will return service for service. You will pull your oar joyfully and manfully in that "team-work of doctor, educator and social worker," whose object is "the care of people in trouble."

This address might have been called "Cooperation in Medicine," because its central idea is to show that medicine like every other human activity tends toward collectivism, toward cooperation. The matters of public health and social service already discussed are two important cooperative enterprises in which I believe that every doctor should take active part. I come now to cooperation in a narrower sense, namely, union of effort to care rightly for the individual patient. This union of effort takes two distinct forms. First, the joining of individuals into a group to care for the ills of the members of the group. Second, the joining of doctors in order the better to care for their patients. Under the first head are included various charities, the fraternal lodges, various forms of insurance societies and companies, industrial concerns and the state or municipality itself, in so far as this largest group makes medical provision for its members. Here we have a complicated and difficult matter; a matter of ever-growing importance, which may change absolutely the social status of medical practice; yet a matter on which medical men are prone to take wrong or at least narrow views. The phrases "contract practice," "company doctor," "sickness insurance" are terms of opprobrium to most of the medical profession; yet the facts and the logic of these facts are simple. You should face them, think them out, adjust your lives to them.

As to the facts: there is first the "submerged tenth" of the population, whose income is always too small for the imperative necessities of proper food, clothing and shelter. When they are sick, they are "down and out." They cannot possibly care for themselves, to say nothing of paying a physician. They must be dependent on some form of assistance or die. Humanity revolts at the latter alternative. Moreover, we are learning that the menace of disease spreads ever from the lowest to the highest orders of society. Organized charity and the state itself, therefore, give freely and largely for this class of unfortunates. Public and charity hospitals and dispensaries are maintained on ever-enlarging plans of material equipment and professional efficiency. The doctors give freely of medical service and administrative knowledge. The very poor in many cities get as good medical service as the rich. On the whole, the lack of inclination and power on the part of society to deal effectively with the underlying and responsible social conditions is the hard and almost hopeless problem as regards the submerged poverty-stricken portion of the population.

But now we come to a second great group of people, composed chiefly of wage earners whose income, so long as they remain in health and have work, is sufficient for the needs of themselves and of those dependent on them. Here are classed the great body of self-respecting laborers and artisans. They are in no sense dependent; on the other hand, they are the backbone of industrialism. It is before the member of this group that ever hangs the imminent possibility that when he gets sick, he first of all will lose his job and secondly will be expected to support his family and pay the doctor. Even in good times and good health many fail to keep more than head and shoulders above water. Illness or non-employment means inevitable submersion. It means drowning unless some form of life preserver is thrown out. Now what is more natural than that this life-preserver should be provided through the cooperative effort of a group, or through the cooperative effort of industry or through the cooperative effort of society as a whole? The first means the lodge or union. The second means the company physician or industrial medical organization. The third means governmental insurance or state medicine.

You have to regard the situation in one of two ways. If your point of view is narrowly individualistic, you may say that the laboring man must maintain himself and bear alone the exigencies of industrial depression, the chance of disease or accident and the inevitable incidence of age. You say, perhaps, that the public is not concerned except to care for the absolutely helpless and the hopelessly indigent. If this is your point of view—and it is a very common one—then the least that you can do is to face the responsibility which your scheme of society involves. You must recognize that your plan must force over the line into the submerged portion of the population many an individual and many a family on whom come, through no fault, perhaps, of themselves, the curse of non-employment, accident or disease. And you must face the fact and the responsibility for the fact that every man so forced over the line into dependence loses something of incentive to labor, something of manhood, something of self-respect. In losing these, his regard for society and law must diminish and his inclination toward parasitic existence must increase. When you consider that sixty-two out of a hundred persons seeking aid from a destitution agency were driven there by illness, you begin to comprehend how serious is your responsibility as medical men if you insist on the individualistic scheme of social organization.

The other point of view is altruistic or, if you prefer, collectivistic. It says that the social order (widely or narrowly considered), is responsible for those accidents which we call sickness and lack of employment. It looks on disease and old age exactly as we have all come to look on fire and burglary and the hazards of the sea. It says that society should carry the burden of all these exigencies. The individual should not be released, but he should bear only his share of the load. All this broadly considered is insurance. It may be government insurance, paid for by taxation, such as the protection afforded by the army, the police, the fire department. It may be corporation insurance as our ordinary types of life, fire and tornado protection. It may be cooperative insurance as in fraternal orders and friendly societies. Whatever its form, the philosophy of insurance is that each participant contributes in proportion to his share of the risk. Not all receive back what they put in. Of a thousand houses insured we expect only a few to burn. But the man whose home does burn receives a much larger sum than he paid in. He receives it gladly and with no stigma of dependence, as would be the case if his friends took up a collection to pay for his house. Surely this form of protection should apply as usefully and properly in meeting the exigencies of accident or disease as those of fire or theft.

Now the medical profession does not object to insurance. Indeed, it approves very heartily when the life insurance comes in at just the right time to liquidate the deceased patient's bill. It highly approves of insurance against malpractice and against automobile injuries. But when insurance attempts to provide medical attendance for a group of poor workingmen, the medical profession is inclined to exclaim in holy horror against the invasion of its ancient prerogatives. It holds up its time-stained right of fee as a banner more esteemed (for the moment) than the noble right of service. It says: "These men pay only fifty cents a month. Do you think we will give any one medical service for fifty cents?" It loses sight of the analogy of the many houses that never burn, but whose owners through insurance pay for the loss of the one that does burn. It loses sight of its own manifold losses from persons who cannot or do not pay. It loses sight of the advantage, even to a doctor, of a fixed income. It fails lamentably to look at the greater good, which is the public good.

With this attitude of many of the medical profession I have little patience nor will the public long have patience. I will grant that many of the schemes proposed have been chimerical; some of them, fraudulent. Most of their promoters have aimed at cheap medical service, not efficient medical service. I will grant and I will work for the proposition that the medical profession should be properly compensated and that matters should be so arranged that the patient shall have free choice of doctors. I will grant the advantage of such elements of competition in medical practice as tend to develop the best service. But granting all these things and balancing these and the other valid objections against invalidity insurance over against the good which would come from a thorough-going system, I find the scale coming down heavily on the side of the latter; and I am sure that the same conclusion will be reached by most, if not all, physicians who open-mindedly study the working of the insurance laws in Germany, Denmark and Great Britain. The objections of the British Association have not been warranted, for the brief experience with the new law shows that the compensation of the profession has been appreciably increased.

This question has not assumed large proportions in this country, but I am certain that it will do so in the not distant future. It is manifestly impossible to discuss it adequately on this occasion. It will demand the highest wisdom to secure a system adapted to our peculiar conditions. Like all the other topics which I have touched on, I bring this before you for thoughtful study as you go about the practice of your profession.

The second form of cooperation for the care of the individual patient which I mentioned was that of the doctors themselves. Of course the consultation is a long-established attempt at such cooperation; but that its usefulness is very limited, as ordinarily carried on, there can be no doubt. Whatever good there may be in consultation (except in hospitals), has accrued almost exclusively to the wealthy patient. Surely medicine will never be rightly adjusted in the social order until every man, woman and child is entitled to receive and actually does receive the best oversight and treatment that science is able to afford. This is not the case at the present time.

There are various reasons for this condition. One of the most potent is the ever-widening specialism in medicine. Of the inevitable necessity of this movement there can be doubt. No one can hope to compass the tremendous volume of medical fact or become proficient in all the valuable diagnostic, therapeutic and operative procedures. Specialism in any line of endeavor, whether medical or otherwise, tends to narrow the field of activity and of vision. Concentration increases intensity at the expense of distribution. It acts in human activity exactly as in the electrical transformer: if you increase the voltage, you decrease the amperage. The practical point is that for certain patients the work of several experts is necessary, if the best results are to be obtained. How well has medical practice succeeded in adjusting itself to secure these benefits for the individual case? In my judgment it has not succeeded. It is true that in the best charity hospitals the very poor individual receives the services of all the necessary specialists and all the modern appliances. For the small group who can pay large fees, there is possibility of getting what is needed by reference from specialist to specialist and the paying of separate fees for each element of service. The doctors may think that this procedure works well. In my opinion it does not work well even for the doctors, taking their interests broadly; and from the patient's point of view it is subject to the criticism that they interpret the multiplicity of fees as repeated payments for a single service. They look on specialism as a new device for padding their pocket-books. But the fatal fallacy of the present arrangement is its inapplicability to the great class of independent poor, who cannot by any possibility meet the repeated demands for even moderate fees. They simply go without the service; and of course, the doctors cannot render it.

Now it seems to me that a hopeful movement toward the solution of this difficult problem is found in those combinations of experts, however arranged, by which the sick man becomes the patient of the group, which renders the service needed for a single charge. The system and efficiency secured by these organizations are almost uniformly admitted. You may criticize the scheme as destroying the individuality of the doctor's work. I cannot see that it does; but even if this were true, I believe that something better, namely, an improved service, is substituted. You may make the charge that these institutions tend to commercialize medicine. Again I cannot see your ground for argument. I believe, on the contrary, that their organized systems of arranging compensation are more just than the haphazard methods of the ordinary practitioner. If the system of fee, that is, of charge proportionate to the financial ability of the patient, is in any way or anywhere defensible, then these organizations certainly administer the system with as full regard to the means of the individual patient as do medical men who work as separate units.

But let us throw to one side these more or less specious and minor criticisms and ask whether the examples of medical cooperation meet a social need? Do they bring to the individual patient what he ought to be entitled to, namely, all the expert service that his case demands? Do they accomplish this end better for the average patient, all things considered, than the same experts would do working separately? If so, common sense must justify this departure from time-honored (which often means worm-eaten), custom. However, as with all other problems which I have discussed, I do not ask you to accept my views in regard to this question. I ask you first to recognize the problem. But I ask you to do more than recognize. I ask you to study it in the light of the broadest spirit and fullest knowledge attainable.

There are various further topics that I had hoped to bring to your attention. There is the suggestion of regular medical examinations for persons in health, a problem which some of the life insurance companies are experimenting with.

The army of the pick and shovel, of the saw and trowel, far overshadows in its importance to the nation the army of the rifle and sword. Yet the latter army takes every precaution through its medical organization to keep the individual soldiers at the highest point of efficiency, while the great army of industry moves forward with the savage individualism of the hoards of Attila. Medical science so far has been content to follow in the rear and pick up the wounded. Should it not go in advance as did the medical officers of the army of Japan? We all know that the true function of medicine should be to keep people well. They should be regularly watched for evidence of disease and given timely advice and treatment. We know how present economic conditions, medical ideals and popular psychology tend actually away from rather than toward the proper relation of medical science to the social body. We read Samuel Hopkins Adams' interesting story of the "Health Master" and are filled with regret that only in fiction is such a character to be found. It is a hopeful sign, however, that people are beginning to think of these things.

This topic I pass with a word. Others as important I omit altogether. I have said enough to fulfil my intent, which was to show that there are many things concerning which you must "learn what is true in order to do what is right." You are going forth to work. Twenty, thirty, perhaps forty years of active service stretch out in front. At the end, what? Will you be like Sylvius?—a great physician, but one whose epitaph is the epitome of self-centered existence.

> Here lies Sylvius who never did anything unless he was paid for it. If he could do it, he would charge you for reading these lines.

No, I cannot think of you as like Sylvius. You are forward-looking men, alive with the spirit of the times, kindled with altruistic enthusiasm. You know that there is something to your profession and something possible to your lives, besides appendicitis and typhoid and pneumonia; something besides office hours and calls and long rides over country roads; something besides bills receivable and bills payable; something besides the individual patient with his idiosyncrasies and his pains. There is world interest; there is world importance. There is room for the scientist's logic, the soldier's heroism, the stateman's wisdom, the reformer's fervor, the poet's imagination. There is room for much living and much thinking. The world with all the centuries wrinkling its forehead; humanity with its accumulated accomplishments; art with its visions of ecstasy and beauty; science with its hard-worn hoards of learning; all are as new to you as the flowers of Eden were to Father Adam. Go forth and strive. There is

Something hidden. Go and find it. Go and look behind the Ranges,
Something lost behind the Ranges. Lost and waiting for you. Go.

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# THE NEGLECT TO PROVIDE FOR THE INFANT IN THE ANTITUBERCULOSIS PROGRAM

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In the warfare against tuberculosis we should consider ourselves particularly fortunate in possessing full knowledge of the cause of the disease which we have to combat and a fairly complete knowledge of its mode of transmission. Probably the greatest advance which has been accomplished in this field during the past few years has been our clearer conception in regard to the time of life when infection takes place—the realization that tuberculosis is contracted to a large extent in early childhood. This brief report is written from this point of view, with the purpose of raising the question whether we are making use of this new knowledge—whether our methods of prophylaxis have advanced or have been reconstructed to harmonize with it. We know not only that infection occurs during early childhood, but that it occurs frequently in infancy, and that the younger the child the graver the prognosis of the disease; infants infected when under 1 year of age rarely recover, and those between the ages of 1 and 2 years have a very poor outlook for life. With these statements as a preface—facts which now constitute every-day medical knowledge—we may well inquire what is being done in the antituberculosis campaign to prevent infection at a time of life when it not only occurs frequently, but runs so grave a course? What measures have been added to the sanatorium treatment, to the provisions for home care, or what new organized effort has been launched, which promises to safeguard our infants against tuberculous infection?

This question recently has presented itself for solution under the following circumstances. At the Tuberculosis Preventorium for Children at Farmingdale, N. J., two hundred children are cared for, who give a positive tuberculin reaction, but show no clinical signs of tuberculosis. They range in age from 4 to 14 years, and are selected by the tuberculosis dispensaries of New York City from households in which some member of the family is tuberculous, frequently suffering from open tuberculosis. These two hundred children, at the present time, happen to represent 120 families, as, in many instances there are several from one and the same family. A chance occurrence, the visit to the preventorium of a sickly tuberculous mother carrying her infant in her arms, suggested that it would be of interest to inquire how many more infants under the age of 2 years there were in the 120 homes of the children at present in the institution. It was a simple matter to secure this information. Not only did we have the data on the admission-cards, but we could question the children themselves. By this means we were able to obtain far more accurate information than if we had undertaken a larger investigation embracing children no longer in the institution.

The result of our inquiry showed that *there were forty-two infants under 2 years of age in these 120 homes.* A most startling situation! The accompanying table gives a summarized picture of the individual families. From this table it will be seen that in very many cases there is more than one member in the home suffering from tuberculosis; that frequently the tuberculous disease is in the second stage; that in many families there are two infants exposed to infection; that even when the tuberculous individual has left the home for a sanatorium, this removal has occurred so recently that the infants have been exposed for many months; that the number of children in these families is unusually large, averaging somewhat over five to a family.

It is apparent that this investigation portrays a very serious condition of affairs, and that unless some protective measure is taken, these infants are doomed to tuberculosis, leading to illness, to the dissemination of infection, and to death. What shall be done in the matter? How shall we protect them and the community? The first relief measure which suggests itself, probably, is to send the tuberculous mother or father to a sanatorium. We find in practice, however, that it is feasible in only a few cases to safeguard the home by sending away the tuberculous member of the family. The mother cannot be spared from the household, for the very reason that she has the infant to care for, as well as because there are usually other children. (It will be noted that the mother constitutes the tuberculous member in over one-half of our cases). The father, although tuberculous, is still in many instances an important source of income for the family; he cannot desert them. There is therefore the necessity, in a large proportion of the cases, of focusing our efforts in another direction, of striving to send the infant out of harm's way. A few who are orphans or half orphans can be committed to orphan asylums; a few others, provided the breadwinner is ill, may be looked after by some existing child-caring institution. If, however, the family is not destitute, if there is a source of income sufficient to keep it afloat, it will be difficult to place the child in an institution. The babies' hospitals can offer no refuge; they must refuse to fill their beds with infants who are not sick. At a loss how to solve the problem, and feeling that there might be some unexplored avenue of escape, I appealed to the Commissioner of Public Charities, Mr. John Kingsbury, for advice. He answered in the main as follows: "In so far as I have been able to gather, and I have caused diligent inquiry to be made, at the present time we have no agency or institution in this city equipped to care for the particular class of children you describe."

DATA OF THE 42 INFANTS IN THE HOMES OF CHILDREN NOW AT THE PREVENTORIUM

| Case No. | Initials of Child | Age in Years | No. Children in Family | Tuberculous Members | Stage of their Disease | Location, Etc. |
|---|---|---|---|---|---|---|
| 1 | G. B. | 1 | 8 | Father | 2 | In sanatorium 2 months |
| 2 | G. B. | 2 | .. | ........ | .. | ........... |
| 3 | W. B. | 1 | 8 | Brother-in-law | 2 | Home |
| 4 | I. C. | 6/12 | 7 | Mother | 2 | Home |
|  |  |  |  | Father | 2 | Home |
|  |  |  |  | Sister | 2 | Sanatorium |
| 5 | H. C. | 1½ | 5 | Sister | 2 | Home |
| 6 | B. C. | 1 | 3 | Mother | 1 | Home |
| 7 | G. D. | 10/12 | 4 | Father | 2 | Sanatorium 4 mos. |
|  |  |  |  | Mother | 2 | Sanatorium 7 mos. |
| 8 | B. D. | 2 | 6 | Father | 2 | Home |
| 9 | H. G. | 2 | 3 | Mother | 1 | Home |
| 10 | L. G. | 2 | 5 | Father | ? | California |
| 11 | I. G. | 2 | 7 | Aunt | 1 | Home |
| 12 | P. G. | 2 | 7 | Mother | 1 | Home |
|  |  |  |  | Brother | 1 | Home |
| 13 | H. G. | 1/12 | 5 | Father | 1 | Home |
|  |  |  |  | Mother | 1 | Home |
| 14 | H. G. | 2/12 | 7 | Mother | 1 | Home. Children mentally deficient |
| 15 | B. J. | 2 | 7 | Father | 2 | Home |
| 16 | B. J. | New-born | .. | ........ | .. | ........... |
| 17 | B. K. | 2 | 6 | Mother | 2 | Home |
| 18 | B. K. | 5/12 | .. | ........ | .. | ........... |
| 19 | W. K. | 3/12 | 5 | Father | 2 | Home |
| 20 | C. L. | 2 | 4 | Father | 2 | Sanatorium 2 mos. |
|  |  |  |  | Mother | 1 | Home (pregnant) |
|  |  |  |  | Sister | 1 | Home |
| 21 | B. M. | 9/12 | 5 | Father | 1 | Home |
|  |  |  |  | Brother | 1 | Home |
| 22 | B. M. | 1½ | 9 | Mother | 1 | Home |
| 23 | B. M. | 1½ | .. | ...... | .. | ............ |
| 24 | B. M. | 5/12 | .. | ........ | .. | ........... |
| 25 | L. M. | 2 | 6 | Mother | 1 | Home |
| 26 | .... | 1/12 | .. | ........ | .. | ........... |
| 27 | L. P. | 1¼ | 3 | Father | 2 | Home |
|  |  |  |  | Sister | 1 | Home |
| 28 | S. R. | 2 | 4 | Father | 1 | Home |
| 29 | S. R. | 8/12 | .. | Mother | 1 | Home. Four children died |
| 30 | F. R. | 1 1/12 | 3 | Mother | 2 | Home |
| 31 | F. R. | 3/12 | .. | Father | 1 | Home |
| 32 | P. S. | 1 5/12 | 6 | ........ | .. | An arrested case |
| 33 | E. S. | 2 | 5 | Father | 3 | In sanatorium? |
| 34 | R. S. | 2 | 4 | Mother | 1 | Home |
| 35 | R. S. | 1 | .. | ........ | .. | ........... |
| 36 | M. S. | 1½ | 4 | Father | 1 | Home |
|  |  |  |  | Mother | 1 | Home. Do not care to be burdened with children |
| 37 | J. S. | 2 | 3 | Father | .. | Died of tuberculosis at home year ago |
| 38 | H. S. | 1 | 3 | Mother | 2 | Home. Cannot leave on acct. of infant |
| 39 | M. S. | 9/12 | 5 | Mother | 1 | Home |
| 40 | F. W. | 2/12 | 4 | Mother | 2 | Home |
| 41 | M. S. | 9/12 | 5 | Mother | 1 | Home |
| 42 | J. S. | 1½ | 3 | Father | 2 | Home |

In order to have the question concretely in view, it may be well to cite a case in point. Let us examine more fully the instance which we referred to above, and which led to this investigation:

> Family H. S. There are two children at the preventorium for the past three months who are doing very well. The father appears to be in moderately good health and earns $10 a week. The mother looks weak and sick and has tuberculosis in the second stage. On being asked why she did not enter a sanatorium, she replied that she could not leave home on account of her 15-months-old baby, which she was carrying in her arms. Further questioning elicited the fact that she had been well until this last child was born, and had weighed about 135 pounds; that since this time she had failed and now weighed about 100 pounds. The recency of active tuberculosis in her case probably explains how it came about that the two older children did not succumb to infection in infancy. This infant evidently could not be sent to a hospital or to an orphan asylum; at best it could be referred to some other institution for a short period. In order to provide for this emergency, we at once admitted the infant to the preventorium. This provision enabled the mother to leave her home and to enter Sea View Hospital a few days later.

It would seem that we have here encountered a weak link, not only in the antituberculosis movement, but in the infant welfare work as well — for these two fields of effort overlap or rather dovetail at this point. Unless infection of young children is adequately guarded against, what basis is there for any hope of eradicating tuberculosis in succeeding generations? Many of these infants will die; others will live to constitute a large proportion of the patients who are destined to waste away in their homes or to fill the preventoriums and the sanatoriums in the generation about to come. How then are we to provide for these infants? The suggestion to protect them in institutions is rejected as impracticable; it is argued that mothers will not part with their healthy infants, and that we cannot exercise coercion. Although this contention has from time to time been made, I know of no experience to substantiate it. In view of the seriousness of the situation, of the thousands of infants who must be exposed to infection in the city of New York, it would seem worth while to ascertain, by means of a vigorous experiment, whether tuberculous parents will give their children up to institutional care. I believe there is a considerable number who will be sufficiently wise to make this sacrifice when the danger lurking in a tuberculous home is adequately explained. The weak and sickly mother suffering from tuberculosis will be particularly inclined to temporarily renounce her infant, and it is in her case that a separation is most urgently demanded. *Tuberculosis preventoriums for infants should be established.*

To make a beginning in this direction it may be advisable to assign wards for this purpose in existing institutions (infant asylums, preventoriums or sanatoriums) rather than to establish new institutions. In this way it would be feasible to have, in many instances, infant and parent in the same institution. These infants need not be sent to the country, to be treated by means of a rigorous fresh air régime; they may be adequately cared for in or near the city, where their parents have the opportunity of visiting them from time to time. Preference might be given at the outset to urgent cases, to infants surrounded by open tuberculosis, to cases in which a tuberculous mother is constrained to remain at home in order to care for her infant, or in which there are two or more members of the family suffering from tuberculosis. The minimum length of stay may be fixed provisionally at one or two years.[1] The details of organization, however, cannot be formulated in advance. The object of this paper is rather to urge those engaged in tuberculosis work, as well as those active in the field of infant welfare, to make some provision for a large number of infants who are now abandoned to their fates, destined to die or to swell the ranks of the tuberculous poor in the coming generations.

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# THE HEART IN THE ACUTE INFECTIONS *

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More and more generally is the fact being realized that the heart suffers in greater or less degree in every acute systemic infection. We may safely go further and state that there probably occurs no instance of perfect cardiac recovery from an acute micro-organismal invasion. This must not be taken to mean that there are no clinical recoveries from the cardiac complications of the acute infections. It does indicate, however, that a scar results from every attack on the cardiac musculature and on the endocardium and pericardium, and that cardiac scars spell weakness, not strength.

Not infrequently, especially in the acute diphtheritic involvements, the pulse will become mean and thready, cyanosis is extreme, sweating profuse, nausea and vomiting appear, the blood-pressure (systolic as well as diastolic) falls, and the patient may die with all the phenomena of shock. Such a patient dies primarily from structural damage to the cardiac mechanism, due to the toxin circulating in the blood. McCallum[1] has shown that there are other factors at work, also, since the insufficient heart may be revived even after the death of the patient, and resume its function for a time. But the microscope reveals lesions amply sufficient to account for every failure in the performance of duty.

It is well to remind ourselves that in certain instances of clinical recovery the heart not only fails to regain its full integrity, but dates its first clinical insufficiency from the acute systemic attack. The picture may be classified as the debility of convalescence, or as a postfebrile anemic state, or what not. The important point is that too seldom is the condition recognized as a real loss and lack of ability to maintain cardiac muscular tone.

Probably all of the acute infections are micro-organismal, if not bacterial in origin. Even syphilis may now be classed within such a category. Rheumatism also seems ready to fall in line, perhaps as a genuine streptococcemia, possibly as a symptom-complex variably dependent on now one, now another causal germ. The pneumonias acknowledge no one bacterium as their invariable underlying factor. Tuberculosis, like influenza, almost always appears as a mixed infection. Measles, small-pox and scarlatina appear to be drifting, more by dint of fashionable tendency than by reason of any definite demonstration, into the streptococcic fold. Only diphtheria, typhoid fever and syphilis—already mentioned—furnish clinical cardiac conditions distinctive, even in a measure, of a definitely recognized organism and demonstrably characteristic lesions.

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[1] In many instances it will be found that the problem of infection in the home has solved itself in the course of a shorter period, the tuberculous member having died or entered a sanatorium, or the disease having become arrested.

* Read at the annual meeting of the Pennsylvania State Medical Society, Pittsburgh, September, 1914.

[1] MacCallum, W. G.: Am. Jour. Med. Sc., 1914, cxlvii, 37.

Roughly speaking, we may generalize or group the harmful effects of the active agents in all of the acute diseases into those of (1) acute true myocarditis, (2) myocardial atony due to degenerative change, (3) toxic paralysis or paresis of the cardiac muscle and nerve fibers, (4) endocarditis (valvular and mural), (5) simple and mediastinopericarditis, and (6) muscular and valvular insufficiencies with dilatation of the cardiac chambers.

I make no reference here to the sclerotic changes that may or may not have had their beginnings in an infectious thrombo-arteritis of the vasa vasorum during the acute disease. Nor may we stop to consider the many post-convalescence developments that may easily be traced back to the acute infection of weeks or months previous. I shall not even dwell on the central involvement of the vasomotor system, the importance of which has, until the recent reaction, been exaggerated beyond all warrant. I have shown in another place[2] that in the pneumonias, at least, the diastolic blood-pressure (the best index of vasomotor tone) maintains a fairly normal level. Schwarzmann[3] has recently come to similar conclusions with respect to eighty cases of the various acute infectious diseases.

### ACUTE TRUE MYOCARDITIS

True inflammatory involvement of the myocardium varies in type and extent in the acute infectious diseases from the simplest edematous infiltration or localized round-cell infiltration to the characteristic nodules of Aschoff, found in the hearts of subjects suffering from genuine rheumatism and chorea. There may be evidences in the myocardium of attacks antedating that which proves fatal, such as areas of old fibrous tissue, side by side with new inflammatory processes, or such as the scars and fibrous patches representing healed Aschoff's bodies, accompanying newly formed and typical giant-cell colonies. If the heart has previously been free from disease, the musculature of the left ventricle is most likely to suffer. It may, however, be the right ventricle wall, or the muscular ring supporting the aortic and mitral valves, or the atrioventricular bundle, or that less commonly known tract of transmitting fibers described by Kent as existing in the right lateral cardiac wall. Here, there, or everywhere the lightning may strike and leave its fingermark.

The vital point to which I would here call attention is that whether the infection be a pneumonia, a gonococcemia, a rheumatism (so-called), an invasion by the *Streptococcus mitis* (*viridans*), or by the homely staphylococcus, if it becomes general and severe, the cardiac musculature invariably suffers and the microscope will reveal lesions competent to explain many features of the clinical picture. Once this fact is appreciated as a general principle, we shall cease emphasizing the all-importance of a loss of vasomotor tone, especially since, as in most pneumonias, the vasomotor tone is not low. Moreover, we shall be more likely from the beginning to watch intelligently and closely for the early signs of cardiac irritability, and later for indications of cardiac distress. A weak, irregular pulse, air hunger, pain that cannot be definitely attributed to pericarditis, precordial oppression, will all have a new significance when we realize that the main lesion even in rheumatism is of the myocardium, not of the valves, and is just as likely to be permanent as if it were valvular.

Acute syphilis is as likely to cripple the myocardium as the valvular structures, and to leave unmistakable evidence of the nature of the process in the presence of the spirochete. The changes may be interstitial or parenchymatous or both, and may vary in grade from an edema to fatty degeneration. Except in the late fibroid lesions the spirochete will usually be found. Very rarely does the heart of syphilis escape being the heart of myocardial disease.

In a brief paper it is manifestly impossible to cover thoroughly the ground suggested by the myocarditis of acute infectious disease. One can, however, and should have instantly brought to mind, when diphtheria presents itself, the fatty degeneration of the fibers and the paralysis of the cardiac nervous mechanism, even more vividly than the localization of the membrane in the pharynx, larynx and nose. In typhoid fever the hyalin or waxy degeneration (Zenker) of the fibers is not to be forgotten. In the pneumonias, I have elsewhere shown that we may confidently expect any or every grade of degenerative change. In influenza many patients die in their convalescence as the result of fatty myocardial change. In true rheumatism we find not only any or all of the changes mentioned above, but in addition the suggestive, if not pathognomonic nodules of Aschoff in and around the adventitia of the small subendocardial vessels, in the interstitial substance between the fibers, even in the valve structures themselves.

I have seen two instances of suppurative involvement of the cardiac muscle, both in cases of pyemia, the one an example of extensive suppurative myocarditis, and the other of multiple abscesses of the heart wall. Cases of this sort are always fatal, and are diagnosed by generalization only, or on the necropsy table.

Whether full cardiac recovery follows even the milder grades of infectious inflammation, and whether a heart so involved is ever again quite ready to perform full service, I think we may, on the basis of the foregoing, very well doubt. For ordinary purposes it may answer every need. When the stress comes, just as during the primary acute illness, it may be taxed just a little beyond its capability, even though well within normal limits, and fail the patient at a time in which he needs every reserve force and energy. In the form of atrophied or degenerated fibers or localized areas of fibrosis the heart may preserve its record of the storm. Many a physician has experienced a severe clinical lesson in the loss of a patient owing to sudden cardiac failure when convalescence has seemed almost or quite complete, even when the primary disease has been not oversevere. Weill and Mouriquand[4] have reported a series of such instances in convalescents from scarlatina. In one case, a girl of 15 years died suddenly at stool. Another child, an infant of 18 months, died suddenly when it seemed past all need for worry. The microscope revealed an acute myocardial inflammation as the cause of the fatality. Far more frequently does diphtheria cause such an end.

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[2] Willson, Robert N.: The Heart in the Pneumonias, The Journal A. M. A., Sept. 19, 1914, p. 981.

[3] Schwarzmann: Centralbl. f. inn. Med., Aug. 1, 1914.

[4] Weill and Mouriquand: Presse méd., Aug. 5, 1911.

It would seem, then, that the heart muscle is of primary interest in the acute infectious diseases, and deserving of more than ordinary concern.

### MYOCARDIAL ATONY DUE TO DEGENERATIVE CHANGE

The various forms of degeneration noted in the myocardium of infectious disease have already been briefly mentioned. They all lead to some measure of disability and incompetence, mainly as a consequence of a loss of muscular tone. This quality or function of being fit, or, to use athletic parlance, "on one's toes," is as essential to cardiac equilibrium as it is to the performance of a person's daily work. If he possesses that indescribable something which insures his mental and physical grasp of things, the vital tension that furnishes both energy and endurance, he enjoys the tasks of the day. He is a giant and they are the duties of a Lilliputian. Exactly so with the cardiac muscle. If tone is lacking, every emergency is a new burden. We must not forget, moreover, that the arterial system is simply a continuation of the structural architecture of the heart. That which lowers cardiac muscular tone is almost certain to have the same influence on the muscle fibers in the walls of the arteries and veins.

Each step toward myocardial degeneration, cloudy swelling, hypertrophy, perhaps at its side atrophy of the fibers, fatty change, hyalin metamorphosis, replacement fibrosis, calcification—all of these represent incapacity through inability to sustain tone. In addition there is likely to be a diminished supply of an infected and chemically altered blood. It is little wonder that tone and accomplishment are both impossible under these conditions.

### TOXIC PARALYSIS OR PARESIS OF THE CARDIAC MUSCLE AND NERVE FIBERS

There are many indications that either or both the vagus and the sympathetic cardiac systems of nerves may be embarrassed or completely paralyzed by the toxins of the acute infectious diseases. It is well known that drugs that ordinarily affect and stimulate the vagus branches to the heart fail to exert their usual influence under the shadow of an active toxemia. Physiologic conditions are abnormal. More and more frequent are the reported instances of so-called functional heart-block in pneumonia, in rheumatism, in syphilis, and in other acute toxemias. In some of these instances the lesion has been shown to be a round-cell infiltration of the auriculoventricular connecting fibers.

As long ago as 1905 Mackenzie[5] called attention to the occurrence of partial heart-block in influenza. In other temporary cases in which there has been clinical recovery, the disturbing influence has appeared to be wholly toxic, and has seemingly been exerted through both the muscular and the nervous tissues. In one of Routier's rheumatism cases[6], recently reported, a heart-block disappeared under the influence of atropin; in a second case, one of pneumonia, without treatment. In a case of heart-block in rheumatism reported by Gosse,[7] the loss of function persisted, in spite of treatment, for eighteen days. Occasionally temporary heart-block is noted in a case which at length comes to necropsy, when there appears to be an entire absence of explanatory and causative lesion. It would seem, however, that a more diligent search might discover evidences that escape the ordinary observer.

Auricular fibrillation and flutter are not rare phenomena in the toxic heart. While not essentially toxic disturbances, as is demonstrated by their appearance in a dying (normal) heart after removal from the laboratory animal's body, there is no question that the toxins of the acute infectious diseases may and do bring the same conditions to pass. Sutherland[8] has just published an interesting study of auricular flutter in acute rheumatic carditis, and of the clinical signs indicating the presence of this condition.

### ENDOCARDITIS (VALVULAR AND MURAL)

Rheumatism (tonsillitis, arthritis, chorea) and syphilis are recognized as the two most frequent causes of valvular heart disease. We are, however, just now in the transition stage with respect to the meaning of "rheumatism," and its relation to the streptococcus in general, to the *Streptococcus viridans* in particular, and to many other forms of subacute and acute bacterial endocarditis. Typhoid fever, pneumonia, influenza, diphtheria, tuberculosis, occasionally involve the valves, but show a marked predilection for the myocardium. Scarlatina very frequently is found to have antedated a valve lesion that appears to have no other explanation. If scarlatina is finally pigeonholed in the category of streptococcic infections, we shall have the needed explanation for this probable etiologic sequence.

We seem bound in the near future to discard the term "rheumatism." Certainly no one has the unscientific privilege of believing, and still less of asserting, as did one critic who wrote to me recently of a number of cases of valvular disease with an entire absence of rheumatic history (arthritis, sore throat, tonsillitis or chorea), "Your cases were rheumatic, I believe,"—I repeat, no one has the privilege of throwing every etiologically obscure case of valvular disease into the rheumatic dump-heap, at least until the pale spirochete has been proved absent, and probably not then. We can and should catalogue the myocardial as well as the valvular lesions that have heretofore been ascribed to "rheumatism" under their proper etiologic classification. Whether or not we shall eventually limit the meaning of the term "rheumatism" to hearts showing Aschoff's nodules remains to be determined. Acute syphilitic lesions of the valves or of the myocardium may, indeed, often be diagnosed by the presence of the *Spirochaeta pallida*. In old and chronic lesions this diagnostic help may not be afforded. The etiologic significance of the other acute infections mentioned above can be ascertained only by a careful clinical following of the heart during the acute attack, and by a comparison with its known previous state.

Whatever the causal factor in a given infectious disease, the endocardial lesion follows one of two or three lines. Either it begins and persists as an inflammatory change in which fibrosis is the ultimate outcome; or vegetative deposits and growths appear; or, finally, the vegetative and ulcerative processes of malignant endocarditis manifest themselves. Any one of the infections may initiate any of the three types of mural or valvular endocarditis, sclerotic, vegetative or ulcerative. Rheumatism and the typically acute diseases (except gonococcemia) tend to the production of the vegetative, recurrent type. Syphilis, on the other hand, leans toward sclerosis from its beginning to its final deformity. More and more clinicians are to be found who believe that in the absence of a known causative factor a valvular lesion of either of the two more chronic types should be suspected of being syphilitic until proved due to some other etiologic influence. In the presence of fibrous arteries in a young person the presumption becomes almost a certainty.

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[5] Mackenzie: Brit. Med. Jour., 1905, pp. 519, 587, 702, 759, 812.
[6] Routier: Arch. d. mal. du cœur, May, 1914.
[7] Gosse: Brit. Med. Jour., June 20, 1914.
[8] Sutherland: Brit. Jour. Child. Dis., August, 1914.

The endocardial lesion may consist of a filmy lymph deposit on the line of junction of the cusps; or it may result in the stoppage of the passageway by a projecting mass; or the cusps may be shriveled and warped and noduled out of shape and position; or, finally, ulcerative processes may have eaten their way through. Endocarditis may thus constitute a mere baptism, or it may mean a destructive involvement that stops short only when the tissues are consumed.

### PERICARDITIS

As the pericardium enjoys the same general blood-supply as the myocardium and the valves, there is little chance of its escaping involvement by any and every infectious process that is blood-borne. Many writers and teachers are skeptical regarding the occurrence of a primary pericarditis. None questions the frequency of the toxemic or of the bacteriemic forms. Indeed, contiguity to the pleura as well as to the myocardium would almost render a primary form of pericarditis unnecessary to explain the origin of the vast majority of instances. Conditions are so favorable to a direct extension of an inflammatory process from one structure to another that this would seem the natural order of events. As a matter of fact, it is an exceptional case of fatality from the acute infectious diseases that fails to show at the necropsy definite evidence of pericardial inflammation. Often a mere fibrinous patch, more frequently also an excess of pericardial fluid, rarely a purulent effusion, it would be almost an anomaly were the pericardium to be found free, when the structures so intimately associated with it are involved.

Pericarditis occurs in children at an early age. Blechmann[9], in studying 500 cases of pericarditis in the London Hospitals, found that 25 per cent. of all occurred earlier than the fifth year, and 50 per cent. before the fifteenth year. The toxemias in rheumatism and in the pneumonias are the most frequent causes, though all of the eruptive diseases contribute to the total. Heretofore rheumatism has been cited as the infection most active in the causation of pericarditis. When, however, we finally learn to discriminate between true rheumatism and other septic arthritides—when, indeed, we discover just what true rheumatism is—we shall probably find that it is not the cause of many cases that have been included under its name. In a series of sixty-seven cases of serofibrinous pericarditis in the University and Bellevue Hospital, Brooks[10] found twenty-six secondary to pneumonia, which led the field as a causative factor.

In early adult life nephritis begins to contribute a very positive percentage of cases. Many of the mediastinal inflammatory conditions also exert an influence It must not be forgotten that the heart and the pericardium rest posteriorly on the esophagus and aorta, and that anteriorly the pericardium is intimately attached to the pleura. In a considerable number of instances of both acute and chronic tuberculosis the pericardium is found at the necropsy the seat of active tuberculous disease. Scarlatina, cerebrospinal fever, influenza, erysipelas and syphilis all contribute their quota—and bear out the assertion that whatever infests the blood-stream finds it difficult to pass the pericardium by.

### MUSCULAR AND VALVULAR INSUFFICIENCIES WITH CARDIAC DILATATION

Only a word need be added with regard to the direct etiology as contrasted with the symptomatology of the insufficiencies (muscular and valvular) of the hearts in subjects suffering from the acute infectious diseases.

We were all taught, and later at some time no doubt began to teach, that the dilated heart usually is incompetent as the result of the misbehavior of some one valve or valves. In fact, in the study of both the acute and chronic heart lesions we have been led to overemphasize the importance of the valvular abnormality and to ignore in a measure the significance of the covering and substance of the organ. We forget that the same condition or infection has caused both the endocarditis and the myocarditis. To-day it would be well for us all to take up again the study of the histopathology of the heart muscle, not with a view to exaggerating the frequency of cardiac disease, but of placing and locating the point of attack, and appraising the etiologic bearing of the infections to acute involvements of the myocardium.

There is an unfortunate tendency among heart students to teach the needlessness of fear of athletic overstrain or damage to a heart which shows no frank signs of cardiac disease. In the light of this study it would be well worth a young man's time and trouble to have his physician inquire into his past history with reference to the acute infectious diseases, and a possible latent structural insufficiency of the cardiac muscle. We constantly hear of young athletes being hurried from their convalescence from a tonsillitis, or even a typhoid fever, into training, and thence into an eight-oared race or a football match. More than once I have personally come into conflict with a medical director of a school or college who appeared willing to permit some young giant, though already suffering from air hunger and cardiac arhythmia evident to the patient, to engage in athletics no less strenuous than a football contest or a cross-country run.

### TREATMENT AND PROGNOSIS

What is the treatment and what the prognosis of a carditis such as one must expect in an acute infectious disease? I would suggest in a word for the acute illness the most perfect possible rest, and the saving of every unnecessary contraction of an organ which we unfortunately cannot ever put to sleep. At the beginning of treatment, an empty, and, for a little time, an "as nearly as possible" sterile gastro-intestinal tube will be the second essential, instead of the frequent attempt to overnourish and feed. Drugs, except opium and possibly atropin, will be of questionable value. If employed at all they should be such as are calculated to subdue and quiet overeffort, rather than incite and excite a lame organ to further exertion. No drug will decide the issue between cardiac competence and collapse. It may be that even the cardiac sedatives and tonics had better be omitted. The most difficult period for the physician will be the convalescence, and the year following the acute illness. If we would conserve the heart muscle and its endocardium it will be of prime importance that all localized foci of infection should be removed from the body. We are just beginning to appreciate the fact that diseased tonsils and adenoids invite a heart lesion, a pulmonary tuberculosis or a pneumonia; that pus tubes or an infected prostate may underlie malignant endocarditis or a joint rheumatism; and that a grumbling appendix may be the cause of arteriosclerosis, myocardial degeneration, arthritis deformans, or varicose veins. In short, it is not safe from any point of view to ignore a chronic focus of disease.

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[9] Blechmann: Ann. de méd. et chir. Infant., July 1, 1913.

[10] Brooks: Am. Jour. Med. Sc., 1909, p. 796.

Very gradual must be the progress in dispensing liberty and freedom to a convalescent from an acute infection in his venture back toward a normal life. Very thorough and intelligent must be the physician's test of the heart's capabilities before the patient is turned over completely to his own direction and guidance. Long after the acute attack has been forgotten the heart muscle may betray a latent disability that has lingered and escaped suspicion. Fortunate the man or woman who enjoys a full convalescence and a life of uninterrupted health following the damage sustained by the cardiac structures in the infectious diseases of an earlier age.

1827 Spruce Street.

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# THE INTRADURAL ADMINISTRATION OF MERCURIALIZED SERUM IN THE TREATMENT OF CEREBROSPINAL SYPHILIS *

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The subject of syphilis in general, and syphilis of the central nervous system in particular, is at present in a transitional state; and it is, therefore, desirable to formulate a tentative classification of the disorders which are to be included under the title of this paper.

In its broader sense, the term "cerebrospinal syphilis" may be so construed as to include every pathologic process within the central nervous system which is of a specific nature. If this broader meaning is adopted, it should be clearly understood what anatomic limitations are to be placed on the central nervous system. Histologically, it could not be said to include more than the true nervous tissue, since the cerebrospinal vessels and meninges, although integral parts of the central nervous system, are not, strictly speaking, neurologic units. Pathologically and clinically, they are, however, quite inseparable; and experience has taught that, for practical purposes, syphilitic affections of the cerebrospinal or central nervous system cannot well be studied independently of the meninges and blood-vessels.

Since these structures may be involved independently or collectively, it has been the custom to treat syphilis of the central nervous system under the following subdivisions: (1) meningitis, secondary or tertiary; (2) cerebrospinal syphilis, which has further been divided into three types, endarteritis, meningomyelitis and gummatous infiltration, and (3) the two parasyphilitic disorders, tabes dorsalis and general paresis. Continued reports on the Wassermann reaction and the recent studies of Noguchi seem to indicate that these so-called parasyphilitic diseases can now be regarded as instances of true syphilitic affections of the nervous system. Consequently, when a diagnosis of cerebrospinal syphilis is made, it is obvious that a multiplicity of pathologic and symptomatic states may be included.

Recent observations by Swift and Ellis[1] and similar personal experiences have led me to believe that it will be helpful to designate the endarteritic group of cases in a separate classification distinct from specific diseases of the cerebrospinal system. It has been observed, in the majority of cases of syphilis in which the neurologic symptoms indicate a vascular disturbance, that the spinal-fluid examination is quite normal. The cell count is only slightly, or not at all, increased, and the fixation test is frequently negative; but the Wassermann serum reaction is generally positive. In my series of cases, these observations have been so uniform that not infrequently it can be predicted, with some assurance, that the spinal-fluid examination will be within normal limits. Naturally, the accuracy of one's prediction will depend somewhat on his ability to distinguish the vascular nature of the affection.

These observations and the demonstrations of the specific organism in the so-called metasyphilitic diseases, together with their determining influence on the form of therapy to be employed, have suggested to me the following classification of syphilitic affections of the central nervous system:

1. Syphilitic meningitis, secondary and tertiary.
2. Cerebrospinal syphilis, including all specific affections in which the nervous tissue itself is directly affected, such as meningomyelitis, gummatous infiltration, tabes dorsalis and general paresis.
3. Cerebrospinal syphilitic arteritis.

To the clinician, this comprehensive use of the term "cerebrospinal syphilis" can hardly be more than confusing unless the particular variety is clearly stated. It is therefore advisable to continue the use of the older terminology, with the understanding that parasyphilis has only clinical significance, and that syphilitic arteritis of the cerebrospinal vessels probably exists without direct invasion of nervous tissues.

With the specific nature of these diseases more clearly established, it was hoped that the use of Ehrlich's new preparation might be the means of securing brilliant therapeutic results. Unfortunately, at first, it was just this class of cases which was thought to offer particular contra-indication to its administration. The hopelessness, however, of many cases seemed to justify the assumption of reasonable risk; so that, in time, this early objection was overcome and salvarsan began to be widely used in all forms of syphilitic nervous affections. While in some instances the improvement was remarkable, there were many cases in which the results were disappointing.

This failure to secure equally promising results in diseases of the central nervous system was not long

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* Read before the Philadelphia Neurological Society, Oct. 23, 1914.

[1] Swift and Ellis: The Cerebrospinal Fluid in Syphilis, Jour. Exper. Med., 1913, xviii, 162.

in stimulating more diligent efforts to ascertain the cause of this failure and establish, if possible, a more successful mode of therapy. Two probable explanations were readily suggested. Either irreparable changes had taken place in the nervous system, or the drug failed to reach the seat of infection. The first explanation was unsatisfactory, and destined to discourage further hope of progress in this direction. There is, no doubt, an incipient stage from the period of invasion of the central nervous system to the beginning of destructive changes when it might be hoped to arrest the disease by efficient therapy. Although the period of invasion and duration of the incipient stage are undetermined, it has been observed that even in the earliest manifestations of nervous symptoms, intravenous administration of salvarsan is often apparently ineffective. It seemed, then, that the second explanation offered greater encouragement for further investigation; and the first noteworthy contribution in this direction was made by Swift and Ellis[2] when they introduced a method of administering salvarsanized serum directly into the subdural space.

The technic of this method is now well known and the method itself, which was at first received with some skepticism, has lately become quite generally adopted. Unhappily, just as intraspinal therapy appeared to be gaining recognition, it received a severe blow from the unfortunate experiences on the western coast. Whether this was a determining factor or not, it appears to be true, at present, that the earlier enthusiasm regarding this form of intraspinal therapy is somewhat diminished. While the real value of the method has been questioned, I believe there can be little doubt that some form of direct therapy is desirable. If the infection is localized within the central nervous system, and it can be demonstrated that drugs given by the usual methods do not reach the seat of infection, it is obvious that the adoption of a direct method of administration is to be encouraged.

Numerous parallel studies on the Wassermann reactions in the serum and spinal fluid, together with the increased globulin and lymphocytes in the spinal fluid, seem to indicate that the central nervous system not infrequently shows evidences of specific infection, while the extraneural tissues, as represented by the negative Wassermann reaction in the blood, have apparently escaped. With a local infection so isolated from the systemic circulation that its nature could not be determined by the usual serum reactions, it was logical to assume that substances introduced into the circulating blood might not reach the seat of infection.

The studies of C. D. Camp[3] on the spinal fluid of seventeen patients who had received intravenous doses of salvarsan established the fact, in his case at least, that no evidence of the drug could be detected in the spinal fluid. The fluid was examined at variable intervals after treatment, and in only one case, after large and repeated doses, was there any evidence of arsenic. Others, however, have reported its presence in very minute quantities. Since the physiology of the spinal fluid and its relation to the vascular system is still undetermined, any explanation of these negative findings must be more or less problematic. As a matter of fact, such observations awakened a more lively interest in a direct form of therapy and encouraged my belief that the Swift-Ellis method is a step in the right direction.

While my earlier experiences with this method were most encouraging and were quite parallel with those recorded by Swift and Ellis, continued observation soon taught me that their method, although most promising, is not all that is to be desired. From a clinical and laboratory point of view there were unquestioned evidences of its usefulness, and fortunately, in my experiences, no alarming consequences.

The manner in which salvarsanized serum was supposed to be effective was an early subject for discussion. It was thought that the arsenic had undergone some change within the circulatory system which rendered the serum preparation spirocheticidal. On the other hand, those who were skeptical questioned the efficacy of the method altogether and maintained that the improvement in clinical symptoms was entirely due to the intravenous administration; while the reduced cell count and globulin and fixation tests in the spinal fluid could be accounted for by the withdrawal of spinal fluid and dilution of the remaining portion by the injected serum.

However this may be, it does not require extensive mathematical knowledge to understand that 12 c.c. of serum (the original amount advised by Swift and Ellis) removed from a patient who has received only 0.6 gm. of salvarsan must contain an infinitesimal amount of either the altered or original arsenical preparation. This, it seems, is the most forceful argument against the adoption of this form of intraspinal therapy, and the subject is admirably treated in a current article by Sachs, Strauss and Kaliski[4] From the chemical analyses of Benedict on ten specimens of blood removed from fifteen to forty-five minutes after intravenous injection of salvarsan, these authors have made some interesting calculations. Only from 0.00004 to 0.0001 gm. of metallic arsenic could be detected in 20 c.c. of whole blood, and from these figures it was estimated that blood removed three-quarters of an hour after administration of salvarsan contained practically no free arsenic in the serum.

After almost a year's experience with the original Swift-Ellis method, it occurred to me that more effective action might be secured if a larger quantity of some specific drug were introduced into the subdural space. Even a hasty review of the literature soon taught me that the direct introduction of unchanged salvarsan in any appreciable quantity could not be done without serious risk to the patient. Wechselmann,[5] and later, Marinesco,[6] had used neosalvarsan in aqueous solutions, but the results were doubtful and the reactions severe. Within the same year, Ravaut[7] began the use of unchanged neosalvarsan intraspinally, and a few months later Marie and Levaditi[8] made similar experiments in the treatment of general paresis, with disappointing consequences. Subsequently, Ravaut[9] improved his technic slightly by using hypertonic solutions in freshly distilled water, by which he asserted that he obviated the unpleasant irritative effects of the injection. In April of the same year,

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[2] Swift and Ellis: New York Med. Jour., 1912, xcvi, 53.

[3] Camp, C. D.: Jour. Nerv. and Ment. Dis., 1912, xxxix, 807.

[4] Sachs, Strauss and Kaliski: Modern Methods of Treatment of Syphilis of the Nervous System, Am. Jour. Med. Sc., 1914, cxlviii, 693.

[5] Wechselmann: Deutsch. med. Wchnschr., 1912, xxxviii, 1446.

[6] Marinesco: Ztschr. f. phys. u. diät. Therap., 1913, xvii, 194.

[7] Ravaut: Deux cas de syphilis nerveuse Traité par les injections intrarachidiennes de mercure et de neosalvarsan, Gaz. de hôp., 1913, lxxxvi, 1061.

[8] Marie and Levaditi: Bull. et mém. Soc. méd. d. hôp. de Paris, Nov. 18, 1913.

[9] Ravaut: Ann. de méd., 1914, i, 49.

Wile[10] introduced this revised technic in America and used it without unpleasant results in two cases. He injected from 1 to 4 drops of a 6 per cent. aqueous solution of neosalvarsan intraspinally (equivalent to from 3 to 12 mg. of neosalvarsan). It has been further suggested by Marinesco and Minea[11] that the arsenical preparation be added in vitro to the patient's serum, and they report the adoption of this method in twenty cases, but the results were, on the whole, discouraging.

The whole question of intraspinal arsenical therapy is very wisely and cautiously summarized in an editorial[12] of The Journal almost a year ago, which, in my opinion, is quite acceptable at the present time. The instability of these complex arsenical preparations and their irritative and toxic properties make their direct introduction into the dural sac an extremely hazardous procedure, and my desire to make further studies in this direction was not encouraged by the experience of others.

It was no new departure to think of introducing mercury into the subdural space. Irrigation of the spinal canal with 1 : 30,000 mercuric chlorid solution had already been practiced as a postoperative measure, and later, Ravaut[7] reported the injections of mercurial salts into the dural space for the treatment of cerebrospinal syphilis. His technic, however, and exact dosage are not clearly stated, and the laboratory studies are incomplete. He reports two cases. The first was treated by intraspinal injection of 2 drops of a 1 : 1.000 mercuric chlorid solution. The only unpleasant after-effect was slight increase in headache. Three days later the patient left the hospital and did not return for further study or treatment.

The second case, which was treated with mercuric cyanid, received intraspinally 2 drops of a 1 per cent. solution. The cyanid was chosen because it was thought to be a very active salt, rich in mercury, and from animal experimentation less apt to produce local irritation because of its lowered coagulative properties. The reaction in this instance, however, was pronounced. A few minutes after administration the patient complained of pains and cramps in the legs. These were followed by severe muscular contraction which began in the feet, ascended to the trunk and arms and later involved the whole body. Trismus was pronounced. The contractions were of five or ten minutes' duration, and on the following day most of the irritative symptoms had subsided. An examination of the spinal fluid four months later showed considerable reduction of the lymphocytes and a negative Wassermann.

These discouraging results with the direct introduction of mercurial salts convinced me that they were scarcely less toxic, in appreciable doses, than the more unstable arsenical preparations. If mercury were to be used at all it is evident that a preparation must be obtained which is therapeutically active, and at the same time possesses comparatively low toxicity and local irritative action.

The fact that many patients who came to me for the Swift-Ellis treatment had already received thorough courses of mercurial therapy suggested that they might be receiving along with the salvarsanized serum a mildly impregnated mercurialized serum.

A series of experiments was then begun in which fifteen patients suffering from syphilitic diseases of the nervous system were divided into three groups of five each. The several groups were given active mercurial treatment by the following methods: The first group received inunctions, the second daily intramuscular injections of the biniodid in oil, and the third mercuric chlorid and potassium iodid by mouth. All were carried to the point of saturation, when blood was withdrawn and serum obtained for chemical analysis.

The serum was sent to Drs. Penniman and Browne, analytic chemists of Baltimore, with the request for a quantitative estimate of the mercurial content. Specimens of spinal fluid were also obtained for similar analysis.

On completion of the chemical analysis, Dr. Browne sent the following report on technic and results: The mercury was extracted and converted into mercuric chlorid and the quantity estimated according to the well-known Nessler color reactions. While the analysis showed slight variations in the amount of mercury present, in general, these investigations would indicate that (1) the serum of patients treated by inunctions showed a slightly higher mercurial content than that from the other two groups; (2) the average mercurial content of serum from all three groups was approximately 0.0000059 gm. per cubic centimeter, and (3) the spinal fluid in two instances showed only a questionable trace of mercury which was too small to be estimated. The report is concluded with the following caution:

> The difficulties in estimating such minute quantities are so great that I wish to remind you that these figures must not be accepted as absolute. In an endeavor to find the limits of accuracy in this work, I made a solution of blood albumin and added a known quantity of mercury (0.000058 gm.). I recovered from the solution by this method 0.000047 gm., or 80 per cent. of the amount taken.

While it would be absurd to entertain the idea that a patient's serum could, by this means, be sufficiently impregnated with mercury to render it of therapeutic value, these analyses convinced me that mercury is present in the circulating blood in amounts approximately equal to the arsenical content after salvarsan therapy, and that in the majority of cases it is not detected in the spinal fluid. Evidently, then, many patients who were being treated with salvarsanized serum were receiving at the same time a serum of low mercurial content, but in too small amounts to possess any therapeutic value or furnish any information as to its local action and toxicity; and it seemed reasonable to conclude that a preparation of mercury similar to that supposed to exist in the circulating blood would offer many advantages for intraspinal administration.

When an inorganic salt of mercury comes in contact with protein matter a coagulative process occurs, in which the insoluble albuminate of mercury is formed; and the occurrence of this reaction led me to believe that it might account for some of the unpleasant symptoms following the direct introduction of inorganic salts of mercury into the subdural space. If mercury exhibits this affinity for the protein molecule it would seem advisable to make use of a preparation in which this affinity is already satisfied. The albuminate, which is supposed to exist in the circulating blood, seemed to answer these requirements. Although its toxicity may not be less than that of the inorganic salts, since definite knowledge concerning the physical state of the albuminate ion is wanting, it was thought that it might be less irritating, and especially so if administered in a serum menstruum.

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[10] Wile, U. J.: The Technic of the Intradural Injections of Neosalvarsan in Syphilis of the Nervous System, The Journal A. M. A., April 11, 1914, p. 1165.

[11] Marinesco and Minea: Bull. de l'Acad. de méd., 1914, lxxviii, 259.

[12] Deaths Following Injection of Neosalvarsan in Los Angeles, editorial, The Journal A. M. A., March 21, 1914, p. 935.

Since the manufactured albuminate on the market is difficult to obtain, unstable and insoluble, it was decided that more satisfactory results might be obtained by adding a mercurial salt directly to human serum. The precipitated albuminate which is at first formed is readily soluble in an excess of albumin, so that on the further addition of serum a perfectly clear solution is obtained. By fractional precipitation, it was determined that approximately 0.022 gm. (1/3 grain) of mercuric chlorid, in solution, may be added to 2 c.c. of serum before precipitation is complete, and that it is necessary to add 4 c.c. more of serum in order completely to dissolve this precipitate. In other words, 6 c.c. will hold in solution 0.022 gm. (1/3 grain) of mercuric chlorid converted into the albuminate.[14]

Obviously, then, a perfectly clear solution of mercury albuminate in blood-serum can be obtained in which the mercurial content is larger than that desired for therapeutic purposes. Consequently, I determined to make use of such a serum for intraspinal administrations. At first the dose of mercury was extremely small and was determined according to body weight, the average tolerance for mercury when administered intramuscularly, and the proportion between the volume of circulating blood and spinal fluid. By cautiously increasing the dose of mercury, it was found that 0.0013 gm. (1/50 grain) of mercuric chlorid and even 0.0026 gm. (1/25 grain) could be safely administered when added to the prepared serum. Perhaps even larger quantities may be given, but I have found the smaller amounts quite effective.[13]

### TECHNIC

The technic for the preparation and administration of the serum is similar to that employed in the Swift-Ellis method, except that no drug is administered before withdrawing the blood.

1. Sufficient blood is withdrawn to yield from 12 to 30 c.c. of serum. The larger amount is obtained if concentrated serum is to be used. After the blood has coagulated the serum is pipetted, and if necessary,
2. Centrifugalized for twenty minutes.
3. If diluted serum is to be used, to 12 c.c. of the centrifugalized specimen is added 1 c.c. of a solution of mercuric chlorid in freshly distilled water so made that each cubic centimeter contains 0.0013 gm. (1/50 grain) of mercuric chlorid.
4. To the serum thus prepared is added sufficient quantity of normal salt solution to make a total volume of 30 c.c. If the concentrated serum is used this step is omitted.
5. It is heated at 56 C. (132.8 F.) for half an hour, and
6. Administered, by gravity, at body temperature.

Since the desired amount of mercury is readily soluble in the diluted serum I can see no special reason for employing the concentrated preparation.

In administering the serum, I have adopted the method followed by Swift and Ellis. With the patient lying in bed, lumbar puncture is done, pressure readings are made, and spinal fluid withdrawn until the pressure falls to 30 mm. The serum is then administered and the foot of the bed elevated about 8 inches for half an hour.

### CLINICAL RESULTS

At the present writing I have the records of thirty-two patients with syphilis of the nervous system who have been treated by this method. The records have been collected from my private practice and from the Sheppard and Enoch Pratt Hospital (Towson, Md.) where, through the kindness of Dr. E. N. Brush, permission was obtained to have Drs. Sargent and Asper of that institution use this technic on the material at their disposal.

Of the 32 cases there are 13 of tabes dorsalis, 2 of taboparesis, 3 of cerebrospinal meningomyelitis and 14 of general paresis. In general, the cases of tabes and meningomyelitis have shown the most marked improvement although, in a few instances, general paresis has been distinctly benefited. Since it would be just as instructive, and certainly less tiresome, to the reader, to make general deductions from the series of cases as a whole, I shall not burden him with a detailed account of individual cases.

The reaction following the administration of mercurialized serum is usually mild. There is some pain in the legs for six or twelve hours, slight nausea, rarely vomiting, and a moderate rise of temperature. All of these symptoms generally subside within thirty-six hours. I have not observed the sphincter disturbances sometimes seen after the use of salvarsanized serum, nor has there been any evidence of renal disturbance or other untoward symptoms.

The improvement in clinical symptoms has been similar to that observed in the Swift-Ellis method. In most instances of locomotor ataxia, there has been decided relief of the pains, the gait has improved, and gastric symptoms have been distinctly alleviated; in others, there has been little or no change in the clinical condition. A tabetic and a patient with taboparesis showed such marked improvement that they deserve brief mention. When first seen, the tabetic was annoyed by bladder disturbances, slight sexual disorders, and inability to walk without assistance. After four treatments all symptoms were markedly improved, and I have lately heard that he is now conducting a profitable business and is the father of a healthy child. In the case of taboparesis, in which there were such marked mental features that the patient could not be left alone, it was decided to try first a thorough course of mercury by intramuscular injections. When the limit of tolerance was reached, there was practically no change clinically, and it was decided to begin intraspinal therapy with mercurialized serum. Following the first administration there were evidences of improvement in the mental state and this improvement continued after each treatment. In all, five intraspinal injections were given, and on the patient's discharge from the Sheppard and Enoch Pratt Hospital Dr. Sargent made the following note: "The patient's mental condition is practically normal, all grandiose ideas have disappeared, expansiveness is gone, the gait is improved, and he has gained 19 pounds in weight." Six months later the patient was seen by Dr. Hamburger and myself, and his mental condition was so clear that it was decided not to commit him to an insane institution, where his family wished to send him because of the attention required on account of his tabetic symptoms.

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[13] After this article was prepared for publication, a letter was received from Mr. Campbell, of the H. K. Mulford Co., containing a report of Dr. Pittenger's experiments in their laboratory. At my suggestion Mr. Campbell kindly directed that studies be made on the toxicity and local irritative action of mercurialized serum. It has been determined that by intravenous administration this serum is as toxic as the inorganic salts of mercury, but when administered intradurally it can be given in much larger doses.

[14] These proportions are only approximate. No doubt a much larger quantity of mercuric chlorid may be added.

The spinal fluid has, in every instance, shown a marked decrease in the cellular elements, and in many cases, the diminution has occurred more rapidly than is observed after the use of salvarsanized serum. The globulin is in general diminished, but the Wassermann reaction, as in the use of salvarsan, appears to be less readily affected. In the thirty-two cases a negative reaction was obtained in only twelve. This low percentage may be accounted for by the fact that the number of treatments was determined largely by the cell count and clinical symptoms; and since these usually showed evidences of improvement after relatively few treatments — usually five — further treatment was not insisted on. Perhaps a more prolonged course might have increased the percentage of negative Wassermann tests.

### CONCLUSIONS

1. While it is not declared that mercurialized serum alone is the only treatment that is necessary in syphilis of the central nervous system, I believe it is equally, if not more, efficacious than salvarsanized serum in the local treatment of these diseases.
2. The immediate reactions following its administration are, in general, not so severe as those after the use of salvarsanized serum, and the cell count in the spinal fluid appears to be more quickly reduced.
3. Since preliminary medication is not required, the blood may be obtained at any time; and because of the greater stability of the mercurialized serum it may be prepared at leisure and kept in sealed flasks until it is convenient to administer it.
4. In certain cases of cerebrospinal syphilis in which the serum Wassermann is negative but in which there are all the indications for intraspinal treatment, it has impressed me as unfortunate that the patient had to be subjected to the discomforts of an intravenous administration of salvarsan merely for the purpose of securing a preparation for intradural injection. This objection does not arise in the use of mercurialized serum. It is true that in many cases both the blood and spinal fluid show evidences of infection, and in such instances I have not felt that the intravenous dose of salvarsan could justly be withheld, so that I have frequently given the combined salvarsanized and mercurialized serum intraspinally.
5. Owing to the greater stability of the mercurialized serum, it is hoped that a method may be devised by which a permanent preparation can be dispensed in sealed ampules and thus simplify the whole technic of intraspinal therapy. While it may be unwise to entertain the idea of using a foreign serum, it is not unlikely that human serum may be obtained in sufficient quantities for this purpose.

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**Nativity of Parents and Infant Mortality.**—Investigation of deaths of infants from so-called congenital disease, including prematurity, congenital debility, convulsions, malformations and injuries at birth, by the Bureau of Child Hygiene of New York City disclosed a definite relation existing between the proportion of congenital deaths and the nationality of the parents. Only three nationalities were considered as the proportion of the others was too small to be of consequence. The Italian and Russian-Austrian proportions of deaths are very low as compared with their proportions of births, while the United States and "All Others" are relatively high. The percentage of congenital deaths among the United States group is 32.3; all others, 43.6; Italians, 14.6; Russian-Austrian, 18.5.

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# A MORPHOLOGIC AND CHEMICAL STUDY OF THE DOUBLE REFRACTIVE FATS OF THE ADRENALS IN DELIRIUM TREMENS *

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Kaiserling and Orgler[1] were the first investigators to call attention to the presence of anisotropic droplets or liquid crystals in the cortex of the human adrenal glands. Herrmann[2] later studied a small number of human adrenals with regard to their content in the doubly refractive substance, and reports it uninfluenced by age, but diminished by wasting diseases. He observed its entire absence once in the adrenals of a 70-year-old woman dying from miliary tuberculosis, and again in the glands removed from a body with long-continued, chronic lung phthisis. The small number of glands studied was not sufficient, however, to permit drawing conclusions regarding the causal relationship between disease and the absence of the anisotropic droplets. White[3] also merely reports the presence of doubly refractile droplets in the adrenals removed from thirty individuals dying from various diseases. Kawamura[4] observed the anisotropic substance in a finely divided form in the cortex of adrenals removed from fetuses and children up to 10 years of age. The abundance of this, he records, is not influenced materially by chronic and acute diseases, but is diminished markedly by sepsis and alimentary intoxications. Kawamura observed no diminution of the doubly refractive substance in disorders of the vessels, obesity, marasmus, tumors and inanition, but on the contrary, in some of these conditions an increase. He confirms Herrmann's observations on its diminution in chronic tuberculosis, and that age does not seem to influence its amount. A diminution of these droplets is recorded by Kawamura in sepsis, typhoid fever, diabetes, and once in chronic nephritis. Weltmann[5] records their diminution in the adrenals removed from persons dying with septic diseases, typhoid fever, severe infectious enteritides, purulent peritonitis, frequently in croupous pneumonia, ulcerative carcinoma, and cavernous phthisis; on the other hand, he found them abundant in atherosclerosis, cirrhosis of the liver, chronic nephritis, generalized passive congestion, cerebral hemorrhage, and encephalomalacia, as well as in subacutely progressing infections. A complete absence of the doubly refractive substance is reported by Mulon and Porak[6] in the adrenals removed from the body of a patient dying with Huntington's chorea. A relatively smaller amount of the adrenal lipoids was found by Landau[7] in phthisis, septic processes, and with many tumors.

Practically all investigators agree in considering the doubly refractive droplets present in the adrenals as lipoids, or, more exactly, esters of cholesterol. According to Kawamura there may be other doubly refractive spheroliths present in fresh tissues, such as the globules in the uric acid infarcts, in part the psammomas, and the prostatic corpora amylacea. These, of course, are not lipoids. Moreover, doubly refractile globules occur in fatty livers, in cloudy swelling of the liver, and have been observed in teased preparations of the central nervous system, especially in diseased softened regions together with myelin droplets or globules, as well as in numerous other pathologic retrogressive processes. In none of these, however, do the droplets lose their double refrangibility with heating. Kawamura summarizes the optical properties of the anisotropic droplets in question as follows: In a fluid state they are doubly refractive; a property lost on heating, to be assumed again with cooling. In tissues fixed with 10 per cent. dilution of liquor formaldehydi they appear as needle-like crystals which are converted by heat into doubly refractive droplets. The relation between the droplet doubly refractive substance in fresh tissues and the crystalline in fixed preparations, he states, is always constant and equal. The same relation is also true on changing the crystalline form into the globular by heat. In the examinations to be mentioned presently these observations by Kawamura have been confirmed repeatedly.

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* From the Laboratories of Pathology of Rush Medical College and the University of Chicago.

[1] Kaiserling, C., and Orgler, A.: Ueber das Auftreten von Myelin in Zellen und seine Beziehung zur Fettmetamorphose, Virchows Arch. f. path. Anat., 1902, clxvii, 296.

[2] Herrmann, O.: Ueber Vorkommen und Veränderungen von Myelin substancen in den Nebennieren, I. D. Tübingen, 1905.

[3] White, C. P.: On the So-Called Fatty Degeneration of the Adrenals, Jour. Path. and Bacteriol., 1909, xiii, 11.

[4] Kawamura, R.: Die Cholesterinesterverfettung, Jena, 1911.

[5] Weltmann, O.: Ueber das doppeltbrechende Lipoid der Nebenniere, Beitr. z. path. Anat., 1913, lvi, 278.

[6] Mulon, P., and Porak, R.: Un cas d'absence d'enclaves lipo-cholesteriques dans la surrenale humaine (choree de Huntington), Compt. rend., Soc. de biol., 1912, lxxiii, 281.

[7] Landau, M.: Nebenniere und Fettstoffwechsel, Deutsch. med. Wchnschr., 1913, xxxix, 546.

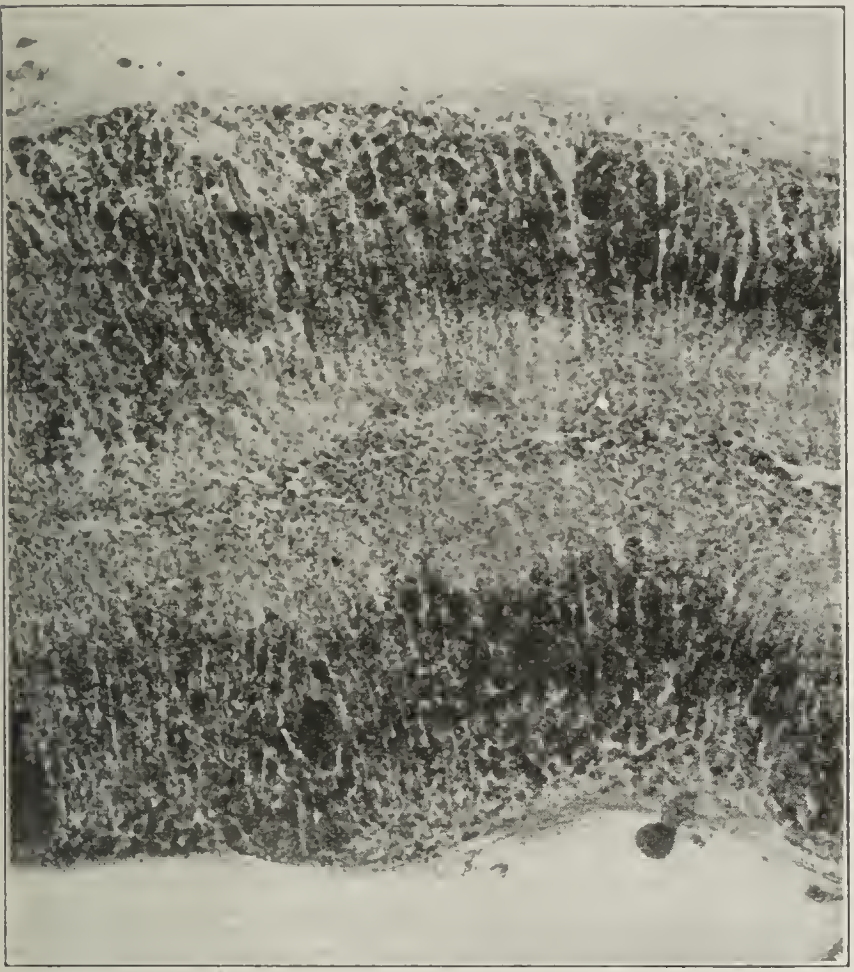
Fig. 1.—Normal adrenal section stained with sudan III; Nicol prisms uncrossed; × 38.

Rosenheim and Tebb[8] analyzed chemically the lipoids from the adrenal and isolated a mixture of fatty acids and cholesterol esters, as well as small amounts of sphingomyelin and phrenosin. Adami and Aschoff[9] sought to determine the chemical nature of these anisotropic droplets by preparing substances artificially with doubly refractive properties, and observed that the following may contain doubly refractive myelin figures, and sometimes also droplets: (1) phosphatids, among which is lecithin; (2) soaps of the fatty acids; (3) cholesterol esters; (4) solutions of cholesterol in phosphatids, in fatty acids and in fats; (5) solutions of cholesterol esters in fats. Of these, only the cholesterol esters easily formed permanent emulsions which contained doubly refractive droplets. Kawamura pursued the same method of investigation on a large number of chemically pure lipoids, as well as with artificial lipoid mixtures. Aside from the cholesterol esters, he observed doubly refractive globules in sphingomyelin and phrenosin isolated both from the brain and from the adrenals. Also with cephalin-cholesterol and cephalin-cholesterol-oleic acid mixtures, lecithin, and sodium oleate. The cholesterol-fatty acid mixtures tend to form myelin, a reaction dependent on the dissolved cholesterol, for the doubly refractive properties appear only with a relatively rich cholesterol content. Cholesterol-glycerol mixtures, glycerol esters, cholesterol-palmitic acid esters, myelin, the fatty acids, soaps, and cephalin have no doubly refractive properties.

In the examination of the bodies of persons dying from delirium tremens, Dr. E. R. Le Count, one of the coroner's physicians in Chicago, found alterations so regularly in the cortices of the adrenals that it was decided to ascertain, if possible, the reason for such changes. The changes consist in a more or less striking diminution of the yellow color normally present in the cortex. This diminution is frequently a narrowing of the yellow, band-like cortex combined sometimes with its irregular disappearance, producing an uneven yellow edge bordering the medullary region into which the substance of the medulla apparently extends, sometimes reaching entirely to

Fig. 2.—Same field illustrated in Figure 1 with the Nicol prisms crossed; the light portions represent the distribution and abundance of the double refractive lipoids; × 38.

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8. Rosenheim, O., and Tebb, M. C.: On the Lipoids of the Adrenals, Proc. Physiol. Soc. London, 1909, xxxviii, p. liv.

9. Aschoff, L.: Zur Morphologie der lipoiden Substanzen, Beitr. z. path. Anat. u. z. allg. Path. (Ziegler's), 1910, xlvii, 1.

the capsular margin. In very marked instances, the entire cortex assumes a reddish-brown color with only occasional areas of yellow distributed at irregular intervals, or there may seem to be an entire absence of all the yellow substance. These changes are grossly very interesting, and so regularly encountered in delirium tremens that when they are absent, as a rule, some other influence than simply the poisonous action of the alcohol manifested as delirium tremens is found contributing to death.

The adrenal glands removed for the purpose of study were weighed after the perirenal fat had been dissected away carefully, and then fixed in 10 per cent. dilution of liquor formaldehydi. After a few days, thin transverse segments of the fixed glands were frozen and sectioned. Some of the sections were mounted directly on slides in glycerol; others were stained from ten to fifteen minutes with sudan III, and then mounted. Preparations were made in this manner from practically all the adrenal glands studied, warmed to 80 C. (176 F.) in a drying oven, and afterward cooled. As controls for this work, the adrenals from persons meeting sudden death, such as results from gunshot wounds or other severe injuries, were used, and sections prepared in a similar way. The micropolariscopic examination was made soon after, using a very low magnification (28 diameters), and artificial illumination in a dark room to insure uniformity. The adrenals from thirty-four persons dying from delirium tremens were compared with the controls, and in practically every instance the doubly refractive droplets in the delirium tremens adrenals were diminished slightly, moderately, markedly, very markedly, and sometimes in a given area were absent entirely (Table 1).

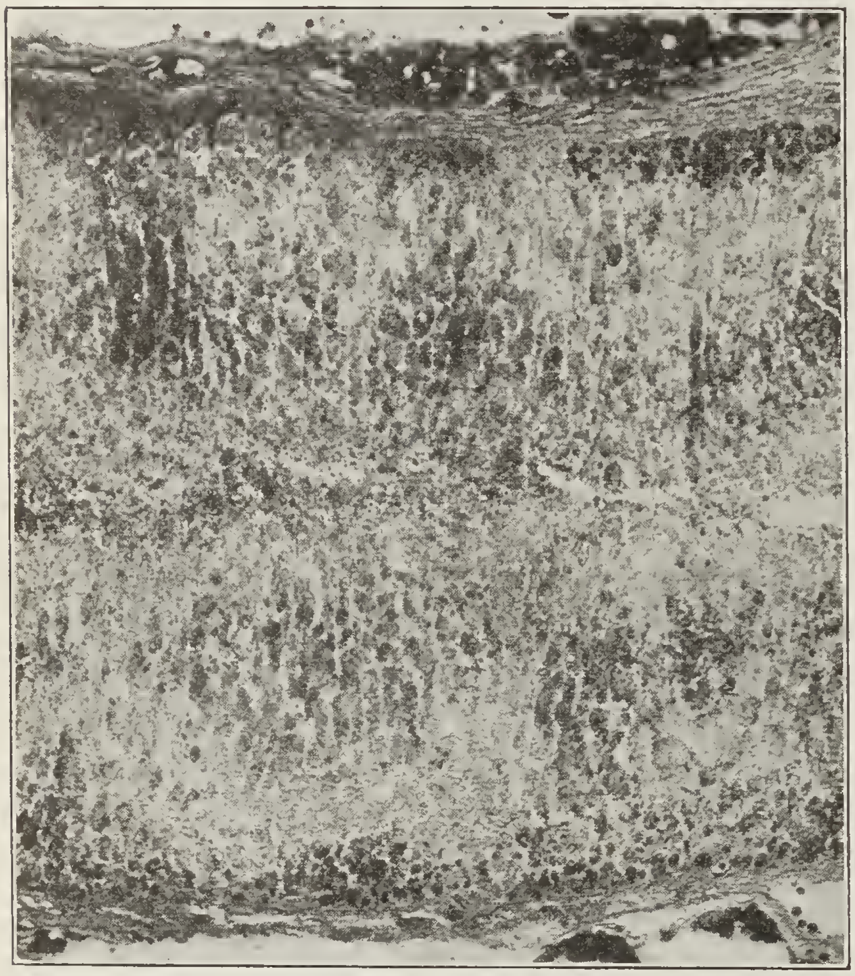

Fig. 3.—Delirium tremens adrenal section stained with sudan III, illustrating the diminution of the lipoids staining with this reagent; Nicol prisms uncrossed; compare with Figure 1; × 38.

Further evidence that the cholesterol content of the adrenals is diminished in delirium tremens was obtained by quantitative chemical estimation. Seven adrenals removed from persons dying with delirium tremens and two controls were analyzed by the following colorimetric method, which, with slight modifications, is the process described by Autenrieth and Funk.[10] While such a colorimetric method may be open to criticism from the point of view of quantitative accuracy, nevertheless, it is probably far better for making comparative estimations of cholesterol than are only rough color determinations such as might be obtained in test-tubes with the Salkowski color reaction.

TABLE 1.—DELIRIUM TREMENS ADRENALS

| No. | Double Refractive Lipoids Diminished | Age | Under Observation, Days | Clinical and Necropsy Notes* |
|---|---|---|---|---|
| 1 | Moderately | 61 | 14 | Small red kidneys; syphilis. |
| 2 | Moderately | — | 4 | An alcoholic for 24 years; marked inflammation of the air passages; slight sclerosis of the brain. |
| 3 | Moderately | — | 19 | Was delirious when admitted to the hospital; syphilis; healed empyema; slight pulmonary tuberculosis. |
| 4 | Moderately | 51 | — | Tuberculous scars of the thorax; early bronchopneumonia. |
| 5 | Moderately | — | — | Syphilis; pseudolobar bronchopneumonia. |
| 6 | Moderately | 33 | — | Delirium tremens clinically and anatomically. |
| 7 | Very markedly | 43 | — | Delirium tremens complicated by trauma; extensive bronchopneumonia. |
| 8 | Moderately | 35 | 20 | Anatomically only delirium tremens. |
| 9 | Very markedly | 45 | 6 | Fractured rib; acute pleuritis; syphilis. |
| 10 | Moderately | 61 | — | Chronic nephritis; syphilis; bilateral bronchopneumonia. |
| 11 | Very slightly | — | 3 | Marked pulmonary tuberculosis. |
| 12 | Moderately | 35 | 20 | Developed lobar pneumonia shortly before death; anatomically lobar pneumonia; chronic nephritis; syphilis. |
| 13 | Moderately | 35 | — | Bilateral bronchopneumonia. |
| 14 | Very markedly | 35 | — | Clinically delirium tremens with early bronchopneumonia. |
| 15 | Markedly | 35 | 6 | Anatomically delirium tremens and bronchopneumonia. |
| 16 | Slightly | 37 | 19 | Slight latent pulmonary tuberculosis; marked bronchopneumonia. |
| 17 | Moderately | 32 | 13 | Chronic alcoholism. |
| 18 | Very markedly | 38 | 12 | Huge empyema; chronic nephritis; syphilis. |
| 19 | Very slightly | 40 | 2 | Anatomically delirium tremens. |
| 20 | Very slightly | 38 | 14 | Syphilis. |
| 21 | Markedly | 38 | 12 | Slight bronchopneumonia; chronic nephritis. |
| 22 | Very slightly | 47 | 3 | Healing duodenal ulcer; otherwise delirium tremens. |
| 23 | Very slightly | 39 | 14 | Developed delirium tremens in the hospital. |
| 24 | Moderately | — | — | Syphilis; chronic nephritis; slight bronchopneumonia. |
| 25 | Very markedly | — | 2 | Marked bronchopneumonia; syphilis. |
| 26 | Slightly | — | 3 | Chronic alcoholism; chronic nephritis; slight bronchopneumonia. |
| 27 | Very markedly | — | 39 | Bronchopneumonia. |
| 28 | Moderately | — | 7 | Chronic alcoholic; bronchopneumonia. |
| 29 | Markedly | — | 5 | Scalp wound; anatomically delirium tremens. |
| 30 | Very markedly | — | 2 | Anatomically delirium tremens. |
| 31 | Very markedly | — | 1 | Chronic alcoholism; atrophic cirrhosis of the liver. |
| 32 | Very markedly | 39 | 13 | Slight bronchopneumonia. |
| 33 | Very markedly | 45 | 26 | Infected scalp wounds. |
| 34 | Moderately | 44 | 4 | Anatomically delirium tremens. |

NORMAL ADRENALS

The adrenals removed from the bodies of 17 persons meeting sudden death contained an abundance of doubly refractive lipoids. Ten of these persons met death as a result of skull fractures; four from gunshot wounds; two from severe trauma, and one from a broken neck.

* I wish to express my appreciation of the kind assistance rendered by Dr. C. E. Sceleth, physician in charge at the House of Correction Hospital, Chicago, as well as my gratitude for the suggestions offered by Drs. E. R. Le Count and H. G. Wells.

The fixed adrenals were taken from the 10 per cent. dilution of liquor formaldehydi, the excess fluid blotted off, and

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[10] Autenrieth, W., and Funk, Albert: Ueber kolorimetrische Bestimmungsmethoden, München. med. Wchnschr., 1913, lx, 1243.

3 gm. of the ground tissue weighed into a 100-c.c. Erlenmeyer flask. Thirty c.c. of a 25 per cent. potassium hydroxid solution were added, and the tissue saponified on a steam bath for three to four hours. After cooling, the mixture was transferred to a 100-c.c. separatory funnel, extracted once with 30 c.c. of chloroform, and four times with 20 c.c. From 5 to 10 gm. of anhydrous sodium sulphate were added to the combined chloroform extracts to clear the solution, then the mixture was thoroughly shaken, and finally filtered in a dried 100-c.c. graduated, glass-stoppered cylinder through a dry filter, the volume finally being made up by adding chloroform to the filter. One-tenth gm. of cholesterol was dissolved in 50 c.c. of chloroform in a 50-c.c. volumetric flask, a solution used as the known in the determinations about to be mentioned. Five c.c. of the unknown extract were transferred from the stoppered cylinder to a 10-c.c. graduated centrifuge tube by means of a 5-c.c. pipet, 2 c.c. of acetic anhydrid and 0.1 c.c. of concentrated sulphuric acid added, the tube stoppered and shaken. Two c.c. of the known solution were transferred in a pipet to another 10-c.c. graduated centrifuge tube, 3 c.c. of chloroform, 2 c.c. of acetic anhydrid, and 0.1 c.c. of concentrated sulphuric acid added as specified above. Both tubes were then placed in a water bath at from 32 to 35 C. (89.6 to 95 F.) and left there in the dark for fifteen minutes, after which time a flocculent precipitate which usually appeared in the unknown solution was thoroughly sedimented by centrifuging. At this time both tubes contained a fluid having varying intensities of a bright green color, and the solutions were transferred to the chambers of a Duboscq colorimeter for comparison. Control tests were also made using 5 c.c. of chloroform, 2 c.c. of acetic anhydrid, and 0.1 c.c. of concentrated sulphuric acid.

The results of these determinations are given in Table 2.

TABLE 2.—CHOLESTEROL CONTENT OF NORMAL AND DELIRIUM TREMENS ADRENALS BY QUANTITATIVE CHEMICAL ESTIMATION

| | Cholesterol per Gram of Moist Adrenal Tissue (Fixed in 10 per cent. Liq. Form. Dil.), Gm. | Condition of the Double Refractive Lipoids |
|---|---|---|
| Normal | 0.0595 | Abundant |
| | 0.1066 | Abundant |
| Average | 0.0830 | |
| Delirium tremens | 0.0206 | Very markedly diminished |
| | 0.0222 | Markedly diminished |
| | 0.0166 | Very markedly diminished |
| | 0.0113 | Very markedly diminished |
| | 0.0233 | Markedly diminished |
| | 0.0242 | Markedly diminished |
| | 0.0193 | Markedly diminished |
| Average | 0.0196 | |

TABLE 3.—CHOLESTEROL CONTENT OF PATHOLOGIC ADRENALS REPORTED BY CHAUFFARD, LAROCHE AND GREGANT

| Pathologic Condition | Number of Adrenals | Cholesterol per 1,000 gm. of Moist Weight Gm. |
|---|---|---|
| Renal insufficiency | 3 | 61 |
| | | 77.45 |
| | | 40.32 |
| Average | | 59.59 |
| Chronic nephritis | 7 | 34.64 to 79.68 |
| Average | | 52.88 |
| Acute infections: | | |
| Typhoid fever | .. | 6.50 |
| Pneumonia | .. | 4.70 |
| | | 20.17 |
| Puerperal sepsis | .. | 4.10 |
| | | 4.28 |
| Subacute meningitis | .. | 1.16 |
| Tetanus | .. | 1.58 |
| Average | | 9.58 |
| Tuberculosis | 13 | 2.08 to 31.15 |
| Average | | 13.50 |
| The low figures corresponding with febrile conditions and severe cachexia range between 2.08 and 5.85 gm., those for the fibroid tuberculosis between 12.8 and 31.15 gm. | | |
| Myeloid leukemia | 1 | 6.50 |
| Asystole | 1 | 17.50 |
| Liver involvement | 4 | |
| Nodular carcinoma without jaundice | | 5.00 |
| Cholelithiasis with icterus | | 10.20 |
| Biliary calculi with carcinoma of the gall-bladder and icterus | | 16.80 |
| Carcinoma of the gall-bladder with icterus | | 15.60 |
| Average | | 12.35 |

Chauffard, Laroche and Gregant[11] report the cholesterol content of thirty-six adrenal glands removed from bodies with various pathologic lesions. The method employed in making these determinations is not given. Table 3 contains the results of their study.

Their figures given for the cholesterol content of the adrenals in renal insufficiency and chronic nephritis correspond very closely with those considered normal in this study. Quite probably these disorders exert very little influence on the cholesterol content of the adrenals.

Fig. 4.—Same field illustrated in Figure 3 with the Nicol prisms crossed; observe the striking diminution of the double refractive lipoids as well as their irregular distribution; × 38.

The physiologic functions of the adrenals, according to Landau, are not concerned with lipoid formation, but rather the adrenal cortex contains an increased lipoid content under different conditions which have in common only a retention of the lipoids, or are characterized by an abnormally increased lipoid formation, the opposite holding true in conditions accompanied by a lipoid-poor cortex. The variations in the lipoid content are to be considered as secondary to changes in the lipoid content of the body or of the individual organs. With certain limitations, such as inanition and infections, the cholesterol esters behave themselves like the total lipoid content of the adrenals, and probably also are carried to the adrenals and there stored up.

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[11] Chauffard, A., Laroche, Guy, and Gregant, A.: De la teneur en cholesterine des capsules surrénales dans differents états pathologiques, Compt. rend. Soc. de biol., 1912, lxxii, 23.

Inasmuch as acute toxic processes in general are associated with a diminution of the double refractive lipoids of the adrenals, the inference lies close that in delirium tremens the body is flooded by some acutely toxic substance, the nature and origin of which is purely hypothetic at present. That something more than the alcohol itself is concerned in producing these changes is derived from the repeated examination of adrenals removed from the bodies of chronic alcoholics without delirium tremens, in which the alterations described were not present.

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# AUTOGENOUS SERUM IN THE TREATMENT OF PSORIASIS *

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The treatment of certain obstinate diseases of the skin by human serum is a therapeutic measure of comparatively recent date. In view of some of the favorable reports on this method it seems strange that it has not been given a more extended trial, especially in America. Although the present report is limited to the treatment of one disease, psoriasis, by a single method of serum therapy, it may be of interest to say a few words on the general subject of the use of human serum in treating skin diseases.

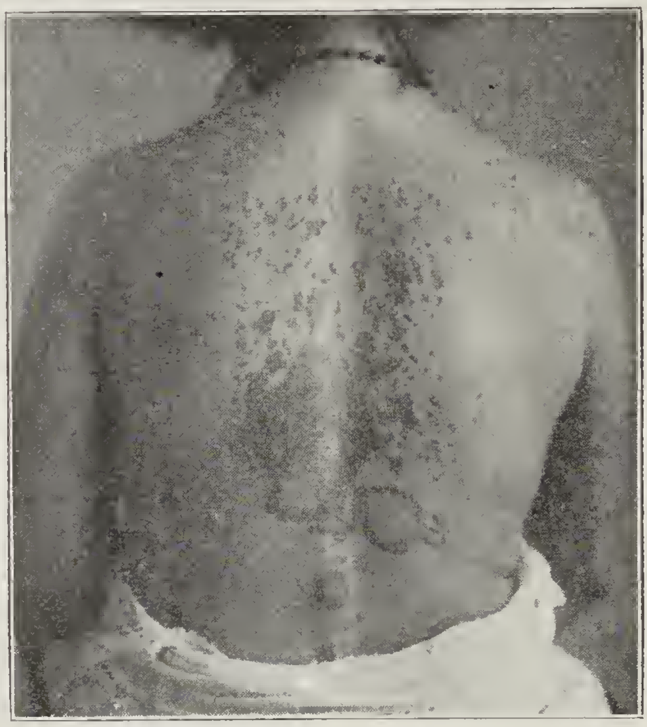
Fig. 1.—Case 5, before treatment; duration, one year.

In December, 1910, a communication was published by Mayer and Linser[1] on the result of treatment of a case of herpes gestationis by injections of serum obtained from another pregnant woman. The theoretic basis which led Mayer to suggest this therapeutic trial was as follows: During pregnancy certain poisonous substances are supposed to enter the maternal circulation from the placenta and act as antigens which in the normal case are neutralized by the formation of antibodies. In certain cases, however, such antibodies are not produced, the patient suffers from auto-intoxication, as shown clinically by eclampsia, hyperemesis and various distressing forms of skin disease. To supply the supposed lack of antibodies, Mayer suggested that the serum of another healthy gravida should be employed. The patient selected to test this theory was a pregnant woman, aged 24, presenting a severe type of so-called herpes gestationis. She was given 10 c.c. of serum intravenously, obtained from a healthy nonpregnant woman, without showing any improvement. Three days later a second injection from a pregnant woman was given and was followed by an immediate improvement, the eruption disappearing entirely at the end of two weeks. Other good results from this apparently specific treatment of toxic dermatoses of pregnancy were later reported by Mayer,[2] Freund,[3] Linser,[4] Fetzer,[5] Veiel[6] and Rübsamen.[7]

Following his success in treating urticaria of pregnancy, Linser[8] was led to try the serum injections in urticaria and other skin diseases having nothing to do with pregnancy. Good results were reported in twenty-four cases of strophulus and urticaria papulosa of children, in prurigo, pemphigus and hemorrhagic diseases of the skin and mucous membranes.

Heuck[9] later reported good results in urticaria and strophulus of children, and in pruritus senilis. Cases of dermatitis herpetiformis showed decided improvement; slight temporary improvement was noted in cases of neurodermatitis, while the treatment failed to be of value in weeping eczema.

A cure of a case of pemphigus following a single injection of human blood was reported by Praetorius.[10] Six cases of this obstinate disease were treated by von Zumbusch[11] partly by injections of human blood and partly by serum, with no result in some and improvement or cure in others.

The report of Ullmann[12] on the serum treatment is less favorable, poor results being obtained in seven cases of dermatitis herpetiformis and no result in eczema of children, though on the other hand, comparatively good results were noted in pruritus.

While all of the foregoing cases were treated with human serum or blood obtained from other individuals (homologous serum) Spiethoff[13] experimented with injections of the patient's own serum (autogenous serum), using this method alone and in combination with homologous and foreign serums. By such combinations of treatment he obtained good results in prurigo, dermatitis herpetiformis, chronic urticaria, pruritus and psoriasis. Other allied therapeutic measures that have been tried in the

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* Because of lack of space this article is abbreviated in The Journal by omission of a table. The complete article appears in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

[1] Mayer, A., and Linser, P.: Ein Versuch Schwangerschaftstoxikosen durch Einspritzungen von Schwangerschaftsserum zu heilen, München. med. Wchnschr., 1910, lvii, 2757.

[2] Mayer, A.: Normales Schwangerenserum als Heilmittel gegen Schwangerschaftsdermatosen im besonderen und Schwangerschaftstoxikosen überhaupt, Zentralbl. f. Gynäk., 1911, xxxv, 350; Weitere Erfahrungen über die Behandlung von Schwangerschaftstoxikosen mit normalem Schwangerenserum, ibid., 1911, xxxv, 1299.

[3] Freund, R.: Serumtherapie bei Schwangerschaftstoxikosen, Med. Klin., 1911, vii, 371.

[4] Linser, P.: Ueber Hauterkrankungen bei Schwangerschaft und deren Heilung, Dermat. Ztschr., 1911, xviii, 217.

[5] Fetzer: Die therapeutische Verwendung von normalem Schwangerenserum nebst Versuch einer Erklärung auf experimenteller Grundlage, Deutsch. Gesellsch. f. Gynäk., 1911, xiv, 712.

[6] Veiel, F.: Ein Beitrag zur Serumbehandlung der Schwangerschaftsdermatosen, München. med. Wchnschr., 1912, lix, 1911.

[7] Rübsamen, W.: Weiterer Beitrag zur Schwangerschaftsserumtherapie der Schwangerschaftstoxikosen, Deutsch. med. Wchnschr., 1913, xxxix, 931.

[8] Linser, P.: Ueber einige mit Serum geheilte Fälle von Urtikaria, Med. Klin., 1911, vii, 136; Ueber die therapeutische Verwendung von normalem menschlichen Serum, Verhandl. d. Cong. f. inn. Med., 1911, xxviii, 125; Ueber die therapeutische Verwendung von normalem menschlichen Serum bei Haut- und innerlichen Krankheiten, Arch. f. Dermat. u. Syph., 1912, cxiii, 701.

[9] Heuck, W.: Erfahrungen über Behandlung Hautkranken mit Menschenserum, München. med. Wchnschr., 1912, lix, 2608.

[10] Praetorius, G.: Pemphigus malignus durch einmalige intravenöse Blutinjektion geheilt, München. med. Wchnschr., 1913, lx, 867.

[11] Von Zumbusch, L.: Serum und Blutinjektionen bei einigen Fällen von Hautkrankheiten, Wien. med. Wchnschr., 1913, xxxviii, 2348.

[12] Ullmann, E.: Ueber die therapeutische Anwendung von normalserum bei juckenden Dermatosen, Arch. f. Dermat. u. Syph., 1913-14, cxviii, 125.

[13] Spiethoff, B.: Zur therapeutischen Verwendung des Eigenserums, München. med. Wchnschr., 1913, lx, 521.

past four years include the treatment of various dermatoses by autogenous blood (Ravaut,[14] Spiethoff[15]), homologous blood (Praetorius), serum from the umbilical cord (Franz[16]) and the serous contents of pemphigus bullae, reinjected in patients with this disease (Holobut and Lenartowicz[17]).

Previous to Spiethoff's publications the result of the serum treatment of psoriasis had not been favorable. Heuck found the treatment of no value in this disease and thought that a beneficial action was not to be expected. In the treatment of psoriasis by autogenous serum, Spiethoff states that in addition to failures he obtained a noteworthy result in two cases. In one case of extensive psoriasis geographica "the patches became pale and flat after the third injection." In another case the involution of the patches began after the first injection of 13 c.c. of inactivated autogenous serum and disappeared after five injections. It was necessary in this case, however, to use local treatment by salves in addition, before a complete disappearance of the eruption was obtained. Spiethoff also mentions a patient with psoriasis applying for treatment for a very severe dermatitis, probably from the use of chrysarobin. Serum treatment was given, after which the dermatitis subsided and the psoriasis disappeared. It may be of interest to add that in the treatment of three cases of psoriasis by autogenous blood, Ravaut failed to see any change in the eruption, although the itching was lessened.

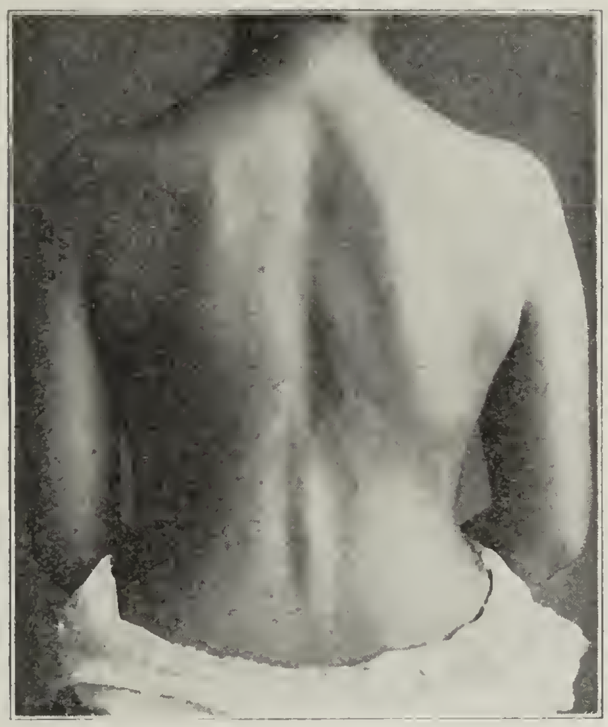

Fig. 2.—Case 5, three weeks after treatment.

Gottheil and Satenstein[18] were the first in this country to experiment with the treatment of skin diseases by human serum, confining their work entirely to the use of active autogenous serum. In their first report on this subject, they stated that "the apparent results from the serum treatments were most noticeable in the psoriasis cases." In a later communication[19] they stated that their results in twelve cases of this disease had been "uniform and extremely satisfactory." In all of these cases the serum treatment was followed by local inunctions of a weak chrysarobin ointment.

My own experience with autogenous serum in psoriasis is derived from the treatment of twenty-eight patients, of whom seventeen were females and eleven males, varying in age from 11 to 54 years. The different forms of the disease such as the guttate, nummular and diffuse were all represented and included varying grades of severity. The duration of the eruption varied in the different cases from 2 to 45 years. All of the patients were treated in an ambulatory manner, with the exception of two, who remained in the hospital for two weeks. The majority belonged to the dispensary class and with few exceptions were fairly faithful in carrying out the treatment.

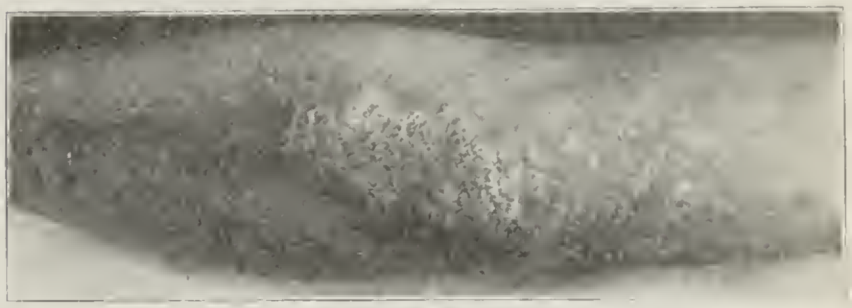

Fig. 3.—Case 10, before treatment.

In all except one case, at least three injections of serum were given, at an average interval of from three to five days. This was immediately followed by the local use of a 10 per cent. chrysarobin ointment, the action of which was increased in certain cases by covering the skin with rubber cloth. No internal medication was given and no particular stress was laid on the diet.

The results of the treatment in general were very satisfactory and in some of the cases decidedly brilliant. The crucial test of the combined serum and local treatment was shown by cases that had been *previously treated by chrysarobin alone.* Some of these patients had been treated by my father, Dr. George Henry Fox, and myself by vigorous inunctions of chrysarobin combined with dietetic methods, and had failed to show practically any response. After the serum injections in combination with the local treatment the results in certain cases were astonishingly good.

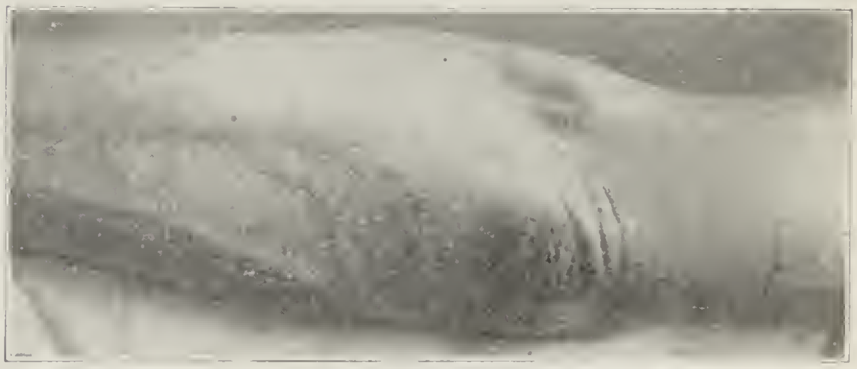

Fig. 4.—Case 10, four weeks after treatment; free of psoriasis for first time in forty-five years.

An idea of the favorable results may be obtained by reading some of the enthusiastic remarks made by the patients themselves. A woman (Case 4), the wife of a physician, had suffered from ten previous attacks of psoriasis and was thoroughly familiar with all of

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14. Ravaut, P.: Essai sur l'autohématothérapie dans quelques dermatoses, Ann. de dermat. et de syph., 1913, iv, Series 5, 292.

15. Spiethoff, B.: Zur Behandlung mit Eigenserum und Eigenblut, Med. Klin., 1913, ix, 949.

16. Franz, R.: Mit Nabelschnurblutserum geheilte Schwangerschaftsdermatose, Zentralbl. f. Gynäk., 1912, xxxvi, 913.

17. Holobut, T., and Lenartowicz, J. T.: Versuche einer Pemphigusbehandlung mit dessen Blaseninhalte, Dermat. Wchnschr., 1914, lviii, 41.

18. Gottheil, W. S., and Satenstein, D. L.: Autoserum Injections in Certain Obstinate Dermatoses, Med. Rec., New York, 1914, lxxxv, 620.

19. Gottheil, W. S., and Satenstein, D. L.: The Autoserum Treatment in Dermatology, The Journal A. M. A., Oct. 3, 1914, p. 1190.

the usual methods of treatment. She was delighted at the rapidity with which her eruption disappeared, which she characterized as being "perfectly marvelous." Another patient (Case 10) thought the result was "like magic" and added that he had tried "all kinds of medicines and doctors in Europe and America for forty years without any result." Another woman (Case 12) said she "never saw chrysarobin take hold so rapidly and never saw the eruption fade so fast as from the present treatment." The daughter of the patient (Case 13) also stated that "although this was by all odds the worst attack she had ever had, the eruption had never disappeared so quickly." Another patient (Case 16) who had suffered from psoriasis for thirty years said that he could not remember when the disease had been so well under control. In his case it should be added that chrysarobin had been previously used on and off for a period of four years. One of my patients (Case 11) had been previously treated for two months with chrysarobin ointment, covered a good deal of the time by an impermeable suit of rubber cloth. In spite of this vigorous treatment the result had been most discouraging. After he had received three injections of autogenous serum, however, and had then been treated by chrysarobin, a lively dermatitis was caused and the greater part of the eruption promptly disappeared. Three other cases that we had previously treated seemed to be immune to any local action of chrysarobin, as it was apparently impossible to produce the slightest dermatitis from a 10 per cent. or 20 per cent. ointment. In one of these cases (Case 5) the result of the new treatment was certainly brilliant, while in two others (Cases 1 and 2) it was gratifying to the patients even though a certain amount of the eruption still remained. One of my patients (Case 28) who seemed most pleased with the treatment was a man who was relieved of his psoriasis for the first time in twenty-four years. He had been vigorously treated on former occasions by chrysarobin alone, but had never seen such a rapid effect from its use as at present when the combined method of treatment was employed.

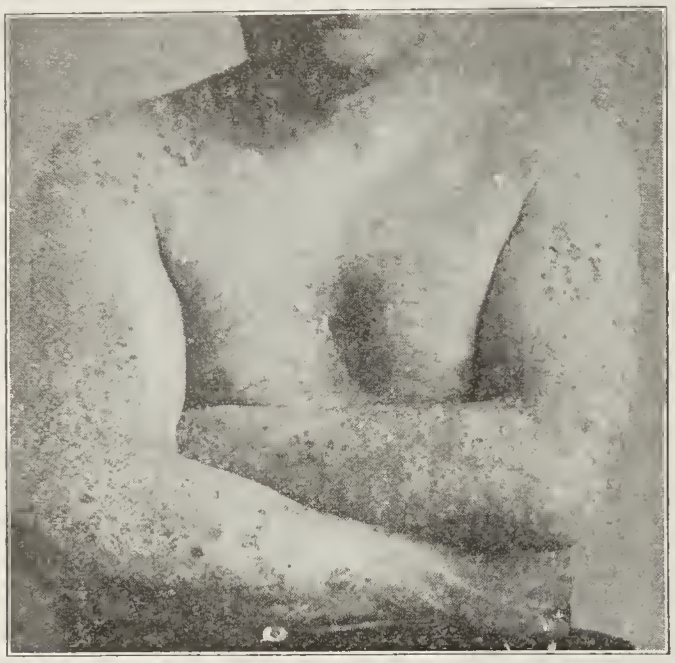

Fig. 5.—Case 11, before treatment; duration, three years.

It might be thought that the good results were not due to the serum injections but simply to the chrysarobin, as the latter drug was used in every case. To prove that the serum injections in some cases at least were responsible for the improvement it is only necessary to repeat that these cases had previously been treated with little or no result with chrysarobin and it was only when the inunctions of this remedy were combined with serum injections that the favorable results were obtained.

From the injections alone I was unable to see any decided effect on the lesions except in one case which might have been a coincidence. An improvement after injections alone was, however, noted by Gottheil and Satenstein, while as above stated in a case of Spiethoff's the attack of psoriasis was entirely relieved by the sole use of the injections.

No ill effects from the serum treatment were observed except in one case (Case 4) in which the third injection was followed by a rather violent urticaria lasting a week. Urticarial rashes were also observed by Linser in several cases, generally lasting from twelve to twenty-four hours. In the case of autogenous serum injections, it is hardly conceivable that any serious ill effects could result when proper aseptic precautions were observed. This cannot be said of the use of a foreign serum in which the possibility of anaphylaxis is always present. In the case of injections of homologous serum the possible transmission of syphilis or tuberculosis must be considered. For this reason the autogenous serum has an advantage over homologous serum and it has the further advantage of greater simplicity, as the patient who receives the injection is also the donor of the blood.

The technic of the injections is perfectly simple for those who have had experience in making venipunctures or giving intravenous injections. For those who have not had this practice it cannot be called difficult. My own plan has consisted at each sitting in drawing 50 c.c. of blood from the cubital vein, by means of a MacRae needle, into a sterile cylindrical glass bottle. The bottle and its contents were then properly balanced and placed in an electric centrifuge having a speed of eighteen hundred or more revolutions a minute. When the serum was thoroughly separated from the corpuscles and fibrin it was drawn off into a glass syringe and injected without delay, either intravenously or intramuscularly. The amount of serum that was generally obtained from the 50 c.c. of blood varied between 15 and 25 c.c., the latter being the maximum. In every case the serum was injected in an active state. As a rule the entire procedure of drawing the blood and

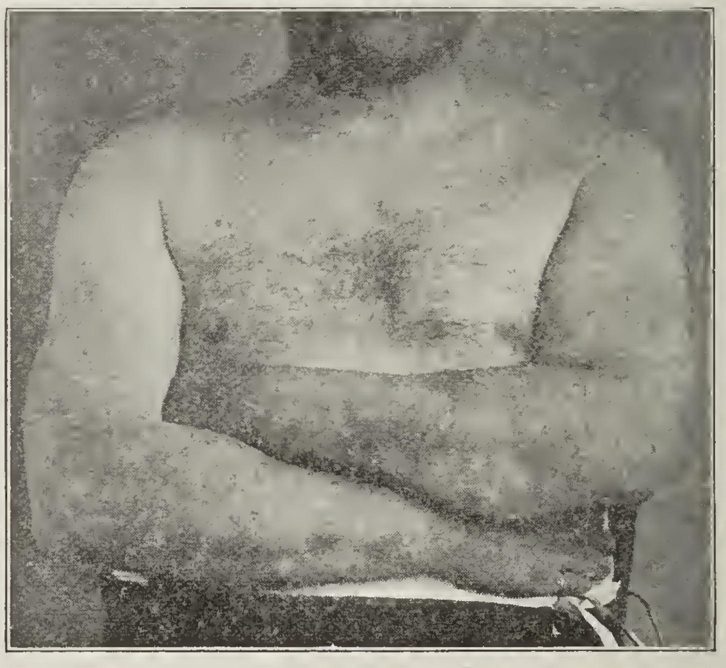

Fig. 6.—Case 11, three weeks after treatment.

injecting the serum was completed in half an hour or less.

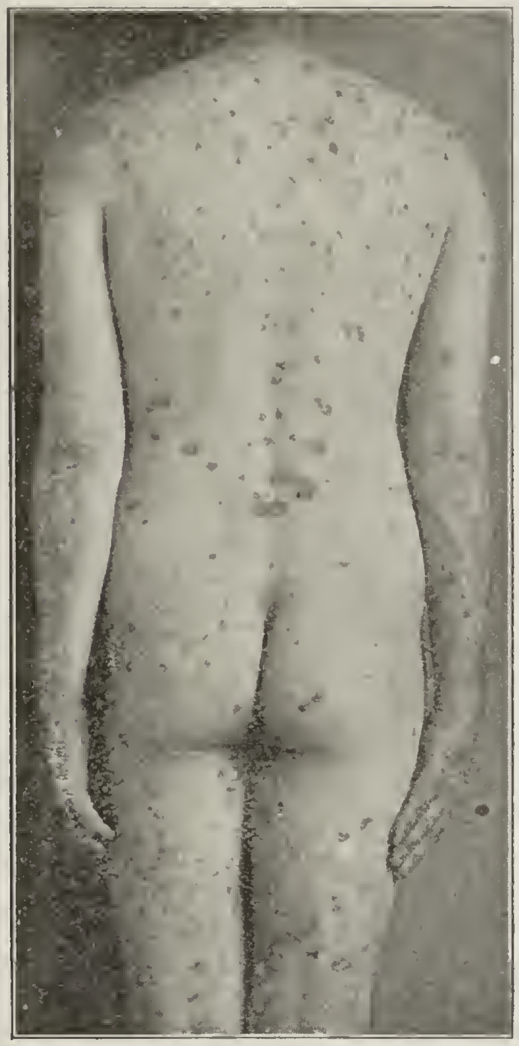

Fig. 7.—Case 28, before treatment.

The question as to why injections of human serum should have a curative action in certain dermatoses is certainly a difficult one to answer. That such an effect is not simply due to the power of suggestion was shown by Linser[20] in control cases in which salt solution was injected in place of the serum. The same writer also suggested that the action of the serum might be due to the addition of complement to the blood of a patient in which this substance was deficient. Ullmann, however, by titration, failed to find any deficiency of complement in his patients who responded well to treatment. Furthermore, it was found that good results were obtained by the use of serum that had been entirely deprived of complement (inactivated). That this suggestion of an addition of complement does not apply to patients treated with their own serum is, of course, self evident.

It was also suggested by Linser that the beneficial results might have a connection with the eosinophil cells. He found that with the lessening of the intensity of the eruption there was a lessening of the number of eosinophil cells, while Ullmann, on the other hand, failed to find a regular decrease in their number after serum treatment but "rather in certain cases an increase." As we know so little of the real significance of the eosinophils, it seems idle to speculate at present on their causative relation to the serum treatment of skin diseases.

The idea naturally presents itself that the beneficial action of autogenous serum injections might be solely due to the bloodletting. That this therapeutic measure may lessen the intensity of some inflammatory skin diseases there can be no doubt; that the results obtained were due, however, to the injections of serum and not merely to the venipuncture has been shown by comparative tests with the two methods of treatment.

The results of treatment of the toxic dermatoses by serum of other healthy pregnant women were thought at first to be due to a specific reaction of the serum. That this was not the case seems apparent from the fact that similar results in toxic dermatoses of pregnancy were obtained by Freund[21] with horse serum, by Hofbauer[22] with pituitary extract and by Rissmann[23] and Eichmann[24] with Ringer's fluid (solution of sodium, calcium and potassium chlorid and ammonium carbonate).

In speaking of his case of pemphigus malignus cured by a single injection of human blood, Praetorius suggested that the curative substances were perhaps protective ferments in the sense of Abderhalden, whose duty it was to prevent the further formation of harmful intermediary products of metabolism or perhaps to destroy injurious secretions of the ductless glands.

Finally, Luitlen[25] showed by animal experimentation that inflammatory reactions of the skin to external irritants could be favorably influenced by injections of homologous, autogenous or foreign serum or homologous blood. Further experiments showed that parenteral introduction of colloidal substances, even when not protein in nature, as colloidal silicic acid and soluble starch, could also influence the inflammatory condition of the skin. He concluded that the action of the serum in the treatment of skin diseases had nothing to do with its antigenic function, but that the introduction into the system of a colloidal complex brought about changes of a character as yet unknown. Spiethoff,[26] whose investigations had been entirely clinical, agreed with the conclusions of Luitlen.

From the foregoing it is evident that we are not in a position to give an entirely definite explanation of the action of human serum in the treatment of psoriasis. I can merely say that in some unknown way the serum injections seem to have caused changes which make it possible for the chrysarobin inunctions to bring about better results than they could otherwise have attained.

The results of treatment recorded in this paper (see

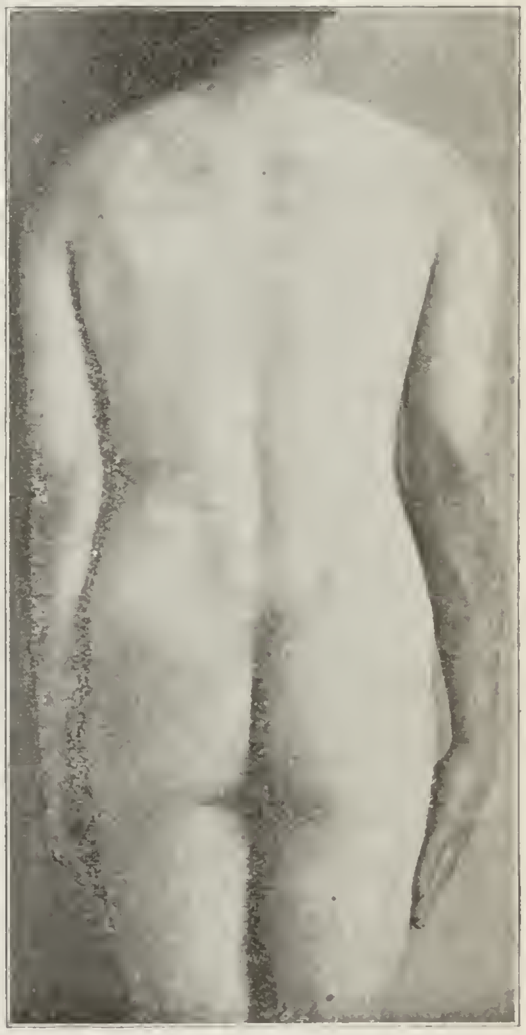

Fig. 8.—Case 28, one month after treatment; free of psoriasis for first time in twenty-four years.

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[20] Linser, P.: Ueber neuere Bestrebungen zur Heilung von Hautkrankheiten durch Blutverbesserung, Samml. zwangl. Abhandl. a. d. Geb. d. Dermat. Syph., 1913, ii, No. 8.

[21] Freund, R.: Mit Pferdeserum geheilte Schwangerschaftstoxikosen, Deutsch. med. Wchnschr., 1911, xxxvii, 2419.

[22] Hofbauer, J.: Schwangerschaftstoxikosen, Deutsch. med. Wchnschr., 1910, xxxvi, 1643.

[23] Rissmann: Intramuskuläre Infusionen von Ringerscher Lösung bei Toxikosen, namentlich bei den Toxikodermien von Schwangeren und Wöchnerinnen, Deutsch. med. Wchnschr., 1912, xxxviii, 1140.

[24] Eichmann, E.: Schwangerschafts - Toxikodermien durch Ringersche Lösung geheilt, München. med. Wchnschr., 1913, lx, 183.

[25] Luitlen, F.: Veränderungen der Hautreaktion bei Injektion von Serum und kolloidalen substanzen, Wien. klin. Wchnschr., 1913, xxvi, 653; Ueber Beeinflussung der Hautentzundungen, Wien. med. Wchnschr., 1913, lxiii, 2375; Ueber die Einwirkung parenteral eingeführter Kolloide und wiederholte Aderlässe auf die Durchlässigkeit der Gefässe, Med. Klin, 1913, ix, 1713.

[26] Spiethoff, B.: Die Herabsetzung der Empfindlichkeit der Haut und des Gesamtorganismus durch Injektionen von Eigenserum, Eigenblut und Natrium nucleinicum, Dermat. Wchnschr., 1913, lvii, 1227; Methode und Wirkung der Eigenserum und Eigenbluthandlung nebst Bemerkungen zur Umstimmung der Hautreaktion durch Eigenstoff- und Natriumnucleininjektionen, Med. Klin., 1913, ix, 1845.

accompanying table) refer to the effect of the combined serum and chrysarobin method on individual attacks of psoriasis. For this purpose it seems to me that the new method is of real value. As to its possible effect in preventing recurrences of the disease, the time is too short for conclusions to be drawn. To hope for such a result would be too much to expect in a disease so peculiarly prone to recurrence. Even if future attacks cannot be prevented, in the present state of our knowledge, it is at least a satisfaction to have an improvement in the method of treating the individual attacks of such an obstinate and chronic disease as psoriasis.

### CONCLUSIONS

As a result of my own observations in a limited number of cases I would draw the following conclusions:

1. Autogenous serum, when used alone, does not appear to be of value in the treatment of psoriasis.
2. It is of decided value in many cases when used in conjunction with chrysarobin. Obstinate cases of psoriasis that have long resisted vigorous treatment with chrysarobin ointment will often yield to this remedy when injections of autogenous serum are given.
3. Intravenous injections of autogenous serum, if properly given, are entirely devoid of danger.
4. The technic of preparing the serum and giving the injections is comparatively simple.

I wish to express my thanks to Drs. Edward Pisko and Benjamin F. Ochs for their kindness in supplying some of the material.

[Note.—Since this article was submitted for publication a communication has appeared in the *Journal of Cutaneous Diseases* (1914, xxxii, 780) by Hilario entitled "A Contribution to the Autoserotherapy of Certain Diseases of the Skin." Hilario reports excellent results in the treatment of five cases of psoriasis by the combined method of injections of autogenous serum and inunctions of a weak (2 per cent.) chrysarobin ointment. A comparatively large number of injections was given (as high as ten in one case) the amount of serum varying from 15 to 40 c.c. Hilario concludes that "The autoserum plays a very active influence in the treatment of psoriasis in the way of reducing the resistance of the psoriatic tissue, thereby rendering it more apt to be acted on by the chrysarobin, in weak percentages."]

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**Scientific and Literary Imagination.**—The imagination of Darwin, of Pasteur, for example, is as high and productive a form of imagination as that of Dante, or Goethe or even Shakespeare, if we regard the human uses which result from the exercise of imaginative powers; and mean by human uses not merely meat and drink, clothes and shelter, but also the satisfaction of mental and spiritual needs.—Charles W. Eliot.

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# OBSERVATIONS ON MILITARY SURGERY IN THE EARLY WEEKS OF THE WAR

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NEW YORK

It has been said by a number of capable military surgeons within the last decade that the treatment of modern gunshot wounds would be a much simpler proposition now than in former years. It was shown that in the Spanish-American and the Russo-Japanese wars the effect of the modern high-speed pointed rifle bullet was a humane one. The wounds were small, non-lacerated, and above all, clean, with comparatively few exceptions.

This might have been true formerly, when the number of men engaged was comparatively few, when transportation was rapid and when there was little use of the modern high-powered shrapnel shells, but from personal observation of the wounded in France during the early weeks of the war I can state without reservation that this is not the case.

Many surgeons have made the observation that in the month of August a large number of those injured by rifle bullets had absolutely clean wounds, especially when there was no involvement of bony structures. Since then the daily life of the soldier in the field has been an extremely arduous one. Facilities for personal cleanliness have been practically nil, and the average soldier's clothing in the field is in a frightfully dirty condition. This is well illustrated by the remark of one of the wounded who was being undressed on his arrival at a base hospital in Paris in November: he said that the trousers that were then being removed were the ones he started to the front in in the early days of August, and that he had not had them off once since then. The hospital bed was the first one he had been in since he had been called from his own home by the mobilization. It is hard to conceive how a bullet traversing such clothes as these can stay aseptic.

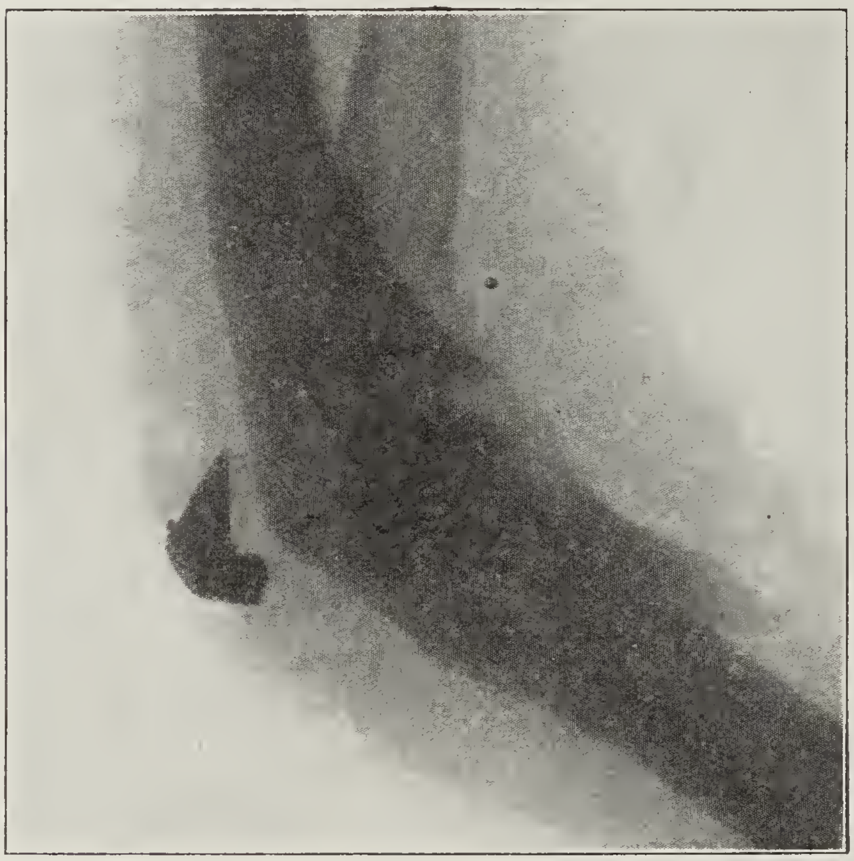

Fig. 1.—Ricochet or deformed bullet. This bullet had gone through the skin of the side of the thorax and then lodged in the elbow between the skin and the olecranon. The bullet had enough force left to fracture the humerus but not to shatter it.

Shrapnel wounds — those caused by the lead shrapnel balls or parts of the casing of the shell — are, of course, attended by a greater amount of infection; on account of the greater size of the ball or shell fragment and their slower velocity, more clothes or other infectious material are brought into a wound, which is very much bruised and lacerated. Probably all these infections occur at the time that the man is wounded. Of course, there are a great number of wounded who cannot be immediately removed from the firing line and who lie for hours exposed to the rifle and shell fire of both their own men and the enemy, but luckily these are the exception. Most of the wounded are first dressed at the front by the field surgeons, the great majority of whom do their work with judgment and ability notwithstanding the surroundings, with little equipment and amid danger.

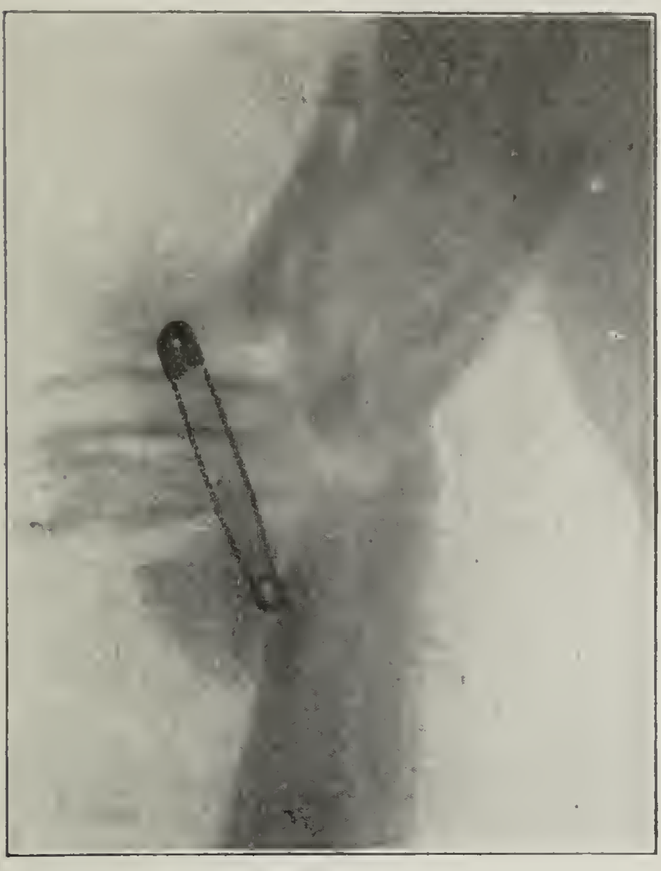

Fig. 2.—Typical butterfly fracture from bullet traveling at high speed.

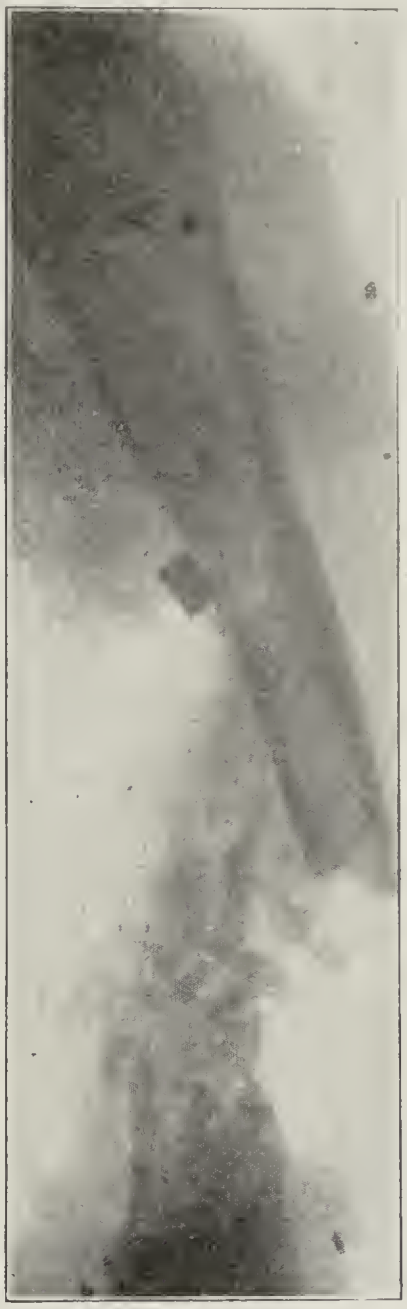

Fig. 3.—Fracture of humerus from shrapnel.

Transportation of the wounded, considering all the difficulties and the great number to be transported, is being creditably done in France. The more seriously injured are being taken care of in the so-called "flying" ambulances which always stay within a few miles of the firing line. Those less seriously injured are removed to the trains, which now are fairly well equipped with the necessary supplies, and well heated and lighted. In charge of each train is an army surgeon, sometimes with assistants, and practically always with orderlies who attend to the comfort and minor wants of the men. Dressings are done *en route*, and these are practically always in good condition on the patient's arrival at the base hospital.

The military authorities up to the present have shown a desire to send as many wounded as possible to the south of France, and to keep the hospitals in the North empty, but at practically all the more important cities along the railroad there are temporary hospitals at the station into which those who are too sick to stand further traveling are taken, and then transferred to a permanent hospital in that city. At almost all stations on the railroads leading from the war zone kitchens have been established by the Red Cross, and the "secours aux blessés militaires," where hot food is supplied to the wounded.

Then, too, from the Pas de Calais district, where the fighting of late has been so heavy, a great number of wounded can be evacuated by the hospital ships to such ports as Cherbourg and Havre, further south, or directly to England. These ships are well equipped, are large and comfortable, and each has a complete staff of surgeons who do whatever emergency operating there is to be done on board. All the patients are dressed as often as necessary, and on some of the ships there is a Roentgen-ray plant where every wounded man is roentgenographed, the plate developed and sent with him to the base hospital when he disembarks.

Practically all the wounds seen are from rifle bullets and shrapnel. One saber wound was observed at the American Ambulance at Neuilly[1] since the beginning of the war; there were no bayonet wounds. Accidental injuries, such as simple fractures of the leg or foot from being thrown from a horse, were sometimes seen, but were very rare.

### RIFLE BULLET WOUNDS

The wound of entrance of the pointed .30 caliber cupronickeled steel rifle bullet now used by the Germans is generally a small one—smaller than the diameter of the bullet—while that of exit is generally larger. The course of the bullet is generally straight, but of course one that is nearly spent may be deflected or even stopped by a strong bone such as the femur. Large lacerated wounds are sometimes made by the so-called "ricochet" bullet (Fig. 1), that is, one that has struck a hard substance and has been deformed by bursting its jacket and then rebounding, striking the person. These are the wounds that give rise to the report that the enemy is using dumdum or explosive bullets. In order to prove the use of such it would be necessary to actually remove such a bullet from a wound.

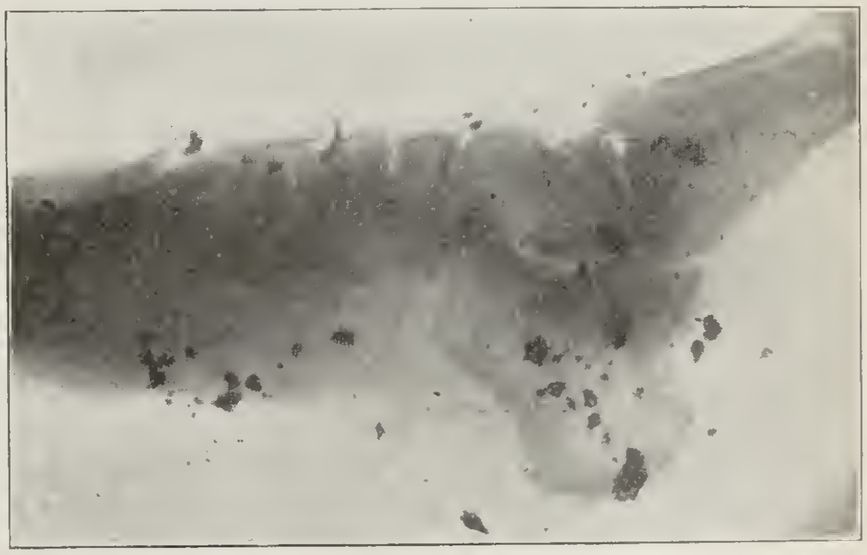

Fig. 4.—Shrapnel wounds of the foot.

The effect of the regulation German rifle bullet on each part will later be taken up, but its effect on bone must be discussed here. When a strong bone, such as the humerus or femur, is struck by a bullet within its zone of maximum speed (5,465 yards), one of two things may happen: Either the bone is cleanly perforated — and this is very rare — or else it is completely shattered. In the latter case we have the typical butterfly fracture, as is shown in Figure 2. In these cases there is such a transmission of energy from the bullet traveling at high speed that extensive comminution results. Near the center of the fracture the fragments are apt to be small, but long fissures extend up and down the shaft of the bone—in some cases into the epiphyses. These fissures make some of the fragments of a large size. On the other hand, when a bullet at the end of its trajectory strikes a bone, a simple fracture results, which very much resembles those caused by indirect violence in occupational injuries. In one instance the bullet, after striking the bone, had its force so nearly expended that it remained in the limb. Short flat bones, such as the clavicle or ribs, are generally shattered, especially when the blow is a glancing one. Small bones like the tarsus or carpus are most often extensively comminuted.

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[1] "Ambulance" is the name given to the military hospital; Neuilly is a suburb of Paris.

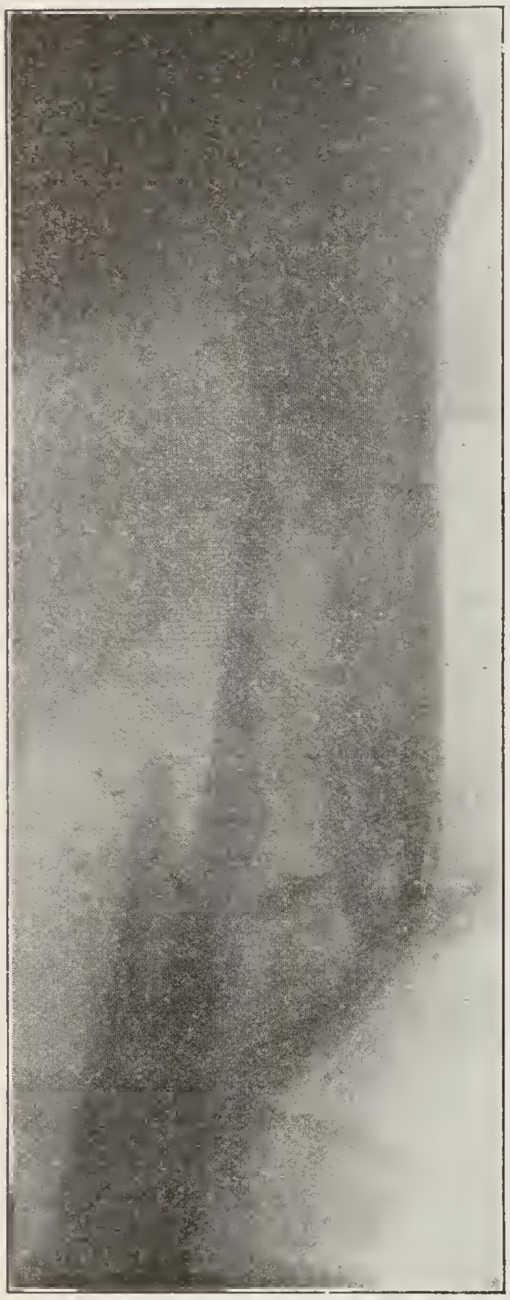
Fig. 5. — Fracture of femur from shrapnel.

### SHRAPNEL WOUNDS

Wounds from shrapnel are, in general, more severe than those from rifle bullets. A shrapnel wound is one made by a shrapnel ball, or part of the casing of the shell. The former is a solid lead ball of about .50 caliber, forty balls to the pound. When the shell explodes these balls are scattered in all directions in the so-called cone of dispersion, but not at a very great velocity. The shell itself is shattered into innumerable pieces of varying sizes. Hence it can be readily seen that shell wounds result from large missles traveling at a comparatively low rate of speed, and are therefore characterized by a large amount of laceration to the parts. Perforating shrapnel wounds are rarely seen, in most cases the missiles lodging in the tissues and forcing in with them a large amount of clothing or parts of the soldier's equipment. These wounds, of course, vary greatly in size and are practically always multiple — seventy-five having been counted in one soldier. The destructive effect of shrapnel on bones is very great. Here the butterfly fracture is hardly ever seen, except when the bone is struck by one piece. In most cases there is an extensive comminution amounting really to a grinding of fragments, being extremely small, about the size of pebbles (Figs. 3, 4 and 5).

### VARIOUS INJURIES

The exact statistics as to the relative frequency of injuries to various parts will not be brought out till after the close of the war, but it might be well to describe briefly here the more characteristic injuries of each part.

One saber cut of the scalp, which was a simple wound without fracture of the skull, was noted. One case in which a rifle bullet had completely traversed the skull from side to side was seen at the Beaujon Hospital on the service of Dr. Tuffier, and was the only one of its kind observed. Cases of furrow wounds of the skull were not uncommon; in most of these the furrow was anteroposterior and generally on the side of the head; they were most often accompanied by an extensive fracture of both inner and outer tables, but very little comminution was present. In one case of this class in which I operated at the American Ambulance, there was an extensive right-side extradural and subdural clot. There was a complete motor paralysis of the opposite arm and leg, which cleared up two weeks after the removal of the clot. Compound fractures of all parts of the skull were very frequent from shrapnel wounds, in which a portion of the overlying tissues had been torn away. Many cases were seen in which a portion of the soft parts of the forehead, together with an eye, had been completely destroyed by shrapnel. Here there was generally a fracture of the frontal bone through which brain tissue exuded. In one patient, received after he had been in a hospital at Arras for a week subsequent to being wounded, I discovered at operation an abscess

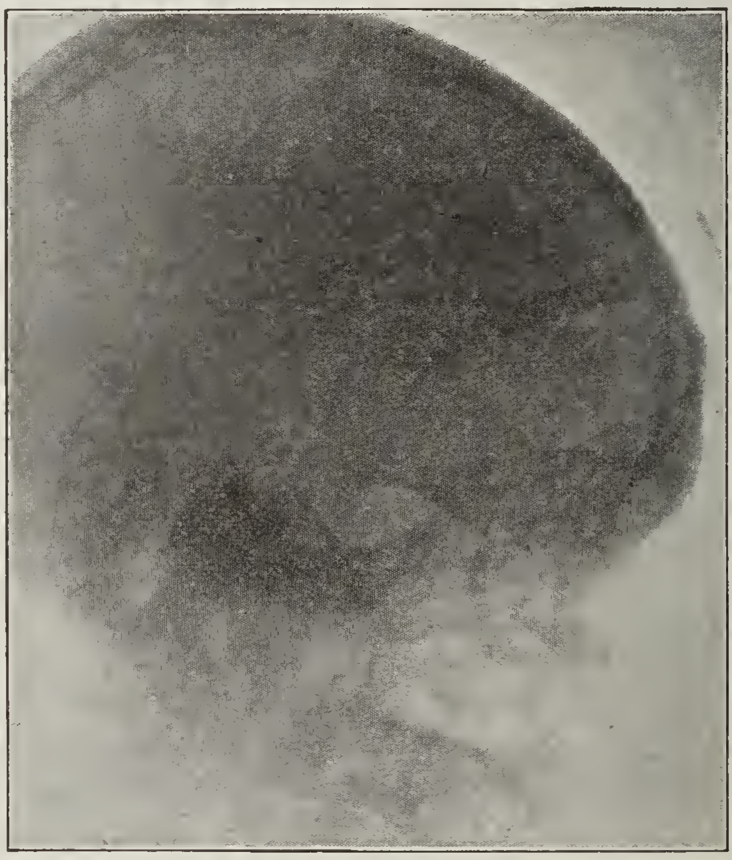
Fig. 6.—Abscess of frontal lobe of the brain with drain in position.

in the frontal lobe on the right side. There were also some small particles of shrapnel behind the right eye (Fig. 6).

Wounds of the face and eyes by rifle bullets were not uncommon, especially since a great deal of the fighting has been done in trenches. Two cases in which the bullet had entered one cheek, completely traversing the head and coming out at the opposite mastoid process, were seen. Both of these were uncomplicated, except for a complete facial paralysis on the side of the wound of exit. Several cases of the destruction of one or both eyes from bullets coming from the side were also observed. Shrapnel wounds of the face were one of the commonest of injuries. Some of the patients simply had very small particles of shell-casing embedded in the skin. Many others had large portions of the face destroyed, and of these there were numerous cases of injuries to the eyes and nose.

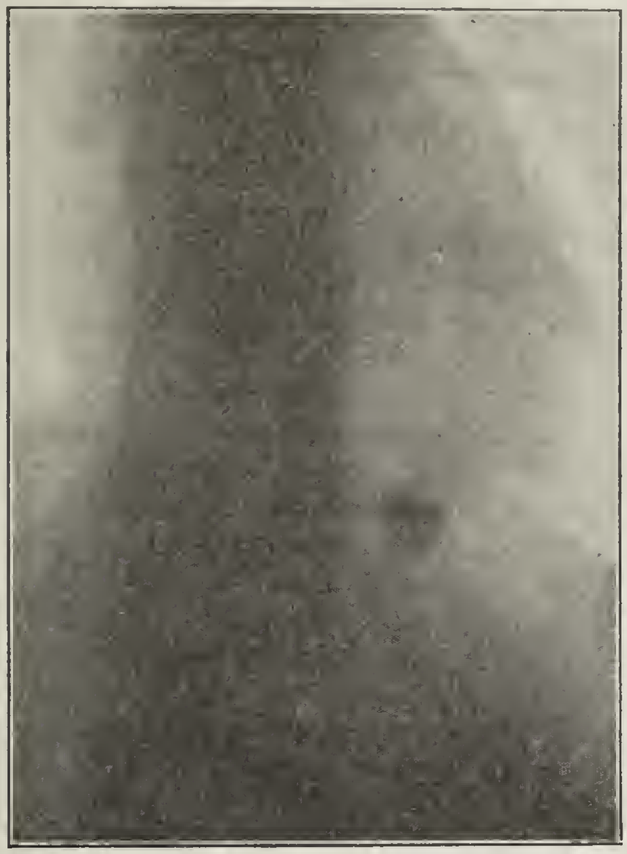

Fig. 7.—Shrapnel ball in pericardial sac. The picture is not very distinct as the ball was moved by every heart beat.

Fractures of the inferior maxilla by both bullets and shrapnel were numerous. They were all very complicated cases, as they were compound either externally or toward the mouth, or both, and the fractures were practically always multiple. In the shrapnel injuries part of the chin or side of the face was often torn away, and in many cases some of the underlying bone was gone. In most of the Paris hospitals these cases were turned over to the dental surgeons, whose work was excellent, and whose results were often brilliant. A number of very complicated fractures with loss of bone and overlying tissues were seen at the Beaujon hospital. Here the plan of treatment was to apply an interdental wire splint immediately on the patient's entrance. The wound of the soft parts was dressed until infection ceased, and any operation in the way of removal of dead bone, or plastic work, was done only when the wound was perfectly clean. This method apparently gave better results than when the interdental splint was applied only when the wound was clean.

Wounds in the neck are comparatively rarely seen. One artillery-man was seen with a large lacerated wound in the middle of the neck from a piece of shell. When taken off the field this patient seemed to be breathing his last. As the piece of the shrapnel was visible through the external wound, it was removed by the field surgeon. The patient immediately began to breathe normally, and it was then discovered that the phrenic nerve had been pressed on. In this case there was surprisingly little loss of blood. Another patient admitted to the American Ambulance with a bullet wound in the neck was almost exsanguinated, and it was found on necropsy that the vertebral artery had been completely severed. Large hematomas of the neck were sometimes seen, and it was found best in all these patients to cut down and ligate the injured vessels immediately. One or two isolated cases of injury to the cervical and brachial plexuses were noted, but were very rare.

Wounds of the chest were not common. Penetrating rifle wounds were sometimes seen. In some the bullet had completely traversed the thorax, and in a few it had remained in it. In all of these cases there was usually an extensive hemothorax, which practically always disappeared slowly of itself, or after a few aspirations. Only one case of empyema was observed, and in this case there was a perforation of the chest wall by a piece of shrapnel 1 by 2 inches in size. Practically all the chest cases showed a complicating fracture of one or more ribs with a considerable amount of comminution. A few had signs of pulmonary consolidation, which lasted a short while and cleared up.

Two very interesting heart cases were seen. In one a shrapnel ball had entered the left lumbar region, completely traversing the left side of the abdomen, and was found by roentgenoscopic examination lying free within the pericardial sac. The ball moved freely up and down at every movement of the heart and apparently caused the patient no inconvenience (Fig. 7). The other case of this kind was seen at necropsy

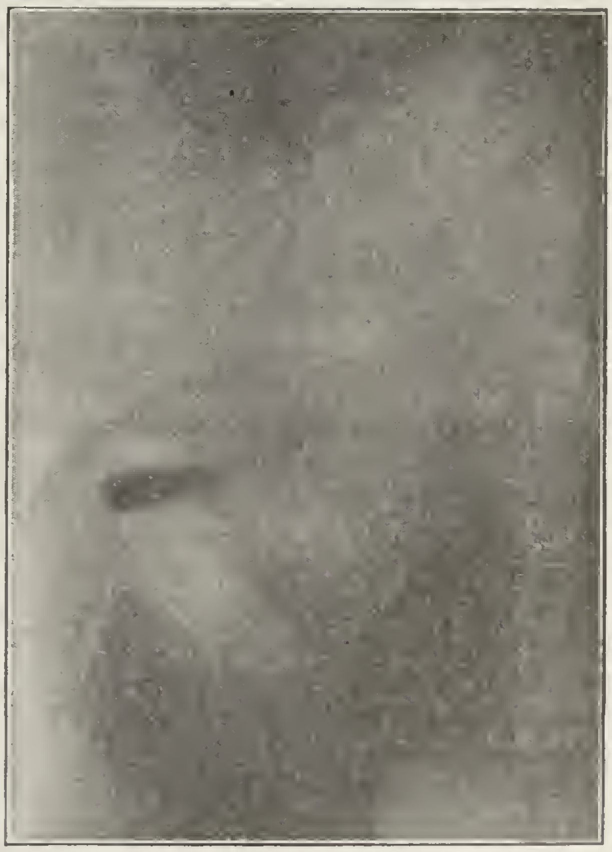

Fig. 8.—Bullet from a machine gun lodged in the abdominal wall, between the peritoneum and the internal oblique muscle.

in a patient who lived only a few days after entering the hospital. Here a large piece of shrapnel had completely traversed the abdomen and lodged in the heart muscle.

A surprisingly large number of patients had nonpenetrating wounds of the abdominal wall. Many of these simply had very small particles of shrapnel embedded under the skin. In some the fragments of shrapnel were quite large, the largest being 1¾ by 2½ inches in size. Several cases in which bullets had entered the side of the abdomen and had pursued their course under the skin were noted. In one instance the bullet of a rapid-fire gun entered the right upper abdomen over the eighth rib in front. On operation, I found it in the left iliac region between the peritoneum and the internal oblique muscle (Fig. 8).

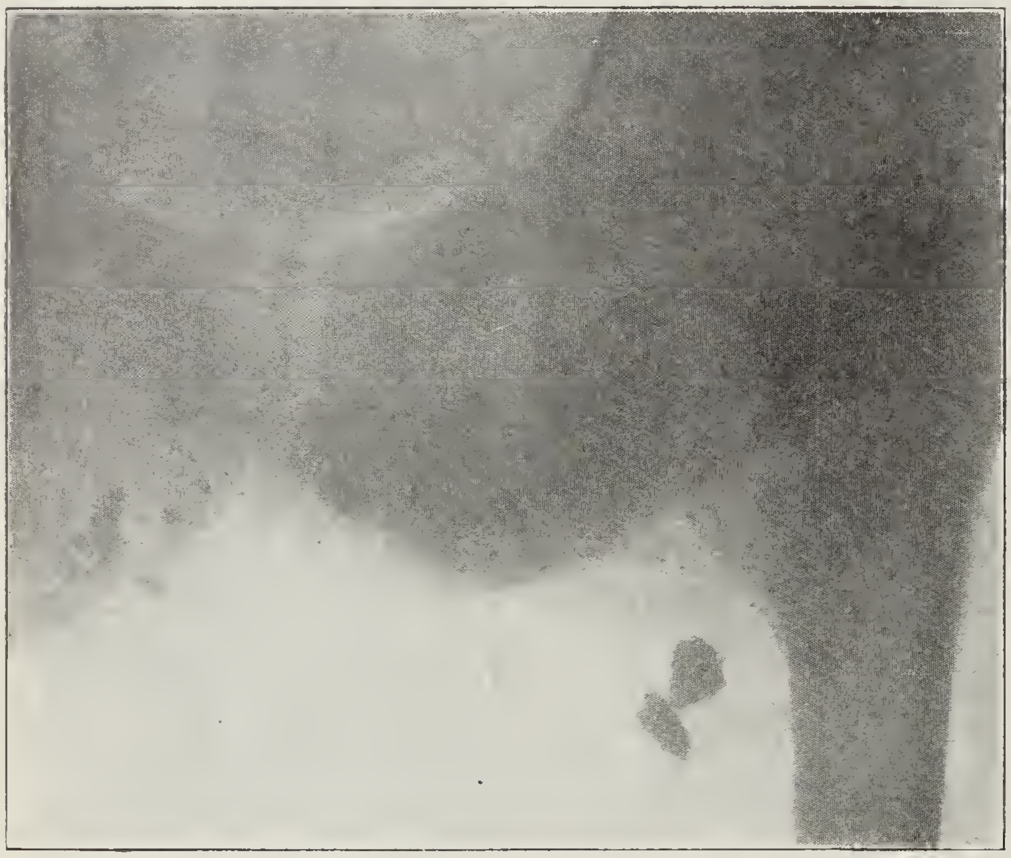

Fig. 9.—Shrapnel in perineum.

That the modern rifle bullet is not a harmless one when it penetrates the abdomen now seems to be an indubitable fact. The typical penetrating wounds are not seen at the base hospitals, or if they are they are seen only in the stage in which a localized abscess has been formed. From accounts of a number of men who have been doing active service at the front, few laparotomies are done there on account of inadequate facilities. The opinion of most of these men is that there is little effort on the part of the mucous membrane to close up the perforation. Most patients with abdominal wounds are now being transported to the nearest base hospital in a sitting position, and there treated expectantly. Luckily localized abscess formation is the rule, and in no case of this kind is operation performed at the base hospital unless there is a definite abscess. One case was seen at the American Ambulance in which the bullet had entered the left iliac region and had made its exit through the middle of the sacrum. This patient had no abdominal symptoms for almost one month, when an abscess began to develop on the left side. A number of cases of fecal fistulas were seen which had been evacuated to the base hospitals from those at the front after the acute symptoms had subsided. The majority were low down in the iliac, or lumbar regions, but several unusual ones were seen higher up in the abdomen, the highest being in the sixth intercostal space in the anterior axillary line.

Bullet wounds in the lower part of the abdomen anteriorly or through the buttocks posteriorly have been found to be especially interesting, and particularly fatal. The reason for this is that here there is often a perforation of the large intestine with a resulting abscess. Apparently a retroperitoneal cellulitis is set up in the neighborhood, so that a large blood-vessel may be eroded and a fatal hemorrhage ensue.

Wounds of the perineum are comparatively rare, though several cases were seen in which shrapnel balls or shell fragments were found lodged there (Fig. 9). The greatest amount of destruction of tissue from shrapnel observed was seen in a case of this kind. Practically all of the perineum had been destroyed here and a large part of the tissues on the inner aspect of both thighs.

By far the most frequent and most interesting cases from a surgical point of view that the war has brought out so far are those of injuries to the extremities. Here again the very superficial injuries from rifle bullets, and shrapnel must be emphasized. Some of the very superficial injuries from rifle bullets, or some of the more superficial wounds *en séton* may sometimes remain clean, but practically every other wound of an extremity from either bullet or shrapnel is infected at this stage of the war. It is for this reason that the compound fractures of the humerus and femur are so very serious, and the latter much more so than the former. When a fracture occurs in either of these bones very long fissures are most often present. There is infection of the soft parts and bone from the very beginning. In the former the infection seems to travel along the fascial planes between the muscles, so that abscesses may subsequently be found at a considerable distance both from the fracture and the wound of entrance. In the bone an acute osteomyelitis starts in at the main point of fracture and slowly spreads along each of the fissures. Hence we see the small fragments extruded first and later the large ones.

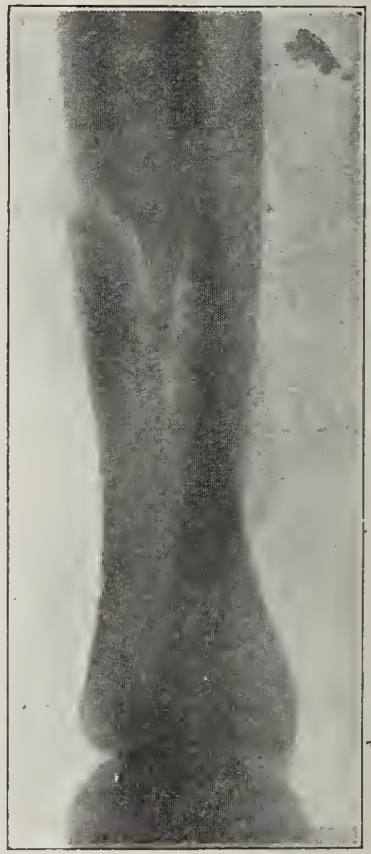

Fig. 10. — Metal shoe-lace clasp driven into the leg by a shell explosion.

Several instances have been noted in which the fissures have extended into the epiphyses, and on account of this osteomyelitis we find an infected joint in a rather short period of time. Where the diaphysis of a long bone is struck there is extensive comminution, but fissuring into the shaft rarely occurs. In these cases, of course, infection of the joint is immediate. Compound infected fractures of the humerus, even when accompanied by an extensive loss of bone and soft parts, yield much more readily to treatment than do similar injuries to the femur. Whether this is due to a better blood-supply to the upper extremity, or whether the foyer of fracture is easier of access here will not now be discussed, but the fact remains, and will probably become more and more evident during the course of the war. Amputation of the arm has rarely to be resorted to unless there is injury to the brachial artery high up, or unless some complication, such as gas gangrene, sets in. Amputation through the thigh, however, must be done in a fairly large proportion of cases, as it must be borne in mind that these patients become rapidly septic so that the first indication is to save the patient's life, the second to save the limb and the third to preserve as much function as possible. Conservatism in the treatment of these fractures is the rule in France and England. I have it on very good authority that such is not the case in the German army.

Conservatism is, of course, to be encouraged, but the treatment of these fractures is one that requires absolutely the best of surgical judgment. Good and efficient drainage must be established early and be maintained. Loose fragments of bone or pieces of shrapnel must be removed. The postoperative treatment is more important than the operation. The limb must be immobilized, and in the case of the femur, extension must be employed. A plaster hip spica, although carrying out both immobilization and extension, has been found to be impracticable. It soon becomes loose as the swelling of the limb decreases, and is dirtied in a very short time, as the amount of discharge from these wounds is enormous. The simplest method and the most practicable consists in extension with weights and immobilization by means of wooden splints on a fracture pillow. An idea of the gravity of these fractures, and the difficulties in their treatment, may be somewhat appreciated when it is remembered that these patients have for several months been living under a terrible strain, and often with insufficient food. The reason that conservatism can be used at all is that all these patients are young men.

Of the two dreaded complications of gunshot injuries — tetanus and gas gangrene — it is much too early in the war to speak. The French government had a supply of antitetanic serum on hand, so that it was a rule in many base hospitals that every soldier should be given an immunizing dose on admission. An idea of the comparative rarity of tetanus can be gathered when it is stated that in four hospitals in Paris — each with a capacity of about 400 beds — not one has had more than six cases.

Gas gangrene, however, is much more common and is especially prone to follow shrapnel wounds of the thigh. The methods of treatment differ in various hospitals. Most of the French surgeons do not believe in extremely large incisions for drainage, but make comparatively small ones, which are frequently irrigated with peroxid. Many are in favor of draining and forcing oxygen gas under pressure into the affected tissues for a considerable length of time — from twelve to seventy hours. This can be repeated at intervals if the process does not resolve. Both these methods of treatment have given good results in some cases, but in many others amputation has to be done, and very often this is of little avail.

For the privilege of having been able to operate in and treat a number of the cases mentioned here I wish to thank Dr. Du Bouchet, Surgeon-in-Chief of the American Ambulance at Neuilly. To the many other surgeons in Paris, by whose courtesy I was able to see the cases under their care, my thanks are also due. The roentgenograms reproduced here were kindly made for me by Dr. Jaugeas and Mr. King of the roentgenographic department of the American Ambulance at Neuilly.

40 East Forty-First Street.

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# THE RELATION OF POSTURE AND INTESTINAL DERANGEMENTS TO COXITIS*

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BOSTON

The title of this communication is misleading. One has a right to infer that I shall at least attempt to explain the relation of posture and intestinal derangements to coxitis. I shall offer no explanation, however, and there should be an interrogation mark after the last word.

The paper is simply a report and a consideration of three cases in which there was an apparent relationship between faulty posture or intestinal derangements and coxitis, and in which the discovery of this relation made unnecessary any prolonged local treatment of the coxitis. The excuse for its presentation is the hope that not all of those present have noted such an association. If this is so and your experience should tally with mine it is possible that you may occasionally be spared a modicum of anxiety, a few families may be spared the distress which the diagnosis of tuberculosis always brings, and certain patients may be spared a prolonged and irksome treatment which may not be demanded.

You are all familiar with the belief held by Sir Arbuthnot Lane[1] that unless the capacity of the several tissues of the body to resist the entry of certain organisms is inhibited by an auto-intoxication resulting from intestinal stasis, it is impossible for these diseases to develop. Therefore, to meet these diseases he adopts measures to improve the drainage scheme and cites cases in which rapid disappearance of large masses of tuberculous glands in the abdomen has occurred, following disconnection of the large bowel.

Fraser,[2] writing on the types of organism in bone and joint tuberculosis in children, is quite convinced that the more common bovine form enters usually by the mouth in milk. It is probably true that an intestinal stasis favors extension to the bones and joints.

Barrington-Ward,[3] working at Great Ormond Street, reports a case of double tuberculous disease of the hip with sinuses, in which orthopedic treatment had been unavailing, but in which rapid recovery followed a short circuiting operation after the manner of Mr. Lane.

It is not, however, to suggest that faulty posture and intestinal derangements bear a causative relation to tuberculous coxitis that these cases are reported. I should be disinclined to deny the possibility of such a relationship, but in this paper I wish rather to suggest that associated with certain intestinal derangements and faulty posture in children there may exist a toxemic arthritis indistinguishable clinically from tuberculosis of the hip.

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Lane, Arbuthnot: Lancet, London, Dec. 14, 1912.
2. Fraser, S.: Brit. Med. Jour., April 12, 1913.
3. Barrington-Ward, L. E.: Surg., Gynec. and Obst., July, 1912.

Thanks to the work of careful pathologists, among whom your Chairman and honored guest are eminent, we know many of the changes which take place in tuberculous disease of the joints. These changes are fairly constant. Tubercles are present, the synovial membrane proliferates, erosion of cartilage appears, and bone foci follow or antedate the involvement of the synovia.

Poncet[4] and others have described a *rhumatisme tuberculeuse* due to toxins elaborated in, and disseminated from, a tuberculous focus in some other part of the body. If such a condition obtains it is probable that joints thus affected may completely recover if the focus can be eradicated.

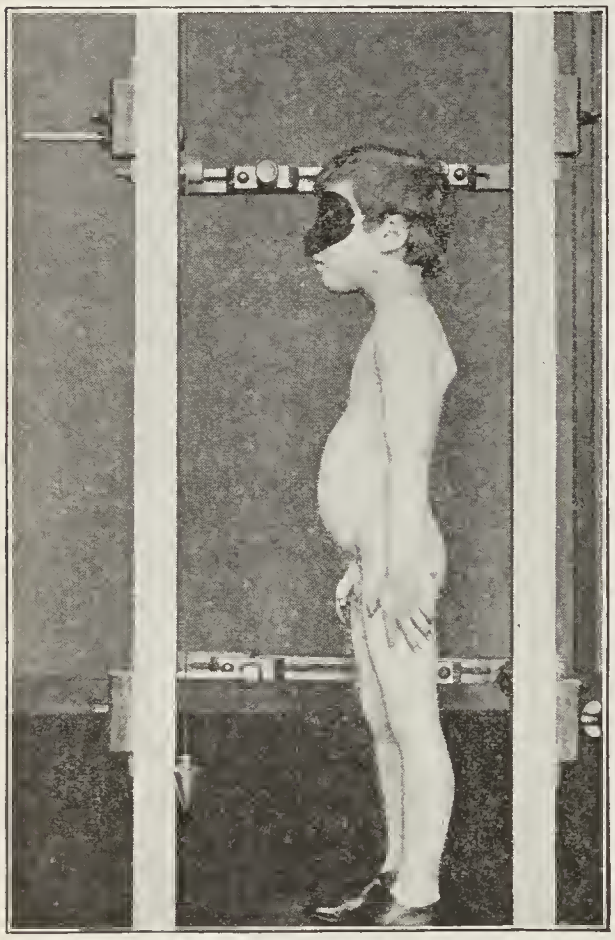

Fig. 1.—Natural standing position, Case 2.

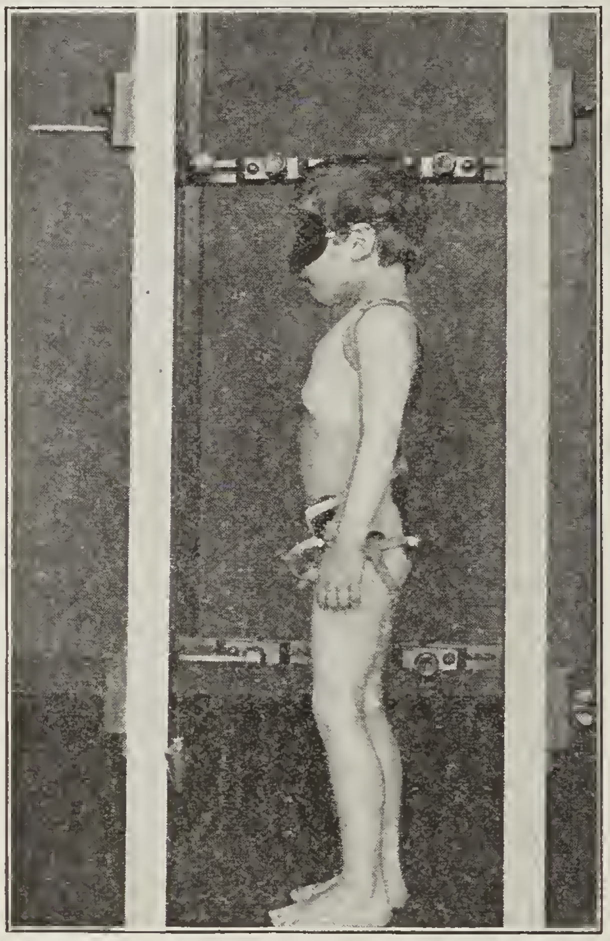

Fig. 2.—Corrected standing position with postural brace, Case 2.

On the other hand, although my experience has not been large, I believe that I have never seen a joint recover complete range of motion or perfect function in which the clinical signs over a considerable period of time were typical of tuberculosis and in which the clinical diagnosis was confirmed by tuberculin reactions, roentgenoscopy or exploratory operation and pathologic examination. I recognize that this experience is at variance with many reported complete cures of tuberculous disease, especially of the hip-joint. My conviction, however, is strengthened by the cases to be reported, which presented quite typical clinical pictures of tuberculosis. All of these to-day have perfect hip-joint motion and perfect function. In all three a carefully done von Pirquet test was absolutely negative, and I am led to believe that a negative reaction is strong evidence that no active tuberculous process of any sort is present.

REPORT OF CASES

Case 1.—*History.*—Girl, aged 6 years, 3 months. Oldest child of a physician, carefully brought up under absolutely hygienic surroundings outside the city. She was first seen six months ago with symptoms in the right hip which had been intermittently present for four months. The family history was good. The past history showed digestive troubles dating back to her first year, continued into her second year, and followed by a more or less chronic constipation and occasional "upsets." During the last four months there had been repeated complaints of pain in the right thigh and the right knee, but never any lasting limp. Three days before being seen she had walked two miles and came back tired, with complaint of pain in the thigh near the knee. Her present illness began on the day on which she was seen. She had started to get up at 5 a. m. to urinate and found it was painful to bear weight on her right leg. There had been no night cries or night sweats. There was little pain at rest or on slight passive movement.

*Examination.* — The general examination by a careful internist had been negative. The child was poorly nourished, with little color. She stood favoring the right leg, with a prominent abdomen, flat chest, hollow back, forward shoulders, prominent scapulae, pronated feet, and an attitude suggestive of congenital visceral ptosis. The length of the legs was the same. The circumference of the calves and thighs was the same on each side. The motions of the spine and all other joints except the right hip were free and painless. The motions of the right hip were limited, painful and accompanied by spasm in extremes of flexion, rotation and hyperextension. Jarring was only slightly painful. Palpation was negative except for some tenderness to deep pressure over the head of the bone.

A definite diagnosis was withheld.

*Treatment and Subsequent History.*—Recumbency in the open air was advised, in positions to stretch out the flat chest and tighten the lax abdominal wall. The child was to assume twice a day for five or ten minutes an inverted position with thighs on the low bed and head on a pillow on the floor; mechanical cathartics, liquid petrolatum and agar-agar were ordered, and she was measured for a back brace with abdominal pad to correct the standing position, support the abdomen and maintain proper posture. The pronation of the feet was corrected. For one week the symptoms remained about the same with some diminution of pain and sensitiveness. There developed 0.5 cm. atrophy of right calf. Excellent roentgenograms of the two hips on the same plate and of the two hips singly were negative as to bone disease. The von Pirquet test made a little later was absolutely negative. The child was gotten up with the brace, but without protection to the hip-joint, and exercises to improve her posture and abdominal and back musculature were prescribed under careful supervision.

There was rapid improvement in nutrition and color, together with a complete disappearance of objective and subjective symptoms in the right hip-joint. An appearance of health not before present gradually ensued and was noteworthy. Four months later the patient, after some error of diet, had a severe urticaria and went for several days without her brace or exercises or the assumption of the corrective positions. Within a few days there was an acute digestive upset, but without symptoms in the hip except perhaps a slight guarding.

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[4] Poncet: Presse Méd., March 26, 1913.

At present she is active, faithful to exercises and positions, wearing the brace half the day, and without subjective symptoms. The right hip has normal motion in all directions. The thighs and calves measure the same on the two sides. The right leg is now nearly a centimeter longer than the left, presumably from the stimulation of epiphyseal growth caused by the toxemic arthritis.

Case 2.—*History.*—Patient of Dr. F. W. Taylor of Cambridge, boy, aged 4 years, 5 months. Oldest child of a man of leisure, carefully brought up under hygienic surroundings in the outskirts of a city. He was first seen five months ago for symptoms in the right hip which had been intermittently present for one year. The family history is negative except that the mother may be described as delicate. The past history showed mild digestive troubles, perhaps not more than in many children, but for over a year the occasional association of pain in the knee with these upsets. This pain usually occurred at night and amounted to typical night cries. There had been no limping in the morning which followed these first attacks of night pain. In the spring of 1913 he had two attacks of bronchitis and croup, and has seemed less well ever since. During the summer, six months before being seen, there had been a very acute digestive upset amounting to almost complete obstruction. Since this time there has been a tendency to constipation. One month before being seen the child had had a slight fall in his play, had limped for a day or two, and complained of pain for a day or two longer. There were occasional night cries as before. Three weeks before being seen he began to limp and to complain of pain in his right leg and knee. The next day he could scarcely walk, but on the day following he was better, and the symptoms gradually passed off. Soon after that he had another attack of croup, and an adenoid operation was advised by an able laryngologist. One week before being seen he had such an acute attack of pain in his right leg that the child screamed when touched and the family physician noticed that the hip-joint motions were greatly limited. The adenoid operation was performed five days before he was seen, and the hip had very rapidly improved while he was recumbent and after the catharsis previous to the operation.

*Examination.*—The general examination by a careful internist, except for the adenoids and enlarged tonsils, had been negative. The child was rather poorly nourished and of poor color, doubtless accentuated by the recent operation. He stood evenly on both legs, with prominent abdomen, narrow, flattened chest, forward shoulders, prominent scapulae, and an attitude suggestive of congenital visceral ptosis (Fig. 1). The length of the legs was the same. The circumferences of the calves and thighs were equal on both sides. The motions of the spine and all other joints, except the right hip, were free and painless. The motions of the right hip were nearly normal, but on careful examination there was distinct restriction and slight spasm in hyperextension and rotation. No sensitiveness to jarring. Palpation was negative.

*Treatment and Subsequent History.*—The child was not put to bed, but the positions described in Case 1 were shown. Mechanical cathartics were advised and he was measured for a back brace with an abdominal pad to correct the standing position, support the abdomen and maintain the proper posture (Figs. 2, 3 and 4). A moderate amount of weight-bearing was allowed. A provisional diagnosis of toxemic arthritis was made. Roentgenograms taken of both hips on the same plate and of each hip singly were negative. The von Pirquet test was absolutely negative. All the subjective symptoms disappeared, and although the boy had subsequently a second adenoid operation and a tonsillectomy, there was no recurrence of leg pain until about seven weeks ago, when he complained of slight pain in the knee for a few hours, May 2 and 3. He was seen, May 4, but the examination showed normal conditions except for the faintest suggestion of limitation in hyperextension. The boy is now apparently entirely well, with good color, and has had no digestive upsets or sluggishness of the bowels.

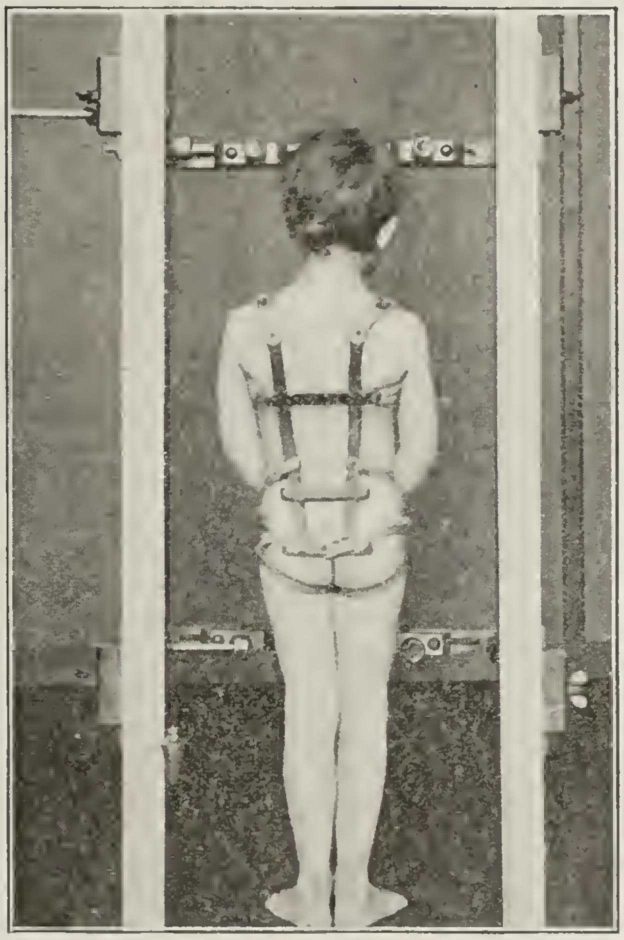
Fig. 3.—Back view of brace to correct posture, Case 2.

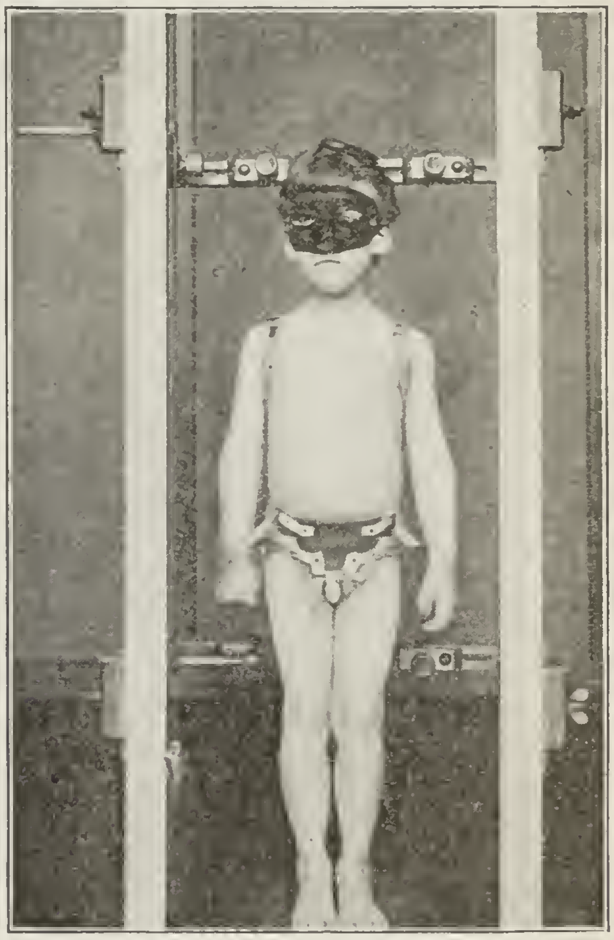
Fig. 4.—Front view of brace to correct posture, Case 2.

Case 3.—*History.*—Girl, aged 14½ months. Only child of people in good circumstances, living in New York City, and referred by a prominent and careful orthopedic surgeon. She was first seen about three months ago and the symptoms had been present for three months. The family history was negative. She had been a bottle-fed baby, great difficulty having been experienced in her early feeding. A proprietary food seeming to agree best, she had been fed on this. After a digestive upset with vomiting, the mother noticed that although she had begun to bear weight and to stamp her feet, she ceased doing so on her right leg, and weight-bearing was painful. When the right leg was raised or moved roughly the child cried. There were typical night cries as well. The family physician was summoned and the orthopedic consultant referred to above was advised by him. The general examination was said to be negative, changes in the diet were suggested in the line of more natural food, orange juice, etc., recumbency and traction were ordered, and a provisional diagnosis of tuberculosis of the right hip-joint made. Within a short time the pain and spasm and night cries having disappeared a short plaster spica was applied by the family physician. This first plaster was worn until three weeks before the child was seen by me, and then a new cast was applied. The family soon moved to the neighborhood of Boston, and the second cast being foul with urine, etc., was removed by a local physician the day before the child was brought to me. During the one night on which she slept without the cast there was no night cry. Since the cast had been applied the digestive upsets had ceased, but the stools had often been hard.

*Examination.*—The general examination was negative. The baby was well nourished, healthy looking, moving both legs with apparent equal freedom and power. There was no evidence of any sensitiveness or guarding in any of the voluntary movements of the right leg. There were no signs of rickets or scorbutus. The abdomen was prominent, but not tender. As far as could be determined, the legs were the same length. The circumference of the calves of both legs were equal, the right thigh a centimeter smaller in circumference than the left, 8 cm. above the upper border of the patella. The motions of all the joints, including the spine and right hip, were free and painless. Palpation was negative. There was no pain on jarring. During the office visit the child had a movement of the bowels consisting of a hard scybalous mass quite different from the normal movements at this age. Roentgen examination was negative except for a slight thinning of the cortex on the right. The child moved slightly and the examination was not entirely satisfactory.

The final diagnosis was withheld until a von Pirquet reaction could be done, but the possibility of the condition being other than tuberculosis was discussed with the mother.

*Treatment and Subsequent History.*—The child was placed in recumbency, the bowels were regulated with liquid petrolatum, and the case was referred to a pediatrician for careful examination, regulation of the diet, and a von Pirquet test. No fixation or traction to the right hip was advised. The local physician was asked to make daily visits with his observation directed toward any suggestion of a recurrence of symptoms. The von Pirquet test was absolutely negative. The child was seen again one week later. There had been no noticeable subjective symptoms, although on two or three occasions the child had wakened at night and cried, but not typically as before. The right leg at rest seems to be held in a slightly abducted position. There is no suggestion of limitation of motion in any direction nor any pain on manipulation or jarring. The child has remained well up to the last report.

## SUMMARY

No definite conclusions can be drawn from so small a number of cases. They seem to me to indicate the importance of (1) a careful history, (2) a search for possible causes of toxemia, (3) a von Pirquet test and perhaps tuberculin tests with Koch's old tuberculin for the local reaction if the skin test is positive, (4) a provisional diagnosis at the first visit, and (5) the withholding of radical treatment other than recumbency until the diagnosis can be confirmed. They seem to suggest that faulty posture and intestinal derangements may in certain cases have some relation to coxitis.

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## ABSTRACT OF DISCUSSION

Dr. Joel E. Goldthwait, Boston: We must recognize that the physiologic processes of the body on which the nutrition of bones and joints depends should be brought to the highest possible standard, so that the individual may have the greatest possibility of repair. The work of Sir Arbuthnot Lane is suggestive in this connection. When a man of his experience short-circuits the bowel of all children with tuberculosis of the joints caused by general toxemia, and obtains such good results it should make us think. We may not be willing to short-circuit a bowel, when the bowel is already too short in these children, nevertheless, we may make it functionate better, and so stop the toxemia, as Dr. Osgood has suggested. If we examine children, not only with reference to local joint inflammation, but also with reference to the entire body, we shall do well. If we think first of the child as a machine, and consider the disposition of his organs through his standing so badly out of poise, we will see that the normal physiologic action cannot take place. We must build up the resistance by improving the physiologic action, intestinal and otherwise, as well as protect the joints.

Dr. Compton Riely, Baltimore, Md.: Dr. Osgood's paper brings up another question in the diagnosis of tuberculosis, especially tuberculosis of the hip. It shows, I think, that we should be more careful in making our diagnoses of hip-disease. The more of these cases I see, the more doubtful I am of their absolute diagnosis as cases of tuberculosis. We have been taught that if children had pain in the hip, limitation of motion, night cries, etc., they had tuberculosis of the hip; and we used to treat these cases as such, but we must be careful to make a more definite diagnosis in the future. In order to do that we must take time to go through every test and examination that we can think of. If we did this we should find fewer absolute cases of tuberculosis than some of us think.

Dr. Charles A. Parker, Chicago: There is at least one method by which a diagnosis in some of these cases can be reached. This is by learning the causative factor, according to the method of Dr. E. C. Rosenow of Chicago. In osteoarthritis of the knee he took out the inguinal glands, which enabled him to make the diagnosis in twenty-three cases; he found the infectious agent in the blood and teeth, and was able to reproduce the disease in animals. His method of diagnosis will probably come rapidly into vogue. The lymphatic glands are taken from the region drained.

Dr. Frederick Hodgson, Atlanta, Ga.: I confirm Dr. Osgood's observations on these conditions of the hip. Dr. Michael Hoke of Atlanta read a paper some time ago on toxic arthritis of the hip; and since then we have been careful in making these diagnoses at the first visit. We put the patients to bed with the best of hygienic surroundings, use colon lavage and get them into the best possible condition. We find that in this way many cases will clear up.

Dr. W. G. Stern, Cleveland: Reasoning backward from Dr. Osgood's observations, we come to consider the fact that the differential diagnosis of these cases from genuine cases of tuberculous coxitis can be best made by the tuberculin reaction. At the meeting of the American Orthopedic Association in Cincinnati, I reported on a combination of the von Pirquet and the Calmette tests as a reliable guide in making the diagnosis of tuberculous coxitis. I reported cases in which the von Pirquet and Calmette tests were negative in the presence of suspicious joint-pain. One was the case of my own son, who had had, within six months, four attacks of night cries with fixation of the limb in adduction and flexion, muscle spasm and slight limp. Roentgenoscopy and the tuberculin tests were negative and we found that the condition was due to a toxic absorption from the bowel from the ingestion of veal. On cleaning out the bowel and keeping the boy at rest we overcame this condition. Then we gave him some roast veal and brought on another attack. Some persons have an idiosyncrasy to certain kinds of food. In this case the idiosyncrasy was to veal. Since then I have looked for other cases and found one, a year ago, in a girl who presented very much the same posture that Dr. Osgood has shown in his cases. By methods similar to those that he has pointed out a cure has been effected.

Dr. Roland Meisenbach, Buffalo: What applies to children also applies to adults. I had one case in a woman 27 years of age who complained of coxalgia. Hyperextension of the hip-joint was limited on the right side and she also had pain over the region of the appendix, although the surgeon could not find an actual appendicitis. Bismuth oxychlorid was given her in small doses over a period of a week. The symptoms disappeared entirely and hyperextension was regained.

Dr. R. B. Osgood, Boston: Dr. Parker's suggestion is valuable, but it must be remembered that various men have recently shown that these bacteria stay in the blood a very short time indeed. In these attacks, therefore, it would be difficult to catch them in the blood at the time and confirm the diagnosis by means of the glands; and I believe that frequently glands that are causing no trouble will show, by culture, some bacterial growth. Hence, while that suggestion is helpful in cases that we believe represent toxemia rather than definite bacterial infection of the joint, yet I do not think it is of a great deal of use in cases of definite bacterial infection. I was much struck with Dr. Stern's valuable observation of an arthritis of the hip caused by the ingestion of veal.

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# THE SYNDROME OF ADRENAL INSUFFICIENCY *

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To the neurologist many cases are referred with the diagnosis of neurasthenia. Many of these are psychologic, being in reality a fixed idea of incapacity derived from the suggestions of medical men or friends, or, perhaps, because of some internal mental conflict which makes the motives for invalidism paramount over those for normal active life. Such patients often actually do become weak, either from mere inaction, or from the malassimilation induced thereby and the worries they permit themselves; this is a familiar picture in a traumatic neurosis,[1] so-called. But among those labeled neurasthenics, there is a certain proportion of patients in whom hysteria is not the factor at all; I do not here refer to psychasthenic patients, in whom anxiety and other features of psychic genesis dominate the picture; nor do I include the *formes frustes* of such psychoses as cyclothymia (manic depressive insanity), hebephrenia, etc. I refer to cases in which definite somatic disturbances are ascertainable, and in which any psychologic symptoms present are dependent on these. Among such cases of "neurasthenia" are persons with latent abdominal or pelvic inflammations, *petit Brightisme,* arterial hypertension and the metabolic disorders which precede it, early stages of cerebrospinal lues, especially that called paresis, and quite often perversion of function of the glands, more especially the thyroid.

Among such cases, I have encountered several in which none of the foregoing conditions were present, but in which the patients were suffering from a profound depression of the neuromuscular functions, quite different from that which is induced mentally or from disturbances of the brain. These are characterized by great asthenia, with lack of concentration, by low blood-pressure, sometimes by psychologic peculiarities, and sometimes by changes in pigmentation. I select a few as paradigms:

Cases may be divided into three classes:

1. Those in which there was improvement or recovery.
2. Those in which there was not.
3. Those which ended fatally.

### CASES WITH IMPROVEMENT OR RECOVERY

Case 1.—*History.*—A man holding a high position under the federal government was brought to me by his friend, Dr. Gerrish of Portland, Maine, in 1911. He complained that he was totally unable to bring himself to deal with the responsibilities of managing the situations with which he had to deal, besides which he was greatly depressed mentally and believed that his usefulness was ended. He "can do work if it does not demand responsibility or the handling of men," for he "finds that his judgment one day takes a certain course only to be deflected the next day, even though the facts may be the same." He can make up his mind neither to accept a yachting invitation to Europe he has received, nor to take a professorship he has been offered for next year. He was pale, languid, had flabby muscles and subcutaneous tissues. He had typhoid at 18, and pleurisy at 20. Two years before he had a rise of temperature and a rapid and irregular heart, the cause of which was unknown. He has always taken his work responsibilities very hard. He is a bachelor of a somewhat retiring disposition, which his need for long inspection trips in the West has accentuated.

*Physical Examination.*—This was negative, except that there was a very slight tremor, the heart sounds were feeble, the systolic pressure was 100 and diastolic pressure 70.

*Treatment and Result.*—The psychologic situations were entered into with the patient very thoroughly, and it was explained that a simple physical depression from want of adrenal juice prevented the brain from accomplishing the processes necessary for the complex psychologic adaptations which had always caused stress on account of his overconscientious way of regarding his relations with others. He was told that worrying would only aggravate the distress, and that his mental incapacity did not arise from what he feared, impending dementia; it would disappear on rectification of his physical state, the nature of which was explained to him. His diet was regulated and he was ordered much rest along with active exercises in short periods. He was given dried adrenal gland tablets, 2 grains thrice daily. The following week there was an improvement, the systolic blood-pressure was 98, diastolic 70; ten days later the pressures had risen to 114 and 80, respectively, he felt better and looked fresher. The following week after sleeping much, he felt better, but still had no spring; the blood-pressures were 112 and 70, respectively. He was staying with friends, worrying less and clearing up his work preparatory to a vacation in the Maine woods. Just before leaving, two weeks later, his pressures were 113 and 80, respectively; he was now more hopeful and more comfortable in mind; the pulse rate remained 70 throughout.

In the fall of 1912 he returned very much better, the dose of adrenal substance having been reduced until finally he went without it; the blood-pressure runs around 118 and 80, and although he has never completely regained his spring and ambition, he is much better, "feels fit," and has undertaken all the work for the government which he had planned.

Case 2.—A mechanic, aged 57, was referred in February, 1912, by Dr. Jackson; he had done no work after an attack of malaria the preceding September, because he had been very weak and dizzy and had a throbbing in the abdomen. Examination showed a tremor a little like that seen in paralysis agitans, but occurring only on spreading the hands, and a slight tremor of the hands and face; there was slight asthenia, and a hint of von Graefe's sign, especially when he was made to look down rapidly. The blood-pressure was systolic, 108; diastolic, 78; no other abnormalities were found. He was returned to his physician with a reserved prognosis, and a recommendation for massage, a proper standard dietary, and adrenal substance. These measures improved him so much that he returned to work and has been well ever since. His physician says that he has never seen such a transformation.

Case 3.—*History.*—A professor of economics, aged 44, was referred to me by Dr. Newell in March, 1913, because of headaches for six years, especially when tired after using the eyes. Twenty-one oculists had failed to relieve him in this country and in Europe. An internist had found nothing the matter with him. He complains also that at times his whole body is sore, especially the neck, and he often awakes with a pain over the sacrum, dull and heavy, radiating and intermittent, which may be removed for a time by a bath; there is no neuralgia and he sleeps well. It is significant that though he says he cannot work because of the eyes, he easily tires also when read to. He was much worse since grip a month before.

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* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* Because of lack of space this article is abbreviated in The Journal.

[1] Williams, Tom A.: Idea and Emotion in Traumatic Neurosis, Jour. Abnormal Psychology, 1910; Psychic Effects of Accidents, Tr. Southern Soc. Ry. Surg., and Monthly Cyclopedia, 1912, v, 47; v, 650, 722.

The patient had scarlet fever when a sophomore, without kidney disease, followed by insomnia, which recovered while he was a school superintendent in the country. He has no cause for worry, his hygiene is excellent, he formerly exercised much, but now does not feel like it, and loafs a great deal; he lacks sexual desire.

*Examination.*—This reveals a tired voice, exaggerated reflexes, great tenderness to pressure, and atrophic state of skin and hair, which he says is a family character. Blood-pressure is 114 and 78; there are no morbid psychologic phenomena.

*Treatment and Result.*—He was ordered massage, active exercise in wood chopping, and adrenal substance, 4 grains twice daily. In a fortnight adrenal was reduced to 2 grains. The only change was the disappearance of hyperesthesia, which I attributed to the massage. After a month, the voice was less tired, thinking and talking were easier, the muscles were stronger. However, headaches were still easily provoked, and asthenopia was still marked; blood-pressure was practically the same. The dose of adrenal was increased to 4 grains again. After this, there was a general improvement, but the patient found that if he extended his work beyond four hours a day he was totally unfit the following day; he was, however, doing a great deal of work in spite of this, even to completing a valuable work on the tariff in time for an insistent publisher. In this respect, he reminds one of Herbert Spencer, who had to limit his work to about four hours a day.

Case 4.—*History.*—A woman, aged 38, was referred in February, 1914, by Dr. Cooper of Hinton, W. Va., because of a postpuerperal psychosis, which greatly accentuated spells of melancholy which she had had for some years. The analysis of these showed that she felt the burden of child-bearing, which she wished to cease; but her husband was a hard man, of rigid views. She was well-developed and nourished, but food had no taste and she had lost interest in life. Blood-pressure was 112 and 84, and there was brown pigmentation of the linea alba, palate and forehead. She was placed at rest in a hospital and massaged and given adrenal substance in a dose of 2 grains twice daily. In a week, blood-pressure had fallen to 106 and 86, and the following day to 90 and 64, respectively. Practically no rise occurred for ten days. Then the dose of adrenal substance was doubled, whereupon there was an immediate rise of blood-pressure until it reached 118 and 94, where it steadily remained for a week even after she left hospital. After this, she went home; and I am informed that she remains well, while the dose of adrenal substance was reduced. She was very difficult to manage, as she desired to leave the hospital and return to her husband, and was obstinately resistant to all reason to the opposite; this idea persisted even after her recovery.

Case 5.—*History.*—A single man of 40 was referred to me by Dr. Bowen, in November, 1912. He was engaged for six months and was obsessed by a feeling that he was disqualified because of impotence. "Worrying about this had run him down so much that he lost his self-control," although he was no longer worried about that; the prospect of marriage in three weeks so horrified him that he no longer wanted to work; he wanted to go and hide; he had the belief that he "was down and out," and that he would lose his job as well. Telling his fiancée had not relieved him in the least, although she was most sympathetic. He had recovered from nervous indigestion some years ago until these troubles came. He had taken many drugs, including chloral hydrate. He was quickly fatigued after a short walk. His physician advised him to marry and go to Atlantic City, but he could not face it, being so "autosuggestible" as he put it; all he could do was to hang around his boarding house, where his fiancée lived.

*Examination.*—This showed exaggerated reflexes, small pupils, sunken eyes, very large, soft, weak pulse without cardiac dilatation, pigmented abdomen, and blood-pressure 102 and 80. Psychic examination was gone into most thoroughly, but it showed no important features, there being no night terrors, and the dreams, whether pleasant or unpleasant, not having pathologic significance. He was prescribed adrenal gland and wet packs to induce sleep. Three days later, the packs not having been taken, the blood-pressure was 100 and 80. The cooperation of his fiancée was enlisted, and his physician reports to me that he fully recovered and married; but I have not ascertained his present blood-pressure.

### CASES WITHOUT IMPROVEMENT

Case 6.—*History.*—An ethnologist, aged 30, was referred by Dr. Henning, in February, 1914, because, as he put it, "his mind feels as a shadow only, and for two years most of the time nothing seemed real." The condition had begun suddenly two years ago, from what was believed autotoxication. He first noted it while doing professorial work at Columbia University when he could not clearly focus his thoughts, and was very much alarmed at it. As a matter of fact, he was a good deal concerned about his physical health for some years, having intestinal flatulence especially after worrying, which he did much; now and then he would have a foul tongue, severe indigestion and dizziness, and headaches in the morning, and he had attributed his condition to disordered metabolism. A love affair aggravated his condition; but this was duly settled by his marriage, which, however, did not improve his health.

He consulted a New York neurologist, who laughed at him and said his nerves were disordered, and ordered a vacation, which he took without benefit. He had a weak, heavy feeling, especially in the arms, and sudden insomnia without cause. During field work among the Indians in Oregon he began to feel better for a while, but finally became so ill that he went into a sanatorium, where a diagnosis was made of a psychoneurasthenic. There he gained 20 pounds, and felt practically well for a few weeks. Returning East in the train, he caught cold, and lost 8 pounds in ten days. Since then, three months before, he has felt out of sorts a great part of the time.

*Examination.*—The reflexes were slightly exaggerated, the frontalis reflex very markedly (this is obtained by tapping over the zygomatic ridge just in front of the antitragus, when a sharp twitch of the eyebrow occurs). The tongue was flabby and white, except just at the tip. The blood-pressure was 102 and 78; the patient was very swarthy, as he said he had always been. Moderate smoking and some constipation were the only other features noteworthy.

*Treatment and Result.*—The patient was given a standard dietary, massage and adrenal substance, 2 grains per day. In ten days the blood-pressure had become 108 and 86; he was irritable, had sinking spells in the chest, felt presentiments, started in his sleep at times, his eyes ached, and his feet become cold. He was sent to bed. Two weeks later, after being up two days, the blood-pressure was 90 and 68, and he felt very tired; his mind was not clear and there was pigmentation of the palate. The dose of adrenal substance was doubled; he was given one tablet of thyroid substance daily in addition. Three days later, the pressure was 104 and 78, and he was found to have increased 5 pounds in weight. Wood chopping was prescribed, and later on the blood-pressure was 117 and 88; but he felt bad. Four days later the blood-pressure was taken by Dr. Lemon, whom I had asked to cooperate in his care, when it was reported to be 112. The next day, after a sleepless night and a day of work, it was 98 and 68, and he had lost 2 pounds. I found he had taken no adrenal substance for five days because he had vomited after taking a decomposed portion. Eight days later the blood-pressure, taken by Dr. Lemon, was 100; three weeks later, 110; the next day, 110 and 78. The patient had been at work typewriting some notes, for he could do no thinking. A week later, blood-pressure was 100 and 82, and the pulse was very weak; he was prescribed 14 grains of adrenal substance per day. He thought it made him feel ill and gave it up; four days after, the blood-pressure, taken by Dr. Lemon, was 110. A week later, blood-pressure was 100 and 65, respectively, since when it has varied between this and 110. Meanwhile a blood examination was made by Dr. John Nichols, which was as follows: Red corpuscles, 5,900,000 per cubic millimeter; hemoglobin, 85 per cent.; corpuscular hemoglobin ratio, 0.72; leukocytes, 13,300 per cubic millimeter; proportion of white to red corpuscles, 1:440; small lymphocytes, 33.3 per cent.; large lymphocytes and large mononuclears, 8.3 per cent.; polymorphonuclears, 43.7 per cent.; esoinophils, 13.7 per cent.; mast cells, 1 per cent. The large proportion of eosinophils caused us to look for intestinal parasites. The examination of the feces was negative, and we are at a loss to account for this phenomenon.

The only result of the treatment is that the patient is now worrying a good deal less, and I am in hopes that he will learn to content himself with a good deal less output of work, that his functional inadequacy will not increase, and that a slight improvement may occur from the large dose of adrenal substance that we are now giving.

### CASES ENDING FATALLY

Case 7.—*History*.—The 17-year-old daughter of a Boston physician, a brilliant girl, began to tire easily both in study and in play. She was recommended a long rest; so her father took her a trip to Europe, during which, however, she became more and more unable to respond to the interests of the visit; finally she was brought to visit an old friend in England at a private institution where I was making some psychologic studies; there I was asked to see her in consultation with the superintendent. By this time the asthenia was extreme, the pupils were dilated, and the bronzing of the skin most decided, so that the diagnosis of extreme hypo-adrenalism was manifest. The psychologic history was imperfect, as we were exceedingly anxious to improve the condition we found. Adrenal substance was given, both in the mouth and under the skin; but there was no response, and within a week the little girl died. Of the blood-pressure, I have no note; I do not think there was an instrument at that time, 1907, in the institution. The adrenals were taken out post mortem, and were found almost free of gland substance, nothing but some medulla and the capsule being left. A careful histologic examination showed no sign of inflammation, and we had to conclude that we were dealing with either a simple dystrophy or an autolysis of toxic origin.

### DR. SCOTT'S REPORT

"Paraffin sections from two pieces were cut, and stained originally with eosin and Ehrlich's acid hematoxylin, more recently by hematoxylin and Biebrich scarlet method (Scott, 1912).

"Microscopically, the capsule is relatively thick, and surrounds a central region infiltrated with lymphocytes, and in some parts engorged with blood. Among the lymphocytes are large cells of irregular shape, with basophil cytoplasm and nuclei of variable size. These cells are frequently arranged in strands. In some places are a few cells whose cytoplasm is somewhat oxyphil (really amphophil with oxyphil preponderance), and whose nuclei are on the average smaller than those of the basophil cells. In some of the more recent sections an accessory cortex whose cells are like those of the second group is visible, lying in the capsule.

"Originally, before I had seen the accessory cortex, and being also more ignorant than I should have been, I was unable to determine the origin of the cells described above. At the present time it is quite clear that the first group is medullary and the second cortical, for by my method the cytoplasm in the medullary cells is predominantly basophil, and in the cortical cells predominantly oxyphil. Everywhere some of the cells have a degenerate appearance, even in the accessory cortex. To sum up, the cortex is practically all gone, but the medulla is much less destroyed.

"The process appears to be centripetal degeneration of the suprarenal cells, accompanied by lymphocytosis and patchy engorgement with blood. Unless pure lymphocytosis be inflammatory there are no signs of inflammation. Certainly there was no fibrosis going on at the time of death, in spite of the thick appearance of the capsule. This relatively thick capsule must be the original capsule and the scanty connective tissue of the cortex collapsed together after disappearance of the cortical cells; for if new formation of white fibrous tissue were going on, young fibroblasts would be present, and their cytoplasm would be obvious, being basophil. As it is, the connective tissue cells have unstained cytoplasm. I should like to emphasize this characteristic of fixed connective-tissue cells, namely, that when they are young, as in the fetus, granulation tissue and spindle-celled sarcomata, their cytoplasm is basophil enough to stain with Ehrlich's acid hematoxylin; but when they are mature they appear as naked nuclei, the cytoplasm being no longer sufficiently basophil to stain as before, nor sufficiently oxyphil to take up the acid dye."

Case 8.—*History*.—A married woman of 34, formerly a schoolteacher, was referred to me by Dr. Wilson on account of a nervous breakdown thought to be the result of twelve years of overwork, during which her weight had fallen from 114 to 97 pounds. She had been worse since her marriage three years before; she had not benefited from residence in a sanatorium or a removal of a uterine polypus. She had been anemic, and although she ate well she did not seem nourished. The heart was feeble. She was a woman of extraordinary good sense and did not worry; she had suffered all her life from inherited menstrual headaches which had prevented her rest; she used to have numbness in the leg; now even massage tires her.

*Examination*.—This showed feebleness of the reflexes, the abdominal and plantar being hardly perceptible; dilatation of the stomach, râles in the chest, pale mucous membrane, sunken eyes, and with it all a calm psyche. Weight was only 83 pounds; there was earthy brown pigmentation on the face, linea alba, a splotch below the xyphoid, and a faint discoloration on the arms and legs, while the coccyx and buttocks were very dark. Hemoglobin was 80 per cent., red cells 4¾ million, leukocytes 3,000; the systolic blood-pressure was 86 or less and the diastolic 66; it was difficult to measure. A week later, the pressure was 80 and 64, the reflexes needed reinforcement and her weight was 81 pounds. She went into the care of Dr. Marbury, and some weeks later she died. Necropsy was refused. It is impossible, therefore, to say whether the failure of adrenal secretion which caused her death was due to tuberculosis, as is often the case, or was a simple atrophy, as in the preceding case.

### DIAGNOSIS, DIFFERENTIAL AND PSYCHIC

From conditions of physical causation characterized by great fatigability and feeble circulation the diagnosis would of course be made by the current procedures of clinical medicine, on which I need not enlarge here.

### PSYCHASTHENIA

But the diagnosis from certain neurotic states requires specification. Patients of the type I have described are often labeled psychasthenics because of their feeling of inadequacy, the most prominent feature in psychasthenia. But the genesis of this feeling in hypo-adrenalism is a real physical tire occurring only during exertion, while the genesis of the inadequate feeling in psychasthenia is from a besetment or apprehension; and it always passes off while the patient is actively exerting himself with muscles or mind. If there is any feeling of panic because of the dread of his incapacity in a hypo-adrenal patient, this is a purely secondary and normal reaction to physical fact; and it is very easily dealt with by enlightenment, as my cases illustrate. Furthermore, psychasthenics present a vast series of intellectual, emotional and often motorial symptoms, the combination of which is characteristic, and the source of which can be detected by analysis of the psyche.

### HYSTERIA, NOSOPHOBIA AND HYPOCHONDRIASIS

The seeming exhaustion and asthenia so often found as a result of a patient's belief in the malfunctioning of a stomach, heart, intestine, limb or brain is a phenomenon of mental attitude induced in the same way as is the case in the little child who suddenly becomes tired when his work or play is no longer to his liking. It is merely a lack of the toughening of psychologic fibers necessary to social welfare. It is a phenomenon induced by suggestion, and its name is hysteria. The real physical exhaustions which may occur after long continuance of hysteric attitudes like this are secondary to the depressing emotions sometimes induced in the patient's mind.[2]

From *melancholia* the incapacity of hypo-adrenalism is distinguished by the absence of the retardation of thought and movement always present in the true melancholic, in whom, furthermore, the responsiveness increases in speed and effectiveness as the day goes on and when the stimuli are augmented and longer continued, whereas in hypo-adrenalism the patient is at his best early in the day and the more work he does the worse he becomes.

Concerning *neurasthenia,* it should be evident that I have ceased to recognize any such nosologic rubric, regarding the term merely as a convenient cloak for failure to investigate a case sufficiently, and placing all the patients who were thus formerly diagnosed in categories corresponding to the etiologic factor which has determined their condition.

## PATHOGENESIS

That prolonged hyperfunction may play a part in the etiology of hypo-adrenalism may be inferred from the facts furnished by posthyperthyroid myxedema (Wilson) and posthyperpituitary adiposity (Cushing and others). That hyperfunction of the adrenals may be induced psychologically is certain from the experiment of Cannon, which shows that the adrenal vein after fright contains a greatly increased amount of the secretion of the gland. The work of Crile too tends toward the belief that the form of prolonged fright known as anxiety may produce the same oversecretion as it undoubtedly does in the case of the thyroid gland.

Now both fright and anxiety are psychologic in induction; they are derived from ideas, an attitude of mind, which may be maintained from within by cogitation by animals with memory long after the disappearance of their initial cause. So that the conditions for the maintenance of that which makes for adrenal hyperfunction are ready in human beings to be called into action at all times, in those persons whose early training has increased fears and scruples about conduct and life.[3] It is only by proper, which means profound, analysis of the features which lead the clinician to penetrate to the foundations of human feelings and behavior that these patients can be understood, and the responses of their organism can be thereby "reconditioned" into health-bringing reactions. The way of doing so, true psychotherapy, is only an elaboration of the method employed by Pawlow to condition the vegetative reflexes of dogs.[4]

## CONCLUSION

The cases reported, and the considerations involved, are far from completely presented, and I am well aware of this; but a consulting neurologist without the hospital facilities for research on a large scale is not well fitted to elaborate what is a very complex problem, namely, pathogenesis, complete clinical syndrome, and treatment of hypo-adrenalism. Although it would seem that prolonged psychic strain plays a part in the induction of the condition, yet on the one hand, thousands of individuals undergo long psychic strain and retain their adrenal sufficiency; indeed, perhaps, functionate excessively in that respect, while on the other hand, it is hardly credible that the adrenal inadequacy from which the Boston physician's daughter died was due to any excessive strain. We are reduced, then, to the hypothesis of the general inadequacy of the chromaffin system to explain cases of this kind. It may, indeed, be that inherent inadequacy is responsible for the failure of the adrenals in all cases in which there is no inflammatory or toxic process damaging the glands. I commend the problem to the resources of some large clinic. My paper is presented mainly in the hope of again drawing attention to the need of differentiation, even in a group of cases most typically neurasthenic.

## PATHOLOGY

According to Scott,[5] Addison's disease must be due to loss of cortex, for accessory cortical tissue is a variable quality; but with so much other chromaffin tissue in the body, loss of the medulla should not be particularly harmful. On searching through the literature it appears that several similar cases are on record, details of which will be found in the works of Simmonds,[6] Karakascheff[7] and Bittorf.[8] Of these, some have the medulla intact, but the cortex gone, others have more or less cortex and medulla left, and yet others are merely fibrotic. Karakascheff,[7] working in Marchand's institute on specimens very similar, was, I believe, the first to prove destruction of the cortex to be responsible for Addison's disease. That the medulla is not essential to life is seen from his case of a child, 5 to 6 months old, in which the cortex was intact, but the medulla had been destroyed on both sides by hemorrhages, but so long before death that calcification had taken place. During the patient's stay in the hospital no symptoms were observed which were referable to the suprarenals. To show the importance of the cortex, he also brings forward a case in which, after death from other causes, one suprarenal was found to have been destroyed by tuberculosis some time previously and the other was hypertrophied, but in the cortex only, thus corresponding with the results obtained by previous workers after removing one suprarenal in young rabbits and guinea-pigs. Wiesel[9] studied ordinary tuberculous cases of Addison's disease, and found that the chromaffin tissue outside the suprarenals was also diminished in amount. He came to the conclusion that Addison's disease was due to deficiency of the whole chromaffin system; but it is hard to understand why tuberculous destruction of suprarenal medulla should be accompanied by simple disappearance of other chromaffin tissue, rather than by compensatory hypertrophy. His cases also all showed more or less destruction of cortex. In a second paper, Karakascheff (1906) is unable to confirm Wiesel's observations on general loss of chromaffin tissue, and deals with the well-known finding of destruction of suprarenals without Addison's disease. This he ascribes to the presence of a sufficient amount of accessory cortical tissue, and he further gives a detailed description of two such cases.

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[2] Williams, Tom A.: Hysteria and Pseudo-Hysteria, Am. Jour. Med. Sc., September, 1910.

[3] Williams, Tom A.: Management of Juvenile Psychasthenia (Section of Children's Diseases, Wash. Med. Annals, 1913, xii, 31); Am. Jour. Med. Sc., January, 1912; Arch. Pediat., 1912; Pacific Med. Jour., 1910, liii, 84; also in Psychotherapeutics, Badger, Boston, 1909.

[4] Williams, Tom A.: False and True Mental Healing, Tr. Brit. Med. Assn., and Br. Med. Jour., 1913; The Practical Import of Recent Work on Hysteria, The Journal A. M. A., Dec. 21, 1912.

[5] Scott: Proc. Path. Soc. Great Britain and Ireland, 1914, xviii, 419.

[6] Simmonds: Virchows Arch. f. path. Anat., 1903, clxxii, 480.

[7] Karakascheff: Beitr. z. path Anat. u. z. allg. Path., 1904, xxxvi, 401; 1906, xxxix, 373.

[8] Bittorf: Die Pathologie der Nebennieren und der Morbus Addisonii, Jena, G. Fischer, 1908.

[9] Wiesel: Ztschr. f. Heilk., Part 1, Path. Anat., 1903, xxiv, 257.

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### ABSTRACT OF DISCUSSION

Dr. Frank R. Starkey, Philadelphia: In dealing with conditions in which the organs of internal secretion are involved, we must remember three things; first there is no such thing as a syndrome of adrenal insufficiency or of thyroid or pituitary insufficiency. This condition is always polyglandular or multiglandular. Although any of the organs of internal secretion may be most conspicuously involved, including the sexual organs, whether the condition be one of lowered function or excessive activity, the condition is always multiple. When one of the group is not functioning properly, the equilibrium of the entire chain is disturbed and the delicate balance normally existing between them is destroyed. Adynamia, inefficiency, mental and physical asthenia and melancholia are the keynote of this condition no matter what name we give the syndrome. Secondly, because of the multiple nature of the condition we must treat the entire group. Thirdly, it is a mistake to administer extracts or other products obtained from spayed animals. The glandular products of commerce are all derived from animals which have been raised for food purposes and they have been castrated in their early youth to improve their flesh for food purposes and they are neurasthenic and inefficient themselves. I do not know just why the medical profession has not recognized this before, for the difference in the texture and flavor of the flesh as well as in the temperament of these animals is so well known. The change from the bull to the ox or from the cock to the capon are conspicuous and familiar examples. The change that takes place in their organs of internal secretion is just as marked, so that the chemical composition and the physiologic action of glands obtained from spayed animals is very different from that of those derived from unspayed ones. In melasma or exophthalmic goiter, it is good organotherapy to treat all of the glands of internal secretion. We must bear these points in mind if we are to be successful in organotherapy.

Dr. Walter L. Bierring, Des Moines, Ia.: I will refer to a case of melasma, the patient being the wife of an Iowa physician. She is 37 years old, and the mother of two healthy children. The condition has been observed about two years, and at present the pigmentation and hypotension are marked. The systolic pressure is 70 and the diastolic 45 mm. Hg. She is fully conscious of her condition, and therefore observant of symptoms and the effect of different plans of treatment. She feels that she is entirely sustained, and in fact her comfort depends on the taking of adrenal extract in doses of 3 grains three times a day. When in a state of extreme weakness, with an absent radial pulse, a single dose will bring back a palpable pulse, raise the blood-pressure appreciably, and increase her general strength. I agree with Dr. Starkey's remarks with regard to adrenal insufficiency as but a single factor in promoting the condition usually referred to as Addison's disease (melasma), because as in the case referred to, while life is sustained and an improvement of symptoms takes place under the substitution therapy, a cure of the condition by this means alone is not to be accomplished.

Dr. Tom A. Williams, Washington, D. C.: I wish to thank Dr. Starkey for his hint concerning the extracts from nonspayed animals; but I cannot agree with the generalization that all endocrinian disorders are pluriglandular, although I have had many such mixed cases. The cases reported in my paper were specifically chosen because they seemed to represent the syndrome of adrenal insufficiency in its purity. Furthermore, in the cases which did not improve, mixed-gland therapy was ineffective; but I cannot say why the extra large dosage should prove conspicuously effective in one case while failing to assist others. I have brought the subject before this Section rather than that of neurology, in order that others may be encouraged to make more extensive and thorough observations than are possible for a neurologist without a large hospital service.

# PAPILLOMA OF THE LARYNX *

HARMON SMITH, M.D.

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### ETIOLOGY AND HISTOLOGY

Many papillomas spring from an inflammatory, syphilitic, tuberculous or even a malignant base, and histologically the malignant are but an exaggerated and continued form of the benign papilloma. A beginning hyperplasia on the vocal cord, irrespective of its underlying cause, may in due course of time assume proportions, varying from a small papular mound to a mass of epithelial growth filling the entire larynx. The proliferation in all cases is chiefly that of the epithelium, although there will be found fibrous thickenings occupying largely the posterior laryngeal wall and the posterior half of the vocal cords, which are seen quite frequently in habitual consumers of alcoholic beverages, also in newsboys, peddlers, hawkers and in those suffering from chronic or atrophic rhinitis. In singers, particularly those with soprano or tenor voices, these thickenings of the epithelium occur on the anterior third of the cord, and are the result possibly of muscle strain. From these hyperplasias spring pointed projections, which form the so-called papilloma. The surface may be papillary or may be smooth with but slight irregularities. The color may vary from a pale, dead white to a red or rose color; sometimes they are dark gray, at others the same color as the cord. Often they are mistaken for singers' nodules, particularly when located at the anterior third of the cord on its border; they may be single, broad-based, multiple or pedunculated with slender bases and vibrate with the respiratory current. They occur frequently in children as a mass filling the larynx, crowding one on the other, some with broad bases and others with pedunculated bases. The simple flat papilloma has but few branching projections, usually very white, with a surface cornification such as is seen in the hard, dry wart on the hand.

This type is observed in elderly men and should be regarded with suspicion, particularly if there is increased vascularity at the base. Often the microscope will reveal no indication of malignancy, as the bits of epithelium removed from the surface of the growth give no evidence of the character of the substratum; but later examination will define the malignant character of the underlying structure.

The frequency of papilloma as compared to other benign growths varies from 39 to 50 per cent. of all cases of benign laryngeal growths. When appearing singly, their most frequent locality is in the anterior half, while the multiple variety will be found most frequently in the posterior part of the larynx, but may also extend to the rest of the mucosa. In children, papilloma is the most frequent laryngeal growth and has been known to be congenital. Here they appear in the branching or budding form and may spring from

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

the entire laryngeal mucosa. In the greater number of instances they reappear persistently when removed until such physiologic change takes place in the child as will occasion their permanent disappearance.

### SYMPTOMS

A small papilloma may exist on the vocal cord of an adult for a long time without attracting the attention of the individual or his associates, either by local discomfort or alteration in voice. In fact, singers have been able to continue their professional work with a moderate-sized papilloma on the cord, without noticeable alteration, except perchance a failure to produce properly one particular note in the limits of their vocal register. In the majority of instances, however, the most noticeable symptom of the existence of papilloma of the larynx is a husky voice or some deviation from the normal. Hoarseness, with now and then a falsetto note, or the reduction of the voice to a subdued whisper is most marked in the adult. The single papilloma when situated on the anterior third of the cord will produce considerably more vocal disturbance than when situated elsewhere. In the multiple variety, particularly in children, the voice is often reduced to a low, hoarse whisper and the cry of the infant, when multiple papillomas are present, resembles that squeaky sound often noted in cases of croup or acute edema of the larynx. The child is often dyspneic and under exercise may become cyanotic. During excitement the facial expression assumes a peculiar aspect denoting insufficient respiration. The same condition is often seen in children in whom large lymphoid masses exist both at the base of the tongue and in the nasopharynx, but when hoarseness has been a prevalent symptom in the child over a continued period, although tonsils and adenoids are sufficiently hypertrophied to warrant the supposition that they are responsible for the hoarseness, it is nevertheless advisable to bear in mind the possible existence of papilloma. In children the long continued presence of papilloma causes irritability, impairs digestion, narrows the chest by insufficient respiration and incidentally reduces the vitality owing to improper oxygenation of the blood. They become pale, anemic and emaciated, although exceptions to this rule are often seen, when the child is fat, thick-necked and of good color.

### FREQUENCY

Judging from the reports formerly submitted by Fauvel and others, we can reasonably conclude that in the early history of laryngology more of these neoplasms existed than at present. The reason for this lessening in frequency may be attributed, according to Wright, to two cause:

> First, the number of trifling laryngeal complaints which come under the observation of the laryngologist to-day has enormously increased; second, to-day treatment in these cases, but especially early and judicial treatment of nasal and pharyngeal diseases has greatly cut down the liability to inflammatory benign laryngeal neoplasms.

Their occurrence in children is comparatively rare. Clark found only twelve cases in the examination of 12,623 children under 14 years of age at the Massachusetts General Hospital. Over a period of fifteen years there have come under my care and treatment at the Manhattan Eye, Ear and Throat Hospital only eight patients, and I have had occasion to observe in the clinics of my confréres only a few additional ones. In 300 tumors of the larynx reported by Fauvel, 206 were papillomas, and of this number nine were in children under the age of 15 years. In the reports of 302 cases of combined papilloma and fibroma of the larynx, 209 occurred in men and 93 in women, thus showing a preponderating tendency of this growth in men.

### TREATMENT

Laryngofissure was at one time believed to be effective in the removal of these growths and in the prevention of their recurrence, but the experience of many operators has demonstrated that this is not only ineffective in the majority of instances, but permanently injures the voice, so that it is now deemed an absolutely unjustifiable procedure. Abbey reports a case in which thyrotomy was performed four times, with recurrence of the growth after each operation, although the bases of the tumors were cauterized; tracheotomy had finally to be done ere the condition was overcome. Lindon reports a case in which thyrotomy was performed seventeen times; but the case finally resulted in laryngeal stenosis, necessitating permanent use of the tracheal tube. In adults, removal of the growth either by indirect or direct laryngoscopy offers fair hope of its eradication, although in many instances recurrence takes place even though the base is cauterized. In the multiple variety in children, surgical removal by direct methods not only results in recurrence of the growth at the site of operation, but likewise occasions new growths to spring up on adjacent mucosa, even on the epiglottis, aryepiglottic folds and trachea. Occasionally in children the growths may be removed by the direct method and the bases fulgurated, and the operator be able to keep ahead of the recurrence of the growths until such physiologic change takes place as will result in their permanent disappearance. In this way the necessity for a tracheotomy-tube may be obviated. Fulguration will result in the disappearance temporarily of the growth, and the recurrence is postponed longer than when operative measures alone are employed; but fulguration has been disappointing as a permanent and positive relief for these growths in children. About the time of puberty or in adults the tendency to recurrence is markedly less, and removal either by fulguration or instrumentation presents more favorable prognosis as regards recurrence. To apply the fulgurating spark with sufficient intensity to be effective it is necessary to have the cauterizing point well insulated to prevent short-circuiting with the metal laryngeal spatula. It is also necessary to have the larynx as free from secretions as possible, as the wet mucous surface tends to disseminate the spark so that its concentration on the growth itself is ineffective. It is also necessary to bear in mind that ether and chloroform fumes are highly inflammable and the child should be permitted to breathe for a half minute at least after the anesthesia is removed ere the fulgurating spark is applied.

In some of my cases I have been able to apply the fulgurating spark with cocain anesthesia alone and I believe this to be the better method if the child is at all tractable. The fulgurating tip should be placed directly on the wart before the spark is turned on and also the current shut off before the point is removed; otherwise the current will be transmitted to the metallic speculum. When a proper spark has been obtained in the larynx the transmission of light may be seen externally, and a good illumination is observable simulating that of transillumination of the sinuses. Unless fulguration is excessive no edema or other untoward symptoms result, and the larynx may be entirely cleared of its neoplasms at one sitting, provided the secretions and the tractability of the child permit its continuance. In one or two instances, however, I have seen considerable edema follow fulguration. In one case (Case 3), particularly, the larynx began to swell almost immediately after the application of the spark, but in this instance my associate, Dr. MacPherson, desired to be very thorough as the parents wished to remove the child to another city, and we hoped to get rid of the growths entirely by the one application. The edema following the fulguration was so threatening that it was deemed advisable to do a tracheotomy. In the other cases, however, there were no indications of dyspnea, cyanosis or any evidence of pain on the part of the patients. The best surgical method for these cases and the one method which is most invaluable in meeting the requirements of multiple papilloma in children is tracheotomy. This was recommended years ago by Hunter Mackenzie, and with the exception of a few cases has proved a most efficient therapeutic measure.

Tracheotomy, *per se*, is virtually without danger, particularly if all surgical precautions are employed and the child is placed under a croup tent for a few days subsequent to the operation. It is necessary for the child to wear this tube for a period varying from six months to two years, depending largely on the age of the patient and the time necessary for the physiologic change to take place, which eventuates in the disappearance of the growths. I have seen one case in which marked fibrosis resulted from the frequent removal of a single papilloma in the anterior commissure of the larynx, and from the anterior border of this fibrosis a large single papilloma projected out between the vocal cords. This case had been under observation for a long period of years, but both fibrosis and papilloma disappeared between one visit to the clinic and the next, a period of about two weeks. It demonstrated beyond question the conclusions advanced by Dr. Jonathan Wright a few years previously, based on observations of the same case, that a physiologic change would at some time occur when this growth would disappear. In accordance with his prognosis, not only the papilloma but the fibrosis disappeared within a period of a month, so that the voice became almost normal.

### RADIUM

Radium has been applied in a number of instances, and in some cases marvelous results have been obtained. Abbey reports a case in which the application of 100 mg. of radium kept in position for one-half hour resulted in the rapid disappearance of the growth. Similar experiences have been related by Harris and Culbert. In my experience, however, there is one case presenting sufficient interest to warrant a detailed account, not yielding to radium.

Case 1.—A. V., aged 15, had from birth a husky voice, leading to the supposition that there were congenital growths in the larynx. When about 5 years of age he was operated on by Dr. Culbert for multiple laryngeal papilloma associated with the characteristic symptoms. Laryngofissure was performed at that time and the entire contents of the larynx cleaned out and the mucosa was cauterized. Within two weeks there was noticeable improvement, which improvement lasted for about six years. At the end of that time there began a recurrence of the symptoms such as hoarseness, dyspnea and imperfect voice production. As this continued to increase he came to my clinic at the Manhattan Eye, Ear and Throat Hospital, Sept. 19, 1911, at which time there could be seen a number of warts on both sides of the larynx, both anteriorly and posteriorly. The voice was very imperfect and of a hoarse, whispering character. The evidence of the former laryngofissure was observable and the movement of the larynx was somewhat imperfect. A tracheotomy was performed and the tube worn for the space of nearly a year. The growths were removed under cocain anesthesia by the direct method, it being reasonable to suppose that surgical removal at this stage, when the patient was approaching puberty, might result in a permanent eradication. They recurred with regular frequency. It was later determined, April 23, 1912, that fulguration should be tried without surgical interference. The growths disappeared following the fulguration and the necessity for another seance did not occur for a period of three months, when they were again removed in the same manner. They recurred again at the end of two months, when the third application was made. This time they recurred at the end of a month. After each fulguration, however, a less number of growths returned and the right side of the larynx cleared up almost entirely. The persistent fibrosis together with a large sessile papilloma remained on the left vocal cord and ventricular band. The obstruction to laryngeal respiration, however, was so slight that the tracheotomy-tube was removed in October, 1912, since which time local treatment and rest together with partial removal of the growth, whenever it encroached on the larynx, has followed. This procedure was carried out in the belief that the boy was approaching that physiologic change incident to puberty which would result in a permanent disappearance.

*Radium Treatment.*—As this did not take place it was decided in March to employ radium. Through the kindness of Dr. Wolf Freudenthal a tube of radium was placed in the larynx after cocainization, March 19, 1914, and left in for about three-quarters of an hour. There appeared to be a disappearance of some of the thickening around the growth.

March 26, it was again applied for a period of about one-half hour following which there seemed to be a marked reaction. The voice has improved under the application of the radium, but the growth continues to recur. There have been three additional applications of radium, varying from fifteen minutes to three-quarters of an hour, but so far as clinical observation goes there has been no diminution in the size of the growth. The boy is in good health, speaks with a hoarse voice, and while the radium has apparently had little or no effect on it, my belief still holds that physiologic change will ultimately bring about that which therapeutic measures have failed to accomplish.

Delavan suggested years ago the employment of alcohol locally applied for the cure of papilloma of the larynx, and in many instances it has proved effective. I have applied it in a number of cases of papilloma of the larynx in children without any apparent effect, but here their multiplicity and the large area of mucosal involvement naturally lessen its effectiveness. In adults, the conditions are entirely different and the shrinking and drying properties of alcohol tend to bleach and dry the superficial epithelial surface so that it might disappear by autoclysis as the tonsil does with increasing age.

Shurly has recommended the employment of *Thuja occidentalis* locally and internally. This also failed in my cases of multiple papilloma of the larynx in children. Castor oil, sodium salicylate, zinc chlorid, silver nitrate, iodin and various other therapeutic agents I have tried persistently, but without any apparent effect. In my first series of cases, reported some years ago, the last case of the series had been persistent in the return of the warts when removed by the direct method and had not responded to tracheotomy, although the tube had been worn over a year. One application of the fulgurating spark resulted in their immediate disappearance, from which I concluded that fulguration would be the solution to the problem. Subsequent experience, however, has disabused my mind of this hope as by fulguration the growths can be immediately and effectively removed; but they return with the same regularity as when removed by surgical means, although the length of time intermediate between the destruction of the growth and its reappearance is longer.

From the fact that in some instances of multiple papilloma of the larynx removal will result not only in the reappearance of these growths in their former situation, but likewise on adjacent mucous membranes, it has occurred to me that there might be an infectivity embodied in certain of these growths, in which, if an emulsion were made of the growth itself, hypodermic injection might prove beneficial in their complete eradication. Since giving expression to these ideas on several occasions no case has presented itself in which a sufficient quantity of the growths could be obtained for this purpose. It is a well-known fact, however, that not only laryngeal warts but skin warts will reproduce themselves on abraded skin or mucous surfaces in some instances and not in others.

## SEQUELS

Barring the few unfortunate instances in which wearing the tracheotomy tube over long periods of years has not eventuated in the disappearance of the papilloma, the prognosis is favorable to their disappearance. The voice, however, in the majority of instances is altered in some degree and probably in children in whom multiple papillomas have existed it may never attain perfection thereafter. In isolated, pedunculated papilloma on the vocal cords of the adult removal is ordinarily followed by complete restoration of voice. When the tracheal tube has been worn for a year or more the cartilaginous rings lose their elasticity and one the withdrawal of the tracheotomy tube the trachea collapses on inspiration. This may be largely obviated by frequent withdrawals of the tube during the course of the treatment, so that the tracheal rings may expand and contract during the respiratory act. When the time has arrived for the permanent withdrawal of the tube it is often advisable to insert tubes diminishing in size until the minimum-sized tube has been reached, after which time it is sometimes necessary to insert a rubber catheter until the larynx and subglottic structures have resumed their normal resiliency. A straight tracheal tube, with just sufficient flange at the end to hold it within the tracheal incision, is often better than one which is curved and extends far down into the lumen of the trachea, for in this way the thickening incident to friction against the tracheal mucosa is obviated. In cases of multiple papilloma in children after tracheotomy has been performed, close observation will reveal these growths extending into the upper part of the tracheal wound and impinging against the tube. I have seen the entire space between the tracheal wound and the larynx almost completely filled with these growths following operations on the laryngeal neoplasms. Occasionally there will result the necessity for a plastic operation to close the tracheal wound completely, but in the majority of instances the withdrawal of the tube will be followed by the wound closing by granulation.

## REPORT OF CASES

Case 2.—An Italian boy, aged 7, presented himself at my clinic in 1909 complaining of hoarseness from birth. Examination of the larynx revealed multiple papillomas. One of the papillomas was removed for microscopic examination, and a syphilitic base was revealed. One injection of salvarsan resulted in the complete disappearance of all the growths, within about three weeks time. The voice was not restored, but was markedly improved from a hoarse whispering voice to a hoarse loud voice. About two months after the injection of salvarsan the boy was brought to the clinic suffering from pronounced jaundice, which did not respond to treatment. His condition became worse until he died about three weeks after observation. No necropsy was permitted. Treatment for his inherited syphilis was instituted at a time when large single doses of salvarsan were being administered, and I have often wondered if repeated smaller doses would not have resulted in the same favorable outcome to the laryngeal condition and possibly obviated the liver complication.

Case 3.—J. S., a boy, aged 3½ years, was admitted to the clinic June 27, 1912. He had complained of hoarseness with whispering voice dating back eighteen months. He had frequent attacks of dyspnea and at all times suffered from difficult respiration. His health was otherwise good. No specific history was obtainable. Examination of the larynx revealed multiple papillomas on both vocal cords and extending from the anterior commissure to the arytenoids. The color was that of the mucous membrane. July 11, fulguration was applied by the use of the Jackson speculum under chloroform anesthesia. Repeated applications of the fulgurating spark were made, July 18, August 1 and 15, and September 5 and 12. After each of these fulgurations the larynx would remain clear of laryngeal warts for a short space when they would recur. On the whole, the larynx showed some improvement up to the time of the last fulguration, September 12. At this time it was decided to make a severe test of the fulgurating spark, as it was necessary for the child to be removed to a different locality where he would not have opportunity of treatment or observation. Following this seance there was marked laryngeal reaction and labored breathing, continuing for five days. As the reaction was so severe it was determined to do a tracheotomy, which was performed, September 17. The next attempt at fulguration was made October 24, but as the patient took the anesthetic badly the spark was not applied. Subsequent to this, a number of fulgurations were given at varying intervals, it being easier of accomplishment after the tracheotomy-tube was in place. On the night of January 20, about 4 a. m., the child pulled out the tracheotomy-tube and died from asphyxia before the house surgeon could reach the ward. The nurse made an unsuccessful attempt to reinsert the tube.

Case 4.—E. F., a girl, aged 3 years, came to the clinic July 11, 1912, with symptoms of whispering voice and difficult breathing since birth. Her health had otherwise been always good. There was no history of either tuberculosis or syphilis. Examination of the larynx revealed multiple papillomas. Fulguration was first applied July 12, and there was immediate improvement in the voice. It was again applied July 18 and August 1 and 15, when she returned home and came to the hospital for treatment. September 1 she developed a diffuse bronchitis and was brought to the hospital; she recovered. September 28 she was fulgurated, following which there was some edema. In October she developed diphtheria in the ward and an immediate dose of 10,000 units of antitoxin was administered. She was carried to the infectious hospital where intubation was done, but died a few days later of pneumonia.

Case 5.—A history of this case has been mislaid, so that the report is made from memory. The patient was a little girl about 3 years old, who complained of hoarseness for two years. She was brought to the clinic where in addition to tonsils and adenoids the presence of laryngeal papilloma was discovered. Under local anesthesia fulguration was applied at varying intervals for three times, after each of which the larynx cleared up and the voice became better. There was no history of tuberculosis or syphilis. The child was well nourished and thick-necked. There was a long period following the last intubation in which there was no recurrence of the papillomatous growths. Just as hope was being raised that we had succeeded at last in overcoming the papilloma, the child developed measles and was taken to the Willard-Parker Hospital, where she recovered from her measles without any recurrence of the growths. Since the dismissal from the hospital no subsequent history has been obtainable.

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## ABSTRACT OF DISCUSSION

Dr. Robert Levy, Denver: It is interesting to know that Dr. Smith has recommended in his paper a return to the thought expressed a great many years ago concerning the value of treatment by tracheotomy and waiting for the spontaneous disappearance of these growths. They have a certain life history and tend to disappear spontaneously, and so when we do a tracheotomy we put the larynx at rest and wait until this occurs. In a paper read a good many years ago I related a case that, to my mind, proved this and so up to a very recent time I have held that view and treated my patients accordingly. As a matter of fact, however, I think the time is coming, or has come, when we most modify our views somewhat. The reason, I believe, for the recurrence of these papillomas with such marked rapidity after they have been removed is that they were not removed thoroughly by our older methods, and this is particularly forced on one by the reading of the last article of Albrecht, in which he reports nine cases, some of which had been operated on by the ordinary way, by direct endoscopy, with constant recurrence, after which they were operated on by the suspension method. It was noticeable that the patients got well quickly and remained well. It may be that in all these cases the time had come for these growths to disappear, but the fact remains that no recurrence took place after they had been removed by the suspension method, while after their removal by the older method they did return rapidly. Of course, the time is somewhat recent to state that as a fact on which to base our future conduct in these cases. We can, however, by this means remove these growths very thoroughly. I have a case at present that proves Dr. Smith's infection theory; a child eight months old had a small papilloma in the anterior commissure; under direct suspension this was removed. I thought it a particularly easy case and one that would remain well but the growth returned with increased activity.

Dr. Samuel Iglauer, Cincinnati: Dr. Smith brought out most of the methods of treatment. In the series of cases that Dr. Levy referred to, I think the electrocautery was used after the removal of the papillomas. The removal of the papilloma by the suspension method, then cauterization, and perhaps prophylactic intubation to prevent edema would be good treatment. I now have two cases under treatment in which, through the kindness of Dr. Ransohoff, I have been able to employ radium. In one case, in an infant, the radium tubes were applied on the outside of the neck for several hours. A slight burn occurred on the skin but the papilloma did not disappear. In the second case I put the radium inside the larynx three times, with better results, and I think perhaps if Dr. Smith were to apply the radium for longer periods he might get better results. In my case it was applied five or six hours with no bad effects. The first time I tried radium I had some trouble in keeping the capsule in the larynx and I hit on this method; I put the capsule in a rubber tube slit on the side, like a drainage tube, with a string tied to it. The V-shaped cuts in the rubber tube acted like flanges to retain it in position. It held so well that on one occasion I had some trouble in removing it.

**What is Sleep?**—That is a nice problem for us to tackle. A French author said of life what we may say of sleep; it does not define itself, it simply manifests itself.—H. Crichton Miller, *Medical Press and Circular.*

# THE TREATMENT OF CHRONIC PYELITIS *

J. T. GERAGHTY, M.D.

BALTIMORE

It is surprising how slow we have been to appreciate the benefits to be derived from pelvic lavage for the treatment of chronic pyelitis. It is probable that much of our tardiness in adopting this extremely beneficial treatment is largely due to insufficient methods of diagnosis, so that we were not able to select with a sufficient degree of accuracy the cases most suitable for lavage.

The successful treatment of chronic pyelitis is largely dependent on accurate examination and diagnosis. While it has been denied that chronic pyelitis can exist without involvement of the parenchyma, clinical experience and examination of pathologic material prove that a pure pyelitis can occur. Most cases of pyelitis are secondary to an infection of the kidney parenchyma or part of a pyelonephritis. The cases of pyelitis which are only a part of a pyelonephritis will not be discussed in this paper. While it is probably true, in most instances, that a pyelitis is secondary to a previous infection of the parenchyma, in many cases this infection in the parenchyma entirely disappears, leaving the pelvis and ureter alone involved. The majority of kidney infections, nontuberculous, are undoubtedly secondary to some predisposing factor, such as stone, tumor, stricture or other mechanical obstruction, and the amelioration or cure of the infection in such cases is dependent on the removal of the predisposing cause. It is surprising how frequently even a severe infection of the kidney and pelvis will disappear when these factors have been remedied. The differentiation of simple pyelitis from pyelonephritis may be quite difficult, and is practically impossible except by the employment of functional estimation. In pyelonephritis the function will be decreased, while, if it is a pure pyelitis, no reduction in function will be observed. Of course, one cannot always exclude the presence of a slight area of pyelonephritis which may not be sufficient to reduce the function, while in occasional cases the function may be diminished as the result of a previous pyelonephritis which has healed, leaving the pelvis still involved. One such case probably of this type is reported below. The presence or absence of albumin in the catheterized specimens has only occasionally been of diagnostic value in our hands. Pyelography is useful also in showing us changes which have occurred in the pelvis as a result of the infection, and gives us information which may be of considerable value from the point of view of prognosis. In our experience, the organism causing the infection has very little influence on the prognosis.

## TREATMENT

When it has been determined accurately that we are dealing with a simple pyelitis, renal lavage is instituted, and in these selected cases the results of treatment have been little short of brilliant. We employed various solutions, such as argyrol, protargol, liquor formaldehydi, nitrate, phenol (carbolic acid) and aluminum acetate, but at the present time we have come to depend largely on silver nitrate and liquor formaldehydi. Vaccines have proved of very doubtful value, although we have employed them extensively. Hexamethylenamin has also proved of questionable value as far as the renal infection is concerned. Its value at the kidney level, as Hinman has shown, is very slight. The cases in which the lavage has been employed have been divided into the following groups:

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* From the Urological Department of the Johns Hopkins Hospital.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Those in which the catheterized specimen shows the presence of a fairly active infection with a normal function and in which the collargol shows very few changes in the pelvic outline. The prognosis in this type of case is very favorable. We begin with injections of from 5 to 10 c.c. of 0.5 per cent. silver nitrate, the tip of the catheter being rather low down in the ureter. It seems advisable to inject from low down as in the majority of cases there is present also a certain degree of ureteritis, as well as pyelitis. The strength of the injection is gradually increased until we have used as strong as 5 per cent. It does not seem advisable to begin to inject with a very strong solution, because the reaction may be rather severe. The tolerance of the individual and the degree of reaction should be tested out first with weaker solutions. The occurrence of a fairly good reaction, however, is not to be avoided, as in the majority of cases this reaction is necessary before the infection can be eliminated. The splendid results obtained can be seen from the histories of a few appended cases:

Case 1.—P. L. P., aged 43, was always healthy until November, 1912, when he was suddenly seized with chills and fever and soon afterward developed frequency and painful micturition. Since then he has had repeated attacks of chills and fever, the urine has been cloudy and the general health failing. Patient has lost 40 pounds during the last six months. Seen Jan. 19, 1913. Bladder urine was cloudy and contained pus and colon bacilli. Ureter catheterization showed a normal and equal function on each side, but from the right kidney the urine was cloudy and contained pus and colon bacilli. From the left kidney the urine was clear macroscopically and on microscopic examination showed no pus-cells or bacteria. Collargol injection showed the pelvis and ureter apparently normal.

Jan. 26, 1913, the right kidney was catheterized and 10 c.c. of 0.5 per cent. silver nitrate was introduced. Following this first injection there was a marked improvement in the bladder urine. Four days later he was again catheterized and 0.5 per cent. silver nitrate again injected. Following the second injection there was some reaction. Within a week the bladder urine became perfectly clear and negative for infection on microscopic examination. Patient has remained entirely well and there has been no recurrence of the infection.

Another case is of particular interest because there was present a double infection, a *Staphylococcus albus* and a colon bacillus.

Case 2.—S, aged 38, seen March, 1914, had an unimportant past history except that he had had numerous attacks of gonorrhea. In December, 1912, patient had a chill and an elevation of temperature ranging from 102 to 106 F. Some days later he developed pain in the left kidney region. This attack of chills and fever cleared up in about three weeks. Since then he has had numerous attacks of chills and fever, sometimes associated with aching pain in the left lower back, which does not radiate. The urine has been cloudy since the onset of his present trouble. Very little frequency is present, and practically no urinary symptoms. On examination, patient is a slender, healthy-looking man. The kidneys are both slightly descended but do not seem enlarged. The bladder urine is quite cloudy and on microscopic examination contains pus, bacilli and cocci. (Cultures show these organisms to be colon and *Staphylococcus albus*, respectively.) Catheterization of the kidneys showed the urine from each side to contain pus, bacilli and cocci. The function was equal and normal on each side. Roentgen examination of the kidney was negative, and pyelography showed both pelves and ureters practically normal.

March 27, 1914, 8 c.c. of 0.5 per cent. silver nitrate was injected into each kidney. No reaction followed. March 30, 2 per cent. silver nitrate was injected into each kidney and this was followed by a moderate amount of pain in each kidney, more marked on the right side. April 6, 6 c.c. 2 per cent. silver nitrate was injected into each kidney pelvis. There was no pain following this treatment. April 11, the urine from each kidney was still slightly turbid and on microscopic examination contained a fair number of leukocytes, some bacilli and no cocci. Six c.c. of 5 per cent. silver nitrate was injected into each kidney pelvis. The patient suffered from considerable pain following the treatment and was rather uncomfortable for several days. Within three days the urine became entirely clear and repeated examinations failed to show any presence of infection. Patient has remained well until the present date. It is of interest that the staphylococcus disappeared before the colon, the colon infection being dislodged only by the use of the strong silver-nitrate solution.

The following case is of interest because of the marked difference in function between the two sides, and the presence of a double infection in the right kidney and a coccus infection in the left.

Case 3.—O., aged 42, was seen April 3, 1914, with a history dating back seven months. The onset of symptoms was with sharp, sudden pain in the right side, fever, nausea and vomiting. Since this first acute attack the patient has had several less severe. Has dull pain at times in the right flank and back and some frequency of urination and urgency. Has noticed that the urine has been quite cloudy since the beginning of his illness. On examination, patient is a well-nourished man, the right kidney is not palpable but there is some tenderness on deep pressure. Leukocytes on admission, 16,000. Roentgen examination is negative, bladder urine cloudy, specific gravity 1.025, acid, no sugar, trace of albumin, microscopically numerous pus-cells, staphylococci and bacilli.

April 7, cystoscopic examination and catheterization of ureters. Bladder somewhat injected, trigon reddened. Catheterization of the ureters gave the following results, the urine being collected for one-half hour.

| Right: | Left: |
|---|---|
| Urine cloudy. | Urine clear. |
| Phthalein appeared in 7 min. | Phthalein appeared in 6 min. |
| Excretion 2 per cent. plus. | Excretion 29 per cent. |
| Urea 0.02 per cent. | Urea 0.17 per cent. |
| Microscopically: pus-cells, staphylococci and bacilli. | Microscopically: no pus-cells, no bacilli but some staphylococci. |

On account of the leakage it was impossible to get an accurate estimation of the function at this examination, but 29 per cent. was excreted by the left kidney, 2 per cent. was collected from the right and the leakage amounted to 14 per cent. Even adding the leakage to the excretion of the right kidney, it can be seen that the function is only half that of the left. A collargol showed the pelves normal. Pelvic lavage was begun, at first using 1:4,000 liquor formaldehydi, later 0.5 per cent. silver, and this was gradually increased to 2 per cent. April 30, the findings were as follows:

| Right: | Left: |
|---|---|
| Urine macroscopically clear but on microscopic examination contains a few bacilli and—cocci and an occasional pus-cell. Amount 21 c.c. | The urine was macroscopically clear but still contained groups of cocci.<br>Amount 53 c.c. |
| Phthalein 12 per cent. | Phthalein 30 per cent. |
| Urea 0.6 gm. | Urea 0.7 gm. |

No leakage.

Patient received two subsequent treatments at weekly intervals, with 3 per cent. silver nitrate. The urine at the last examination was entirely negative microscopically, one month after the last treatment. The difference in function between these two sides, both in the beginning and at the end of treatment, indicates either that the function of the right kidney was reduced from a previous pyelonephritis which had been cleared up, or that we are dealing with the infantile type of kidney. The equal concentration on each side would rather indicate the infantile type.

Another case illustrating the value of the strong silver nitrate when weaker solutions had absolutely failed to eliminate it, is the following:

Case 4.—G. R. M., aged 20, was seen July 14. 1913. About two months ago patient noticed that he began to have frequency of urination and considerable pain on emptying the bladder. His general health seems good; the bladder urine is cloudy microscopically, shows pus and diplococci, which on culture prove to be a variety of *Staphylococcus albus*. On ureteral catheterization, the urine from the left kidney was slightly cloudy and on microscopic examination contained pus-cells and numerous cocci. The urine from the right kidney was clear. A pyelogram of the right kidney and ureter seemed perfectly normal. Roentgenoscopy was negative for stone. Total function was normal and the function of the left kidney was normal and equal to that of the right, as determined by phenolsulphonephthalein. Pelvic lavage was instituted and patient received four lavages of 1:4,000 liquor formaldehydi at five-day intervals; then two lavages of 1 per cent. silver nitrate at intervals of a week. At the end of this time there was no change in the infection present. It was then decided to inject the kidney pelvis with 5 per cent. silver nitrate, and about 10 c.c. was employed. Following this, patient had a fairly severe pain in the kidney region for several hours. The next day the bladder urine was smoky and on microscopic examination contained a good many blood-cells and a few leukocytes, but no bacteria. On the fourth day following the employment of the 5 per cent. silver nitrate the bladder urine was absolutely clear, microscopically negative for cocci and pus-cells. Patient was kept under observation for several weeks, and during that time the urine remained perfectly normal. Six months later he reported that he had remained well up to that time and that the urine was perfectly clear and normal-looking.

It is of interest here that no result was obtained until the strong silver nitrate had been employed and a considerable reaction produced.

2. In long-standing pelvic infections, in which marked changes have occurred in the pelvic wall, as shown by pyelography, and in which one finds in the catheterized specimens very few leukocytes and only an occasional bacterium, the prognosis is not so favorable. The infection in these cases is of a low grade, usually quite deep in the pelvic wall, so that it is very difficult to eradicate it. Occasionally, in these cases, after a certain amount of treatment, the infection may apparently disappear, but it usually recurs again. These cases sometimes have slight exacerbations when one finds considerable pus and bacteria and at other times almost a perfectly negative urine, as far as the most careful microscopic examination can determine. One should be very careful about giving a good prognosis as far as eradication of infection is concerned, in this class of case.

3. In infections of the kidney pelvis, associated with a certain amount of pelvic dilatation and varying amounts of residual urine, pelvic lavage has also been of comparatively little value. The most unfavorable are those in which the condition is largely a bacteriuria. While it is possible in many cases by lavage to improve to some extent the character of the urine and decrease the severity of infection, the results of lavage have not been particularly gratifying so far as complete eradication of infection is concerned. In cases in which nephrectomy is contra-indicated, pelvic lavage should be tried because not infrequently, while it is impossible to entirely eradicate the infection, a great improvement in the condition may follow renal drainage and lavage. In these infections with mild hydronephrosis, silver nitrate seems to give less favorable results than solutions of formaldehyd, which we employ in strength from 1:5,000 to 1:2,000. Under such conditions, it is advisable to introduce a catheter into the pelvis of the kidney so as completely to empty the residual urine.

## ABSTRACT OF DISCUSSION

Dr. I. S. Koll, Chicago: I heartily agree with Dr. Geraghty as to the indications for pelvic lavage, that is, as differentiating a pyelitis from a pyelonephritis. My experimental work, however, made me believe that as a pathologic entity we have no such thing as a pyelitis, because twenty-four hours after 1 c.c. of a twenty-four-hour colon-bacillus culture is injected into the ureter, the kidney, when examined histologically, will show a definite pyelonephritis, care having been taken not to traumatize the kidney or ureter. It certainly was a revelation to hear that any one was brave enough to inject silver nitrate in 5 per cent. solution into the ureter and pelvis of the kidney. I believe everything Dr. Geraghty says, but let us, for a moment, consider the rationale of the use of nitrate of silver. In 5 per cent. strength it is a powerful astringent and escharotic, and has a tendency to form a coagulation of the epithelial cells and prevent any penetration of the drug itself. It therefore has not much chance of doing good. The work that I did with liquor alumini acetatis five years ago showed that in chronic pyelitis cases there is a definite penetration of the bacteria into the tissues. How long has Dr. Geraghty followed his cases? What percentage has shown recurrences? When does he cease to use lavage of the kidney? I differentiate strongly between a clinical cure and a bacterial cure. I never stop lavaging in my cases until a catheterized specimen from the ureter of the infected side fails to give a culture of the organism, which in 98 per cent. of the cases is due to the colon bacillus. That is an all-important point, I believe, and I am sure that most of us have had recurrences time and again because we stopped our treatment before the bacteria disappeared. It is not difficult to get rid of the pus-cells, but the colon bacillus will remain there in pure culture for a much longer time.

Dr. Martin Krotoszyner, San Francisco: I am glad to hear that Dr. Geraghty has used strong solutions of silver nitrate, because I have always held that weak solutions of 1:10,000 never have any beneficial effect. I have never gone as high as 5 per cent., but, as a rule, I start with 1:500 and go up to 1 per cent., and I admit that my assistants would look at me askance when I carried my injections up to 1:200 and even 1 per cent., but I am glad to see that at Johns Hopkins they do not stop until they reach 5 per cent. At what intervals does Dr. Geraghty use these injections? I want to take exception to one more statement. With Dr. Geraghty I believe in the teaching of Casper that the differential diagnosis of pyelitis and pyelonephritis can be made on the basis of the functional kidney tests. I have seen lately a case in which I was mistaken. I exposed the kidney in a case in which I had made the diagnosis of pyelonephritis from a very low kidney function on the affected side. When I opened the kidney I found it perfectly normal, with simply a dilated pelvis, showing the presence of a pyelitis. I will admit the kidney was interfered with in function by adhesions around the ureter, but the pathologic report on the pieces that were excised confirmed the preoperative diagnosis of pyelonephritis.

Dr. Louis E. Schmidt, Chicago: I disagree, to a certain extent, with Dr. Geraghty. He makes rather a clinical diagnosis, and of course when we talk about cures we also depend on the clinical results. It would really be interesting to be able to demonstrate kidneys of this kind after death really to see what the exact changes have been, that is, if the patient has really passed through a distinct pyelitis. I do not believe that a pure and simple pyelitis exists. I have always been under the impression that there is at least a very mild degree of pyelonephritis present; hence that all this local treatment is, at least in the vast majority of instances, not followed by the best results. Of course, Dr. Geraghty divides his cases and states positively that there is one type, exceptionally common, which responds to this mode of treatment. I do not believe pyelography is necessary for the diagnosis of pyelitis. I object to the general use of this method of examination. I do not see what distinct information we can get, except possibly slight changes in the papillae, etc., but I do not believe a diagnosis can be made from that. If we do a ureteral catheterization and find that we have a slight enlargement of the pelvis, I think that will give us a certain amount of information, and naturally the ordinary urinary examinations that go with it are useful; but in cases of this kind I do not think that pyelography is absolutely essential in the diagnosis. As it is a question of formulating the exact conditions of when we should do pyelography, I would be glad to hear what Dr. Geraghty has to say about this method of examination in differentiating these conditions. When it comes to the diagnosis of pyelitis, I lean more on the clinical course than on a lot of these so-called more exact methods. When we come to the treatment a good many depend on internal medication. Of course, there are objections to that, but I am still skeptical as to lavage. I have gone through that for a good many years. It is true that I have not treated all cases indiscriminately, but I have still to see any practical results from lavage of the pelvis of the kidney.

Dr. W. E. Stevens, San Francisco: Does Dr. Geraghty use vaccines in the treatment of any of these forms of pyelitis?

Dr. John T. Geraghty, Baltimore: A pyelitis cannot be considered cured until repeated examinations have shown the urine to be free from infection and bacteriologically sterile. In our series of cases we have only considered as cured those in whom this result was obtained. Pyelography has proved of considerable value in differentiating those with marked changes in the pelvic wall from the type in which these changes have not occurred, and the knowledge obtained in this way has been useful from the point of view of prognosis. I can see no objection to using pyelography in these cases, particularly when it is done carefully and the gravity method alone is employed. Since employing the gravity method of injecting the pelvis, we have had no ill results. We used vaccines some years ago quite extensively in the treatment of pelvic infections, but were never able to see any specific benefit which could be ascribed to the vaccines alone. At present we employ them but seldom.

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# THE RELATION OF UREA TO THE TOTAL NITROGEN OF THE BLOOD IN HEPATIC DISEASE *

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AND

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The object of this investigation was to test by the new and dependable method of Folin the assertion of various French investigators that in cirrhosis and other diseases of the liver the percentage of urea in the blood is diminished.

Folin's method had given one[1] of us excellent results in the study of the blood of nephritis, and although we were skeptical about obtaining definite evidence of changes in the blood in hepatic disease, the accuracy of Folin's method seemed to offer the best means of reaching a conclusion. Our scepticism may be explained as due in part to our belief that even in so extensive a disease of the liver as cirrhosis, enough normal liver parenchyma remains — the so-called "factor of safety" — to carry on the normal function, and also to the well-known fact that in all diseases of the liver of the cirrhotic type, regenerative proliferation of hepatic parenchyma is more or less constantly present. With the wide margin of safety offered by these two factors it appeared highly improbable that a noteworthy diminution in urea formation would be found.

UREA AND TOTAL NITROGEN OF BLOOD IN HEPATIC DISEASE

| Diagnosis | Total Nitrogen mg. | Urea mg. | Remarks |
|---|---|---|---|
| I. CIRRHOSIS | | | |
| 1. Portal cirrhosis ...... | 25.5 | 12.4 | |
| 2. Portal cirrhosis ...... | 34.2 | 17.7 | |
| 3. Portal cirrhosis; splenomegaly ........... | 28.9 | 14.4 | Occasionally albumin and casts |
| 4. Portal cirrhosis ....... | 33.8 | 16.8 | |
| 5. Portal cirrhosis ....... | 23.5 | 12.7 | |
| 6. Portal cirrhosis ....... | 22.2 | 12.7 | |
| 7. Portal cirrhosis ....... | 40.9 | 20.0 | Nephritis |
| 8. Hypertrophic cirrhosis*. | 30.3 | 15.3 | Albumin and easts |
| 9. Hypertrophic cirrhosis.. | 45.9 | 24.1 | Nephritis |
| II. CANCER AND JAUNDICE | | | |
| 10. (1) Carcinoma of liver | 69.5 | 30.0 | Occasionally albumin |
| (2) Carcinoma of liver† | 35.0 | 13.4 | |
| 11. Carcinoma of liver, jaundice ............ | 72.7 | high‡ | Albumin and casts |
| 12. Catarrhal jaundice .... | 35.2 | 14.3 | |
| III. CHRONIC PASSIVE CONGESTION OF LIVER | | | |
| 13. Passive congestion; myocarditis ........... | 24.7 | 12.2 | Occasionally albumin |
| 14. Passive congestion; chronic endocarditis. | 31.3 | 16.6 | Albumin and casts |
| 15. Passive congestion; cardiorenal ......... | 23.9 | 11.6 | Albumin and casts |
| 16. Passive congestion; chronic endocarditis. | 22.7 | 11.0 | |
| 17. Passive congestion; syphilitic aortitis .. | 38.2 | 22.5 | Albumin and casts |
| 18. Passive congestion; chronic endocarditis.. | 51.2 | 33.9 | |
| IV. CONTROLS | | | |
| 19. Typhoid fever (suspected cirrhosis) ...... | 23.7 | 11.2 | Occasionally albumin |
| 20. Nephritis (?) ........ | 24.7 | 10.4 | |
| 21. Tuberculous hip disease | 34.1 | 19.3 | |
| 22. Convalescent typhoid .. | 23.9 | 12.2 | |
| 23. Normal .............. | 30.1 | 14.8 | |

* Reported previously by Farr and Austin, Case 56.
† Second test performed two weeks later.
‡ Too high to be read with dilution employed.

The earlier observations based on the older methods of study are as follows: Morel and Mouriquand,[2] using the Pflüger-Braunstein method, found that whereas in nephritis the percentage of urea in the blood varied from 64 to 77 per cent., in hepatic disease it ranged from 33 to 50 per cent.

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* From the John Herr Musser Department of Research Medicine, University of Pennsylvania.

[1] Farr, C. B., and Austin, J. H.: The Total Non-Protein Nitrogen of the Blood in Nephritis and Allied Conditions, Jour. Exper. Med., 1913, xviii, 228.

[2] Morel, A., and Mouriquand, G.: Urémie et azotémie; considerations sur la signification de la retention des corps azotés dans le sang des cirrhotiques, Bull. et mém. Soc. méd. d. hôp. de Paris, 1913, xxxv, 266.

Courmont, Boulud, Savy and Blanc-Perducet[3] studied the urea percentage in the blood by Boulud's method. Twenty-two cases, mostly nephritics, gave an average of 80 per cent., whereas the one cirrhotic studied gave 42 per cent.

Brodin[4] also found that the urea percentage was decreased in hepatic disease and the "non-ureic" nitrogen correspondingly augmented. Finally, Chauffard[5] called attention to the fact that the estimation of the urea percentage might be inaccurate on account of changes due to diet or an accompanying nephritis, and suggested, as a better criterion, the estimation of the "residual or non-ureic" nitrogen. By this was meant the determination of the difference, in milligrams per hundred c.c., between the urea and the total non-protein nitrogen of the blood.

Our results are shown in the accompanying table, and present the average of duplicate estimations made according to the method of Folin and Denis.[6] The figures indicate in milligrams the respective amounts of urea and total nitrogen per hundred c.c. of blood. The percentage of urea and the difference between total nitrogen and urea (Chauffard) were calculated in each instance, but as these figures did not prove to be of value, we have, for the sake of brevity, omitted them.

## SUMMARY

In the various forms of cirrhosis, as presented in the first portion of the table, the total nitrogen was markedly increased only in those accompanied by definite nephritis. The moderate increase seen in rare instances may have been due to slight renal involvement not shown by our clinical tests. The percentage of urea was in each case approximately 50 per cent., which we regard as normal.

The second group of three cases, in each of which severe functional disturbances might have been expected, did in fact show changes suggestive of hepatic insufficiency. The percentage of urea ranged from 38 to 43 and the difference from 21 to 40. Similar results were occasionally found in cases of eclampsia, reported elsewhere,[7] in which impaired liver function was presumably present.

Our third group consisted entirely of cases of chronic passive congestion of the liver secondary to heart disease. In none, according to the criteria mentioned, did we find any suggestion of hepatic insufficiency. The urea percentage ranged from 47 to 66.

In the fourth, or control group, the urea percentage ranged from 42 to 57, essentially normal figures.

In conclusion it may be stated that our observations offer little or no support of the view that in destructive disease or severe functional derangement of the liver the percentage of urea in the blood is reduced. In the group of diseases studied our figures are close to the normal. In cirrhosis of the liver, a disease in which functional tests would be of the greatest value the determination of blood urea offers no information of use in diagnosis.

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[3] Courmont, Boulud, Savy and Blanc-Perducet: Sur le coefficient azoturique du serum. Bull. et mém Soc. méd. d. hôp. de Paris, 1913, xxxv, 259.

[4] Brodin, P.: Modification de la teneur azotée du serum sanguin au cours de l'insuffisance hepatique, Comp. rend. Soc. de biol., 1913, lxxiv, 26.

[5] Chauffard, A.: A propos des variations de la teneur azotée de serum chez les hepatiques, Bull. et mém. Soc. méd. d. hôp. de Paris, 1913, xxxv, 273.

[6] Folin, O., and Denis, W.: New Methods for the Determination of Total Non-Protein Nitrogen, Urea and Ammonia in Blood, Jour. Biol. Chem., 1912, xi, 527.

[7] Farr, C. B., and Williams, P. F.: Total Non-Protein Nitrogen of Blood in Toxemias of Pregnancy, Am. Jour. Obst., 1914, lxx, 614.

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# LATENT ATYPICAL MALARIA COMPLICATING THE PUERPERIUM

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Manaberg claims that pregnancy constitutes no protection against malarial infections, notwithstanding the statements of the older observers to the contrary. In a gravid woman, malarial infection often takes on a severe form. The influences making for anemia in cases of even slight infections are more potent in pregnant women than in others, as abortions frequently occur.

Weatherly reported that in India, 46 per cent. of his cases aborted, while in England the frequency amounts to only 3.56 per cent.

Pellereau reports the same conditions in Mauritius. The abortion does not require a fever nor a paroxysm for its production, the fetus usually being dead before abortion occurs.

Weatherly also finds sterility among women in India of common occurrence, which he attributes to malaria.

According to Chevers the act of parturition often operates as an exciting cause in an outbreak of malaria, during which lochial and lacteal secretions cease. The same was reported by Parker of New York. He had only one death among forty-seven cases. Repeated blood examinations would naturally be very desirable in similar cases, as the possibility of septic infection is very great. Since the parasite of masked malaria is not always found in the peripheral blood, special emphasis is laid on the repetition of blood-tests in obscure cases. The frequency of masked malaria varies inversely with the care and thoroughness employed in diagnosis, and diagnosis must be based on microscopic findings and therapeutic tests, as symptoms *per se* are only confusing.

The case about to be described is one of latent atypical malaria complicating the puerperium in a patient afflicted with chronic nephritis of long standing. This report is of more than passing interest to the general practitioner and especially to the obstetrician for clinical study, as no like case has been found in the literature.

## REPORT OF CASE

Mrs. X., aged 25, American, lived in Illinois all her life. When 2 years old she had a severe attack of "summer complaint." Puberty at 12 years was uneventful so far as the establishing of normal menstruation was concerned, but the patient was ill four weeks at that time as the result of a fall on her head while at turning school. At 15 years the patient became anemic, which condition persisted to the age of 18 when she was unable to walk for one month on account of dropsy. During this period she was afflicted with frequent fainting spells.

June 20, 1900, at the age of 20, the patient was married. May 9, 1901, aged 21, she was confined and delivered of a fine healthy boy weighing about 10 pounds. On the sixth day after labor she had chills and fever which at that time I attributed to a probable infection as there was no trained nurse in attendance. There were no manifestations of puerperal sepsis, no pelvic symptoms, no offensive lochia and no stitch infection. The perineal lacerations were bilateral though not extensive; the cervix sustained slight tears on both sides. Unfortunately, no clinical record could be made of this sickness which lasted about three weeks. The treatment was not antimalarial, but tonic and supportive—entirely symptomatic. The patient made an uneventful recovery and, to use her own expression, "enjoyed better health than ever before in all my life." This state of good health lasted until her next pregnancy. Feb. 22, 1905, aged 25, at 4:15 a. m., patient gave birth to a 12-pound boy in St. Mary of Nazareth Hospital, Chicago. There were extensive lacerations of the cervix uteri and of the perineum and more than ordinary hemorrhages. The latter caused three fainting spells. The labor came on so suddenly that I had no time to summon an intern. No vaginal examinations were made as there were no indications of any pathologic conditions, and, besides, there was no time for ascertaining details between the time of her admission, late in the evening of February 21, to the time of the spontaneous labor, 4:15 a. m. February 22. As persistent uterine inertia followed, the placenta was delivered artificially. This caused a fourth fainting spell. The patient was allowed a brief respite, until 8:15 a. m. when I repaired the cervical and perineal lacerations, using only a few whiffs of an anesthetic as she insisted on exercising her will power. A fifth fainting spell occurred in the operating-room after the completion of the suturing. During the night the temperature rose to 100 F. and the pulse to 120, but both were normal the next morning. Every function was normal with the exception of the pulse, which ranged from 90 to 100 and above—in fact the pulse was often above 100. Owing to the nervousness of the patient and the absence of any discoverable disease other than chronic nephritis with its usual concomitants, no unusual significance was attached to this feature of the case, especially since the pulse was otherwise normal.

February 28 the left breast became indurated and painful and the patient had slight chills and complained of nausea. At 6 a. m. the temperature rose to 102$\frac{6}{10}$ F. and the pulse to 104. The breast was massaged and boric-acid fomentations and breast pump were applied. The nipple being fissured, was treated with glycerite of tannic acid. Enemata and sponge baths were given for eliminative and antipyretic purposes. Then there ensued the following play of pulse and temperature:

| Date | Time | Pulse | Temperature F. |
|---|---|---|---|
| 3/1 | 4:00 a. m. | 120 | 103 |
| | 4:30 p. m. | 128 | 104$\frac{2}{10}$ |
| | 8:45 p. m. | 90 | 102 |
| 3/2 | 12:30 a. m. | 140 | 104 |
| | 3:30 a. m. | 120 | 103 |
| | 5:30 a. m. | 120 | 100$\frac{2}{10}$ |
| | 2:00 p. m. | 108 | 99$\frac{6}{10}$ |
| | 6:00 p. m. | 100 | 99 |

Pulse then became normal. There were no symptoms of any pelvic infection, hence puerperal septicemia was excluded. As the breast was the only offending organ that was discovered at that time, I held it accountable for the vagaries of the pulse and temperature and, naturally, when these dropped to normal, simultaneously with the cessation of all untoward breast symptoms, I thought the difficulty was overcome. Urinalysis showed specific gravity 1.032; 4 per cent. albumin by volume; trace of sugar; some hyalin and a few granular casts.

The next day I was made uneasy by the following clinical record:

| Date | Time | Pulse | Temperature F. |
|---|---|---|---|
| 3/3 | 3:00 p. m. | 124 | 100 |
| | 6:00 p. m. | 128 | 102 |
| | 10:15 p. m. | 130 | 104 |

The record remained about as above until it became more serious, namely:

| Date | Time | Pulse | Temperature F. |
|---|---|---|---|
| 3/4 | 3:00 a. m. | 128 | 105 |
| | 8:45 a. m. | 130 | 105$\frac{2}{10}$ |
| | 11:00 a. m. | 120 | 104 |

The condition becoming alarming, I requested consultation. After an exhaustive examination consultant assured me that there was not one sign of any pelvic infection, and in his subsequent daily visits found no reason to alter his opinion.

In spite of finding no pathologic lesions of any kind, there was no improvement in the pulse-temperature wave which rose to 140 and 106$\frac{8}{10}$ and never dropped below 110 and 101, respectively. There was not even the slightest periodicity in these records. Feeling that we were making no progress and that the patient was losing ground daily, a second consultant was sought. A careful study of the case, course, examinations made and treatment given, revealed the fact that malaria was about the only disease not thought of. While the clinical record did not support any malarial theory, yet a blood examination was advised and ordered and large numbers of the parasites of the tertian variety were found.

Specific antimalarial treatment (quinin bisulphate 2 grains followed by a cup of hot water every two hours) produced good results in twenty-four hours. In forty-eight hours convalescence was established and recovery was gradual and positive. No other untoward symptoms appeared, excepting cinchonism which was overcome by adding sodium bromid, 5 grains to each dose of quinin.

After all symptoms subsided, the patient normal in every respect and ready to be discharged, she complained of slight tenderness in the pelvis. Some lochial discharges appeared March 21, 1905, which, on microscopic examination, were found to contain gonococci. The husband admitted to consultant and to me that he had been afflicted with gonorrhea.

## SUMMARY

The patient never lived in a strictly malarial locality. The symptoms were not at all typical of malaria. The patient never had an attack of malaria until after labor. The anemia that occurred between the ages of 15 and 18 might have been the result of malarial intoxication (in latent form). The occurrence of irregular chills and fever in two consecutive confinements and never at any other time, with no pelvic involvement and with positive microscopic findings in the second, merits attention. The late gonorrheal complications after the second puerperium about thirty days after labor and long after other conditions were normal, was an extraordinary experience. Every case of fever following labor is not puerperal sepsis.

Finally the most important part of this paper is the lesson to be learned from a lack of thoroughness in diagnosis. I offer no apology, as there was an acute exacerbation of nephritis engrafted on a chronic nephritis of long standing, together with acute mammitis and the atypical malarial manifestations, to say nothing of the late gonorrheal infection, all of which formed a symptom-complex so confusing and so perplexing that it was indeed not easy nor yet hardly reasonable to expect to decipher such symptoms as would make for a diagnosis of malaria.

I make a strong plea for exhaustive methods of diagnosis as a routine practice, and the lesson I would take to heart if still engaged in an obstetric practice, would be to take nothing for granted and to examine all unusual cases exhaustively, carefully studying clinical data, and especially to go the limit in the laboratory methods of diagnosis.

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**Yellow Fever Commission.**—The reports of the Yellow Fever Commission of West Africa have been issued and the following conclusions are drawn: 1. Yellow fever has occurred from time to time since 1778 in various parts of the British West African colonies. 2. There is no evidence to show that the infection in each outbreak has been introduced from outside Africa. 3. The mild nature of the attack in certain cases makes identification a matter of great difficulty. It is therefore essential that in future all cases of fever should be carefully observed and classified in order that, so far as possible, such mild cases may not pass unrecognized. 4. The attention of all workers at this subject should be specially directed to the discovery of a clinical test for yellow fever.

# A METHOD OF DIMINISHING HEMORRHAGE AFTER SUPRAPUBIC PROSTATECTOMY *

EDWARD L. KEYES, JR., M.D.
NEW YORK

Discussion of the amount of bleeding that follows suprapubic prostatectomy is not likely to profit us anything. I have at various times been convinced that a certain method of removing the prostate markedly diminished the hemorrhage, but no sooner was this opinion in the way of becoming a certainty than it was rudely shattered. My personal preference is to enucleate the prostate by the so-called intra-urethral method. To avoid the hemorrhage I have tried packing, and making the incision through the mucous membrane by means of a Bottini instrument introduced into the urethra. This did not much diminish the hemorrhage, and it did have the inconvenience of leaving one of the four or five patients on whom I operated in this way with partial incontinence of urine. I next tried to suture the neck of the bladder in one case; the patient died of hemorrhage. Since then I have employed the following technic in ten cases:

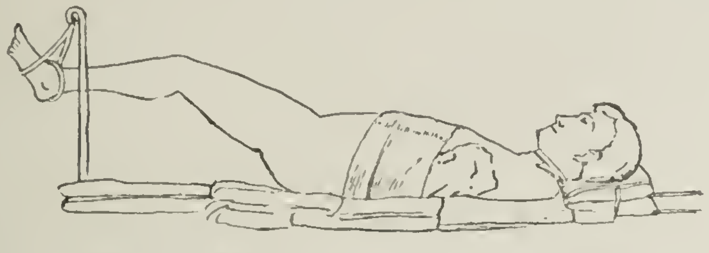

Fig. 1.—Position of patient in author's operation with legs supported on leg-rests and with hips at an angle of about 45 degrees.

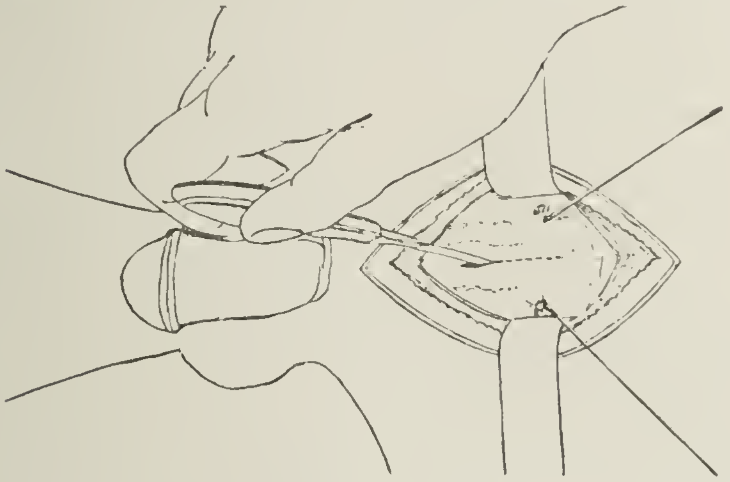

Fig. 2.—The bladder exposed through a suprapubic incision, suspended by two skin hooks; incision between the hooks.

The patient is put on the operating table in the dorsal position but with his legs supported on leg-rests so that the hips are flexed at an angle of about 45 degrees (Fig. 1). The hypogastrium, the genitals, the perineum and the adjoining portions of the thighs are then cleaned in the usual manner, and this wide field is left uncovered by towels.

The bladder is exposed through a suprapubic incision, suspended by two skin hooks, and incised between these (Fig. 2). The prostate is then rapidly enucleated between two fingers in the rectum and two in the bladder. Then a grooved staff is inserted into the urethra and a long Peaslee or Reverdin needle, threaded with a piece of catgut about 18 inches long, is plunged into the groove of the staff through the perineum (Fig. 3) quite in the same way as one uses a bistoury in doing a rapid perineal section.

The needle is passed along the grooved staff until it can be felt in the bladder by a finger in the suprapubic opening. The staff is then withdrawn and two Walker suprapubic bladder retractors[1] are introduced. These, by making lateral traction on the bladder, elevate the torn edges of the bladder neck like a veil and make it plainly palpable to the examining finger.

The needle, carrying the catgut, is inserted through the edge of this veil, just deep enough to get a good hold, at a lateral angle (about 7 o'clock) (Fig. 4). Then by depressing the handle of the needle its eye is brought up into the suprapubic wound so that the catgut can be disengaged (Fig. 5). This accomplished, the needle is withdrawn from the puncture in the bladder neck and reintroduced at a corresponding point on the opposite side, again threaded with the catgut, allowing plenty of slack (Fig. 6), then rapidly withdrawn through the perineum. The threading and unthreading of the needle is expedited by removing the corresponding Walker retractors immediately after the puncture of the bladder neck on each side. If an indwelling catheter is to be employed, it must be inserted now.

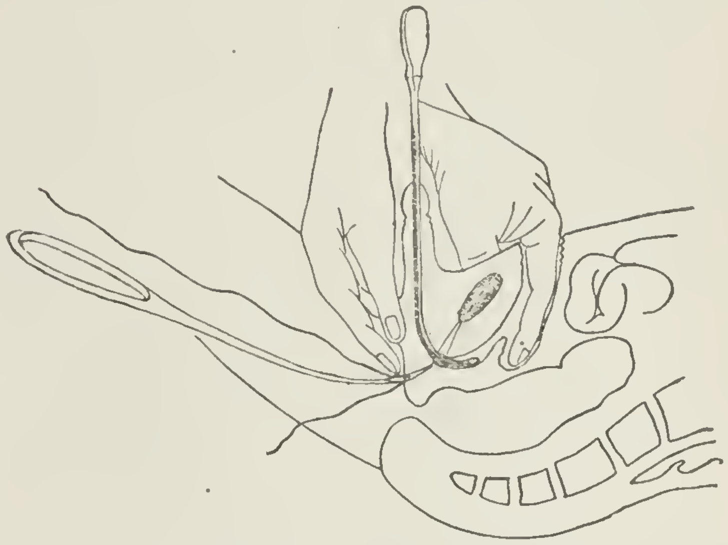

Fig. 3.—Peaslee or Reverdin needle threaded with catgut inserted through perineum along grooved staff.

After the needle has been withdrawn we have in our hands the two ends of a suture entering through a single puncture in the perineum, passing through the deep urethra and to the bladder neck and catching the lower segment of this at its two angles (Fig. 7). Traction on the ends of the loop pulls the bladder neck down

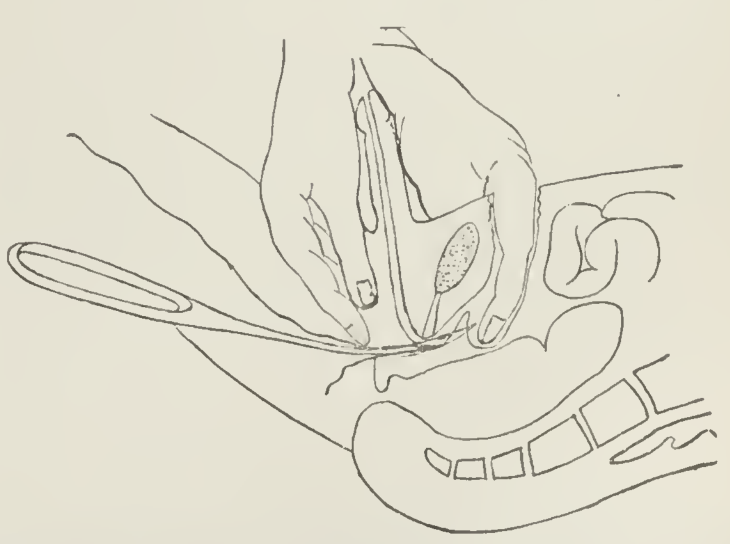

Fig. 4.—Showing method of inserting needle through the torn edges of the bladder neck, made tense by retractors.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] After becoming accustomed to the technic of the operation one may dispense with this retraction.

into the urethra. It thus controls hemorrhage, chiefly, I fancy, by putting the bladder neck on tension. The ends of the suture are then tied about a short rubber tube laid against the perineum, after the bladder neck has been pulled down very firmly (Fig. 8).

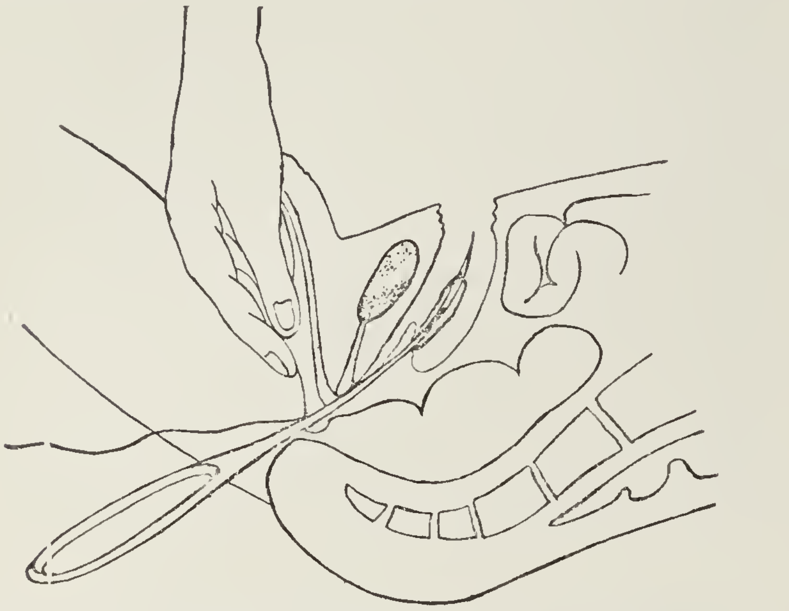

Fig. 5.—The eye of a needle is brought up into the suprapubic wound by depressing the handle so that the catgut can be disengaged. The needle is then withdrawn.

Drainage is provided by the usual suprapubic tube or by a catheter in the urethra, and a tube in the suprapubic wound, according to the fancy of the operator. I am using a rather small suprapubic tube in these cases, but do not care to do away with it altogether with the memory fresh in my mind of the gentleman who so recently advocated complete suture of the bladder after suprapubic prostectomy and is reported to have returned home only to find that the heralded improvement had been discarded during his absence. The suture is divided and withdrawn from eighteen to twenty-four hours later. With this technic the immediate hemorrhage has been promptly checked, and the ultimate bleeding has been much less than it would otherwise have been. I have not seen any fistula or inflammatory complications along the track of the suture in the perineum.

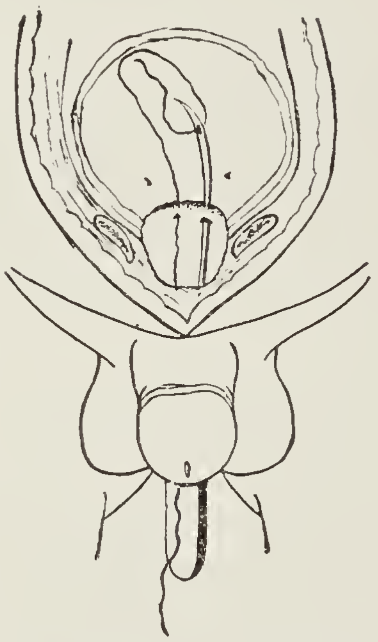

Fig. 6.—The needle reintroduced at corresponding point on the opposite side, again threaded with catgut and then withdrawn through the perineum.

109 East Thirty-Fourth Street.

## ABSTRACT OF DISCUSSION

Dr. Francis R. Hagner, Washington: A little bag that I have devised does practically the same thing as Dr. Keyes' ingenious process. This bag has a string attached to one end, at the other a hollow rubber tube. A long curved sound is passed through the urethra, the tip of the rubber tube is pulled over the end of the sound, and the sound withdrawn, bringing with it the tube. The bag is now lying against the neck of the bladder, with a tube coming out through the urethra and a string through the suprapubic opening. The bag is inflated with a large syringe. The finger should be passed around the bag to see that the torn mucous membrane falls back into the cavity from which the prostate was removed. The bag is allowed to remain for from twenty-four to forty-eight hours, but is deflated at the end of twelve hours. To make the bag collapse perfectly it is necessary to use suction with the syringe. To remove it, the tube is cleansed as thoroughly as possible with soap and water and mercuric chlorid, and traction is made on the string while the tube is fed into the urethra. We have used this bag in eleven cases. There is practically no bleeding. If you wash out the bladder there will be just the slightest staining of the fluid. In one case the bag was not big enough. The first bag I had made was 11½ cm. in circumference. It will probably be necessary to have larger sizes, say, 13½ and 15½ cm. In the case in which bleeding occurred the internal sphincter did not contract down as it should. I remarked on it at the time. It is a very simple device. The patient is not uncomfortable; and the bag is removed without pain.

Dr. Charles E. Barnett, Fort Wayne: If the drainage were taken out within from twelve to twenty-four hours, there would be no danger; but if the drainage is kept *in situ* for a longer period than that it appears to me that there would be more danger from the means used to control hemorrhage than there would be had we not used any method of control, for should the drainage tube from its trauma loosen up a clot that had formed in the mouth of a vein there would be great danger from thrombi and emboli. The majority of men who are operating to-day pay no attention, particularly, to hemorrhage, unless the case is hemophiliac. The hemorrhage controls itself.

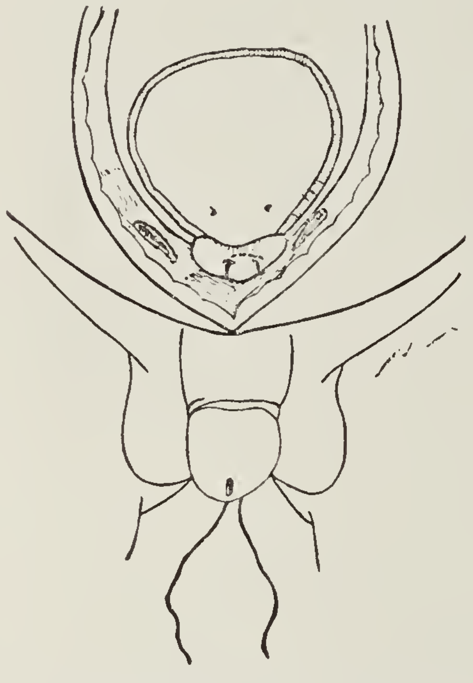

Fig. 7.—Showing the two ends of the suture entering through a single puncture of the perineum, passing through the deep urethra and to the bladder neck and catching the lower segment of the latter at its two angles. The traction on the ends of the loop pulls the bladder down into the urethra.

Dr. E. L. Keyes, Jr., New York: I respect Dr. Barnett's opinion, which is, however, contrary to my own. I consider that hemorrhage is dangerous in many cases; in certain cases, however, it is not dangerous. If we are to employ any technic for the control of hemorrhage, it is better for the sake of our own expertness and rapidity of action that we employ that technic in all cases. Neither in delay at the time of operation nor in complications have I felt that the technic I employ adds anything to the patient's danger.

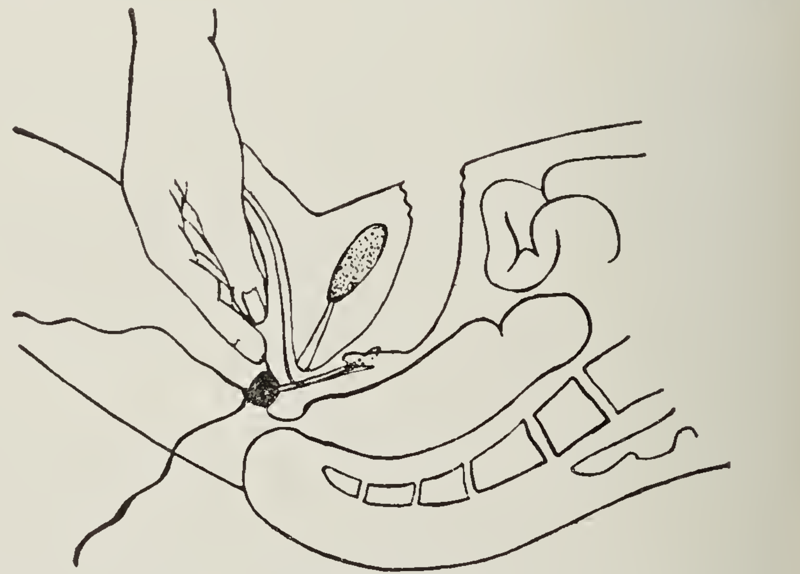

Fig. 8.—The ends of the suture tied about a short rubber tube laid against the perineum after the bladder neck has been pulled down firmly as shown in Figure 7.

# THE TREATMENT OF HYDROCELE

## WITH SPECIAL REFERENCE TO PHENOL INJECTIONS *

ROBERT H. HERBST, M.D.
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CHICAGO

Although a serous effusion into the sac of the tunica vaginalis occurs as an independent malady, in the vast majority of cases we find an underlying pathologic condition of one or more of the anatomic structures found in the scrotum. Hydrocele frequently accompanies the acute infections of the epididymis and testicle, but is more commonly found complicating the chronic infections of these organs, such as tuberculosis and syphilis. As a rule when the hydrocele is secondary to a tuberculosis of the epididymis, the tuberculous process is far advanced, having traveled down the cord, involving both the prostate and vesicles. In such cases it is my belief that an open operation is contra-indicated. Again, in those cases due to syphilis of the testicle, the removal or stitching of the sac behind the testicle is entirely unnecessary.

When the sac of the tunica vaginalis is well filled with fluid, it is often very difficult to palpate the contents of the scrotum. Therefore if we consider the conditions underlying hydrocele, namely, acute infections of the epididymis, such as gonococcus and pus infection (rarely colon), tuberculosis, neoplasms of both testicle and epididymis, syphilis of the testicle, also hydrocele resulting from traumatism of these organs, it is obvious that a preliminary tapping and evacuation of the sac is always indicated before choosing between the open operation and the injection of phenol (carbolic acid).

If preliminary tapping is practiced, it will prevent the too common error of opening the sac and finding an advanced tuberculous process behind the fluid. The same holds true in cases of syphilis of the testicle, in which, in all probability, there would be recovery with antisyphilitic treatment.

If I may be allowed to eliminate those effusions into the sac of the tunica vaginalis which accompany the acute infections of the epididymis and which usually disappear as the acute process subsides, it is my contention that the results following tapping and injection of phenol are as good as are seen following any of the open operations, provided the sac be thoroughly washed with sterile water after the serum has been evacuated and before the phenol is injected.

The common recurrences following the old method of injecting phenol without the preliminary washing out of the sac were due to the fact that the sac wall was covered with serum, which coagulated the phenol and did not allow the acid to come into contact with the sac wall. To obviate further such a contingency it has been my practice to test the return fluid for albumin and to continue the washing of the sac until the fluid fails to give a reaction to nitric acid. Then from 10 to 12 c.c. of 95 per cent. phenol are injected, the scrotum at the same time being manipulated so as to bring the acid into contact with all parts of the sac; then the excess is allowed to flow out, after which about 15 c.c. of alcohol are injected.

The injection of sterile water into the sac serves the double purpose of cleansing the sac wall and prevents the not infrequent accident of injecting the phenol into the tissues of the scrotum. During the emptying of a well-filled tunica vaginalis the receding sac wall is likely to draw away from the end of the cannula without the knowledge of the operator. If this does occur and the water is injected, it does not return, but remains in the tissues of the scrotum, which appear edematous. Under such circumstances the sac must be allowed again to fill with serum before an attempt is made to inject the phenol. The use of the Belfield hydrocele trochar and cannula, however, will practically always prevent this accident because it fixes the sac, by passing through two of its walls. The refilling of the sac which is commonly seen during the first twenty-four hours after the injection is due to the reaction of the tissue to the phenol and disappears spontaneously within a few days.

For the number of years that I have been practicing this method of washing the sac before injection I have observed very few recurrences. These few were in most instances due to a slight reaccumulation of serum, during the first week or two after the injection, and after a simple evacuation the cure was permanent.

In cases of chronic pachyvaginalitis in which the sac wall has become greatly thickened, excision is preferable to either eversion or injection. As is sometimes supposed, injection of phenol is not followed by atrophy of the testicle, although it may rarely produce a peritesticular sclerosis.

As for the objections that might be advanced relative to the toxic effect of the phenol, I would say that neither in my own experience nor in the literature have such results obtained.

### CONCLUSIONS

1. Considering the underlying pathology of many cases of hydrocele, it is my belief that open operation for the relief of this condition is usually unnecessary and frequently contra-indicated.

2. When the sac is thoroughly washed with sterile water before the phenol is injected, recurrences are very rare.

32 North State Street.

### ABSTRACT OF DISCUSSION

Dr. A. A. Martin, New Zealand: Will Dr. Herbst say whether there is any pain after using this method?

Dr. V. D. Lespinasse, Chicago: I have often used phenol (carbolic acid). One of my early experiences was in a case of sloughing of the scrotum from carbolic acid, due to improper technic. That gave the method a sort of black eye in my own opinion. Later on I used the device of Dr. B. Einasson and somewhat simultaneously Dr. Belfield brought out his cannula. Since then I have used that with good results. Lately, instead of using phenol, after making the puncture and as the fluid is running out, I thread some chromic catgut into the sac. The catgut technic causes a little more pain the next day, but there is no chance of sloughing occurring.

Dr. B. A. Thomas, Philadelphia: It has been my experience that the injection of phenol is a useful procedure, in a large number of cases. I have noticed, however, that in not a few there has been a good deal of effusion as a result of the chemical reaction provoked in the tunica vaginalis, and in order to hasten convalescence I have resorted to secondary paracentesis. Has Dr. Herbst found it necessary to practice that supplementary procedure in the postoperative treatment of his cases?

Dr. Frank Hinman, Baltimore: Has Dr. Herbst made any comparative studies with the use of phenol and the

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

formaldehyd solution or catgut methods? A number who have used equal parts of formaldehyd, glycerin and alcohol report better results than with phenol. We have treated a few patients at Johns Hopkins with formaldehyd and with the pushing in of catgut, and there has been, in all cases, a marked inflammatory reaction afterward. We have not used phenol.

Dr. Robert H. Herbst, Chicago: Practically no pain follows the injection of phenol.

Concerning Dr. Lespinasse's trouble, I do not want to criticize his technic, but I imagine that he must have injected the acid into the dartos and not into the tunica vaginalis. I do not believe that sloughing could occur if the acid were injected into the tunica vaginalis.

Dr. Lespinasse: It was not my technic. The case was in the hospital when I went on duty.

Dr. Herbst: I happened to have had this accident occur in my own work due to the slipping of the sac from the end of the cannula. If one injects the acid into the tissues outside of the tunica vaginalis one is likely to cause a sloughing of the scrotum. Answering Dr. Thomas, a short extract from my paper reads: "These few were in most instances due to a slight reaccumulation of serum during the first week or two after injection, and after a simple evacuation the cure was permanent." I have not had any experience with the injection of formaldehyd solution.

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# SONOROUS VIBRATIONS IN THE TREATMENT OF EAR-DISEASES*

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NEW YORK

The treatment of ear-diseases with sonorous vibrations rests on the following principles:

The application of sonorous vibrations not too long continued and not too intense has a stimulating effect on the metabolism of all living cells. This action is a pneumovibratory massage. Applied to the ear it affects the external auditory canal directly, the tympanum through the membrana tympani, and the internal ear and cochlear nerve-system through the ossicles, oval window and, to a much less degree, through the tympanum and the round window.

All the structures of the auditory apparatus degenerate when insufficiently exercised; hence the necessity of intensive exercises when any of them are crippled.

Sonorous vibrations exercise the membrana tympani, the tympanic ossicles and muscles, the hair-cells of Corti's organ and membrana tectoria, and the entire cochlear nerve-system. Such exercise not carried to the point of fatigue increases the nutrition and efficiency of these structures.

The parts of the auditory apparatus or system, like those of other systems or organs of the body, are closely connected by the sympathetic. Metabolic changes in one part produce similar changes in allied parts. Thus, acute circulatory changes in the tympanic mucosa produce similar changes in that of the eustachian tube, and vice versa. This probably explains the improvement in the eustachian tube after treatment directed at the tympanum.

The Zünd-Burguet electrophone, which has been described in a previous paper,[1] was used in all the treatments and experiments enumerated herein. With this instrument siren-like scales may be produced in three timbers, corresponding to three registers of the human voice, low, medium and high. These registers may be lowered or raised, but they should be adjusted so that the scale of each overlaps that of the adjacent register. Each register has a scale of over an octave, and the sum of all the registers is a little less than five octaves, which is about the conversational range. If the harmonics and overtones produced are also considered, possibly the eleven octaves of human auditory perception are reached in the exercises. The latter consist in the production of scales in each of the registers, either applied to one ear at a time, or first to one ear and then to the other in each register, or as is usually done, alternately, first to one and then to the other ear while playing each scale in each register. Zünd-Burguet produces two scales, once in the low and once in the high register, and three times in the middle register at each treatment. Thus he starts in the middle register, proceeds to the low, then back to the middle, then up to the high and finally back to the middle register.

I complete the treatment by a short mechanical massage near and over the ear to overcome any slight numbness induced by the sonorous vibrations.

The intensity of the vibrations to each ear can be regulated, and also changed gradually or suddenly during the scales on each ear seriatim.

By this method, each note is produced for only a small fraction of a second (less than one-eighth of a second in the usual three-minute treatment), and each note is sounded at least twice for each ear.

The regulation of the intensities of the sounds used is exceedingly important. Zünd-Burguet as a general rule uses waves of not quite sufficient amplitude to cause a prickling sensation in the ear. There are many cases, however, in which no prickling sensation can be produced by the instrument used and yet the intensities of the sounds are sufficient to cause tinnitus and decreased audition. Therefore each case must be carefully studied and the intensities of the sounds graded to bring about the maximum improvement. To accomplish this in these cases, it is necessary to make tests before and after treatment for several days until the correct dosage is determined.

This brings up the subject of examinations.

The method pursued in chronic cases is to examine the ears at the start, and after fifteen, thirty, and fifty treatments.

In acute and subacute conditions, single tests may be necessary before and after treatment each time.

Thus the course and the frequency of treatments must be determined for each case, not always in advance.

Acute and subacute conditions require treatments once a day, while the chronic usually need two a day.

Good physical condition seems necessary for the most rapid improvement, especially when two treatments a day are given.

Negative results are liable to follow when the patient is in a continual state of exhaustion. This is one of the difficulties of the two treatments a day course. The pursuit of a vocation and the expenditure of the necessary energy for visits to the office twice a day sometimes prevent a successful outcome.

The usual course of treatment comprises fifty seances, two treatments a day. A second course of from twenty to thirty treatments is necessary in from six months to a year in the majority of cases of chronic deafness.

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

[1] Hubby, L. M.: Treatment of Deafness with Sonorous Vibrations by the Zünd-Burguet Method, New York Med. Rec., Jan. 31, 1914.

Some experiments were tried on the fairly normal ear to show the immediate effects of the treatment on audition.

A single distance test with a watch, an acoumeter, or similar instrument was made just before and immediately after a treatment on six individuals with the following results:

Case 12.—Three cork acoumeter tests for each ear. The percentage of increase of audition distance varied from 1 to 45 per cent. The average was 21⅓ per cent.

Case 43.—Three cork acoumeter tests for each ear. Increase of audition distance 3 to 49 per cent. Average increase 20.5 per cent.

Case 28.—One watch experiment with one ear. Increase of audition distance 18 per cent.

Case 39.—Six cord acoumeter experiments with one ear. Increase of audition distance from 3 to 43 per cent. Average increase 13⅓ per cent.

Case 11.—Two acoumeter experiments for each ear. Increase of audition distance from 9 to 17 per cent. Average increase 14 per cent.

Case 13.—One cork acoumeter experiment with each ear. Increase of audition distance 13 and 9 per cent. Average increase 11 per cent.

The average increase for the twenty-six experiments was 16.33 per cent.

A few observations were made to determine the length of time that a normal ear retained its improved audition after one treatment and it was found to be a little over a day.

Some tests were made on abnormal ears to find the immediate effects on hearing distance.

Case 25.—A patient aged 60, suffering from otosclerosis with nerve atrophy. Right ear was tested three days with acoumeter, the left with cricket. Increase of audition distance from 4 to 47 per cent. Average increase 18⅓ per cent.

Case 4.—Patient aged 33, with otosclerosis, OMCC residual, nerve atrophy. One experiment with cricket with each ear. Increase of audition distance, right ear 61 per cent., left ear 46 per cent. Average 53.5 per cent.

Case 7.—Patient, aged 47, with otosclerosis and nerve atrophy. Cricket experiments on two days with both ears. Increase of audition distance from 3 to 22 per cent. Average 14.75 per cent.

The average increase for these three chronic cases was 28.9 per cent.

Case 39.—OMCA in boy aged 16. Tests made on seven days. On the first day a watch was used, on the other days a cork acoumeter. Increase of audition distance from —3 to 59 per cent. Average 14 per cent.

Case 28.—A man, aged 35, OMCA. Tests made on three days with watch showed increase of audition distance of 62, 60 and 13 per cent., or an average of 45 per cent.

### SOME RESULTS IN CHRONIC PURULENT OTITIS

Case 17.—Man, aged 27, OMPC left ear with small perforation in Shrapnell's membrane. Usual antiseptic cleansing methods of no avail after several months' trial. Perforation healed in two days after four treatments.

Case 6.—Woman, aged 25, OMPC of both ears failed to dry after long course of treatment. Both ears dry after four days, eight treatments. She also had severe eczema of both canals which practically cleared up in two days.

Case 24.—Man, aged 22, OMPC (R). Ear dry after three days.

Case 8.—Boy, aged 5, OMPC (B), treated for over a year without success; both ears dry in five days' treatment, but the discharge returned with the next cold.

Case 15.—Woman, aged 30, OMPC (L), dry after three treatments.

Case 18.—Man, aged 22, OMPC and localized perilabyrinthitis in right ear. Dry after fifteen treatments.

Case 21.—Man, aged 54, OMPC (B) with almost entire destruction of the drum and ossicles, and exposure of the internal carotid on the left side. Discharge reduced to a few drops in a few treatments, but the ears did not become dry after forty-nine treatments.

Case 16.—Girl, aged 11, with radical mastoid wound following cholesteatoma, not healing in one spot after two months' treatment, became dry after fifty treatments.

Scanty dry ceruminous secretion causing itching of the external auditory canal was alleviated in at least one case of my series.

One bad case of eczema, associated with a moderate purulent discharge, was quickly relieved by the treatment.

Congestive, stenotic conditions of the eustachian tube were relieved in every instance in which the treatment was tried.

Case 1.—Woman, aged 66. Four pounds' pressure required to open right tube, and 14 pounds for left tube, before treatment. After fifteen treatments, less than 3 pounds' pressure required. (Three pounds pressure is the lowest pressure registered with my apparatus.)

Case 9.—Girl, aged 18. Left tube required 14 pounds' pressure to become patent, before treatment. After eighteen treatments the patency pressure needed was less than 3 pounds.

Case 19.—Man, aged 23. Left tube required 10 pounds' pressure to become patent, before treatment. After fourteen treatments the patency pressure needed was less than 3 pounds.

Case 33.—Woman, aged 25. Right tube required 15 pounds', left tube, 10 pounds' pressure to become patent, before treatment. After thirty treatments (no second test was made prior to this) the patency pressure needed was less than 3 pounds.

Case 37.—Girl, aged 19. Both tubes required more than 15 pounds' pressure to make them open, before treatment. After fifteen treatments the patency pressure required was less than 3 pounds.

Case 3.—Woman, aged 32. Right tube required 10 pounds' pressure to become patent before treatment. After fifteen treatments, less than 3 pounds was required.

Case 18.—Man, aged 22. Left tube required more than 15 pounds' pressure to make it patent before treatment. After thirty treatments 9 pounds' pressure was required, and after fifty treatments less than 3 pounds' pressure was required.

Case 17.—Man, aged 27. Left tube required more than 15 pounds to make it open before treatment; after fifteen treatments still not less than 15 pounds, but after thirty treatments less than 3 pounds were required.

Thus in the eight cases, four were relieved within fifteen treatments, one in eighteen, two in thirty, and one in fifty treatments.

### TWO CASES OF ACUTE CATARRHAL OTITIS

Case 39.—Boy, aged 16. Severe OMCA (B). The first few days inflations were beneficial for the right ear, but there was decreased audition in the left. Sonorous vibrations improved the hearing rapidly. Hearing was normal in one week on both sides.

Case 28.—Man, aged 35. Severe OMCA (R). Audition was decreased by the mildest inflation, but attack was overcome by daily treatment with the sonorous vibrations for four days.

In the table are shown the audition tests at the first examination and the morning following the last treatment with sonorous vibrations in thirty-two consecutive cases of chronic deafness.

AUDITION TESTS AT FIRST EXAMINATION AND MORNING FOLLOWING

| Lesions | Number of Case | Treatments Given | Ear Treated | Voice | | Loud Whisper | | Watch | | Acoumeter | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Before | After | Before | After | Before | After | Before | After |
| OMCC | 17 | 49 | R | L 15+ | L 15+ | 15+ | 15+ | S .89 | S .72 | 11.88 | 11.85 |
| OMPC | | | L | L 15+ | L 15+ | 7.42 | 15+ | S .06 | S .12 | .19 | .62 |
| OMCC | 15 | 50 | R | L 15+ | L 15+ | 15+ | 15+ | S .72 | S .83 | 8.05 | 15+ |
| OMPC | | | L | L 15+ | L 11 | 8.52 | 15+ | S .17 | S .50 | .57 | 6.55 |
| OMPC, Otosclerosis | 21 | 49 | R | L 15+ | L 15+ | 8.12 | 15+ | S .005<br>L .64 | S .175<br>L .85 | .60 | .35 |
| OMPC, Otosclerosis | | " | L | L 15+ | L 15+ | 6.66 | 10 | S .0025<br>L .215 | S .06<br>L .37 | .305 | .58 |
| OMPC | 24 | 49 | R | L 15+ | L 15+ | 15+ | 15+ | S .13 | S 1.32 | .54 | 6.10 |
| Otosclerosis | | | L | L 15+ | L 15+ | 15+ | 15+ | S .18 | S 1.04 | 1.82 | 5.50 |
| OMPC, eczema | 6 | 51 | R | L 15 | L 15+ | 3 | 15+ | S .07<br>M .09 | S .52<br>M .95 | .44 | 3.33 |
| OMPC, nerve atrophy, eczema | | | L | L 10.43 | L 10.04 | .83 | .75 | L .02 | L .08 | .01 | .105 |
| OMPC, localized perilabyrinthitis | 18 | 50 | R | L 15+ | L 15+ | 7.98 | 10 | S .005<br>L .21 | S 02<br>L .46 | .76 | .53 |
| OMCC | | | L | L 15+ | L 15+ | 9.04 | 14.47 | S .04 | S .09 | .26 | .30 |
| Otosclerosis | 2 | 15 | R | L 7.68 | L 10.55 | .415 | .58 | L .15 | L .33 | ...... | ...... |
| Otosclerosis | | | L | L 15+ | L 15+ | 15. | 15+ | S .33 | S .21 | ...... | ...... |
| Otosclerosis | 23 | 50 | R | L 15+ | L 15+ | 10.3 | 12.04 | S .105<br>L .31 | S .13<br>L .57 | .20 | .235 |
| Otosclerosis | | | L | L 10 | L 11.115 | 1.72 | 1.59 | S + C<br>L .01 | S .005<br>L .04 | .01 | .032 |
| Otosclerosis | 32 | 50 | R | L 15+ | L 15+ | 15+ | 15+ | S .12<br>L .92 | S .125<br>L .78 | 1.18 | 2.04 |
| Otosclerosis | | | L | L 15+ | L 15+ | 15+ | 15+ | S .145<br>L 1.92 | S .17<br>L 2.20 | 5.09 | 4.95 |
| Otosclerosis, OMCC (residual) nerve atrophy | 4 | 48 | R | L 5.97 | L 15+ | .155 | 1.51 | L — C | ........ | — | ...... |
| Otosclerosis, OMCC (residual) nerve atrophy | | | L | L .175 | L .69 | — | .215 | L — C | ........ | — | ...... |
| Otosclerosis, nerve atrophy‡ | 10 | 49 | R | L 14.9 | L 15+ | 1.07 | 8.65 | M .01?<br>L + C | L .06 | .016 | .10 |
| Otosclerosis, nerve atrophy‡ | | | L | L 15+ | L 15+ | .77 | 2.22 | L .01 | L + C | .03 | .015 |
| Otosclerosis, nerve atrophy§ | 1 | 30 | R | L 3.97 | L 7.16 | .23 | .65 | M + C<br>L .005 | ........ | .01 | .044 |
| Otosclerosis, nerve atrophy§ | | | L | L .88 | L 4.41 | .15 | .40 | L + C | ........ | — | — |
| Otosclerosis, nerve atrophy | 40 | 15 | R | C 4.64 | C 6.45 | 4.90 | 7.36 | L .105 | S + C<br>L .14 | .07 | .10 |
| Otosclerosis, nerve atrophy | | | L | C 4.24 | C 5.88 | 2.23 | 7.21 | L + C | L + C | .01 | .03 |
| Otosclerosis, nerve atrophy | 33 | 48 | R | C 7.95 | C 6.42 | 5.09 | 11.75 | S .005<br>L .05 | S .045<br>L .155 | .035 | .095 |
| Otosclerosis, nerve atrophy | | | L | C .32 | C 2.58 | 3.73 | 7.21 | L + C | S + C<br>L .12 | .03 | .105 |
| Otosclerosis, nerve atrophy; heredit. syphilis | 37 | 49 | R | C .93 | C 1.32 | 4.29 | 11.63 | S + C<br>L .115 | S .05<br>L .60 | .30 | .38 |
| Otosclerosis, nerve atrophy; heredit. syphilis | | | L | C 2.15 | C 1.94 | 8.23 | 11.77 | S .005<br>L .295 | S .055<br>L .385 | .43 | .38 |
| Otosclerosis, nerve atrophy | 25 | 17 | R | L 15+ | L 15+ | 15+ | 15+ | S .32 | S .38 | .98 | 1.41 |
| Otosclerosis, nerve atrophy | | | L | L 15+ | L 15+ | 9 | 11.75 | L — C | L — C | ...... | .04 |
| Otosclerosis, nerve atrophy¶ | 29 | 30 | R | C 5.97 | C 7.27 | 12.25 | 15+ | S .005<br>L .03 | S .009<br>L .05 | .19 | .21 |
| Otosclerosis, nerve atrophy | | | L | C 2.45 | C 3.95 | 1.90 | 8.03 | S + C<br>L .01 | S + C<br>L .017 | .03 | .08 |
| Otosclerosis, nerve atrophy | 3 | 49 | R | L 15+ | L 15+ | 1.86 | 7.78 | S .04 | S .09 | ...... | ...... |
| Otosclerosis, nerve atrophy | | | L | L 15+ | L 15+ | 15+ | 15+ | S .49 | S .58 | ...... | ...... |
| Otosclerosis, nerve atrophy | 14 | 48 | R | L 3.68 | L 15+ | .005 | .50 | L — C | ........ | — | ...... |
| Otosclerosis, nerve atrophy | | | L | L 2.29 | L 15+ | .005 | .50 | L — C | ........ | — | ...... |
| Otosclerosis, nerve atrophy‖ | 35 | 42 | R | C 1.30 | C 2.11 | 3.61 | 9.50 | S + C<br>L .235 | S .02<br>L .33 | .37 | .62 |
| Otosclerosis, nerve atrophy | | | L | C 1.53 | C .92 | 2.40 | 8.64 | S + C<br>L .17 | S .005<br>L .18 | .087 | ...... |
| Otosclerosis, nerve atrophy | 41 | 30 | R | C .47 | C 1.20 | 2.95 | 6.70 | S + C<br>L .115 | S + C<br>L .145 | .05 | .07 |
| Otosclerosis, nerve atrophy | | | L | C .67 | C 1.12 | 1.38 | 4.24 | L .08 | L .135 | .035 | .035 |
| Otosclerosis, nerve atrophy | 38 | 30 | R | C .92 | C 2.41 | 8.10 | 13.91 | S + C<br>L .045 | S .015<br>L .045 | .075 | .09 |
| Otosclerosis, nerve atrophy | | | L | C 1.12 | C 2.89 | 11.83 | 13.53 | S .025<br>L .545 | S .05?<br>L .86 | .19 | .19 |
| Otosclerosis, nerve atrophy | 36 | 31 | R | L 10 | L 15+ | 15+ | 15+ | S .087 | S .135 | .68 | .64 |
| Otosclerosis, nerve atrophy | | | L | C .70 | C 1.59 | 7.03 | 11.82 | S .047<br>L .265 | S .035<br>L .285 | .175 | .195 |
| Otosclerosis, nerve atrophy | 7 | 50 | R | L 6.67 | L 15+ | .265 | 1.97 | L — C | ........ | — | ...... |
| Otosclerosis, nerve atrophy | | | L | L 6.36 | L 15 | .21 | .88 | L + C | ........ | — | ...... |
| Nerve atrophy | 9 | 50 | R | L 15+ | L 15+ | 15+ | 15+ | S .16<br>M 1.16 | S 1.75<br>M 2.25 | ...... | ...... |
| Nerve atrophy | | | L | L 15+ | L 15+ | 15+ | 15+ | S .118<br>M .74 | S 1.56<br>M 2.21 | ...... | ...... |
| Nerve atrophy | 26 | 50 | R | L 15+ | L 15+ | 8.42 | 10 | S + C<br>L .05 | S + C<br>L .14 | .085 | 1.11 |
| Nerve atrophy | | | L | L 15+ | L 15+ | 15 | 15+ | S .005<br>L .05 | S + C<br>L .085 | .08 | .262 |
| Nerve atrophy | 19 | 50 | R | L 15+ | L 15+ | 15+ | 15+ | S .005<br>L .155 | S .025<br>L .14 | .21 | .205 |
| Nerve atrophy, OMCC | | | L | L 1.60 | L 2.61 | 6.90 | 6.02 | L — C | L — C | — | — |
| Nerve atrophy | 31 | 30 | R | L 15+ | L 15+ | 15+ | 15+ | S .165 | S .47 | .56 | 1.35 |
| Nerve atrophy | | | L | L 15+ | L 15+ | 15+ | 15+ | S .34 | S .68 | 4.40 | 9.25 |
| Nerve atrophy** | 42 | 15 | R | C 15+ | C 15+ | 15+ | 15+ | S .95 | S 1.54 | 13.46 | 15+ |
| Nerve atrophy | | | L | C 15+ | C 15+ | 15+ | 15+ | S .73 | S 1.71 | 12.73 | 15+ |
| Nerve atrophy; otosclerosis | 5 | 16 | R | L 1.7 | L 2.83 | .27 | .495 | L .005 | L .025 | .005 | .0175 |
| Nerve atrophy | | | L | L 10.85 | L 12.58 | 1.52 | 2.15 | S + C<br>L .19 | L .243 | ...... | ...... |
| Nerve atrophy, senile | 27 | 50 | R | L 15+ | L 15+ | 15 | 15+ | S .05<br>L .17 | S .07<br>L .425 | .17 | .273 |
| Nerve atrophy, " | | | L | L 15+ | L 15+ | 15+ | 15+ | S .05<br>L .24 | S .097<br>L .74 | .34 | .43 |
| Nerve atrophy, senile | 30 | 25 | R | L 15+ | L 15+ | 15+ | 15+ | S .17 | S .165 | 9.20? | 9.40 |
| Nerve atrophy, " | | | L | L 15+ | L 15+ | 15+ | 15+ | S 1.24 | S 1.89 | 8.56 | 9.61 |

In this table L indicates loud, C conversational, M medium, and S soft. * At first test did not use lower than 26. † Old $C_4$ fork broke, so
¶ Last fifteen treatments given irregularly on account of general fatigue. ‖ $C_4$ in second test shorter sounding than in first test.

LAST TREATMENT IN THIRTY-TWO CASES OF CHRONIC DEAFNESS

| Cricket | | High (Air) | | High (Bone) | | Low (Air) | | Low (Bone) | | C (Air) (Seconds) | | C (Bone) (Seconds) | | $C_4$ (Air) (Seconds) | | $C_4$ (Bone) (Seconds) | | Gellé C.mm. Hg | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Before | After | Before | After | Before | After | Before | After | Before | After | Before | After | Before | After | Before | After | Before | After | Before | After |
| ..... | ..... | 19,000 | ...... | 17,000 | ...... | 26 | 26 | 26 | 26 | 62 | 79 | 37 | 33 | 27 | 23 | 18 | 14 | 40? | — |
| ..... | ..... | 14,000 | ...... | 17,000 | ...... | 128 | 128 | 26 | 26 | 40 | 38 | 35 | 38 | 24 | 16 | 14 | 15 | 40? | — |
| ..... | ..... | 17,000 | 19,000 | 19,000 | ...... | 26 | 26 | 26 | 26 | 81 | 95 | 60 | 44 | 16 | 30 | 10 | 12 | 20 | 10 |
| ..... | ..... | 16,000 | 14,750 | 20,000 | ...... | 128 | 26 | 26 | 26 | 41 | 67 | 41.5 | 47 | 18 | 25 | 12 | 15 | — | 10 |
| 15+ | 15+ | 12,000 | 12,500 | 17,500 | 18,000 | 256 | 90 | 26 | 26 | 0 | 12 | 32 | 46 | 16 | 16 | 10 | 14 | — | .. |
| 15+ | 15+ | 13,500 | 13,750 | 20,000 | 21,000 | 128 | 55 | 26 | 26 | 20 | 22 | 30 | 40 | 20 | 19 | 10 | 12 | ? | .. |
| ..... | ..... | 15,500? | 14,500 | 15,500 | 16,500 | 128 | 55 | 26 | 26 | 43 | 64 | 47 | 38 | 15 | 24 | 12 | 19 | ? | + |
| ..... | ..... | 13,000 | 15,750 | 15,500 | 16,750 | 128 | 55 | 26 | 26 | 45 | 50 | 47 | 45 | 25 | 28 | 20 | 19 | — | + |
| ..... | ..... | 15,000 | ...... | 21,000 | ...... | 128 | 26 | 26 | 26 | 46 | 40 | 49 | 51 | 20 | 21 | 11 | 18 | ? | .. |
| 11.80 | 15+ | 14,000 | ...... | 22,000 | ...... | 256 | 256 | 26 | 26 | 0 | 0 | 30 | 30 | 14 | 14 | 9 | 15 | — | .. |
| ..... | ..... | 15,600 | ...... | 19,000 | ...... | 128 | ..... | 26 | .. | 16 | 30 | 50 | 66 | 19 | 20 | 18 | 16 | ? | .. |
| ..... | ..... | 16,000 | ...... | 20,000 | ...... | 128 | ..... | 26 | .. | 23 | 28 | 45 | 49 | 18 | 16 | 13 | 15 | 100? | .. |
| ..... | ..... | 16,000 | ...... | 19,000 | ...... | 512 | ..... | .. | .. | 0 | .. | 40 | .. | 10 | .. | 14 | .. | — | .. |
| ..... | ..... | 15,300 | ...... | 19,500 | ...... | 128 | ..... | .. | .. | 45 | .. | 36 | .. | 22 | .. | 14 | .. | — | .. |
| 15+ | ..... | 16,000 | 16,000 | 25,000 | 25,000 | 128 | ..... | 26 | .. | 0 | 40 | 33 | 33 | 18 | 15† | 20 | 20† | — | .. |
| 15+ | ..... | 13,500 | 13,600 | 23,000 | 23,000 | 256 | ..... | 26 | .. | 0 | 0 | 33 | 35 | 15 | 14† | 18 | 13† | — | .. |
| ..... | ..... | 14,750 | 14,950 | 19,600 | ...... | 55 | 45 | 26 | 26 | 47 | 48 | 45 | 45 | 15 | 21 | 19 | 9 | — | — |
| ..... | ..... | 16,250 | 16,250 | 19,000 | ...... | 55 | 26 | 26 | 26 | 50 | 43 | 40 | 45 | 20 | 18 | 15 | 8 | — | — |
| 2.36 | 4.70 | 11,000 | ...... | 13,000 | ...... | 128 | ..... | 26 | .. | 24 | 17 | 53 | 38 | 12 | 12 | 8 | 9 | ? | .. |
| .09 | .10 | 12,250 | ...... | 20,000 | ...... | 256 | ..... | 26 | .. | 14 | 17 | 38 | 37 | 7 | 9 | 6 | 7 | — | .. |
| 15+ | 15+ | 13,250 | 10,950 | 22,000 | ...... | 64 | 26 | 26 | .. | 42 | 57 | 37 | 34 | 17 | 16 | 8 | 8 | ? | .. |
| 15+ | 15+ | 13,000 | 14,500 | 23,500 | ...... | 64 | 40 | 26 | .. | 50 | 45 | 27 | 34 | 16 | 16 | 10 | 8 | — | .. |
| 15+ | 15+ | 12,500 | ...... | 19,000 | ...... | 128 | ..... | 26 | .. | 0 | .. | 40 | .. | 15 | .. | 9 | .. | — | .. |
| 7.79 | 8.60 | 9,000 | ...... | 20,000 | ...... | 256 | ..... | 26 | .. | 0 | ... | 40 | .. | 10 | .. | 8 | .. | — | .. |
| 15+ | 15+ | 10,600 | 10,800 | 21,000 | ...... | 90 | 26 | 26 | 26 | 13 | 25 | 34 | 47 | 9 | 21 | 13 | 15 | — | .. |
| 15+ | 15+ | 10,400 | 10,800 | 19,500 | ...... | 30 | 26 | 26 | 26 | 36 | 45 | 36 | 42 | 10 | 11 | 7 | 12 | — | .. |
| 15+ | 15+ | 9,250 | 10,000 | 15,000 | 17,250 | 65 | 55 | 26 | 26 | 22 | 32 | 41 | 49 | 16 | 18 | 15 | 16 | — | — |
| 9.57 | 15+ | 7,900 | 8,900 | 16,000 | 17,400 | 90 | 55 | 26 | 26 | 18 | 25 | 38 | 43 | 16 | 18 | 13 | 17 | — | — |
| 15+ | 15+ | 15,950 | 16,000 | 19,000 | ...... | 512 | 120 | 26 | 26 | 0 | 7 | 26 | 52 | 12 | 20 | 9 | 11 | — | — |
| 15+ | 15+ | 15,900 | 16,250 | 20,000 | ...... | 90 | 57.5 | 26 | 26 | 18 | 25 | 30 | 42 | 9 | 19 | 8 | 13 | — | — |
| ..... | ..... | 14,000 | ...... | 15,500 | ...... | 50 | ..... | 50 | .. | 61 | 60 | 45 | 24 | 20 | 20 | 19 | 18 | 160 | .. |
| ..... | ..... | 8,800 | ...... | 15,500 | ...... | 50 | ..... | 50 | .. | 36 | 30 | 30 | 25 | 14 | 14 | 13 | 11 | — | .. |
| 15+ | 15+ | 11,000 | 14,500 | 19,500 | ...... | 55 | 45 | 26 | .. | 37 | 46 | 38 | 49 | 20 | 20 | 7 | 8 | — | — |
| 15+ | 15+ | 9,125 | 12,400 | 20,500 | ...... | 55 | 55 | 26 | .. | 19 | 28 | 37 | 41 | 13 | 16 | 7 | 11 | — | — |
| ..... | ..... | 17,000 | ...... | 20,500 | ...... | 128 | ..... | 26 | .. | 9 | 16 | 26 | 28 | 14 | 16 | 13 | 18 | — | .. |
| ..... | ..... | 18,000 | ...... | 21,000 | ...... | 26 | ..... | 26 | .. | 81 | 70 | 29 | 27 | 20 | 19 | 14 | 14 | — | .. |
| .81 | .94 | 2,048 | ...... | 21,000 | ...... | 256 | ..... | 26 | .. | 0 | 16 | 44 | 47 | 15 | 15 | 10 | 10 | — | — |
| .82 | 1.03 | 2,048 | ...... | 19,000 | ...... | 256 | ..... | 26 | .. | 0 | 1 | 45 | 28 | 11 | 14 | 10 | 11 | — | — |
| 15+ | ..... | 16,000 | 16,250 | 19,600 | ...... | 90 | 70 | 26 | .. | 20 | .. | 50 | 40 | 14 | 11 | 17 | 8 | — | .. |
| 15+ | ..... | 15,000 | 15,500 | 19,000 | ...... | 90 | 70 | 26 | .. | 0? | 10 | 37 | 50 | 15 | 14 | 16 | 9 | — | .. |
| 15+ | 15+ | 13,500 | 13,500 | 21,000 | ...... | 512 | 256 | 26 | .. | 0 | 6 | 25 | 25 | 12 | 15 | 9 | 13 | — | .. |
| 15+ | 15+ | 9,300 | 9,300 | 19,000 | ...... | 512 | 256 | 26 | .. | 0 | 0 | 21 | 20 | 14 | 16 | 8 | 11 | — | .. |
| 15+ | ..... | 11,250 | 12,400 | 22,500 | ...... | 55 | 26 | 26 | .. | 24 | 35 | 45 | 44 | 15 | 21 | 7 | 13 | — | — |
| 15+ | ..... | 15,750 | 15,800 | 24,500 | ...... | 55 | 26 | 26 | .. | 25 | 24 | 30 | 35 | 13 | 19 | 13 | 11 | — | — |
| 15+ | ..... | 13,700 | 15,000 | 19,500 | ...... | 90 | 26 | 26 | .. | 23 | 33 | 44 | 45 | 11 | 20 | 9 | 15 | — | .. |
| 15+ | ..... | 14,600 | 14,900 | 20,000 | ...... | 90 | 50 | 26 | .. | 15 | 22 | 45 | 50 | 11 | 16 | 10 | 10 | — | .. |
| 13.23 | 15+ | 13,000 | ...... | 21,000 | ...... | 256 | ..... | 26 | .. | 0 | 0 | 25 | 30 | 14 | 16 | 15 | 20 | — | — |
| 9.94 | 15+ | 12,250 | ...... | 22,000 | ...... | 512 | ..... | 26 | .. | 0 | 0 | 40 | 41 | 12 | 16 | 15 | 16 | — | — |
| ..... | ..... | 18,000 | ...... | 20,000 | ...... | 26 | ..... | 26 | .. | 48 | 67 | 25 | 37 | 15 | 29 | 10 | 20 | +? | ? |
| ..... | ..... | 18,000 | ...... | 19,000 | ...... | 26 | ..... | 26 | .. | 41 | 69 | 15 | 37 | 14 | 29 | 10 | 21 | +? | ? |
| 9.70 | 9.35 | 1,750 | 2,069 | 14,000 | ...... | 26 | ..... | 26 | .. | 50 | 88 | 25 | 28 | 10 | 10 | 6 | 7 | 10 | .. |
| 9.32 | 15+ | 1,750 | 2,461 | 15,500 | ...... | 26 | ..... | 26 | .. | 64 | 87 | 24 | 30 | 12 | 14 | 7 | 7 | 10 | .. |
| 15+ | 15+ | 15,000 | ...... | 18,000 | ...... | 26 | ..... | 26 | .. | 56 | 55 | 16 | 18 | 22 | 18 | 8 | 11 | ? | — |
| 6.70 | 12.34 | 12,000 | ...... | 20,000 | ...... | 128 | ..... | 26 | .. | 10 | 10 | 15 | 13 | 9 | 11 | 8 | 10 | ? | — |
| 15+ | ..... | 12,500 | 12,750 | 15,500 | 15,750 | 55 | 26 | 26 | 26 | 35 | 67 | 17 | 21 | 15 | 20 | 13 | 13 | 10 | .. |
| 15+ | ..... | 18,000 | 14,750 | 19,000 | 17,500 | 26 | 26 | 26 | 26 | 45 | 63 | 18 | 21 | 15 | 18 | 13 | 13 | 10 | .. |
| ..... | ..... | 17,500 | 18,000 | 19,000 | ...... | 26 | 16* | 26 | 16* | 70 | 68 | 48 | 40 | 19 | 17 | 13 | 14 | 10 | 10 |
| ..... | ..... | 16,500 | 16,600 | 20,000 | ...... | 26 | 16* | 26 | 16* | 82 | 78 | 30 | 34 | 26 | 27 | 14 | 15 | 15 | 10 |
| ..... | ..... | 9,000 | 20,000 | 17,000 | 19,000 | 128 | ..... | 128 | .. | 25 | 23 | 18 | 20 | 14 | 12 | 7 | 8 | — | .. |
| ..... | ..... | 20,000 | 20,000 | 21,000 | 19,000 | 64 | ..... | 64 | .. | 40 | 40 | 28 | 14 | 16 | 13 | 7 | 7 | + | .. |
| 15+ | ..... | 12,000 | 12,300 | 20,000 | 20,000 | 26 | ..... | 26 | .. | 68 | 65 | 28 | 33 | 20 | 21 | 10 | 10 | — | — |
| 15+ | ..... | 13,000 | 14,800 | 21,000 | 20,000 | 26 | ..... | 26 | .. | 65 | 75 | 40 | 40 | 18 | 20 | 9 | 13 | — | — |
| ..... | ..... | 14,250 | ...... | 16,000 | ...... | 26 | ..... | 26 | .. | 75 | 77 | 25 | 32 | 17 | 18 | 17 | 12 | ? | .. |
| ..... | ..... | 14,500 | ...... | 17,500 | ...... | 26 | ..... | 26 | .. | 65 | 75 | 25 | 32 | 17 | 23 | 16 | 12 | ? | .. |

used new one, which was a few seconds shorter. ‡ April 27 (later date) Gellé negative (B). § May 7 (later date) Gellé negative (B).

SUMMARY OF RESULTS

The results are thus roughly summarized:

Two cases of OMPC, audition distance tripled.

Two cases of OMPC with otosclerosis: Audition distance in one increased ten times; audition distance in the other increased 50 per cent.

One case of OMPC with nerve atrophy. Audition distance on one side increased over seven times and on the other side, four times.

One case of OMPC with localized perilabyrinthitis: Audition distance more than doubled.

Three cases of otosclerosis: Very slight improvement, less than 50 per cent.

Fifteen cases of otosclerosis with nerve atrophy: Five cases had audition distance more than doubled. Five had audition distance doubled or increased more than 50 per cent. Five cases had audition distance increased only slightly.

Eight cases of nerve atrophy: One had audition distance increased about ten times. Five had audition distance doubled. One had audition distance increased 50 per cent. One had audition distance increased only slightly.

High tone limit by air conduction was raised in twenty-five ears, remained stationary in five, and was lowered in four ears.

High tone limit by bone conduction was raised in eight ears, remained stationary in three and was lowered in three ears.

Lower tone limit by air conduction was lowered in twenty-seven ears and remained stationary in seven ears. Some of the latter might have been found lowered if they had been tested with a longer series of forks.

In only two cases of the series was any improvement indicated in ossicular rigidity by Gelle's test. One, Case 15, was an OMCC on one side and an OMPC on the other.

The other, Case 42, was a case of nerve atrophy.

These tests were made with a manometer, the amount of pressure necessary to affect the hearing for the C fork being noted.

Tinnitus was removed in nine cases, improved in twelve and in six there was no change.

Paresthesia, neuralgic otalgia, otitic cephalgia and sense of fulness in ears were removed in sixteen cases, improved in four and no change in one case.

The principal contra-indications for the treatment are acute purulent conditions of the tympanum, all acute conditions of the internal ear, great fatigue of the nervous system, and absolute nerve deafness.

The number of observations and tests enumerated in this paper are too small to permit the making of any sweeping generalizations, but are sufficient to show the usefulness of the treatment in many cases of acute and chronic conditions of the ears.

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## ABSTRACT OF DISCUSSION

Dr. Walter A. Wells, Washington, D. C.: In considering the effect of sonorous vibrations on the ear, some peculiarities of the ear as a sense-organ must be borne in mind. The auditory apparatus, which originated probably as a protective apparatus, is constantly on guard. The last of the sense-organs to go to sleep, it is the first to awake, and during waking hours, it has, apparently, no repose. Every one lives in a sonorous environment and must therefore have his auditory nerves constantly bombarded by vibrations of sound of every conceivable variety of pitch, quality and intensity. One may rest his eyes now and then by the simple, voluntary process of closing the lids. Hearing, however, is an involuntary function except so far as we may, by different degrees of attention, inhibit cortical perception. One inference from this is that an organ destined by nature to such increasing activities must suffer when it is deprived, as it is in deafness, of its accustomed stimuli of sonorous vibrations. It might also be inferred that an organ so constituted must be quite proof against fatigue and strain. The first inference I believe is a correct one, that a deaf ear suffers from a want of proper sound-stimuli, but, unfortunately, the second is not quite true, and therein comes the limitation of the therapeutic use of sound. I have not made use of acoustic exercises for the betterment of hearing, but I have endeavored to ascertain, in some measure, the behavior of the normal ear when exposed to sounds of different pitch, duration and intensity, hoping thereby to establish some of the laws of auditory fatigue, and I believe that a knowledge of the laws of auditory fatigue, as produced by sound, is an absolute preliminary requisite to the use of sound for therapeutic purposes. I first ascertained the exact electrical energy necessary to awaken a sensation of sound of a given pitch. This, which we call the threshold of excitation, is equivalent to the individual measurement of hearing for that sound. I then exposed this ear to electrically produced sounds of a selected pitch and a certain duration, and then, without loss of time, again tested the electrical energy necessary to awaken perception for the original note. Fatigue of hearing was clearly proved, though it was surprising how quickly it was recovered from. It was particularly marked for the higher notes of the scale. I employed only musical notes and continued them for comparatively short periods. Some who have experimented on animals, however, have proved that if we use very shrill disagreeable notes, for many hours continuously, we can actually produce degeneration in the nerve-cell, localized in the cochlea. In using acoustic exercises the greatest caution is necessary in order not to exceed the limit of auditory endurance as shown by the subjective sensation of the patient, and the evidences of fatigue as manifest by loss of function. The subjective sensation may be manifested by a generally disagreeable sense of irritability, a feeling of numbness and some form of tinnitus. The loss of function is ascertained by frequent, accurate functional tests.

The results reported by Dr. Hubby show that effects can be obtained, but I believe that he will agree that extreme caution must be observed in using sounds of the right quality, intensity and duration, and also discrimination in the choice of cases for this method of treatment.

Dr. L. M. Hubby, New York: It is, of course, very important to study each individual to see how he responds to the sonorous vibrations and then to give the proper length and strength of treatment. If Schambaugh's theory of auditory perception is correct, it would explain the good results obtained with this instrument rather than with those that have very few notes. The shortness of exposure to each note at a time and the covering of the entire scale within the limits of the instrument stimulate each corresponding part of the tectorial membrane with its adjacent hair cells without the production of fatigue.

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**Public Health and Good Roads.**—In our largest cities to-day the economic health is directly dependent upon good transportation. More children die annually because of poor milk in the summer season than probably from any other cause. Fresh milk cannot be supplied to the children because of poor transportation facilities. It is true that a large part of this transportation is conducted by railroads; but a large part of this is also conducted by wagon roads. Transportation must be of the very best kind in order to bring fresh milk into our large cities. This in a measure also holds true for the smaller cities.—William De Kleine, *Public Health,* published by Michigan State Board of Health.

# THE ETIOLOGY OF SPLENIC ANEMIA OR BANTI'S DISEASE

PRELIMINARY NOTE *

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Pure cultures of diphtheroid organisms apparently identical with or closely related to the *Bacillus hodgkini* have recently been obtained by us from two spleens removed surgically in the treatment of splenic anemia.

Case 1 was under the care of Dr. J. J. Bellin of Green Bay, Wis., who kindly submitted blood-smears for examination before operation and sent the spleen immediately after its removal. The spleen was carefully sterilized externally by boiling before cultures were made from its interior.

Case 2 was a patient in the Milwaukee County Hospital, where the blood was studied before and after splenectomy and where part of the bacteriologic and experimental observations were made.

Histologic studies of the two spleens confirmed the clinical diagnosis of splenic anemia or the early stage of Banti's disease. Inoculation of dogs and rabbits was made with cultures of the organism obtained from Case 2 and with a culture obtained from a lymph-gland of a case of Hodgkin's disease, in which the diagnosis had been confirmed histologically and hematologically. In each case there were produced changes that were characteristic of the disease as described by Banti. These experiments were conducted independently at the pathologic laboratories of the University of Wisconsin and of the Milwaukee County Hospital and the results compared later.

These findings appear significant in view of the results of A. G. Gibbons,[1] who found in stained sections of six cases of splenomegaly Gram-staining streptotrichal organisms, at times segmented and at times appearing as bacillary forms.

The following clinical evidence seems confirmatory of the importance of the observations cited:

Atrophic cirrhosis of the liver, as a complication of the more usually accepted glandular variety of Hodgkin's disease, has been observed repeatedly, but is infrequent. Earlier stages of a periportal connective tissue overgrowth have, however, been noted comparatively often in the more chronic cases. This rarity of advanced cirrhosis in Hodgkin's disease is probably due, as Klein[2] has suggested, to the fact that life is, as a rule, insufficiently prolonged. In anemia splenica (Banti's disease) the first stage usually lasts from three to five years, a period quite in excess of the average duration of life in anemia lymphatica (Hodgkin's disease). This difference in duration, and in addition the relatively greater concentration of toxins in the portal circulation in Banti's disease, may explain why a Laënnec's cirrhosis is the constant terminal feature in the latter condition.

In the clinical course of splenic anemia as described by Banti[3] there is the characteristic alternation of periods of progression and remission which one of us[4] has described as so constantly present in Hodgkin's disease and has attributed to variations in the degrees of toxemia. There is the striking difference of greater chronicity in the former condition. Moreover, in splenic anemia recurrent fever has been noted which may correspond quite exactly with the febrile state first described by Murchison, but commonly designated as Pel-Ebstein.

Banti recognized that splenic anemia might be accompanied by lymph-gland enlargement in later stages and that the changes in the spleen in this affection and in pseudoleukemia-splenolymphatica were similar, wherefore he thought it possible to regard "anemia splenica as a pure form of pseudoleukemia splenica." In other words, Banti's disease might be Hodgkin's disease of the spleen.

The foregoing bacteriologic, histologic, hematologic and clinical evidence seems to warrant the conclusion that splenic anemia or Banti's disease and Hodgkin's disease are closely related, if not only variations in manifestation of a single type of infection.

# THE USE OF ANTISTREPTOCOCCUS SERUM IN CHRONIC ARTHRITIS *

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An extensive literature bears witness of the attempts which have been made in the past few years to make some use of passive immunization by means of antiserums against various forms of streptococcus infection. The serums prepared by Marmorek, Aronson, Moser and Menzer were perhaps given the most exhaustive trials. It appears that only a moderate and only a variable degree of success has been attained as compared with some of the effective immune serums, and it seems probable that some of the factors in the production or transfer of the immune bodies are at fault. The causes of this discrepancy have been sought in various parts of the immunizing process such as a lack of specificity in the organism used, the absence of polyvalence, insufficient dosage, and the apparently demonstrated fact that the streptococcus develops no true antitoxin, so that any immunity must be entirely phagocytic and would require frequent renewal of the specific opsonins in the immune serum to produce any permanent effect.

In view of the recent investigations which seemed to indicate that the streptococcus was a common agent in the production of the chronic as well as the acute forms of arthritis,[1] it was thought that possibly some of the defects of former serum treatment might be avoided and a serum produced which would be of benefit in some of the intractable cases of chronic joint disease. The serum used was a polyvalent horse serum prepared by Drs. Gatewood and Moore[2] working in the Otho S. A. Sprague Institute, the immunizing organisms consisting of from twenty-five to thirty strains of streptococci which had been isolated from the enucleated tonsils or the joint fluid of arthritis patients. The first portion of the serum used was not refined or heated. As toxic effects were observed following its use, an effort was made to lessen them by heating to 50 C. for ten hours and the serum was concentrated by a modified Banzhaf method[2] in order that the mass of each injection might be lessened. The original unheated serums were used in doses of from 20 to 30 c.c., and in a number of instances small preliminary injections of 1 or 2 c.c. were made from two to twenty-four hours before the large injection in the hope of avoiding allergic reactions by the production of a temporary refractory condition to anaphylaxis. This method did not appear to be successful in avoiding toxic symptoms; and, after several trials, a succession of gradually increasing frequent doses of 2, 6, 8, 10 and 12 c.c. was adopted as more likely to avoid dangerous sensitization. The maximum dose of the concentrated serum was not more than 12 c.c. since the viscosity of the serum prevented its rapid spread through the subcutaneous tissue and the use of larger amounts caused excessive pain.

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* From the Pathological Laboratories of the University of Wisconsin and of the Milwaukee County Hospital.

[1] Gibbons, A. G.: Quart. Jour. Med., January, 1914, p. 153. Streptotrichal Organisms in the Spleen in Certain Cases of Splenomegaly, Current Comment, The Journal A. M. A., May 23, 1914, p. 1664.

[2] Klein: Berl. klin. Wchnschr., 1890, xxvii, 712.

[3] Banti: Beitr. z. path. Anat. u. z. allg. Path. (Ziegler's), 1898, xxiv, 21.

[4] Yates: Bull. Johns Hopkins Hosp., 1914, xxv, 180.

* This work was carried on under the Dane Billings Fellowship and in the laboratories of the Otho S. A. Sprague Memorial Institute.

[1] Beattie: Jour. Path. and Bacteriol., 1904, ix, 272. Davis, D. J.: Chronic Streptococcus Arthritis, The Journal A. M. A., Sept. 6, 1913, p. 724. Billings, Frank: Chronic Focal Infections and Their Etiologic Relations to Arthritis and Nephritis, Arch. Int. Med., April, 1912, p. 484; Chronic Focal Infection as a Causative Factor in Chronic Arthritis, The Journal A. M. A., Sept. 12, 1913, p. 819.

[2] Heinemann and Gatewood: Jour. Infect. Dis., 1912, x, 416.

The serum was usually administered subcutaneously, in the interscapular region, a needle of rather large caliber being used. On three occasions the injection was made into the knee-joint after the withdrawal of fluid. In the subcutaneous injections every effort was made to avoid accidental intravenous injection. The needle was always withdrawn a short distance from its extreme insertion and suction made with the piston to determine if the point was in the lumen of a vein. The possibility, however, of tearing a vein with the broad point of the needle and of forcing in small amounts of the serum under the strong pressure necessary for the injection cannot be denied. The patients treated with the serum, twenty in number, were all in the Presbyterian Hospital on the service of Dr. Frank Billings and to a large extent in the beds maintained by the Sprague Memorial Institute. They received in conjunction with the serum the benefit of all possible measures for the relief of their symptoms, such as the removal of apparent foci of infection, complete rest in bed, a carefully regulated and nourishing diet, massage, streptococcic vaccines, the application of casts and braces, and an improvement of their mental attitude toward the disease. In all of the cases the disease was polyarticular, and all evidences seemed to indicate that the streptococcus was the infecting agent. The duration of the arthritis varied from one to fifteen years, the average being about five years. The youngest patient was 22 and oldest 56, seven of the twenty being under 30 and seven over 45. None gave a history of asthma or hay fever and none had received any previous injection of horse serum.

In every case, vaccines were used in conjunction with the serum, and whenever possible they were autogenous, from organisms isolated from foci of infection which seemed probable sources of the systemic disease. Most commonly they were from the excised tonsil, infected sinuses of the head, or alveolar abscesses and pockets of peridental pus, and consisted of streptococci in a mixture of the hemolytic and the viridans varieties with small proportions of pneumococci, staphylococci and Friedländer bacilli. The vaccines were prepared in the usual manner and given in doses of from 50 to 200 millions at six or eight day intervals. They were usually given from twenty-four to thirty-six hours previous to the serum injections in the effort to have the serum present during the rising stage of the opsonins. In four of the cases extremely large doses, from 3 to 4 billions, were given for a short time, but no added beneficial result was observed.

The immediate results of the serum injections consisted of a sharp rise in the specific streptococcic opsonins and the clinical manifestations of serum sickness. At no time was there observed any especial relief from the pain and disability with which the patients suffered. The opsonins, especially with the first few large injections, rose rapidly to 1.5 to 2, and declined only after two or three days, usually never reaching the original level. After repeated injections, and especially with the smaller doses of serum, the rise was more gradual and steady. In every case the opsonins were maintained above the normal control by the combination of serum and vaccine. The phagocytic index was recorded and varied directly with the opsonins, although the variations were always less extensive. A slight rise in the number of leukocytes was observed in all cases in which the count was made following a serum injection, the highest number being 12,400.

Serum sickness, consisting of various degrees of headache, nausea, rise in temperature, aching of joints, and urticaria, was observed in eighteen of the twenty patients receiving the serum. The chief discomfort arose from the urticaria, which was very severe at times and recurred in some cases after each of the first three or four injections. Five of the patients developed rather marked symptoms of anaphylactic shock and in four cases it was so severe as to appear dangerous to life. The symptoms appeared in all cases within from one-half to three minutes after the subcutaneous injection, varying greatly in degree, the most constant ones being tingling and burning sensations in the face and hands, dyspnea with cyanosis, nausea and extreme weakness. In the more severe attacks, dyspnea and dysphagia were very marked and the pulse very weak and irregular. The duration of the acute attack was usually not more than three or four minutes, but in one instance the symptoms recurred in three lessening waves during a period of thirty minutes. This patient suffered the most severe shock, and during the first attack the respirations and pulse were entirely absent for a short period.

The hypodermic administration of epinephrin and the use of ammonia or some other stimulant was followed in the other cases by a speedy recovery. Morphin and atropin were also used with an apparently favorable action. Following the attacks, the patients complained chiefly of general malaise, and weakness, often with a severe headache. In one case an estimation of the opsonins was made with serum taken immediately after the shock, and a very low stage recorded. Reasoning from this observation, Dr. J. H. McClellan, who was assisting in the work, attempted to discover some constant relationship between a declining stage of opsonin and the occurrence of anaphylactic symptoms. It appeared after some observation that the injections given during a prolonged negative phase were more frequently followed by shock, and an effort was made in the later work to avoid this coincidence.

The anaphylactic symptoms occurred in four of these five cases and appeared to increase in violence. They did not appear with each injection but at intervals and never with the first injection. Among the five cases, it appeared first after the seventh, third, sixth, third, and seventh injections, the time which had elapsed since the last preceding dose varying from two to twenty-six days. In all, eight severe shocks were observed. The opsonic curve in these patients did not vary markedly from the average of the other fifteen cases.

The later or final results of the use of the serum are difficult to estimate because of the simultaneous use of so many other remedial agents. In the majority, especially when the process was not of too long duration, there has been a definite improvement, and in some the change has been remarkable.

In comparison with an equal number of patients at approximately similar stages of the disease who were in the hospital at the same time and who received identical treatment with the exception of the serum, no very definite advantage could be observed. The opsonic indexes of those who did not receive serum did not rise, as a rule, so rapidly, and it appeared that the serum and vaccine had some complementary action when given together. When considered over a long period of time, however, their opsonins remained as consistently high, and the clinical improvement was apparently as pronounced as in the serum patients. It appeared at least that any added gain from the use of the serum was not sufficient to compensate for the severe pain and discomfort attending its administration and the dangers of the anaphylactic shock.

In addition to our cases, Dr. J. J. Moore of St. Luke's Hospital administered the serum to four patients suffering with chronic arthritis probably of streptococcal origin. The treatment differed from ours in that the serum was the only therapeutic agent employed over periods ranging from two to eight weeks. In no instance was there any improvement which could be accredited to the serum. One patient had an acute inflammatory arthritis involving the ankle, toe, and finger joints during the course of serum treatment. Although this patient received from 10 to 15 c.c. of serum daily, the joint inflammation persisted. In a second case in which the tonsils had been removed before serum therapy was commenced, the throat became acutely inflamed and persisted for some time in spite of the administration of serum. In this case a virulent hemolytic streptococcus was isolated from the throat.

The reactions following the serum injections were usually mild, local in character, often nothing more than an erythema, or pruritis around the site of injection. An edema of the lower limbs was observed in one patient following daily doses of 10 to 15 c.c. of the serum. This was thought to be a peculiar allergic reaction since the heart and urine were normal. There was no definite rise in the opsonic index in any of these patients during the serum treatment.

### CONCLUSIONS

1. The administration of horse serum in repeated doses may be followed in 25 per cent. of the cases by dangerous degrees of anaphylaxis, even in patients who give no history of previous use of horse serum or of asthmatic symptoms.

2. Heating and aging the serum does not completely remove its toxicity.

3. Clinical observation and the estimation of immune bodies do not show any added advantage from the use of an antiserum in chronic arthritis even when a concentrated serum with much greater potency than the usual commercial serums was employed. In two cases, acute streptococcus infections arose during and in spite of its administration.

4. Attempts to increase the value of such a serum by concentration have not been successful, so far as its employment in chronic arthritis cases is concerned. Whether or not such concentrated serum might have advantages in acute streptococcus infection has not been determined.

5. In view of these facts, the use of antistreptococcus serum in the treatment of chronic arthritis is, under present conditions, neither advisable nor justifiable.

122 South Michigan Boulevard.

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# Therapeutics

## PREVENTION IS GREATER THAN CURE

*(Continued from page 2133)*

## XII

### DISINFECTION OF SCHOOLS

In view of the fact that contact is apparently a necessity for the spread of almost all, if not all, of the contagions that visit schoolchildren, disinfection, as so long practiced, is unnecessary and a delusion. Also the closing of schools is unnecessary. Fumigation of schoolrooms and schoolbuildings has been abolished in many large cities. The ordinary care of the schoolroom involves the free admission of sunlight and pure air and the removal of dust by a vacuum cleaner or by moist sweeping or mopping.

If a contagious disease occurs, (*a*) the child's desk, chair, and the immediately surrounding desks and chairs, as well as the floor, should be sprayed and washed with a strong solution of a germicide or disinfectant. (*b*) The child's books, pencils, etc., should be destroyed, unless the books are valuable, in which case they should be subjected to dry heat or to formaldehyd cabinet fumigation. (*c*) The pupil's clothing should be boiled or efficiently fumigated before he returns to school.

There is no question that most all so-called children's contagious diseases are more prevalent during the months that schools are in session than during vacation times. Hence schools do distribute infection by allowing crowding and close association with infected persons; also because the confinement diminishes the resisting power of the well. Therefore, the necessity for cleanliness, freedom from dust and for fresh air and sunlight is readily recognized.

### DISINFECTION

Fresh air and sunlight let freely into infected rooms and into the sickrooms aid in killing germs and curing the patients. Schoolrooms with open windows and open-air schools have less contagion than ordinary schoolrooms.

Oxygen is not a very active bactericidal agent. Ozone if brought to the germ is effective, but pure ozone is difficult to furnish to infected rooms or to introduce into infected parts of the body, and ozone treatments of infection are generally fallacious and fraudulent. Hydrogen peroxid solutions, if fresh and uncontaminated, are efficient in killing germs, when brought into contact with them. To be efficient the strength should be 50 per cent. of aqua hydrogenii dioxidi.

Fumigation after scarlet fever, diphtheria and measles does not seem to pay for the cost and trouble it causes, and should be abolished. Proper fumigation with strong formaldehyd, carried out by boards of health, should still be done for small-pox and tuberculosis, and perhaps for erysipelas, childbed fever and tetanus, especially in hospitals. Spraying with germicides of all the immediate surroundings of an infected patient is the method of disinfection now most satisfactory. All washable clothing and bedclothing should be boiled: all other clothing should be baked and put into the sunlight. Carpets and rugs should be washed with antiseptics. Various washing solutions may be used, such as chlorinated lime solutions, 5 per cent., formaldehyd solutions, corrosive sublimate solutions 1:500, 5 per cent. phenol (carbolic acid) solutions, or better, the higher coal-tar disinfectants, as liquor cresolis compositus. The New York Board of Health orders the woodwork and floors scrubbed with hot solution of 1 pound of washing soda to 3 gallons of hot water. Bedding and night clothing are ordered soaked in phenol solutions and then poiled in soapsuds for half an hour. Books and toys should be burned.

Dr. Dixon,[1] Commissioner of Health of Pennsylvania, suggests as a substitute for the combination of potassium permanganate and formaldehyd, the following: "sodium dichromate, 10 ounces avoirdupois; saturated solution of formaldehyd gas, 1 pint; sulphuric acid, commercial, 1½ fluidounces." He states that the sulphuric acid and formaldehyd gas form a stable solution. "This, after it cools, should be poured over the crystals of sodium dichromate spread out in a thin layer over the bottom of an earthenware vessel having ten times the capacity of the volume of the ingredients used." He finds this process more rapid than the combination with potassium permanganate.

The danger to others lies in carriers and missed cases, those who are so mildly sick as to escape medical care.

The contagious disease hospital is the only safe place for tenement cases; this prevents the infection of others, as families in tenements have no isolation rooms and no trained nurses to carry out disinfection.

## PERSONAL HYGIENE OF SCHOOLCHILDREN

The schoolteacher and the trained nurse should note and correct many things found wrong in a child. They should also teach many simple truths as to hygiene. Only a few obvious hygienic mistakes will be touched on before conditions that may cause infection of others are discussed.

*Feet.*—A good working rule is for broad-toed shoes always; no heels for the earlier years of the child; low heels later; and if must be, still later, heels a little higher. Rubber heels are all right if desired, but not rubber soles, unless perhaps for playing tennis. The weight of a rubber-soled and heeled shoe is too great for constant, or even for a few hours' continuous use. Also, completely rubber-soled and heeled shoes cause the feet to perspire, to say nothing of the undesired insulation of the person. Low shoes for summer, high shoes for winter and rainy weather, and storm shoes or rubber overshoes for rain and snow are necessities for health. If a child wears rubber boots in stormy weather, they should be removed while in school. Occasional observations of a child's feet and insistence that proper shoes be worn will prevent future corns, bunions and weakened arches. Too short and too narrow-toed shoes ruin the feet of young men and young women. Also, this continuous dancing fad causes corns and callouses to occur on different parts of the toes, which means future trouble, if not properly cared for or prevented.

*Hygiene of the Skin.*—Briefly to refresh our memory as to the anatomy and physiology of the skin, it may be noted that the different layers of the cells of the epidermis, or horny layer of the skin, change their chemical structure as they advance to the outer layer. They gradually die, so to speak, and then are cast off. This layer contains no blood-vessels and no lymph-channels, and is a distinct protection to the body against the absorption of toxins and germs. If this layer is broken by injury, an absorptive area is immediately presented, and infection may readily occur. Nature makes this protective layer thickest where injury is likely to be the greatest, such as the palms of the hands and the soles of the feet. The hair and nails are really projections of this layer of horny cells.

Some drugs in solution or ointment may be rubbed or massaged through the horny layer into the layers of absorption, that is, the rete layer. Irritants may also reach this layer after more or less corrosion or removal of the epidermal layer, and local inflammation may be caused. It is the rete layer that is especially inflamed in many conditions of eczema.

The sebaceous glands of the skin may be overactive or underactive. If they are overactive, too much oily substance reaches the skin and hair and the parts become greasy. If the opening of a gland becomes clogged with dust or other particles, the canal and gland become more or less congested and the result is a so-called comedo or blackhead, and pathogenic germs may grow, especially the pus-forming germs, and a condition of acne or infection occur. If these sebaceous glands secrete insufficiently, the skin becomes dry and scaly, perhaps brittle, cracks readily, insensible perspiration is interfered with, and the whole system may be more or less affected, depending on the seriousness of this condition.

The sweat-glands must be sufficiently active for the body to be in perfect health; they largely eliminate water, reduce the temperature of the body and keep the internal temperature normal. The few salts and the small traces of nitrogen that are eliminated by the sweat-glands may be disregarded; suffice it to say that the excretion of poisonous nitrogen compounds by the sweat-glands is very small. The odor of the perspiration varies with different individuals and with different races. Not infrequently it is intensely disagreeable, and the secretion, both as to odor and character and the amount of decomposition of fatty acids, varies with the part of the body from which the perspiration comes. When the sweat from an individual gives off a very disagreeable odor, the condition is termed bromidrosis, and requires treatment by a physician. The condition should be noted in children, and prevented if possible.

Dandruff and dirty, greasy scalps and insufficient cleanliness of the hair should be noted, and instructions given as to the proper care of the child's head. A good daily brushing, and a simple castile soap shampoo weekly (or at least once in two weeks), with proper drying of the scalp, should be given by the mother.

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[1] Dixon, S. G.: A Substitute for Potassium Permanganate to Liberate Formaldehyd Gas from a Water Solution, The Journal A. M. A., Sept. 19, 1914, p. 1025.

Besides the advice given the parents as to the care of the child's scalp, the teacher or nurse should note the condition of the child's skin as to cleanliness, greasiness, dryness or eruptions, and proper advice should be transmitted to the parents. Also, the condition of the clothing and the kind of underclothing should be noted, especially in young children, and if considered improper, similar advice should be given the parents on the subject of underclothing.

Children and parents should be instructed not to use strong, irritant soaps, and parents should be urged to seek medical advice when a child's skin is too greasy and acne of the face is beginning to develop, when the child's skin is too dry for health, and when there is any eruption. They should be warned against the use of all nostrums, whether ointments or liquids, as liable to cause more harm than good. Parents should be advised to give their children only the simplest kind of food, to give them no tea and coffee, and to forbid their eating large amounts of sweets; especially is such advice necessary when there are eruptions on the skin.

*Contagious Skin Diseases*—The principal contagiums that occur on the skin of schoolchildren are ringworm, body- and head-lice and scabies. None of these conditions can be well treated at the school or in dispensaries, but the treatment must be carried out at the home of the infected child. No verbal or written instructions will accomplish half so much as a visit from the trained nurse and her personal instruction of the parents. Also she can take a general survey of the other children of the family and of the household.

It is not necessary to describe the treatment for these several troublesome but simple conditions. The various parasiticides are well understood, but the whole success of treatment lies in the care exercised and the curative measures taken in the child's home. When the patient's family can afford it, the Roentgen-ray treatment of ringworm is perhaps the ideal treatment.

Body-lice rarely occur in children and demand a cleansing bath and the baking of the underclothing in an oven at a temperature above the boiling point, but not high enough to burn the clothing.

*Pediculosis Capitis.*—Aside from being an evidence of neglect, the head-louse may be the means of conveying infection, for example, of typhus fever.

Dr. Jacob Sobel[2] of the Department of Health of New York City describes the method of handling this infection in New York, and also shows how greatly the disease has been reduced by the home instructions that the board of health has inaugurated. Following are the instructions issued by the New York board of health to the parents of children who are found to be infected with pediculi:

> Children affected with vermin of the head are excluded from school. The following directions will cure the condition:
>
> Mix ½ pint of sweet oil and ½ pint of kerosene oil. Shake the mixture well and saturate the hair with the mixture. Then wrap the head in a large bath-towel or rubber cap so that the head is entirely covered; the head must remain covered from six to eight hours.
>
> (Tincture of larkspur may be used instead of oil mixture. The directions for use are the same.)
>
> After removing the towel, the head should be shampooed as follows:
>
> To 2 quarts of warm water add 1 teaspoonful of sodium carbonate. Wet the hair with this solution and then apply castile soap and rub the head thoroughly about ten minutes. Wash the soap out of the hair with repeated washing of clear warm water. Dry the hair thoroughly.
>
> Nits: If the head is shampooed regularly each week as above described, it will cure and prevent the condition of "nits."

*Vulvovaginitis.*—Just what methods are advisable to determine that a female child has vulvovaginitis, which may be transmitted to others by the school water-closets and by other means of transmission, is difficult to outline. It must be recognized, however, that a great deal of this condition occurs in young girls. The discharge may be non-specific, or may be associated with some eruption or irritation of the genital region, or it may be actually due to an infection from gonococci. Microscopic examination and bacteriologic cultures are the only means of determining the character of the discharge.

It being ascertained that a girl has a discharge, it is the duty of the medical inspector or trained nurse to insist that the family have their physician properly treat the patient. The necessity of bacteriologic examination must be emphasized, the danger of contagion urged, and the necessity for ascertaining the source of the child's infection discovered, if possible.

It is certain that these little patients frequently masturbate; whether this is a cause of the inflammation, or whether the irritation causes the bad habit, is a matter of unimportance. Feeble-minded girls are likely to have a vaginal discharge, and have been found to be often infected with gonorrhea.

Dr. F. G. Taussig[3] urges the following measures to prevent the vaginal infection from entering institutions such as orphan asylums and children's homes:

First, he would examine a vaginal smear from all girls applying for admission, and if gonorrheal infection is discovered, the child should be excluded until cured. If the disease is discovered in an institution, the patient should be isolated and the nurse in attendance should take measures to prevent the infection of others.

As further preventive measures of gonorrheal infection of female children, Taussig advises that 1 drop of a 2 per cent. silver nitrate solution be instilled into the vestibule of the vagina at the birth of every female child whose mother shows evidence of gonorrhea. He would advise this even if only about 5 per cent. of gonorrheal vaginitis in young children occurs directly after birth. He also believes that "the adoption of the U-shaped seat with low bowl and other precautionary measures to prevent the spread of the infection in the lavatories in schools, playgrounds, comfort stations and tenements" would prevent a great many cases of innocent infection.

The curative treatment is the gentle, frequent cleansing douche, as warm boric acid or borax solutions, and the more or less frequent applications of silver salt solutions. The little patient should not be considered cured until several examinations of the smear have shown gonococci to be absent.

*(To be continued)*

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[2] Sobel, Jacob: New York Med. Jour., Oct. 4, 1913, p. 656.

[3] Taussig, F. G.: Am. Jour. Med. Sc., October, 1914, p. 480.

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SATURDAY, DECEMBER 19, 1914

## GASKELL AND THE PHYSIOLOGY OF THE HEART

The stirring events of recent weeks, when men's minds have been turned from the paths of intellectual life into other fields of human activity, should not make us oblivious of the names which deserve honor because of what they represent in science. For this reason we shall not forego the opportunity to refer to the death of Dr. Walter Holbrook Gaskell at his home in England, Sept. 4, 1914, at the age of 67 years. To this talented physiologist, stimulated by the environment of the Cambridge school under the influence of Michael Foster and trained in Ludwig's laboratory at Leipsic, we owe some of the fundamental observations regarding the mechanism of the phenomenon known as heart-block — a condition to-day recognized clinically and studied experimentally wherever the medical sciences flourish. It was Gaskell who invented the term "heart-block" and produced it experimentally by clamping the auriculoventricular and sino-auricular grooves, which he calls "the two natural blocking points" of the muscular contraction wave. One of his biographers, Dr. Fielding H. Garrison of the Army Medical Museum in Washington, has summarized the importance of Gaskell's endeavors in this field as follows: In his view, the original Stannius experiments become simple cases of temporary block. This view has been brilliantly confirmed by the discovery of the vestigial muscular structures known as the auriculoventricular bundle of His and the sino-auricular node of Keith and Flack; also by the clinical and pathologic findings in the disease described by Morgagni in 1761 and now known as heart-block or the Stokes-Adams syndrome. Gaskell even produced the two-, three- and four-time gallops of modern clinicians, in which the ventricle drops one or more of its beats. Schiff's observation that the ventricle of a dying heart beats slower than the auricle is interpreted as the effect of a gradually increasing block. Gaskell also produced the clinical condition known as "fibrillation of the heart" in an isolated strip of cardiac muscle, interpreting the phenomenon as due to blocking of the connections between individual muscle cells. In recent medicine, the various rhythmic disorders of the heart are regarded, not as cases of nervous unbalance, but as the effects of blocking of the peristaltic wave which passes from sinus venosus to bulbus arteriosus, and from muscle fiber to muscle fiber.[1]

In these days, when the relative merits of the neurogenic and myogenic hypotheses of the causation of the heart-beat are still being debated vigorously, we may recall that it was the early work of Gaskell and of Engelmann in particular that furnished serious objections to the neurogenic thesis earlier supported. These physiologists came to the conclusion that the source of the cardiac rhythm was to be found, not in the ganglia scattered about its cavities, but in the muscular cells themselves. It was their contributions which inaugurated the revival of the myogenic theory.

Aside from these classic researches on the motor mechanism of the heart, science owes to Gaskell numerous important contributions to other chapters of biology, notably on the sympathetic system and on organic evolution. To those who appreciate the confusing detail in the factors concerned in the latter field, the trend of Gaskell's mind may be described by his ability "to state the problems in terms of biologic phenomena rather than in metaphysical terms."[2]

## THE PITUITARY BODY

The discovery by Marie[3] that an intimate relationship exists between the pituitary body and acromegaly created a new interest in a body which previously had been of interest purely on account of its anatomic relations and its histologic structure. About a decade later Oliver and Schäfer[4] found that extracts made from the entire pituitary body produced a rise in blood-pressure when given intravenously. By working with extracts made from its various parts, Howell[5] concluded that the pressor effect was produced only by posterior lobe extracts. Later it was found by others that posterior lobe extracts caused diuresis, dilatation of the pupil, an increase in the secretion of milk and the contraction of unstriped muscle, especially that of the arteries, uterus, intestines and bladder.

The evidence that the pituitary body is essential to life is now convincing. Paulesco[6] and Cushing,[7] using an improved technic, showed that fatal results are to be expected from removal of the anterior lobe. Partial removal of the anterior lobe led to striking changes in metabolism.

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[1] Garrison, F. H.: Walter Holbrook Gaskell, Science, 1914, xl, 802. Other biographies will be found in Nature, 1914, xciv, 93; Brit. Med. Jour., 1914, No. 2804, p. 559.

[2] Pike, F. H.: Dr. Gaskell's Work on Organic Evolution, Science, Dec. 4, 1914, p. 805.

[3] Marie, P.: Rev. de méd., 1886, vi, 297.

[4] Oliver, G., and Schäfer, E. A.: Jour. Physiol., 1895, xviii, 277.

[5] Howell, W. H.: Jour. Exper. Med., 1898, iii, 245.

[6] Paulesco, N. C.: L'hypophyse du cerveau, Paris, 1908.

[7] Cushing, Harvey: The Hypophysis Cerebri, The Journal A. M. A., July 24, 1909, p. 249.

The knowledge that extracts of the anterior lobe, which is glandular in structure, are without marked immediate effects when injected intravenously, whereas extracts of the posterior lobe, which is a nervous structure, produce striking immediate results is very interesting when one considers that removal of the posterior lobe is compatible with life, while removal of the anterior lobe terminates fatally.

Feeding experiments have not been wholly satisfactory. Wulzen[8] has recently found that when young fowls were fed with anterior lobe substance a retardation of growth resulted. This effect was especially marked in males.

From a therapeutic point of view the most striking results have come from the administration of posterior lobe extracts. Favorable results have been reported by many from the use of posterior lobe extracts in the treatment of post-partum hemorrhage, uterine inertia and postoperative shock; on the other hand, its use in labor is in certain cases followed by grave results, rupture of the uterus being reported after the repeated administration of some commercial preparations.[9]

The recent work from the Hygienic Laboratory by Roth[10] of the Public Health Service on the standardization of pituitary extracts may throw some light on some of the results obtained in therapeutics. Roth examined preparations obtained from six different manufacturers and found that the activity of commercial posterior lobe extracts varied widely when tested by three different methods, their relative activity on the isolated uterus of the guinea-pig being as 7.5 to 1. The commercial preparations which have been responsible for untoward results have therefore been shown to be exceedingly active ones. Roth could assign no positive reason for such great variability. He concludes that there is need for uniformity in the strength of commercial pituitary preparations, and to bring this about advocates their standardization on the isolated uterus of the virgin guinea-pig, suggesting an arbitrary standard. He further suggests that clinical studies should then be made to determine the therapeutic dosage.

## AN INTERRELATION BETWEEN OXYGEN AND CARBON DIOXID IN THE BLOOD

Among the numerous illustrations of physiologic regulation in the functions of the body none exhibits a greater degree of exactness than those furnished by the absorption and dissociation of the gases of the blood. With respect to the relation of oxygen to the circulating medium this has been demonstrated more strikingly perhaps than is true in the case of the carbon dioxid which ordinarily accompanies it. With the demonstration of the unique rôle of the latter gas in regulating respiration, and presumably other activities of the organism, has come an increasing knowledge of its exchange between tissues, blood and external atmosphere, respectively. The average arterial blood, in which the hemoglobin is 96 per cent. saturated, contains 17.76 c.c. of oxygen in combination per hundred c.c. of blood, or a total of 18.1 c.c. if to this is added the small amount of the gas which is in simple solution at the oxygen pressure of arterial blood. Under normal conditions the same individual shows a definite and constant relation between the pressure of carbon dioxid and the amount of this gas taken up by fresh defibrinated human blood. It does not differ much for different individuals. According to Christiansen, Douglas and Haldane,[1] at 40 mm. pressure of carbon dioxid, 100 volumes of oxygenated human blood take up about 50 volumes of carbon dioxid; and at about 80 mm. pressure 15 additional volumes are taken up.

These investigators, working in the Physiological Laboratory at Oxford and the Institute of General Pathology at Copenhagen, have demonstrated that at a given pressure of carbon dioxid, blood which has been deprived of oxygen takes up considerably more carbon dioxid than oxygenated blood. The oxygen—and the same is true for carbon monoxid—thus tends to drive out carbon dioxid, and this action depends on the saturation of the hemoglobin. For the metabolic performances of the organism it is interesting to learn that the oxygenation of the blood in the lungs helps to drive out carbon dioxid, and increases by one-half or more the amount of carbon dioxid given off at each round of the circulation. The deoxygenation of the blood in the tissues in turn helps the absorption of carbon dioxid and diminishes by about 40 per cent. the rise of carbon dioxid pressure in the venous blood.

If these facts are correct it follows that the giving off of carbon dioxid by the lungs is to a large extent consequent on the taking up of oxygen. Haldane and his colleagues have insisted for some time that under a variety of conditions the uptake of oxygen may be supported by physiologic activity of the lung epithelium. Under such conditions, therefore, the giving off of carbon dioxid would also be dependent on this activity. In any event these interrelations between the movements of the two gases, long ago suspected and now more definitely demonstrated, give an added illustration of the interdependence of many physiologic functions in the organism.

In connection with the investigation of the behavior of carbon dioxid in human blood,[1] it has been possible to calculate the rate of blood-flow through the lungs. Every one must realize, from general considerations, that this involves rapid change. The statement that the rate of this blood-flow may amount to 7.7 liters (8.1 quarts) per minute for a person with a total blood volume of 4.7 liters (4.9 quarts) offers a concrete instance of the marvelous performances of the human circulation.

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[8] 8. Wulzen, R.: Am. Jour. Physiol., 1914, xxxiv, 127.

[9] 9. Herz, E.: Zentralbl. f. Gynäk., 1913, xxxvii, 720. Espeut, G.: München. med. Wchnschr., 1913, lx, 1774.

[10] 10. Roth, G. B.: Pituitary Extract, The Journal A. M. A., Aug. 8, 1914, p. 476; Hyg. Lab. Bull. 100, U. S. P. H. S., 1914.

[1] 1. Christiansen, Johanne; Douglas, C. G., and Haldane, J. S.: The Absorption and Dissociation of Carbon Dioxide by Human Blood, Jour. Physiol., 1914, xlviii, 244.

## SOURCES OF CEREBROSPINAL FLUID

It has been thought that the cerebrospinal fluid is derived from the choroid plexuses and possibly also from the nervous tissues by way of the perivascular spaces, but conclusive evidence as to its source has been lacking until recently. Thus Dandy and Blackfan,[1] and also Frazier and Peet,[2] have produced internal hydrocephalus in animals by blocking the aqueduct of Sylvius. Then Weed,[3] under the direction of Cushing, took a step nearer to the final solution of the problem by introducing a cannula directly into the third ventricle from the fourth. When the cannula is introduced there is at first a rapid flow of several drops, whereupon a gradual diminution ensues, and after three or four hours, all flow ceases. The fluid obtained in this way appears identical with that in the subarachnoid spaces. By Weed's method it will be possible to study the action of drugs and other factors on the production of fluid, that is, on the functions of the choroid plexuses.

Around the cerebral vessels are spaces which extend to the capillaries and communicate into the subarachnoid spaces. If the direction of the flow of the fluid in these perivascular spaces could be determined, light would be thrown on another possible source of the cerebrospinal fluid. By subarachnoid injection according to the method already discussed in these columns,[4] Weed found no granules of Prussian blue in the perivascular spaces after injection at low pressure. After injection under medium pressure granules were found in the perivascular and pericapillary spaces, not, however, in the vessels, but sometimes adhering to the periphery of the nerve cells and their prolongations. On injection under high pressure, granules sometimes were found in the lumen of capillaries. These results point unmistakably, it would seem, to a flow from the capillaries into perineuronal and perivascular spaces and thence into the subarachnoid spaces, where the fluid mixes with that from the ventricles.

These results point clearly to a dual source of the cerebrospinal fluid, namely, the choroid plexus and the cerebral capillaries. It will be recalled that by the same method of subarachnoid injection, Weed[4] could demonstrate that the cerebrospinal fluid escapes largely by way of the longitudinal sinuses, and also along the nerves. These results certainly go far to give us a clear idea of the circulation of the fluid.

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[1] Dandy, W. E., and Blackfan, K. D.: An Experimental and Clinical Study of Internal Hydrocephalus, The Journal A. M. A., Dec. 20, 1913, p. 2216.

[2] Frazier and Peet: Am. Jour. Physiol., 1914, xxxv, 268.

[3] Weed: Jour. Med. Research, 1914, xxxi, 93.

[4] Absorption of the Cerebrospinal Fluid, editorial, The Journal A. M. A., Nov. 21, 1914, p. 1857.

## THE CORPUS LUTEUM AND OVULATION

Aside from the immediate scientific value of the experiment, there is a peculiar sort of satisfaction in being able to duplicate new facts found in one species of animals by observations on another species. Whenever a process or a structure is seen to be common to many types, the frequency of its occurrence gives a justification for belief in its universality. It is often asked whether physiologic or pathologic phenomena noted in the dog, cat, rabbit or other laboratory animals are safely referable, under similar conditions, to man. The more wide-spread such phenomena are in the animal kingdom, the more justifiable is the reliance which we feel in upholding the belief in their broad applicability. Comparative physiology and pathology deserve the earnest consideration of the student of human biologic manifestations.

In view of what has just been said, there is a special satisfaction derived from the report that the desiccated fat-free substance of the corpus luteum of the cow, when injected in suspension, in proper dosage, into an actively laying fowl immediately inhibits ovulation. The duration of this effect varies with different birds from a few days up to two or three weeks. After the bird begins ovulating again the laying goes on unimpaired. The same effect is produced by the injection of extracts of the lutear substance, either intravenously or intra-abdominally. The active substance producing the inhibition is inactivated by boiling.[1] As Pearl and Surface,[1] who ascertained these facts, point out, the ovulation-inhibiting function of the corpus luteum is specific in a physiologic or chemical sense. The fact that the same chemical substance inhibits ovulation in mammals and birds, the latter of which do not possess any organ corresponding to the one which produces the substance in mammals (the corpus luteum), suggests that natural selection probably had nothing to do with the evolution of either the organ or the function in the mammals. If it had, one would expect that the function would have been perfected as a specifically and exclusively mammalian one.

The chief interest, to the student of medicine, in the effect of corpus luteum substance on ovulation in the fowl lies in its corroboration of the well-known work of Leo Loeb[2] on mammals. He has shown that one function of the well-developed corpus luteum in the mammalian reproductive cycle is to inhibit ovulation. To the confirmation which this finding has already received, these new studies in avian reproduction give added support. The corroboration of one more instance of an important physiologic function specifically controlled by a chemical regulation is in line with recent developments. It suggests, to quote Pearl and Surface, that since it is possible to obtain a chemical substance which inhibits ovulation, without in any way otherwise affecting the normal vital processes of the bird, it will also probably be possible to find a chemical substance which has the opposite action and will stimulate, or better activate, the ovulation mechanism.

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[1] Pearl, R., and Surface, F. M.: Studies on the Physiology of Reproduction in the Domestic Fowl, IX, On the Effect of Corpus Luteum Substance upon Ovulation in the Fowl, Jour. Biol. Chem., 1914, xix, 263.

[2] Loeb, Leo: Jour. Morphol., 1911, xxii, 37; Zentralbl. f. Physiol., xxv, No. 9; Virchows Arch. f. path. Anat., 1911, ccvi, 278; Deutsch. med. Wchnschr., 1911, No. 1, and other papers.

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## "MOTHERHOOD WITHOUT FEAR"

A few months ago *McClure's* magazine announced to the prospective mothers of the country that a remarkable discovery had been made by which the pangs of childbirth were to be forever abolished. The announcement was made in the form of an article by two women, apparently of no medical training. The remarkable discovery was the long-discredited scopolamin-morphin analgesia, first suggested in 1902. This sensational article was taken advantage of by a pharmaceutic firm for free advertising of a nostrum, based on a similar formula; a number of physicians previously unknown brought themselves into newspaper prominence with naive statements regarding their ability in the use of the method and with reports of their success; a host of "sob-writers" and sisters of the pen, whose work is tested by their ability to wring anguish from sympathetic hearts, filled columns of the daily press and magazines with pseudoscientific rubbish.

And now, when this sensation has about died out, we are supplied with another. This one is furnished by Mr. Vance Thompson, playwright and novelist: the medium is the *Cosmopolitan* magazine. In an editor's note the article describing this new method of eliminating the pains of labor is introduced as follows:

> The all-absorbing events of the last days of July prevented the spread of the most joyful message ever sent from the scientist's laboratory to woman. It was that henceforth she will bear children not in pain and terror but in gladness. Paris knew of it; the French Academy of Medicine had accepted it, but it got no further. Mr. Thompson was then in the city and to him has fallen the wonderful opportunity of carrying the good news to the men and women of America. Here it is.
>
> Attention must be called to the fact that the practice here described has nothing to do with the morphin-scopolamin treatment originating some years ago in Freiburg and which recently has had some measure of exploitation under the popular name of "twilight sleep." This requires special and very expert care on the part of the physician, and has the further disadvantage of drugging the patient into a state of partial insensibility. It can be administered properly only in hospitals, and its use in general practice should, and probably will, be forbidden by law. But detoxicated morphin, without the slightest danger to the mother, causes neither check nor delay, does not interfere with the necessary rhythmic muscular contractions, and makes painless childbirth a scientific certainty.

As a composition, Mr. Thompson's article is fairly comparable with that of the two ladies who reintroduced "twilight sleep" to American women; but for sentimental rot, for pseudoscientific rubbish, and for downright "sob-writing" Mr. Vance Thompson must be given the palm.

As to the facts, in one place it is stated:

> I do not write of this discovery as being in an experimental stage. It has been accepted by the French Academy of Medicine — the date was the third week in July. Surgeons, gynecologists, chemists, doctors of all degrees have examined, tested, approved. For once scientific men have been unanimous.

There is no excuse for such false statements; even Mr. Thompson could easily have learned the truth.

What are the facts? What is this "detoxicated morphin" which, we are told, eliminates the pains of childbirth? Last July, Ribemont-Dessaignes reported to the Academy of Medicine of Paris a number of cases of childbirth in which he had used, for the relief of pain, a preparation "discovered" by a chemist named Paulin. The nature of the preparation was not disclosed to the academy. September 1, presumably as a result of the suggestion of Paulin, a request came to the academy from the Minister of War asking the opinion of the academy as to the advisability of using this remedy, presented under the name "Tocanalgine" and "Antalgine," in military hospitals as a substitute for morphin. By unanimous vote the academy declared that, the formula and composition of these medicines being unknown, it could give no opinion. Since it was stated, however, that the new drug was produced by the action of enzymes on morphin, the academy appointed a committee to investigate oxydimorphin, a chemical substance which it was known could be produced by the action of enzymes on morphin. Under the direction of the committee, two chemists examined samples of the new preparation obtained directly from the discoverer. The examination showed that these samples were variable, and that they did not contain any oxydimorphin. The only active ingredient found by these chemists was morphin hydrochlorid, and this in quantities varying from 0.05 to 4 per cent. The conclusions of these two chemists were later emphasized by Bertrand who, after careful chemical and biologic tests of samples submitted to him, found that the solid residue was exclusively formed of hydrochlorid of morphin, and that it was fully as toxic and dangerous as morphin, as might be expected; the symptoms of poisoning were exactly the same as those of morphin hydrochlorid, and death occurred after the same interval. A dose of the preparation would give about ½ grain of morphin. In other words, judging from the reports which appeared in the *Journal de pharmacie et de chimie* for November 16, and the

*Bulletin de l'Académie de médecine* from July 21 to November 17, this so-called "detoxicated morphin" is essentially a solution of morphin in ampules. It will kill just as quickly as morphin, it will relieve pain just as quickly as morphin — because it is morphin. Naturally, the Academy of Medicine of Paris has not accepted the preparation.

We presume it is useless to protest against this shameless exploitation of the fears of prospective mothers of the country. But if magazines must have articles on this subject, let them at least confine themselves to the facts. The article in the *Cosmopolitan* is cruel, sensational and a disgrace even to yellow journalism.

## Current Comment

### CONGRESS PASSES ANTINARCOTIC BILL

The Harrison bill (H. R. 6282) for the suppression of illicit trade in habit-forming drugs passed the House December 10, after having been before Congress for over two years. The passage of the first and second Harrison bills regulating the manufacture and importation of habit-forming drugs has already been mentioned in The Journal.[1] The third measure, to regulate the interstate sale of opium and cocain preparations, passed both houses last summer, but on account of conflicting amendments was referred to a conference committee. This committee agreed on a report which was adopted by the Senate. When the report came up in the House in the last hours of the recent session, the question of no quorum was unfortunately raised, and the House adjourned without action. The bill consequently went over until the present session. The object of the bill is to restrict the sale of habit-forming drugs to persons desiring them for legitimate purposes. The difficulty has been so to word the measure as to prevent illicit traffic in these drugs without interfering with their legitimate use by physicians and others. As the bill passed the House in June, 1913, it exempted from the operation of the law the dispensing or distribution of habit-forming drugs by physicians, provided the physician in each case was personally attendant on such patient. This exemption was modified in the Senate to require that the physician should have been employed for the particular patient receiving such drug and that the drug should be dispensed in good faith. The bill as agreed on by the conference committee and as finally passed exempts the dispensing or distribution by physicians of drugs containing opium or coca leaves or any of their derivatives, provided the physician keeps a record of all such drugs dispensed or distributed, showing the amount dispensed, the date, the name and the address of the patient. If, however, the physician is in personal attendance on the patient, such a record is unnecessary. Physicians and all others buying drug preparations containing opium or cocain must order them on forms to be issued by the Commission of Internal Revenue. But physicians' prescriptions are specifically exempt. As has been frequently pointed out, it is not in any sense a regulatory measure, and the amount of good that it will or can accomplish will depend entirely on the local police regulations and the methods adopted by states and cities to enforce such regulations. But after years of long, patient effort and many revisions, the bill as passed is probably the best that can be formulated under existing conditions. A complete abstract of the bill will appear in a later issue.

### UNAPPRECIATED FEATURES OF THE SCHOOL LUNCH MOVEMENT

School lunches have become established in a large number of our cities, and a defense for their institution is now unnecessary. The maintenance of such a service is no longer defended solely on the basis of the needs of the poorer classes, but is encouraged in ways to avert the criticism that the school lunch leads to pauperizing and to the neglect of maternal responsibility in the home. The unquestioned benefits of a well-chosen warm lunch, usually supplied at the cost of the materials and service, have impressed both teachers and parents so that even the well-to-do commend and approve this latest innovation in the routine of the school day. As a rule, the school lunch room provides better food than the street vender. In most places the foods are chosen by persons trained in the field of dietetics, and the variety of dietary articles offered at one cent a portion is frequently quite impressive. It includes soups, salads, sandwiches, fruits, puddings and other dishes. The New York School Lunch Committee, in cooperation with the Bureau of Welfare of School Children of the Association for Improving the Condition of the Poor, for example, has maintained a service available to over 24,000 children in seventeen public schools situated in districts in which the need of such service is pressing. The registration has run as high as 2,353. In addition to this noon warm lunch service, the committee has operated a special 3-cent warm lunch of milk and crackers at 10 a. m. for anemic, ungraded and crippled classes. It begins to appear that the school lunch movement has engendered certain features which promise to contribute to the general welfare in a direction almost as important as that of the proper nourishment of the body. Educational and social possibilities, at first unforeseen, are being brought to notice.[1] The children of the well-to-do parents and the children of the poor have learned "to sit quietly as one family, to talk pleasantly with each other, to eat their food properly; and many acts of courtesy and generosity have been encouraged." The appeal which the school lunches have made has not infrequently been manifested by mothers who have had their interest in respect to special foods and dietary procedures aroused. Thus the school lunch scheme has fostered educational and social as well as economic purposes.

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[1] The Harrison Bills and the Nelson Amendment, Medical Economics, The Journal A. M. A., April 18, 1914, p. 1276.

[1] See the reports of leaders in the school lunch movement in the Journal of Home Economics, 1914, vi, 437.

## ACTIVITY OF DIGESTIVE FERMENT PREPARATIONS

A recent bulletin of the Bureau of Chemistry emphasizes anew the importance of determining exactly the activity of digestive enzymes and ferments. The great difficulty with these preparations is that they do not keep well, that while active at first, many, after a time, lose their digestive activity. Examination of certain preparations supposed to contain definite enzymes or ferments showed that in reality they contained little, if any, of these agents. Other investigations showed that the manufacturers had employed the proper quantities of pepsin, pancreatin, diastase or similar enzymes, but no attempt had been made to determine their activity. On the other hand, disregarding scientific evidence as to the proper medium or combination of the enzymes, pepsin and trypsin, which tend to negative each other, have been combined; pepsin has been used in alkaline mediums, which destroy its activity, and trypsin has been combined with acid substances not suited to it. Further errors have arisen through overheating enzymes or through issuing them in strong alcoholic solutions, lessening their effectiveness. Manufacturers are warned by the Department of Agriculture, through the Bureau of Chemistry, that combinations claiming to contain digestive enzymes must be active when sold. If preparations tend to deteriorate in a short time, each lot should be dated and not sold after the period when they become inactive. While every manufacturer must be considered innocent until proved guilty and ignorant until proved knowing, it is a matter of knowledge that many manufacturers have marketed their various digestive mixtures with full appreciation of their worthlessness. The Council on Pharmacy and Chemistry nearly seven years ago called attention[1] to the various digestive impossibilities on the market. Practically all of these are still sold. To sell a sick patient a mass of inert material which he believes to be active is not only perpetration of a fraud on the patient, but does gross injury to the physician who prescribes for him and endangers still further the patient's health. It is to be hoped that the government will adopt measures that will prevent the sale of such useless and scientifically absurd combinations.

## THE MILK OF DIFFERENT BREEDS OF COWS

Among the various associations of breeders of milk cattle there is a lively competition in medical advertising literature for recognition of the superiority of the type of animal in which each happens to be primarily interested in either a commercial or a scientific way. Many physicians who read the announcements of the different groups of breeders have doubtless asked themselves whether the reputed claims of unlike composition for the milk of the various breeds of cattle concerned are in reality sufficiently distinctive to merit serious recognition from a scientific or practical point of view. It is, of course, widely recognized that types of dairy cattle which give a large amount of milk commonly furnish a product less rich in solids and particularly in the cream components. In this respect the milk from cows of the Jersey and Guernsey types departs noticeably from the Holstein variety; but inasmuch as it is believed, with some justification, that the composition of milk is more or less influenced by the period of lactation and the season of the year — that cows far along in lactation give richer milk than just after calving — one might well assume that incidental factors of this sort may easily counterbalance the inequalities of composition attributable to the differing types of cattle. During the past few years the laboratory of food and drug inspection of the Massachusetts State Board of Health has made extensive analyses of hundreds of samples of milk from Jersey, Guernsey, Ayrshire, Dutch Belt and Holstein cows, as well as from cross-bred or so-called grade cows.[1] The valuable data thus obtained under controlled conditions make it clear that variations in the composition of milk are due primarily to the breed, and to a less extent to the season of the year and the time since calving. The least variable milk constituents are the lactose and the mineral ingredients, both of which are therefore of value in detecting added water. Incidentally the fact is borne out, contrary to popular opinion, that milk obtained in summer under current conditions is, if anything, somewhat inferior in quality to that obtained in winter.[2]

## THE SYSTOLIC DISCHARGE OF THE HUMAN HEART

The systolic discharge of blood from the heart and particularly the left ventricle, in man, is a factor of no small importance in the workings of the organism. The ability of the blood to distribute oxygen and thus permit the exhibition of energy under most favorable conditions, depends on its distribution by the cardiac muscle, and its oxygen-carrying capacity as expressed in its content of hemoglobin. The so-called tidal volume of the heart has never been measured with extreme accuracy. By estimations of what they term the "oxygen pulse," that is, the amount of oxygen consumed by the body from the blood of one systolic discharge of the heart, Henderson and Prince[3] have attempted to solve the problem of the magnitude of the discharge. The value of the "oxygen pulse" was calculated by dividing the amount of oxygen absorbed by the individual per minute by the number of heart-beats in the minute. From the data obtained for this factor under a variety of conditions causing various rates of

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[1] Liquid Combinations Containing Pepsin and Pancreatin, The Journal, Feb. 2, 1907, p. 434. The Digestive Impossibilities, The Journal, Feb. 9, 1907, p. 533.

[1] Lythgoe, H. C.: The Composition of Milk as Shown by Analyses of Samples of Known Purity Made by the Massachusetts State Board of Health, Jour. Indust. and Eng. Chem., 1914, vi, 899.

[2] Inasmuch as the statistics may be of interest to physicians we append some of the average figures reported by Lythgoe:

| | Solids Per Cent. | Fat Per Cent. | Protein Per Cent. |
|---|---|---|---|
| Jersey ............ | 14.7 | 5.6 | 3.4 |
| Guernsey ........... | 14.6 | 5.2 | 3.7 |
| Ayrshire ........... | 12.6 | 4.0 | 3.0 |
| Dutch Belt.......... | 12.1 | 3.5 | 2.9 |
| Holstein ........... | 11.7 | 3.4 | 2.9 |
| Herd milk.......... | 12.8 | 4.0 | 3.3 |

[3] Henderson, Y., and Prince, A. L.: The Oxygen Pulse and the Systolic Discharge, Am. Jour. Physiol., 1914, xxxv, 106.

heart-beat, Henderson and Prince infer that the systolic discharge of the left ventricle of a well-developed man working hard and with a pulse-rate of 140 per minute is not less than 100 c.c. (3⅓ ounces) of blood. At slow rates of the heart-beat the systolic discharge is probably 150 c.c. (5 ounces) or more. In men of poor physique it is believed to be probably not more than two-thirds as much. The tidal volume of the whole human heart, that is, its change in size during the complete cardiac cycle, might accordingly amount to 400 or even 500 c.c. (16½ ounces). Such figures are considerably larger than those suggested by previous workers and are about twice as large as the values adopted in some of the current writings. The question promptly suggests itself whether the pericardial sac is actually large enough to allow the heart to make strokes of the magnitude here indicated. Henderson and Prince[2] have made direct measurements of the pericardial capacity in man. Their figures vary quite widely, as might be expected, with the size and general physique of the individual, and range from about 350 to 700 c.c. (23 ounces). A comparison of the pericardial volumes and the maximum possible systolic discharges permitted by them show that the pericardial sac in man is large enough to allow a systolic discharge considerably greater than it may be reasonably supposed that the heart will ever make. It may interest the members of the Association to know that the investigations here reviewed were carried out in the laboratories of the Yale Medical School, with the aid of a grant from the Committee on Scientific Research of the American Medical Association.

## Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

### ALABAMA

**Personal.**—The house of Dr. Henry A. Darby, Athens, was destroyed by fire, December 3.——Major Henry A. Page, M.C., U. S. Army, has been appointed inspector-instructor in the medical department of the National Guard of Alabama and of five other states.

**Tuberculosis Sanatorium Incorporated.**—The Mobile City and County Sanatorium Company filed incorporation papers, December 3, the object being stated as the operation of a sanatorium or open-air camp in Mobile County for the treatment of tuberculosis. The organization has no capital stock, and the trustees incorporated are: Drs. Daniel T. McCall and Harry T. Inge, and Messrs. A. D. Block, Joseph D. Andrews and R. L. Waddle.

**Extension of Mine-Rescue Station at Birmingham.**—An extension of the mine-rescue station is needed at Birmingham, according to the report of Director Holmes of the Bureau of Mines, and recommendation to that effect has been made by the director in his annual report. He also recommends that living quarters be provided for the foreman in charge of the station in order that he may be on duty day and night. Birmingham is situated in a large and important mining district.

### CONNECTICUT

**Personal.**—Dr. Simon R. Klein, formerly professor of histology and embryology in Fordham University School of Medicine, New York City, has been appointed pathologist of the Norwich State Hospital for the Insane.

### GEORGIA

**Personal.**—Dr. William L. Funkhouser, Rome, has been elected medical director of the Cherokee Life Insurance Company, succeeding Dr. William W. Mangum, deceased.——Dr. Herbert E. Truax, Atlanta, has started for France for duty with the Red Cross.——Dr. R. S. O'Neal, Bronwood, has been appointed chairman of the Health Board of Terrell County.

**Decrease in Infectious Diseases in Atlanta Attributed to School Inspection.**—Dr. Willard E. Quillian, president of the Atlanta Board of Health, in a recent lecture, stated that there had been a notable improvement in the general health of the city through the suppression of infectious diseases. One year ago there were 350 diphtheria signs posted in Atlanta. At present there is only one. One year ago there were many cases of scarlet fever, to-day there are only four, and these are very mild. School inspection, he considered, had been a great aid in locating and checking the progress of disease.

### ILLINOIS

**Hospital Notes.**—Frank M. Elliott, president of the Evanston Hospital Association, after nineteen years of service, has resigned on account of ill health.——The Compton Hospital was reopened December 3. It is now under the management of Dr. Clarence G. Pool.

**Aim of State Tuberculosis Association.**—The Illinois State Association for the Prevention of Tuberculosis and the other antituberculosis associations of the state are endeavoring this year to realize sufficient funds from the sale of Red Cross seals to pay for the services of a nurse in each community in the state.

**Personal.**—Dr. William P. Sherman, Aurora, was operated on for appendicitis, December 9.——Dr. J. Lenne Aleshire, Plainville, was painfully injured in a collision between his automobile and a street car in Quincy, December 4.——Dr. Albert N. Mueller has been appointed city physician of Rock Island, vice Dr. George G. Craig, resigned.

**Unpaid State Health Board Recommended.**—The Legislative Efficiency Committee, in its report on the administrative system of Illinois which appeared December 7, makes the following recommendations: The reorganization of the various health agencies into a state health department to be under the direction of a salaried health commissioner; an unpaid state health board of five officers to be appointed by the governor; the state health department to have supervision over the examination and licensing of physicians, pharmacists, dentists and nurses, and the regulation of those organizations which carry on other professions and trades for the protection of public health; a small board or committee to be provided for each profession to arrange for examinations, issue licenses and to revoke same for cause; the clerical and administrative work in connection with such examinations to be handled through one office and the action of the examining boards in revoking licenses, to be subject to review by the State Board of Health. The board of barbers' examiners to be abolished and the power of sanitary control over barbers to be exercised by the health department; the law for the collection of vital statistics to be made more effective; the pharmacy law to be revised; the cold storage of food products to be regulated and a state sanitary code to be enacted.

#### Chicago

**Medicine Samples Not to Be Distributed.**—The chief of police, on December 8, issued instructions for the arrest of any one distributing sample packages of medicine.

**Zones of Quiet.**—A resolution indorsing a petition before the city council to establish zones of quiet around hospitals, was adopted at a meeting of the council of the Chicago Medical Society, December 8.

**Nurses' Association Needs Funds.**—The Visiting Nurses' Association has issued an especial appeal for funds and announces that if the general public does not come to its aid many of its patients among the sick poor of the city will die from lack of nursing care.

**Phone Exchange for Physicians.**—A special phone exchange for physicians was advocated at a meeting of the council of the Chicago Medical Association, December 8. Drs. Willis O. Nance, Milton H. Mack and Albert W. Seidel were appointed a committee to urge the plan on the city council.

**Health Conferences.**—In connection with the Public Health Exhibition at the City Club, health conferences have been held on the following subjects: On December 4, "Food" was the topic for discussion. Prof. A. J. Carlson presided and the speakers were Dr. Carl Alsberg, chief of the Bureau of Chemistry, Washington, D. C.; Prof. John H. Long of Northwestern University and Dr. John L. White of the Chicago Municipal Laboratory. "Environmental Conditions" were considered at the evening session of December 7, and the noon session of December 8. The chairman at the first session was Prof. James H. Tuft, and addresses were made by Prof. C. E. A. Winslow of the New York State Board of Health; Miss Sophonisba Breckenridge of the Chicago School of Civics and Philanthropy, and Chief Sanitary Inspector Charles B. Ball of the Chicago Department of Health. Mr. Oscar F. Nelson, chief of the State Factory Inspection Department, Chicago, was the chairman at the second meeting at which Professor Winslow spoke a second time, and Dr. Alice Hamilton of the United States Bureau of Labor Statistics, delivered an address. The session of December 10 was devoted to "Infant Welfare." Mr. Lucius Teter, president of the Chicago Infant Welfare Society, was chairman, and addresses were made by Dr. Isaac A. Abt, Chicago; Passed Assistant Surgeon J. W. Schereschewsky, U. S. P. H. S., and Dr. Frank S. Churchill, Chicago. The noon meeting of December 12, over which Mr. Allen B. Pond presided, took up the question of "Health Administration," the speakers being Dr. George B. Young, health commissioner of Chicago, and Dr. Henry B. Favill, Chicago.

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[2] Henderson, Y., and Prince, A. L.: The Systolic Discharge and the Pericardial Volume, Am. Jour. Physiol., 1914, xxxv, 116.

## KANSAS

**Personal.**—Dr. Leon Matassarin, Wichita, while alighting from a street car recently, fell breaking his left humerus. ——Dr. Noah Hayes, who has practiced in Seneca for more than thirty-five years, has disposed of his practice and will live in Lawrence.

**Government Recognizes Kansas Vital Statistics.**—As the result of the enforcement of the Kansas Vital Statistics Law passed in 1911, Kansas has been placed among the twenty-four states accepted by the government as authorities on records of vital statistics.

**Exceptional Outbreak of Diphtheria Abating.**—Dr. John J. Sippy, Topeka, epidemiologist of the board of health, reports that diphtheria, which had run an almost unprecedented course throughout the state during October, is now abating. The outbreak started in the southeastern part of the state, the first cases being reported at Galena and Pittsburg. The progress of the disease could be traced along the railroad lines. At one or two places where medical inspection of schools was not indulged in on account of expense, it was necessary later to close the schools at greater expense. The board of health exhausted its supply of diphtheria antitoxin several times during the outbreak.

## MAINE

**Personal.**—Dr. LeRoi S. Syphers succeeded Dr. Loring S. Lombard, resigned, as a member of the Board of Health of South Portland.——Dr. Edouard M. Marquis, Old Town, has gone to France to offer his services to the American Ambulance in Paris.——Dr. Edwin W. Gehring, Portland, has been appointed a member of the State Board of Health, vice Dr. Charles D. Smith, Portland, resigned.

## MARYLAND

**Civic Club Formed.**—A Physicians' Civic Club has been organized in Baltimore by Dr. William T. Watson, with an initial membership of twenty-five.

**Against Vaccine Law.**—Believing that the compulsory vaccine law is unjust and drastic, the Washington County commissioners, sitting as a board of health, have adopted a resolution recommending that the health officer and all others in authority discontinue the rigorous enforcement of this law, allowing all to use their own judgment in the matter.

**Lectures Before University Medical Society.**—Dr. Lewis Gregory Cole of Cornell University delivered two lectures before the University of Maryland Medical Society, December 3, on "Anatomy and Physiology of the Stomach and Duodenal Cap," and on "Negative and Positive Diagnosis of Organic Lesions of the Stomach and Duodenal Cap." In the afternoon Lieut-Col. Champe C. McCulloch, Jr., M.C., U. S. Army, delivered a lecture on "Beri Beri."

**To Join State University.**—The University of Maryland, the College of Physicians and Surgeons and the Maryland Medical College, with three other institutions of learning were created into a Maryland State University, December 11. St. John's College, at Annapolis, was the only one of seven institutions that did not formally affiliate with the university, but this question will be decided at the annual meeting of their board in January. The affiliation of these institutions was decided on at the last session of the general assembly, when a law to that effect was passed.

**Personal.**—Dr. Franklin P. Mall, Baltimore, professor of anatomy at Johns Hopkins Medical School, has been appointed head of the new department of embryology of the Carnegie Institution in Washington. It is not likely that Dr. Mall will sever his connection with the Johns Hopkins University to pursue his new work.——Dr. George H. Whipple, a member of the faculty of the Johns Hopkins Medical School, has been appointed a director of the George Williams Hooper Memorial Foundation for Medical Research in the University of California.——Dr. Veader N. Leonard of Baltimore, who left on the first Red Cross expedition, is on duty at a 300-bed war hospital at Paignton, Devonshire, England.

## MASSACHUSETTS

**Personal.**—Drs. Henry M. Chase and Gilbert F. Day have been appointed assistant surgeons to the Peter Bent Brigham Hospital, Boston.——Dr. Francis D. Donoghue, Boston, has been appointed a medical expert to the Industrial Accident Board.

**New Health Council.**—The governor has nominated the following as the new health council: Prof. W. T. Sedgwick, Massachusetts Institute of Technology of Boston; Drs. Milton J. Rosenau and David Linn Edsall of Harvard Medical School; Prof. George Chandler Whipple, sanitary engineer and secretary of the administrative board of the School for Health Officers; Dr. William J. Gallivan, former chairman of the Boston Bureau of Child Hygiene, and Dr. Joseph E. Lamoureaux, Lowell, a member of the local Contagious Hospital Commission and school committee. This council will cooperate with Dr. Allan J. McLaughlin, the new head of the board.

## MICHIGAN

**Hospital Sought for Chebcygan.**—At a meeting of the medical profession held in Cheboygan, November 24, Dr. Stanislas A. St. Armour and James H. McCall were appointed a committee to confer with the Visiting Nurses' Association as regards establishing a hospital in Cheboygan.

**Free Clinic at Lansing.**—The Ingham County Nurses' Association has established a free medical clinic at Lansing, which was opened December 4. The Ingham County Medical Society has been asked to give free medical service for this clinic, which has been opened in rooms adjoining those of the Associated Charities in the Prudden Building.

**Personal.**—Dr. Edgar A. Planck, Union, has been elected a member of the state senate.——Dr. Flemming Carrow, who left the University of Michigan three years ago to combine pleasure, profit and health in the fruit-growing industry of northern Michigan, has made a specialty and success of growing chestnuts on his farm near Traverse City.

## MISSISSIPPI

**Hospital Notes.**—The work on a new hospital at Meridian, which Dr. James H. Rush is about to build, will begin before the end of the month. The building will contain ten private rooms and four wards, in addition to the necessary offices, operating rooms, etc.

**Personal.**—Dr. John H. Lynn has resigned as house surgeon of the State Charity Hospital, Vicksburg.——Dr. Walter H. Rowan, Jackson, chief sanitary officer of Mississippi, has started for Central America to take charge of a campaign for the International Sanitary Commission. The State Board of Health, at a meeting November 20, adopted resolutions voicing the regret and reluctance with which the board accepted Dr. Rowan's resignation, and bearing testimony to his honesty, competency and fidelity.——Dr. Willis Walley, Richton, has taken up his duties as chief sanitary inspector of the state.

## NEW YORK

**Health Lectures at Albany.**—A series of lectures, under the auspices of the State Department of Health, has been begun at Albany Medical College. The lectures are delivered on Tuesdays at 5 o'clock.

**Tuberculosis Hospital Opened.**—The Homestead Sanatorium, the Tuberculosis Hospital for Saratoga County, was opened December 5. The site for the hospital was donated to the county by Gen. Horace W. Carpentier in 1902.

**Small-Pox in Hospital.**—Four cases of small-pox have appeared among the patients of the Metropolitan Life Insurance Company's Hospital at Mt. McGregor, near Glens Falls. Everyone in the hospital and its vicinity has been vaccinated.

**Dispensary Needs Funds.**—An appeal to the public has been made by the president and board of trustees of the Syracuse Free Dispensary for $5,500 required to meet the expenses of the institution until Oct. 1, 1915. During the last six months 8,723 treatments were given as compared with 6,198 treatments during the same period last year.

**Plans for Public Health Education.**—The State Department of Health, in extending its work in public health education, has planned, in addition to the pamphlets furnished to the schools, to prepare a considerable number of compact exhibits, consisting of a series of striking charts to be circulated throughout the schools of the state. In order to reach rural districts where the installation of the regular exhibits would be too expensive it has also planned to send out a railroad exhibit car with lectures and moving pictures connected with it, similar to the exhibits being used so successfully in California and Louisiana.

### New York City

**Personal.**—Dr. and Mrs. William A. Griffith, Brooklyn, have sailed for San Juan, P. R.——Dr. and Mrs. Robert F. Weir have sailed for Nassau and Guantanamo, Cuba.

**Bill to Abolish Coroner's Office.**—The investigation of the coroner's office in this city, which has been conducted for several weeks, is nearing an end. Commissioner Wallenstein, who has been conducting the examination, announces that sufficient evidence has been collected to demonstrate the abuses of the office, and to form a basis for a bill which will be presented before the legislature at the coming session. It is purposed to substitute the system in operation in Boston.

**Subway Crowding and the Public Health.**—Health Commissioner Goldwater recently sent a letter to the public service commission asking that it take official notice of the overcrowding on the elevated and subway trains since it was his belief that such overcrowding greatly promoted the spread of infection by the "droplet method." To this communication the chairman of the public service commission has made reply showing that the public service commission has expended a large amount of money to prevent transportation congestion, that it has not jurisdiction over health matters, and that it is within the power of the health department to prevent the practices complained of, namely, the coughing and sneezing.

## NORTH CAROLINA

**New Medical Association Organized.**—The Winston-Salem Medical Association was organized recently with an initial membership of nineteen.

**County Needs Hospital.**—Davidson County is in need of a hospital. The fraternal organizations of Lexington have contributed $5,000 toward the building and stock subscriptions are now being solicited throughout the county.

**District Society Meeting.**—The Eight District Medical Society held its semi-annual meeting at Winston-Salem, December 1: Dr. Joseph W. Ring, Elkin, was elected president, and Dr. William M. Jones, Jr., Greenboro, was reelected secretary. It was decided to hold the spring meeting of the organization at Elkin.

## OKLAHOMA

**County Society Organized.**—Grant County Medical Society was organized at Medford, November 24, with an initial membership of twelve, and the following officers were elected: president, Dr. Samuel A. Lively, Wakita; vice-president, Dr. Harry A. Stalker, Pond Creek; secretary-treasurer, Dr. Chester H. Lockwood, Medford.

**Unprecedented Prevalence of Diphtheria.**—According to reports received by Dr. John C. Mahr, Shawnee, state commissioner of health, diphtheria is more prevalent throughout the state now than at any time since Oklahoma was admitted to the Union seven years ago. There is scarcely a county in the state entirely free. Rigid quarantine and general distribution of antitoxin have enabled the authorities to get the situation well in hand, and the outbreak will probably be checked soon.

**Personal.**—Dr. Thomas J. Jackson, Marsden, who has been seriously ill with septicemia, has recovered.——Dr. John L. Plumbee, Poteau, who fractured his arm and sustained other painful injuries in a runaway accident a short time ago, has recovered.——Dr. Percy A. Smithe, Enid, has sailed to join the Red Cross service in Austria.——Dr. Walter H. McKenzie, Enid, who has been seriously ill, is reported to be improving.——Dr. Surl E. Williams, Hydro, while feeding his team late at night, November 27, fell from the hay loft with a lantern in his hand, setting fire to the hay. The barn was destroyed and the team burned to death, and Dr. Williams suffered a fracture of the hip and several burns.——Dr. William C. Whittenberg, Stillwater, has purchased the Buffalo Park Sanitarium, Pawnee, and the institution will be opened about January 21 for the reception of patients.

## OREGON

**Personal.**—Dr. and Mrs. Walter F. Williamson, Portland, have returned from abroad.——Dr. John Griswold, Helix, is reported to be seriously ill.

**Trachoma on the Umatilla Reservation.**—It is reported that government physicians find trachoma prevalent among the Indians of the Umatilla reservation, all ages being affected but the young being the greatest sufferers.

**New Medical Society.**—Klamath County Medical Society, the first medical organization in any county of southern Oregon east of the Cascades, was organized November 14, at Klamath Falls, with an initial membership of twelve. Dr. Lawson L. Truax, Klamath Falls, was elected president; Dr. John L. Harris, Bonanza, vice-president, and Dr. Floyd M. White, Klamath Falls, secretary-treasurer.

## PENNSYLVANIA

**Small-Pox Epidemic.**—Jamestown, a small village near Greenville, has been placed under quarantine by the State Board of Health. Twenty-seven cases of small-pox have been reported.

**Outbreak of Diphtheria in Allentown.**—An outbreak of diphtheria (upward of fifty cases) in Allentown during the latter part of November, necessitated calling in the aid of the State Health Department. Investigation showed that in this instance the schools were not centers of infection, most cases being those of adults and children under 5. Carelessness in observing the modified quarantine rules was regarded as the cause of the spread.

**Alumni Clinic Day at Erie.**—The first annual meeting of the Northwestern Pennsylvania Chapter of Jefferson Medical College Association was held at Erie, November 14. During the entire day and evening, scientific and social meetings and clinics were held. A business meeting of the chapter was called for the afternoon at which the permanent organization was effected with the following officers: president, Dr. John W. Wright; vice-president, Dr. Frank A. Walsh; secretary, Dr. Harrison A. Dunn, and treasurer, Dr. Claude Weston Page, all of Erie. The membership of the chapter includes all eligible Jefferson graduates who are residents of the counties of Crawford, Erie, Forest, McKean, Mercer, Venango and Warren.

**Personal.**—Dr. Robert W. Ramsey, Chambersburg, is reported to be seriously ill at his home.——Dr. Albert C. Lamade, Williamsport, was operated on for appendicitis in the German Hospital, December 1, and is reported to be doing well.——After fifteen years' service as a member and president of the Board of Health of Norristown, Dr. Alfred H. Read resigned December 1, and Dr. Willis R. Roberts was appointed his successor.——Dr. Theodore L. Hazlett, Pittsburgh, has been appointed an assistant surgeon in the third Russian Red Cross Unit to sail for Europe this month.——Dr. Johnston McLanahan, Chambersburg, who has been seriously ill with gastritis, is reported to be convalescent.——Dr. William McKenzie, Conshohocken, was seriously injured in a collision between his automobile and a trolley car, recently.——Dr. Benjamin J. Millard, Mount Carmel, while cranking his automobile, fractured his left hip.

### Philadelphia

**Cattle Quarantine Still in City.**—A new order lifting the foot-and-mouth disease from fifteen different counties, and explaining the conditions under which cattle may be imported was issued December 11, by the state live stock and sanitary commission. Philadelphia County is still under ban.

**Schools to Teach Care of Babies.**—At the suggestion of the Child Federation, the Board of Public Education has established a course for little mothers in the seventh and eighth grades of the public schools. There are classes of instruction now operating in sixteen and seventeen schools under the Child Federation volunteer corps of teachers, and the latest development is a series of lectures in the Stock Exchange Building by Dr. Howard Childs Carpenter, instructing the teachers.

**Discuss Hospital Plans.**—Plans for the new Philadelphia General Hospital were discussed at a subscription luncheon given by the City Club to representatives of city councils, the County Medical Society and the Civic Club, December 12. Dr. Richard H. Harte of the department of health and charities outlined the proposed plan for spending one million dollars a year during the next five years for the erection of an entirely new group of buildings on the present site of the Philadelphia Hospital. Addresses were made by Dr. David Riesman, a member of the committee on rehabilitation of the hospital, and Dr. William D. Robinson, president of the County Medical Society.

**Personal.**—Dr. Thomas McCrae has been made consulting physician to the Girard College.——Dr. William S. Newcomet has been appointed radiotherapist to the Jefferson Hospital. ——Dr. George S. Crampton has been elected attending surgeon to the eye department of the Pennsylvania Hospital, vice Dr. Peter N. K. Schwenk, who resigned November 30, after twenty-three years of service. Formal ceremonies were held in honor of Dr. Schwenk at which he was presented with a silver loving cup by members of his staff and was also given flowers by the social service department and school nurses, and numerous tokens of esteem from other persons connected with the hospital.

## SOUTH CAROLINA

**Personal.**—Dr. W. Thad. Hunt, Townville, is reported to be critically ill with nephritis in the Anderson County Hospital.——Dr. W. R. Bethea, who has been seriously ill with pneumonia at the Florence Infirmary, is reported to be improving.

**New Society Organized.**—Physicians of Calhoun County met at St. Matthews December 3, and organized the Calhoun County Medical Society electing the following officers: president, Dr. Lucius B. Bates, St. Matthews; vice-president, Dr. Asa P. Trawick, Cameron; secretary-treasurer, Dr. Thomas H. Symmes, Jr., St. Matthews.

**Society Indorses Health Officer.**—The Greenville County Medical Society adopted resolutions recently indorsing the work of the County Board of Health and of Dr. S. J. Taylor, the county health officer, requesting the county delegation to appropriate at least $3,000 for the work of the board of health for the coming year and appointing a committee of three to meet the county delegation and discuss the health questions involved.

**District Physicians Meet.**—The annual meeting of the Fourth District Medical Society was held in Seneca, November 24, and the following officers were elected: President, Dr. Joseph S. Stribling, Seneca; vice-president, Dr. Lawrence G. Clayton, Central; treasurer, Dr. James R. Young, Anderson. Easley was selected as the next place of meeting and the date of the meeting was changed from the second Tuesday in November to the fourth Tuesday in September.

## VIRGINIA

**New Organization of Colored Physicians.**—The Hippocratic Medical Academy was organized at Roanoke, November 3, with the following officers: president, Dr. George E. Moore; secretary, Dr. A. W. Harris, Jr.——Magic City Medical Society at Roanoke: president, Dr. S. F. William; secretary, Dr. E. D. Downing.

**Alumni Organized.**—The Medical Alumni of the University of Virginia met in Richmond, November 11, and organized an alumni association, electing Dr. Hugh H. Young, Baltimore, president; Dr. Richard H. Whitehead, University, Va., vice-president, and Dr. Thomas V. Williamson, Norfolk, secretary-treasurer.

**Monument to Confederate Surgeon-General.**—The Association of Medical Officers of the Army and Navy of the Confederacy has planned a beautiful memorial to be erected over the grave of Dr. Samuel Preston Moore, Surgeon-General of the Confederate Army, who is buried at Hollywood Cemetery, Richmond. Other associations are cooperating in the erection of this memorial.

**Personal.**—Dr. James Allison Hodges, Richmond, has been elected president of the North Carolina Society of Richmond. ——Dr. John F. Ragland, Jr., Centralia, recently appointed coroner of Chesterfield County, who has been seriously ill with typhoid fever, is reported to be improving.——Dr. Stonewall J. Gill, Roanoke, underwent an operation at the Lewis-Gale Hospital in that city, November 25.——Dr. Kenneth B. Graves, bacteriologist of the State Board of Health, has been elected city bacteriologist of Richmond.

## GENERAL

**Conference on Child Labor.**—The National Child Labor Committee has called a conference of all interested in the protection of children to meet in Washington, January 5 and 6, to emphasize the need of a federal child labor law and to discuss the question whether or not the federal government should intervene to prevent the conditions of child labor now prevailing in twenty-one states of the Union, where the employment of children under 14 years of age in mills and canneries is legal.

**Fenger Memorial Fund.**—The Directors of the Fenger Memorial Fund announce that $600 has been set aside for medical investigation in 1915. The money will be used to pay all or part of the salary of a worker, the work to be done under direction in an established institution, which will furnish the necessary facilities and supplies free of cost. It is desirable that the work undertaken should have a direct clinical bearing. Applications giving full particulars should be sent to Dr. Ludvig Hektoen, 629 South Wood Street, Chicago, before Jan. 15, 1915.

**Sanitarians Elect Officers.**—At the annual meeting of the American Public Health Association held in Jacksonville, Fla., December 1 to 4, the following officers were elected: president, Prof. William T. Sedgwick, Boston; vice-presidents, Drs. Charles J. C. O. Hastings, Toronto, Ont.; Juan Guiteras, Havana, Cuba, and Charles E. Terry, Jacksonville, Fla.; members of executive committee: Surgs. J. F. Anderson, U. S. P. H. S.; John H. Landis, Cincinnati, and Alfredo Dominguez, Havana, Cuba; secretary, Dr. S. M. Gunn, New York City, and treasurer, Dr. Lee K. Frankel, New York City. Honorary membership was conferred on Dr. Eduardo Liceaga, for many years president of the Bureau of Health of the City of Mexico. Rochester, N. Y., was selected as the place of meeting for 1915.

**Hookworm Campaign in the Canal Zone.**—The International Health Commission of the Rockefeller Foundation has established laboratory stations for the diagnosis and treatment of hookworm at Panama, La Chorrera and Bocas del Toro. The work was organized by Dr. L. W. Hackett of the commission, and according to the *Canal Record*, October 28, out of the first thousand men, women and children reporting at the La Chorrera laboratory more than 700 were found to be harboring hookworm. An effort is being made to induce every inhabitant of this village of 4,000 to submit to examination for hookworm, and circulars in simple language have been distributed and house-to-house visits and investigations have been made. Treatment is free, but not compulsory, although the work is carried on at the request and with the cooperation of the Panama government, and pressure may be brought to bear to make the campaign a thorough one. The establishment of laboratories in Panama is in pursuance of the plan of the International Health Commission for a world-wide campaign of health work in countries requesting the cooperation of the commission. Panama was one of the first countries to invite assistance. Great Britain has already solicited cooperation in behalf of her tropical possessions and a French and Dutch colonial service and an oriental service are also under consideration.

## WAR NOTES

**Dr. Crile Takes Charge of Division in American Ambulance at Paris.**—Dr. DuBouchet, in charge of the American Ambulance at Neuilly, has placed at the disposal of Dr. G. W. Crile one division of the hospital, consisting of 150 beds. Other surgeons and nurses will also go from the Lakeside Hospital, Cleveland. The party, which will sail December 30, includes also Dr. Samuel J. Ledbetter, resident surgeon of the Lakeside Hospital; Miss Agatha Hodgins, chief anesthetist, and Miss Iva Davidson, operating-room nurse.

**American Ambulance Surgeons Daring.**—The American Ambulance Corps of Paris has done much daring work at the front, but so far there has been not a single casualty among the staff, although the life-saving work has been carried on close to the firing line. The British Ambulance Corps has not been so fortunate, as one ambulance near an American Ambulance car, was struck by a shell and demolished, its entire crew being killed or wounded.

**Red Cross Work Changes.**—The American National Red Cross, at its tenth annual meeting in Washington, December

9, readjusted its European war work. Hereafter, the society will not solicit contributions for non-combatants, but will limit its solicitations to funds for relieving the sick and wounded in the armies at war. It will transmit, however, non-combatants' relief funds to the European Red Cross organizations when the donor designates the country to which the funds are to be sent.

**Aid for the Austrian Red Cross.**—Dr. Adam P. Leighton informs us of the receipt of a letter from Dr. Oskar Frankl, editor of the *Gynäkologische Rundschau* of Vienna, regarding the work of the Austrian Red Cross. Dr. Frankl states that doctors have given up their accustomed clinical work and are now military surgeons in service of the Fatherland. As with other countries, the Red Cross is in need of funds. Anyone desiring to contribute for this cause may send their contributions direct to Dr. A. P. Leighton, 192 State Street, Portland, Maine, or Oskar Frankl, Franz Josefs-Kai 17, Wien, I., Austria.

**More Clothing and Supplies Sent to Europe.**—The American Red Cross shipped to Europe on December 13, 401 cases of hospital garments, hospital supplies, blankets, shawls and clothing for the women and children of the war zone.——To France were sent 89 cases of hospital garments, women's and children's, 9 cases of absorbent cotton, several cases of iodin and antiseptic tablets.——To the German Red Cross were sent 71 boxes containing hospital garments, women's and children's clothing, hospital linen and absorbent cotton and bandages.——To the Austro-Hungarian Red Cross were sent 71 cases of hospital garments and clothing for women and children, and 20 bales of absorbent cotton.——To Rotterdam, there were sent for the use of Belgian refugees in Holland, 94 cases of clothing for men, women and children, overcoats, 3,000 blankets and 1,400 shawls, and 65 cases containing nearly 4,000 blankets for the Belgian Relief Committee for Belgium.

**Aid to Belgian Physicians and Surgeons.**—An appeal made by Sir Rickman J. Godlee of London, chairman of the committee organized in Great Britain in aid of Belgian physicians and surgeons, has resulted in the organization of an American committee which will accept subscriptions in money and surgical or pharmaceutical supplies and distribute them to the best of their ability among the Belgian sufferers. The appeal is accompanied by a contribution by Prof. C. Jacobs of the University of Brussels on "The Position of Belgian Doctors and Pharmacists" and a letter by Sir Gilbert Parker to the Chicago *Tribune*, both of which explain most clearly and vividly the needs of the Belgians.——Dr. Frank F. Simpson, 7048 Jenkins Arcade Building, Pittsburgh, has consented to act as treasurer to the American Relief Committee which consists of Drs. William L. Rodman, Philadelphia; Charles H. Mayo, Rochester, Minn.; John M. T. Finney, Baltimore; George H. Simmons, Chicago; Thomas L. Stedman, New York City; Edward W. Taylor, Boston; Franklin H. Martin, Chicago, and Howard Canning Taylor, New York. Contributions should be sent to the treasurer, Dr. F. F. Simpson.

**Work in American Ambulance at Paris.**—Dr. Blake, in a letter to an American correspondent states:

> "In view of the great number of surgeons who are applying and who are coming over, I think it would be wise for you to give out a statement to be published throughout the medical press that the Ambulance of the American Hospital in Paris is in reality a hospital of between four and five hundred beds, situated in the environs of Paris at Neuilly, that the staff at present is full, and that only from time to time new men will be needed to fill the vacancies by men leaving. On account of the fact that nearly all the patients are French, and that histories of the cases in French are required by the government; it is highly desirable that applicants should be able to speak French.
>
> Further, that extensions to the work of the Hospital carried out in other places than the neighborhood of Paris for the immediate present, are being manned by complete units leaving America as such, and consequently their personnel is to be recruited before leaving.
>
> Further, in order that applicants may get information more readily, Dr. Gibson and yourself have been requested by the Staff of the American Ambulance to act as a Committee to whom applications should be made."

In accordance with the above request made in a letter from Dr. Joseph A. Blake to Dr. Hugh Auchincloss, dated Paris, Nov. 14, 1914, applications for service of any kind—doctor, nurse, orderly, ambulance driver—in the American Ambulance or its units will be received by Dr. Charles L. Gibson and Dr. Hugh Auchincloss, acting as a committee appointed by the medical board of the American Ambulance. All applications should be made out so as to cover fully, and in detail, all the information requested in the application form, which Dr. Hugh Auchincloss, 178 East Seventieth Street, New York City, will send to any one requesting it. Notices will then be sent directly to any applicant when, on hearing from the American Ambulance in Paris, it may be deemed by the committee that his or her services may be made use of. It should be remembered by all applicants that a passport is an absolute essential, if going abroad, and that the new regulations for securing one are much more stringent than formerly, and that a new form of application blank has been adopted by the government within the past month.

## LONDON LETTER

London, Nov. 27, 1914.

### The War

The uniformly septic condition of the wounds which have come under treatment in the hospitals, and the failure of the modern "aseptic" treatment, have caused a proposal to revert to the old antiseptic treatment. The latter is now in the ascendency. The importance of immediate disinfection of wounds is recognized and, following the example of the French, a small quantity of iodin is being supplied to each man to be used as soon as a wound is inflicted. Every effort is being made to preserve the health of the troops in the field, so far with complete success. We have had no cases whatever of cholera and few of typhoid. Divisional sanitary companies consisting of sanitary inspectors and men of the scavenging class are being prepared to be sent to the front. A sanitary committee which was sent out by the government has reported that nothing could exceed the sanitary accommodation of the actual trenches. With the advent of the frost there are some cases of frost bite, dysentery, rheumatism and pneumonia. It is remarkable that cases of illness are so few, considering that the men have often to stand ankle deep all night in slush. The motor ambulances are proving invaluable in the removal of the wounded from the field of battle, but the conditions of present-day warfare have rendered immediate succor difficult and often impossible. Horse ambulances are pushed forward during an engagement as near the firing line as is consistent with moderate safety, and the wounded are placed in them from the regimental aid posts behind the firing line. In the course of the protracted semisiege-like battles which are characteristic of this war, it is usually only under cover of darkness that it is possible for the wagons to approach the aid posts, and the collection of wounded is accordingly begun at dusk.

Having collected the wounded, the wagons are driven to the headquarters of the field ambulance, which may be two, three, or four miles in the rear; here the patients are fed on hot beef tea, soup, tea, milk or other sustaining food. Their wounds are redressed, if necessary, and operations of urgency undertaken. In some cases it may happen, as at the battle of the Aisne, that the headquarters of the field ambulance are so near to railroads that the wounded can be transferred straight to ambulance trains or to clearing hospitals in which they can await the arrival of such trains. But as a rule this is not the case; there is nearly always a gap of some miles separating the headquarters of the field ambulances and the nearest available point reached by ambulance trains. It is this gap which the motor ambulances are employed to bridge, and most excellently they do it. Before they appeared, all sorts of shifts were necessary. Whenever the troops advance (or retire) the field ambulances are required to advance (or retire) with them. It is essential, therefore, that the field ambulances should retain their patients for as short a time as possible, for it is obvious that they cannot move with the troops if they are encumbered with hundreds (or even scores) of wounded patients. Thus the motor ambulances, working rapidly backward and forward between the railhead and the field ambulances, achieve a double object: they ensure speedier and far more comfortable transit for the wounded to those places where their wounds can best be treated and healed, and they enable the field ambulances to retain their full mobility and so serve most efficiently the needs of the troops among whom further casualties may occur. The motor ambulances run so speedily up and down that the field ambulances are never allowed to get choked up with wounded, even after a big engagement. If the order comes to march before all the wounded have been taken away in the cars, all that is necessary is to send word to the latter that the patients are lying in a certain house or farm and to leave one or two orderlies behind to look after them until the motor ambulance arrives.

### Casualties Among Army Surgeons

The heavy casualties among army surgeons continues. The list for the past week is one killed and five wounded.

In the present war their work is very dangerous. To succor the wounded where they fall they must travel long distances up and down a long front, exposing themselves to the enemy's fire. It is now beginning to be realized that the wounded are safer lying where they fall, provided some one will apply the first field dressing. To carry wounded men or allow slightly wounded to walk to the aid posts during an engagement exposes them to the grave risks of additional wounds and means losses among the medical personnel. It is better that wounded men, having received first aid, should lie until darkness enables them to be moved with safety.

### Gas Gangrene

An important report has been made to the government on emphysematous gangrene (which, as previously stated, is rife among the wounded) by Sir Anthony Bowlby, consulting surgeon to the forces, and Dr. J. S. Rowlands, a bacteriologist. A bacillus was isolated which, when inoculated into a guinea-pig caused fatal gangrenous cellulitis. Examination of a culture at the Lister Institute by Dr. C. J. Martin and Dr. Arkwright inclined these observers to the view that the organism is identical with one that for some time was confused with that of malignant edema, known as the bacillus of Ghon and Sachs. This organism was originally obtained from a case of gangrene in the human subject. There are ten different organisms that have been isolated from cases of gas gangrene in man, all of which are closely allied and have the common characteristic of being anaerobic spore-bearers. From other cases in the clearing hospitals at the front several more organisms of this group have been isolated and have been sent to the Lister Institute for confirmatory diagnosis. A sample of earth from a trench was also examined. The inoculation of a few drops of water, in which this earth had been shaken up, into a guinea-pig killed the animal in eighteen hours. Post mortem a similar gangrenous cellulitis was found. The animal was also found, like the guinea-pig inoculated from the gangrenous culture, to be infected throughout with a spore-bearing anaerobic organism belonging to the same group. It is reasonable to conclude, therefore, that the gangrene found among our wounded soldiers is directly due to infection introduced at the time of the wound, and this is especially likely to occur if muddy clothing has been carried in by the projectile or if earth has been carried in the explosion. It is solely due to infection from the soil and is in no way related to sloughing phagedena, or so-called "hospital gangrene." The onset is characterized by swelling of the injured part, and the gangrene seems especially liable to occur in connection with that swelling of a limb which is due to extravasation of blood in the subcutaneous tissues and intermuscular planes. It seems that interference with the circulation either by extravasation of blood or by tight bandages has a marked influence. In the early stages the patient complains of severe pain, which is perhaps due to tension, the result of the swelling, but in the later stages the affected area becomes completely numbed and insensitive. The edges of the wound are generally ragged and sloughy, and a considerable quantity of blood-stained serum constantly exudes and soaks the dressings. This discharge emits a characteristic and most offensive odor, which is so marked as to be almost diagnostic. The skin, if not previously discolored by extravasated blood, assumes a dark purplish or slate-colored hue. In the vicinity of the wound it changes subsequently to a greener color. The swelling extends coincidently with the change of color, and a few hours later the skin becomes nearly black, and finally forms a black, leathery slough. Beyond the area of discoloration the limb is swollen with gas and fluid exudation, and an emphysematous crackling can be elicited on pressure with the hand. This may spread to a distance of as much as a foot above and below the actually gangrenous area, and so rapid is the extension of the gangrene that the whole of the lower extremity may be completely mortified before the end of the third day after the infliction of the wound. The following practical conclusions are drawn:

1. All tight bandages, and especially those applied at the first field dressing, should be avoided. Shell wounds are so often followed by so much interstitial hemorrhage that the part swells and the bandage rapidly becomes tighter and interferes with the circulation. Consequently, many bandages have to be cut within a few hours of their application.
2. In many cases it is necessary to relieve the tension by incisions and drainage, and the opportunity should be taken to wash the wounds thoroughly with an antiseptic. Hydrogen peroxid is one of the best. Great care should be taken to remove portions of clothing, as these contain the infective agent. Shattered fragments of bone and pieces of shell or gravel should be taken out.
3. Amputation may often be successfully performed through tissues made emphysematous by gas but not yet gangrenous.
4. The group of anaerobes causing gangrene are spore-bearers, and spores (especially of this group of anaerobes) are difficult to kill by any antiseptic solution or even by boiling. Consequently, in order to sterilize instruments and other things that have been infected, other measures are required. These are: destruction of blankets and clothing soaked by the discharge, heating in an autoclave at a temperature of 120 C. (248 F.), or boiling for an hour in a solution of phenol (carbolic acid) 1:20, or compound solution of cresol, 1:10.
5. Where possible it is advisable to isolate patients under treatment in hospitals, and this is all the more necessary on account of the bad smell which is inseparable from the condition.

### Effect of the War on the Medical Profession

At the General Medical Council (the body of which controls examinations and registration of physicians) the president, Sir Donald MacAlister, in his address referred to communications which had been received from several licensing authorities as to the propriety of modifying or suspending some of the existing regulations in the case of students whose regular course of study might be interrupted by military service. He said it was the duty of the council to maintain such a standard of proficiency as would guarantee the possession by candidates of the knowledge and skill requisite for the practice of the profession. Multitudes of their professional brethren had nobly offered themselves for service with the troops at home and abroad; many had already laid down their lives in the performance of that humane duty. The toll of war was not yet complete. They must face the certainty that before long the ranks of the profession would be sadly depleted. Ample reserves were necessary to supply the places of those who fell on the field of honor. Those reserves would be constituted by those whom they were now admitting to the status and privileges of registered physicians. They would best honor the memory of the fallen and safeguard the welfare of the forces and the people if they did all in their power to secure that the men who entered the profession were as fully and as efficiently trained as their predecessors. The need for efficient physicians in the field and at home was not less urgent than the need for efficient soldiers and sailors. He had felt it his duty to press this consideration on senior students who, though they had nearly completed their curriculum, were ready to forego the prospect of early qualification and to enroll themselves straightway in the combatant forces. It was currently reported that owing to the war the number of the students of all years enrolled for the present medical year was much below the average. If that were true, the risk of a serious shortage in the future supply of physicians would appear to be imminent.

## PARIS LETTER

Paris, Nov. 26, 1914.

### School for Cripples

During the four months that the war has lasted, our hospitals have discharged numbers of crippled soldiers. What is going to become of these young men, some scarcely over 20? They cannot be abandoned to public charity. All means should be used to make them capable of practicing a trade. The mayor of Lyons, M. Édouard Herriot, reminds us that for a long time the Scandinavian countries have concerned themselves with the problem of the training of cripples. In 1872 the Danish philanthropist, Hans Knudsen, founded at Copenhagen his celebrated orthopedic policlinic, and institutions of the same kind have been opened at Helsingfors, Stockholm and Christiania. M. Herriot visited some months before the war, the training-school for cripples and victims of industrial accidents founded in Charleroi, Belgium, by the province of Hainaut in 1906 after the passing of the Belgian law on compensation for industrial accidents. The workshops of the school were directed by a physician whose duty it was to find out the suitable trade for each pupil when he enters. One might see, for example, a man who had lost both forearms enabled to make brushes by means of a special apparatus. One of the stumps was fitted with a mass of steel, serving as a hammer, the other with a leather pad furnished with a magnet for placing the nails. The school had its prothesis workshop where the physician's ingenuity was taxed by the most various problems. Seven sections were in regular operation: a school of shoemaking, a school of bookbinding, a school of harnessmaking, a school for the cutting and making of clothes, a school of basketmaking, a school for making matting and a school of bookkeeping. The instruction was both theoretical and practical. The cutting school in particular did most acceptable work. The institution could not supply the demands for work people. The basketmaking section also was overwhelmed with orders. Well-organized canteens nourished cheaply this little community of workers saved from want and idleness. Their intellectual development was the object of the same care as their physiologic reeducation. Since the present war renders some such measure urgent, the city of Lyons, which is particularly rich in scientific and industrial resources, has volunteered to found without delay, the first school for cripples in France.

### An Appeal of the French Sanitary League

The object of the Ligue sanitaire française, whose president is Dr. Raphael Blanchard, professor of parasitology and of medical natural history at the Faculté de médecine de Paris, is to disseminate the principles of general hygiene. The league believes that under the present circumstances it has a special urgent task to fulfil. It is well known that after all wars the devastated regions are generally subjected to another scourge, that of epidemics (typhoid fever, choleriform infections, dysentery, etc.). To prevent this new calamity, the league has decided to send out a poster to the 6,000 communes affected by the German invasion indicating the most urgent hygienic precautions; for instance, against careless burial of bodies, pollution of springs and wells, and epidemic diseases with information about how they are spread and how they may be avoided. This notice will be posted in all communes. Moreover, wherever the mayors request it, public conferences will be held and it may be that antiseptics will be distributed free on request. The league appeals to all its friends to aid (1) by subscriptions of money, (2) by gifts of antiseptics, (3) by the loan of automobiles and (4) by any other methods. Donations may be addressed to the Secrétariat général de la Ligue sanitaire française, 72, rue de Rome, Paris.

### Sanitary Postal Cards

The families of sick and wounded soldiers have complained very justly that they receive only much delayed and very insufficient information. The minister of war has endeavored to meet this complaint as far as possible. Hospitals have been ordered to furnish lists of names of the sick and wounded to be sent to relatives of patients. Moreover, a sanitary postal card has been devised which is to be sent to the families with the signature of the head physician at the time of the admission of the soldier to the hospital and thereafter each week as long as the patient remains. Unfortunately, the heads of too many hospitals of the territorial or reserve army are unfamiliar with military discipline and up to the present they have tended to regard these lists as tiresome administrative red tape which could, in any event, be postponed to a convenient season. Very precise and peremptory instructions have just been given by the minister of war so that this duty may no longer be shirked.

## BERLIN LETTER

Berlin, Nov. 7, 1914.

### Experiences of the Latest Military Surgery

In a hospital in northern France, where the army headquarters are also situated, the Leipsic surgeon, Professor Payr, delivered a lecture a few days ago on the experiences which he had so far had in the present campaign. He said that military surgery has to reckon with an especial difficulty because the injured are pressed on the surgeons in such numbers that the surgeons are not physically capable of meeting the demands on them. The surgeon in the field must, as has always been the principle of our German sanitary service, work as simply and surely as possible. He must dismiss the wounded that he does not keep under his care in such condition that they may be transported further without danger from any possible accident. In this case, the surgeon in the war lacks any self criticism of his results because he loses sight of his patients in the great majority of cases immediately. However, previous experiences have already given some definite guiding principles. Among them belongs, for instance, the principle that surgeons should not operate too early.

#### VARIOUS KINDS OF WOUNDS

The wounds differ according to the kind of projectile and according to its effect. They concern infantry bullets, shrapnel, pieces of grenade or shells. The modern French infantry bullet consists of comparatively soft materials and is easily deformed. This occasions the hook form in which it is generally found in the wound. Nothing can be said with reference to the shape of pieces of grenade and shells. Something quite new which has been introduced with this war is the flying arrow. With dramatic vivacity Payr described the first experience of our troops with this weapon. Above a column of marching infantry there appeared a hostile aviator. While it was noticed that he was throwing no bombs, a man suddenly cried out, "I am hit." Although surgical examination at first showed only an insignificant wound on the left shoulder, the patient bled to death under the hands of the surgeon. Necropsy showed that the arrow had pierced the upper fossa of the clavicle, the left lung, the diaphragm, the spleen, the thigh and the pelvis, and had made its exit from the body at the knee. The arrow was found in the trousers of the dead man. It was a pointed piece of steel with the strength of a pen holder, the posterior half of which had been hollowed out quadrangularly so that in falling the heavy point was always downward. A number of such arrows hang in a perforated board under the aeroplane from which they can immediately be released by the pressure of the foot of the aviator, so that a certain scattering and volley-like discharge is secured. At an elevation of 1,500 meters (about a mile), from which they are generally thrown they reach the earth with a final velocity of 200 meters per second, which corresponds to the velocity of one of the older rifle balls. In cases like that described, the effect was fatal, but wounds from the aeroplane arrows are rare.

In describing the injuries of tissues and organs, the lecturer showed that the blood-vessels are cut through by the modern infantry bullet with a smooth wound. The number of injuries to blood-vessels in this war is larger than has been anticipated. The muscle swells up after a few seconds until its counterpressure is great enough to hinder the further exit of blood from the open vessel. Moreover, the nerves have no longer time to yield to the infantry bullet but are smoothly cut across. As far as concerns the serious injuries of bone, it has been shown that shot wounds of the joints take a comparatively favorable course as the result of spongy consistency of the bones about the joints, while the long bones with their ivory-like hardness suffer severely at the distances with which we have to reckon with our far-carrying weapon, and are splintered at a distance of from 1,600 to 1,800 meters. In the internal organs the tendency of the bullet to cause rupture comes into account if, like the kidney and bladder, they are filled with fluid. A peculiar phenomenon is wound fright, a condition in which, even with a relatively slight wound, the wounded show a very serious appearance and a small pulse.

Wounds of the head are especially frequent in modern warfare as a result of the extensive employment of protecting trenches. These wounds may be divided into perforating, tangential and furrowed. The perforating wound is the milder one. A man could be shown who had received a shot transversely through the brain but who yet was able to answer any questions, although with some delay. Sometimes in such cases an abscess of the brain occurs in consequence of infection, but it is possible to reach this by operation, and the case is by no means hopeless. On the other hand, the tangential wound in which the bullet has ploughed an open furrow in the skull shows almost without exception a very severe wound which is dangerous on account of splinters of bone and infection. Here energetic operative interference is generally necessary and, if carried out at the right time, affords in many cases, even with deep wounds of the brain, the prospect of complete recovery. Wounds of the neck, in spite of the crowding of important vital organs in a small space, pursued an astonishingly favorable course in the majority of cases. In wounds of the larynx, tracheotomy was often performed at the field hospital on account of the danger of suffocation. Wounds of the thorax permit almost the best prognosis. Smooth penetrating wounds through both lungs were in many cases so little dangerous that the wounded could already be transported after from ten to fourteen days, even if they had coughed up blood for a couple of days. To be sure, in wounds of the heart and its auricles the progress of surgery, which has made it possible in times of peace to suture such wounds, can be applied only exceptionally in time of war. Wounds of the abdomen were characterized by the lecturer as a disputed territory. The South African War afforded the experience in contrast with former views that it is better not to undertake operative treatment on abdominal wounds immediately but to postpone it. Multiple perforations of the intestines pursued a favorable course if the wounded were allowed to remain quiet for a week without eating or drinking.

### THE WORK OF MILITARY SURGERY

The entire work of military surgery consists in the first aid to the wounded, the final care of the wound and the after-treatment. The first aid consists chiefly in the stopping of hemorrhage. In reference to this, the lecturer remarked that the ligature of arteries had been found to be especially important in this war. The prevention of infection also belongs to the first aid. Brilliant results have been secured by the small bandage of germ-free gauze which the soldiers themselves apply in the field or which is applied by their comrades. The third task of first aid treatment is preparing the wounded for transportation. Here the strong cars introduced into the sanitary service do excellent work. The wounded man must be dismissed in such a condition that the surgeon is convinced that no further accident can happen to him on the journey. Broken bones must be fixed in plaster or with splints. The surgeon must in such cases often improvise his apparatus. Very good splints can be made from the limbs of trees and be covered with straw when no other material is at hand. In the final treatment of the wound, the principle has been adopted not to operate too hastily so that the aseptic healing which has already begun may not be interrupted. No importance is attributed in general to the removal of the bullet from the body unless it is necessary.

The shrapnel bullet often carries pieces of clothing into the depths of the wounds on account of the slight force with which it reaches its mark. In from 70 to 75 per cent. of cases, according to the experience in this war, shrapnel wounds resulted in suppuration. Also pieces of grenades with their ragged edges often carry foreign bodies into the flesh. Among the complications which may result, especially in artillery wounds, is the not very rare occurrence of tetanus. The attempt has been made to prevent this by the injection of tetanus serum. Also the injection of tetanus serum into the spinal canal, the nerve centers and the circulation has given successful results in the treatment of developed cases of this fearful disease. As a rule, the simple wounds of the soft parts by infantry bullets pursued a favorable course. In many cases those who had been struck by these bullets were fit for service in the field a week later. Wounds of the joint with infantry weapons pursue a favorable course if splints are applied at the right time. Wounds of the long bones are often much more serious from the distances with which we are concerned generally in this war. They are the crucial cases of our hospitals. It has been shown that delay in operation in these cases is often undesirable, but that an immediate free opening of the gunshot fracture is the proper treatment. Naturally, surgery of the present day, which has become eminently conservative, no longer takes the stand as shown by the distinguished Baron Larrey, chief surgeon of Napoleon I, who believed that he was giving the best help to the wounded if he amputated the wounded limbs. But it has been shown, on the other hand, that military surgery of the present day, in some rare cases, has probably become too sparing of amputation. Wounds of the skull as well as those of the neck and chest pursue a relatively favorable course, but the furrow-like wounds are dangerous. Bombs from aeroplanes are peculiar in their action. The wounded much oftener show burns from these than from the grenades and the splinters produce an especially sharp dagger-like wound canal. Payr closed with praise of the arrangements for moving the wounded, especially the luxuriously equipped hospital trains.

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BERLIN, NOV. 16, 1914.

### The Number of Casualties

The lists of names published in the *Deutsche medizinische Wochenschrift* show that to date the German army medical corps has lost 287 members. Among them, 94 were killed on the field of battle, 12 have died, 90 have been wounded, 27 taken prisoners and 64 are missing, which probably means that they are prisoners. Undoubtedly the number of actual losses is still greater. The facts naturally become known slowly by the troops and are still more slow in reaching publication. It is especially to be regretted that, on the one hand, so many have fallen in the exercise of their professional work and, on the other hand, that so many physicians have been taken and are being held prisoners.

### The Iron Cross for Physicians

In contrast with these sad features of the war, we must note that the number of decorations for gallantry in the field (the Iron Cross of the first and second class) awarded to German physicians is extraordinarily great. As is shown by the official communications, these are given not only in appreciation of exhausting and successful professional work but also as a recognition of bravery in the face of the enemy. Many physicians have for hours tended the wounded in the front ranks during a rain of bullets. Many have taken their charges out of hospitals which were exposed to a shower of the enemy's bullets, and were partly on fire. It is easily understood that many of our colleagues lost their lives in this way.

### Death of Weismann

August Weismann, zoologist and biologist, died November 6 after a short illness, at the age of 81. He was one of the most distinguished German naturalists of the present period, and had taken first place among the investigators of the Darwinian theory of evolution. Originally he studied medicine. After passing his state examination, he was for a time an assistant at the medical clinic at Rostock. Then he went to foreign countries for further practical education, and his interest in zoology led him gradually to devote himself exclusively to this field. He became a pupil of Leuckart at Giessen and in 1863 he joined the faculty of Freiburg in zoology and comparative anatomy, and in spite of frequent honorable calls elsewhere he never left this university. Weismann devoted his scientific lifework almost exclusively to the grounding and further development of the theory of the evolution of species, and in this field again he preferably devoted himself to one of the most difficult and disputed biologic problems, that of heredity. Darwin had adopted as a temporary hypothesis for the explanation of the inheritance of peculiarities the theory of pangenesis, which in its basic principles goes back to Hippocrates. This theory teaches that from all parts of an organism material contributions pass into the juices of procreation so that the latter, to a certain extent, consist of a concentrated extract of the former. He assumed in this that a living organism had the power of transmitting to its progeny those peculiarities which it had acquired for the first time in the course of its individual existence. He regarded this as an essential factor in the further development of the characteristics of a species and the formation of new species.

The numerous difficulties which the Darwin theory of heredity had encountered led Weismann to more or less successful researches to remove its defects and particularly to secure comprehensible morphologic ideas of the manner in which the elements passing from the entire organism to the sexual cells are to be regarded as active. One of the most important results of these investigations is the theory developed by Weismann—in conjunction with Jäger, Galton and other investigators—of the continuity of the germ plasm. Whatever one may think of its explanatory value, this theory has been, at any rate, very fruitful and rich in results by the stimulus which it has exerted, not only on biology, but also on pathology, natural philosophy and other sciences.

On the basis of this theory, Weismann reaches an exactly opposite result to that of Darwin with regard to inheritance of acquired characters, since Darwin found no difficulty in assuming the possibility of extensive modification of the germ elements. In contrast with this, Weismann declared that the endogenous structure of the germ plasm, with which the function of heredity is connected, is unchangeable and stable. All those characters which the individual in the course of his life has acquired from external sources—changes of organs, diseases, deformities, etc.—cannot, according to Weismann, be transmitted to the offspring. In numerous publications Weismann expounded his theory, which provoked long discussions in the world of science, lasting even to the present time. He published in 1892 "Das Keimplasma, eine Theorie der Vererbung," and in 1902-1904, "Vorträge über die Deszendenztheorie." Of more popular interest are two inspiring productions "Ueber die Dauer des Lebens" (1882), and "Leben und Tod" (1884)—"Length of Life," and "Life and Death"—in which he sought to demonstrate that the length of life of individuals is the result of natural selection, a phenomenon of adaptation which has been produced by the advantage which it affords for the maintenance of the species.

August Weismann was not only a noted and thorough investigator but, what is not always associated with this, he was an excellent university teacher who enjoyed the highest regard of his hearers because of the wonderful clearness and distinctness of his address.

## Marriages

Joseph Augustus Blake, M.D., to Mrs. Katherine Alexander Duer, both of New York City, in Paris, France, November 28.

Leroy Thomas Geer, M.D., Syracuse, N. Y., to Miss Adele May Spencer of Los Angeles, at Auburn, N. Y., November 13.

Leroy Francis Heimberger, M.D., Wei Hei Shien, China, to Miss Louisa Corbett of Chefoo, China, November 26.

Clarence Edward Burt, M.D., to Miss Anne Beatrice McCullough, both of New Bedford, Mass., November 25.

Wilbur Randolph Hurst, M.D., to Miss Gertrude Amy Rosencranz, both of Evansville, Ind., November 11.

William Henry Eason, M.D., Lula, Miss., to Miss Willie Joyner Greer of Potts Camp, Miss., November 5.

Peter Jackson Sherlock, M.D., Lockridge, Ia., to Miss Stella Garbre of Mt. Pleasant, Ia., November 17.

Alfred Townsend Osgood, M.D., to Miss Ethna de Lestere Mackeye, both of New York City, November 24.

Edward Morrison Myers, M.D., Boone, Ia., to Miss Margaret Ross of Frankfort, Ind., November 24.

Jacob Victor Greenebaum, M.D., Cincinnati, to Miss Fannie Frank of Boston, November 22.

Arthur Reeves, M.D., Bladen, Neb., to Miss Flora Wilderman of Pittsburg, Kan., November 9.

John E. O'Neill, M.D., to Miss Catherine Agnes Thuman, both of Baltimore, November 23.

Walter Edward List, M.D., to Miss Beulah Kleespies, both of Cincinnati, November 25.

## Deaths

**Clinton Wagner, M.D.** University of Maryland, Baltimore, 1859; surgeon-in-chief of the Second Division of the Fifth Army Corps of the Army of the Potomac; prime mover in the establishment of several military hospitals, including the first floating hospital on Western waters; founder of the New York Laryngological Society and instrumental in the founding of the American Laryngological Society; first professor of laryngology and rhinology in the New York Post-Graduate Medical School and Hospital; inventor of many surgical instruments and the author of voluminous literature relating to his specialty; died in Geneva, Switzerland, November 25, aged 77 years.

**John Walter Grimes, M.D.** University of the South, Sewanee, Tenn., 1898; a member of the Medical Association of the State of Alabama; once president of the Talladega County (Ala.) Medical Association; a practitioner of Talladega Springs and surgeon for the Alabama Mineral Division of the Louisville and Nashville System; who moved to Clayton, N. Mex., two years ago on account of tuberculosis; died in that place, November 27, from pulmonary hemorrhage, aged 46.

**Euclid Van Zandt, M.D.** College of Physicians and Surgeons, Keokuk, Ia., 1878; a pioneer practitioner and for many years county physician of Whatcom County, Wash.; for several years president of the Washington State Medical Association and of the State Board of Medical Examiners; in 1904 appointed superintendent of the State Hospital for the Insane, Fort Steilacoom; died in Bellingham, Wash., November 20, from arteriosclerosis, aged 70.

**Darwin Adelbert Stewart, M.D.** College of Physicians and Surgeons in the City of New York, 1869; of Winona, Minn.; a member of the Minnesota State Medical Association; in 1902 and 1903 mayor of Winona, Minn.; for ten years coroner of Winona County; for five years city physician, and once president of the school board; local physician for the Chicago, Milwaukee and St. Paul Railway; died in St. Barnabas' Hospital, Minneapolis, November 30, aged 69.

**Harry T. Walker, M.D.** Keokuk (Ia.) Medical College, 1898; of Dubuque, Ia.; formerly a Fellow of the American Medical Association; a member of the Iowa State Medical Society; a member of the staff of St. Joseph's Mercy Insane Hospital; died in Mercy Hospital, Dubuque, November 30, a few hours after an operation for disease of the kidney, aged 48.

**Albert Charles Peale, M.D.** University of Pennsylvania, Philadelphia, 1871; for more than thirty years connected with the Smithsonian Institute and the National Museum, Washington; mineralogist and geologist in the government employ in the survey of the territories from 1871 to 1879; and geologist of the U. S. Geological Survey from 1883 to 1898; died in the German Hospital, Philadelphia, December 5, from cerebral hemorrhage, aged 65.

**William Terrence Carolin, M.D.** Harvard Medical School, 1877; a Fellow of the American Medical Association and formerly a member of the Massachusetts State Board of Health, Lunacy and Charity; died at his home in Lowell, Mass., November 21, aged 62. The active pall-bearers at his funeral were his professional associates in Lowell.

**James Sullivan Howe, M.D.** Harvard Medical School, 1881; a Fellow of the American Medical Association and American Dermatological Association; professor of dermatology in Tufts College Medical School, Boston; dermatologist to the Boston City Hospital and Boston Dispensary; died at his home in Brookline, Mass., November 22, aged 56.

**Benjamin F. Whitmer, M.D.** Jefferson Medical College, 1868; formerly a member of the Indiana State Medical Association and for more than thirty-five years a practitioner of Elkhart County; a surgeon in the Federal service during the Civil War; died at his home in Goshen, Ind.; November 22, from cerebral hemorrhage, aged 76.

**J. McBride Johnson, M.D.** Kentucky School of Medicine, Louisville, 1899; of West Plains, Mo.; a member of the Missouri State Medical Association and a specialist in diseases of the eye, ear, nose and throat; died in a hospital in Springfield, Mo., November 22, from nephritis, aged 42.

**Mosheim S. Burgess, M.D.** Maryland Medical College, Baltimore, 1907; formerly of Medford, Ore.; died in his office in Wayne, W. Va., November 24, from the effects of a gunshot wound of the head, self-inflicted, it is believed with suicidal intent, aged 34.

**Albert Barnes Dorman, M.D.** College of Physicians and Surgeons, Boston, Mass., 1892; a member of the Massachusetts Medical Society; a practitioner of Winthrop, Mass., for more than thirty-five years, and for twelve years, chairman of the board of health of that town; died at his home in Winthrop, November 22, aged 59.

**William Palmer Melcher, M.D.** University of Pennsylvania, Philadelphia, 1876; a Fellow of the American Medical Association; for six years a practitioner of Camden, N. Y.; visiting physician to the Burlington County (N. J.) Hospital; died at his home in Mt. Holly, N. J., November 30, from heart disease, aged 65.

**Frederick Enoch Shaw, M.D.** Cooper Medical College, San Francisco, 1908; a member of the Medical Society of the State of California; formerly a resident of Haverhill, Mass.; recently elected commissioner of finance of Sacramento, Cal.; died at his home in that city, November 29, from pulmonary hemorrhage, aged 35.

**Francis Lester Babcock, M.D.** Boston University School of Medicine, 1879; for many years a member of the Dedham (Mass.) Board of Health and for ten years visiting physician to the Norfolk County Home, Dedham; died at his home in East Dedham, Mass., October 27, from cerebral hemorrhage, aged 65.

**Samuel Webb Scales, M.D.** Vanderbilt University, Nashville, Tenn., 1905; of Starkville, Miss.; surgeon to the John N. Stone Cotton Mills; while crossing the railroad tracks near his home, November 26, in his automobile, was run down by a passenger train and almost instantly killed, aged 34.

**William Ernest Walker, M.D.** Baltimore College of Dental Surgery, 1889; University Medical College, Richmond, Va., 1900; an Associate Fellow of the American Medical Association and a prominent dentist and oral surgeon of New Orleans; died in the Hotel Dieu in that city, November 21, aged 46.

**William Tatum Richmond, M.D.** Tulane University, New Orleans, 1882; a Confederate veteran; for many years a practitioner of Manor and Edna, Texas; health officer of Edna and Jackson counties; died at the home of his son in El Paso, Texas, November 22, from heart disease, aged 72.

**Warren Morris Babbitt, M.D.** New York University, New York City, 1858; assistant surgeon of the Fifty-Fifth Massachusetts Volunteer Infantry and later surgeon of a New York regiment during the Civil War; died at his home in South Braintree, Mass., November 26, from pneumonia, aged 82.

**Charles Bailey Simcoe, M.D.** Missouri Medical College, St. Louis, 1884; superintendent of the State Institution for Feeble-Minded, Marshall, and later assistant physician at the Nevada State Hospital; died in that institution, November 21, from nephritis, aged 54.

**Marshall T. Shively, M.D.** Medical College of Ohio, Cincinnati, 1874; a member of the Indiana State Medical Association and a prominent practitioner of Grant County, Ind.; died at his home in Marion, November 23, from cerebral hemorrhage, aged 65.

**James Muir Halstead, M.D.** Kentucky University, Louisville, 1906; of Ridgway, Colo.; local surgeon for the Denver and Rio Grande System; died in the Mont Rose Hospital, November 14, a few hours after an operation for acute appendicitis, aged 29.

**William Wesley Johnson, M.D.** University of Pennsylvania, Philadelphia, 1865; of Chester, Pa.; surgeon of U. S. Volunteers during the Civil War; died suddenly while making a professional call in Chester, Pa., October 21, from cerebral hemorrhage, aged 77.

**Charles W. Shreve, M.D.** University of Maryland, Baltimore, 1858; for many years a practitioner of Dickerson, Md.; died at the home of his son in Washington, D. C., November 24, from the effects of a fracture of the hip three months before, aged 80.

**Charles Bertram Powell, M.D.** University of Minnesota, Minneapolis, 1894; a Fellow of the American Medical Association and a specialist on diseases of the eye, ear, nose and throat; died at his home in Bemidji, Minn., November 30, aged 43.

**Jeptha J. Alford, M.D.** Tulane University, New Orleans, 1857; formerly a member of the Louisiana Legislature and a resident of Sunny Hill; one of the oldest residents of Washington Parish; died at the home of his son near Osyka, Miss., November 21.

**William Augustine Hewins, M.D.** Miami Medical College, Cincinnati, 1878; a Fellow of the American Medical Association; for thirty-five years a practitioner of Chandler, Ind.; died at his home in that place, November 26, from asthma, aged 63.

**John Irvine Wiley, M.D.** Trinity Medical College, Toronto, Ont., 1889, and gold medalist of his year; a member of the Board of Education of Dresden, Ont.; died at his home in that place, October 15, from pernicious anemia, aged 48.

**J. T. Bettis, M.D.** Cleveland Homeopathic Medical College, 1869; a veteran of the Civil War; and for more than forty years a practitioner of Livonia, N. Y.; died at his home in that city, November 22, from heart disease, aged 69.

**Samuel William Coombs, M.D.** Vanderbilt University, Nashville, Tenn., 1885; local surgeon at Bowling Green, Ky., for the Louisville and Nashville System; died at his home November 20, from cerebral hemorrhage, aged 51.

**Crawford Johnston, M.D.** University of Toronto, Ont., 1907; an early practitioner of Sheridan County, Mont., and a resident of Culbertson; died in the Havre (Mont.) Hospital, November 14, from typhoid fever, aged 32.

**Hannibal W. Rand, M.D.** University of Vermont, Burlington, 1881; a Fellow of the American Medical Association; health officer of Keene, N. Y.; died in the Mary Fletcher Hospital, Burlington, Vt., November 20, aged 60.

**Walter V. Hanscom, M.D.** Hahnemann Medical College, Philadelphia, 1890; for sixteen years in charge of a hospital in Rockland, Me.; died at the home of his brother in Haverhill, Mass., November 7, from nephritis, aged 45.

**Elton L. Wilson, M.D.** Tulane University, New Orleans, 1883; a Fellow of the American Medical Association, and for many years a practitioner of Yell County, Ark.; died at his home in Fowler, Ark., November 26, aged 55.

**Thomas Olin Jones, M.D.** University of Virginia, Charlottesville, 1875; a member of the Medical Society of Virginia; died at his home in Harrisonburg, Va., November 22, from cerebral hemorrhage, aged 63.

**John B. Brierly, M.D.** Missouri Medical College, St. Louis, 1888; of Gunn City, Mo.; a member of the Missouri State Medical Association; died in the German Hospital, Kansas City, Mo., November 20, aged 53.

**Warren M. Campbell, M.D.** Cincinnati College of Medicine and Surgery, 1871; for more than sixty years a practitioner; died at his home in Kansas City, Mo., November 28, aged 87.

**Delphius W. Howard, M.D.** Hahnemann Medical College, Chicago, 1881; formerly mayor of Independence and Nevada, Mo.; died at his home in Nevada, November 21.

**Frederick Seitz, M.D.** Jefferson Medical College, 1886; for thirty-eight years a physician and druggist of Philadelphia; died at his home in that city, November 25, from cerebral hemorrhage, aged 63.

**William H. Smith, M.D.** Western Reserve University, Cleveland, Ohio, 1876; for fifty-eight years a practitioner of Rushville, Ind.; died at his home in that city, November 10, from angina pectoris, aged 80.

**John T. Hubel, M.D.** Detroit College of Medicine, 1899; examining surgeon to the United States Marine Corps in Detroit; died at his home in that city, November 29, from disease of the lungs, aged 37.

**Thaddeus FitzHugh, M.D.** Medical College of Virginia, Richmond, 1859; a Confederate veteran; in 1896 appointed postmaster of Kansas City, Kan.; died at his home in that city, November 21, aged 79.

**Stephen Clarence Pettit, M.D.** Long Island College Hospital, Brooklyn, 1895; died at his home in Brooklyn December 3, from septicemia due to an infected wound received while operating, aged 43.

**Louis C. Long, M.D.** Northwestern Medical College, St. Joseph, Mo., 1882; for twenty-three years a practitioner of Lincoln, Neb.; died at his home in that city, December 2, from diabetes, aged 57.

**Sarah C. Hussey Millen, M.D.** College of Physicians and Surgeons, Keokuk, Ia., 1882; of Omaha, Neb.; died in the Nicholas Senn Hospital, Omaha, November 22, from cerebral hemorrhage, aged 59.

**Newton Graves, M.D.** Western Reserve University, Cleveland, Ohio, 1862; for more than twenty years a practitioner of Stafford; died in the Masonic Home, Utica, N. Y., November 23, aged 86.

**J. M. Sheppard, M.D.** Baltimore Medical College, 1894; a member of the West Virginia Medical Association; was found frozen to death near his home at Falls Mills, Va., November 21.

**Robert McNeilly, M.D.** University of Pennsylvania, Philadelphia, 1863; assistant surgeon of Volunteers during the Civil War; died at his home in New York City, November 28, aged 83.

**Loren S. Barton Otwell, M.D.** Medical College of Ohio, Cincinnati, 1865; a pioneer practitioner of southeastern Kansas; died at his home in Independence, Kan., December 3, aged 87.

**Isaac Moore, M.D.** St. Louis Medical College, 1870; for many years a practitioner of Alton, Ill.; died in the Deaconess Hospital, St. Louis, November 19, after a surgical operation, aged 67.

**William Henry Baldinger, M.D.** Jefferson Medical College, 1885; oculist and aurist to the Home for Homeless Children, Galveston, Texas; died recently at his home in Galveston, aged 54.

**Ralph H. Augur, M.D.** Baltimore Medical College, 1909; a post-graduate worker in John Hopkins Hospital; was found dead in his office in Baltimore, November 27, aged 32.

**James Henry Cocke, M.D.** Memphis Hospital Medical College, 1900; a member of the Tennessee State Medical Association; died at his home in Moscow, Tenn., November 19.

**Michael Richard McGarry, M.D.** Dalhousie University, Halifax, N. S., 1908; of Florence, N. S.; died in Harbor View Hospital, North Sydney, N. S., September 23, aged 34.

**Welcome Harrison Calfee, M.D.** St. Louis Medical College, 1870; Bellevue Hospital Medical College, 1877; of Muskogee, Okla.; died in Big Cabin, Okla., October 21, aged 73.

**Stephen H. Gillis, M.D.** McGill University, Montreal, 1910; of St. Louis, P. E. I.; died in the Charlottetown, P. E. I. Hospital, September 16, from typhoid fever, aged 29.

**Charles R. Crow, M.D.** Eclectic College of Physicians and Surgeons, Indianapolis, Ind., 1892; died at his home in Indianapolis, November 27, from neuritis, aged 62.

**Frederick W. Kohler, M.D.** Jefferson Medical College, 1882; well known as a travel lecturer of Philadelphia; died in the German Hospital in that city, November 27.

**J. W. Hogsett, M.D.** Medical College of Indiana, Indianapolis, 1875; a veteran of the Civil War; died recently at his home in Lincoln, Kan.

**Albert Elliott Wright** (license, Michigan, twelve years of practice, 1900) for nearly half a century a resident of Ecorse, Mich.; died at his home, November 28, aged 73.

**Willis B. Parks, M.D.** Southern Medical College, Atlanta, Ga., 1881; died at his home in Atlanta, November 23, aged 61.

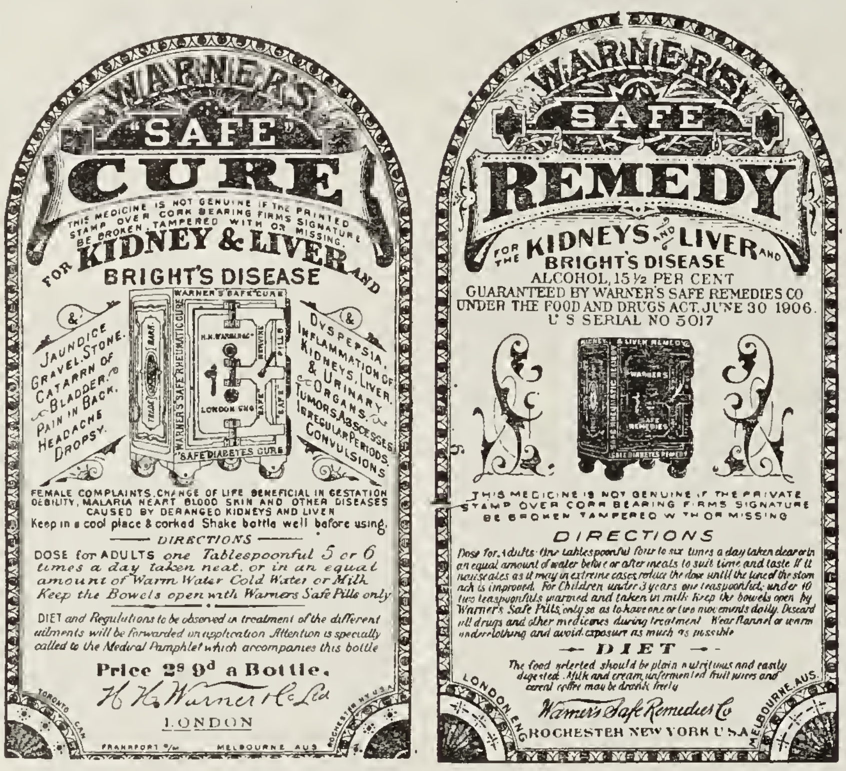
# The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

## WARNER'S SAFE REMEDY

### An Unsafe and Fraudulent Nostrum

"Warner's Safe Remedy for the Kidneys and Liver and Bright's Disease" was sold, not long ago, as "Warner's Safe Cure for Kidney and Liver, Bright's Disease, Urinary Disorders, Female Complaints, General Debility, Malaria and all Diseases caused by Disordered Kidneys and Liver." The company that puts the product on the market was known, until recently, as Warner's Safe Cure Company, Rochester, N. Y. It is now "Warner's Safe Remedies Company." The Warner concern is said to be leased by, and practically a subsidiary company of the New York and Kentucky Company, distillers and wholesale liquor dealers of Rochester, whose business is frankly and openly the manufacture of whiskies. Another subsidiary concern of the New York and Kentucky Company is the Duffy Malt Whiskey Company.



WARNER'S
"SAFE"
CURE
THIS MEDICINE IS NOT GENUINE IF THE PRINTED STAMP OVER CORK BEARING FIRMS SIGNATURE BE BROKEN, TAMPERED WITH OR MISSING.
FOR KIDNEY & LIVER AND
BRIGHT'S DISEASE
& JAUNDICE GRAVEL. STONE. CATARRH OF BLADDER. PAIN IN BACK. HEADACHE DROPSY.
& DYSPEPSIA. INFLAMMATION OF KIDNEYS, LIVER, & URINARY ORGANS. TUMORS, ABSCESSES IRREGULAR PERIODS. CONVULSIONS
FEMALE COMPLAINTS, CHANGE OF LIFE BENEFICIAL IN GESTATION DEBILITY, MALARIA HEART BLOOD SKIN AND OTHER DISEASES CAUSED BY DERANGED KIDNEYS AND LIVER
Keep in a cool place & corked Shake bottle well before using.
DIRECTIONS
DOSE for ADULTS *one Tablespoonful 5 or 6 times a day taken neat, or in an equal amount of Warm Water Cold Water or Milk Keep the Bowels open with Warners Safe Pills only*
DIET *and Regulations to be observed in treatment of the different ailments will be forwarded on application Attention is specially called to the Medical Pamphlet which accompanies this bottle*
**Price 2$^{s}$ 9$^{d}$ a Bottle.**
H. H. Warner & Co Ltd
LONDON
TORONTO CAN
ROCHESTER N.Y. U.S.A.
FRANKFORT a/M
MELBOURNE AUS

WARNER'S
SAFE
REMEDY
FOR THE KIDNEYS AND LIVER AND
BRIGHT'S DISEASE
ALCOHOL, 15½ PER CENT
GUARANTEED BY WARNER'S SAFE REMEDIES CO
UNDER THE FOOD AND DRUGS ACT, JUNE 30 1906.
U S SERIAL NO 5017
THIS MEDICINE IS NOT GENUINE IF THE PRIVATE STAMP OVER CORK BEARING FIRMS SIGNATURE BE BROKEN TAMPERED WITH OR MISSING
DIRECTIONS
*Dose for Adults One tablespoonful four to six times a day taken clear or in an equal amount of water before or after meals to suit time and taste If it nauseates as it may in extreme cases reduce the dose until the tone of the stomach is improved. For Children under 3 years one teaspoonful; under 10 two teaspoonfuls warmed and taken in milk Keep the bowels open by Warner's Safe Pills only so as to have one or two movements daily. Discard all drugs and other medicines during treatment Wear flannel or warm underclothing and avoid exposure as much as possible*
DIET
*The food selected should be plain nutritious and easily digested. Milk and cream, unfermented fruit juices and cereal coffee may be drunk freely*
Warner's Safe Remedies Co
ROCHESTER NEW YORK U.S.A.
LONDON ENG
MELBOURNE AUS.

Reduced facsimiles of the Warner labels as used in the United States (on right) and in the British Isles (on left) after the passage of the Food and Drugs Act. Notice that the "Cure" became a "Remedy" in the United States and the range of diseases for which the stuff is, or was, recommended is much smaller on this side of the Atlantic.

The history of Warner's Safe Remedy is typical of the "patent medicine" business. In the free and easy days, before the public was protected by the Food and Drugs Act, Warner's Safe Cure was advertised extensively — and fraudulently. Efforts were made to impress on the well and the sick the falsehoods that most aches and pains are due to diseased kidneys; that a pain in the back is a sure sign of Bright's disease, and that the only sure cure is the Warner nostrum. The concern went even further in its attempt to frighten people into purchasing Warner's Safe Cure. The advertisements contained what purported to be a sure and simple test for kidney disease. This "test" was led up to by such "scare" claims as:

> "At every stroke of the clock a human life goes out. Nearly one-half of all deaths are the result of kidney disease. Nine men and women out of every ten have kidney trouble. If in doubt, try this simple home test":
>
> "Diseased kidneys cause more sickness, suffering and serious complications than any other disease. Thousands of people have kidney trouble and do not know it. If in doubt make this test":
>
> "Thousands of men and women have kidney disease and do not know it until it is too late. This simple test will tell":

The "test" by which the susceptible were to be frightened into a belief that they were seriously ill was described thus:

> "Put some morning urine in a glass or bottle; let it stand for twenty-four hours. If then it is milky or cloudy or contains reddish brick-dust sediment, or if particles or germs float about in it, your kidneys are diseased. This is the supreme moment when you should begin to take Warner's Safe Cure to arrest all these unnatural conditions, for they are the unmistakable symptoms of kidney disease."

They are "unmistakable symptoms" of nothing of the sort. Practically any normal urine from a perfectly healthy individual will become more or less cloudy after standing twenty-four hours. "Brick-dust sediment" indicates nothing more serious than a concentrated urine and is not an "unmistakable symptom" of "kidney disease." How much mental anguish has been caused by, and how many poor devils have been frightened into purchasing this false and fraudulent nostrum through the villainous suggestion contained in the "test" just quoted there is no means of knowing. That it brought in a golden harvest to the stockholders in Warner's Safe Cure Company, can not be doubted.

With the coming of the Food and Drugs Act, the cruder and more evidently false claims made for this nostrum began slowly to disappear. For some years, however, the lying continued in the newspaper advertising, although certain modifications were made in the labels and cartons. The labels and cartons used in Great Britain, however, continued to bear the same false statements years after the change had been made in the American labels. Such statements as those that follow continued to accompany the trade package of Warner's Safe Cure as sold in Great Britain, long after similar falsehoods had been eliminated from the trade package of the Warner nostrum sold in the United States:

> "Warner's Safe Cure is a purely vegetable preparation . . ."
>
> "It is the only recognized specific."
>
> "Warner's Safe Cure is the most wonderful and beneficent medicine known."
>
> "Backache is the one sure sign of deranged kidneys."

At various times this nostrum has been analyzed and the composition of the product has been described. According to a quotation appearing in the report of the Australian Royal Commission on Secret Drugs, Cures and Foods, the following formula for Warner's "Safe Kidney and Liver Cure" was furnished the German government in accordance with the law:

| | | |
|---|---|---|
| Extract lycopus virginiana ........ | 308 | grains |
| Extract hepatica (herb) ........ | 322 | grains |
| Extract gaultheria. | 7½ | grains |
| Potassium nitrate | 39 | grains |
| Alcohol (90 per cent.) ....... | 2½ | ounces |
| Glycerin ....... | 10 | drams |
| Water sufficient to make ..... | 1 | pint |

It is reported that as long ago as 1887 the Health Department at Karlsruhe issued a warning to the public against the use of Warner's Safe Cure and closed its pronouncement with the statement: "We warn you against buying this useless medicine."

From the formula given above, it will be seen that the essential drugs in the nostrum are alcohol and potassium nitrate. In 1907 the North Dakota Agricultural Experiment Station analyzed the stuff and it, too, found potassium nitrate and alcohol as, also, did the chemists of the British Medical Association in 1909. Still more recently the chemists of the Laboratory of the American Medical Association have examined Warner's Safe Remedy with the following results:

#### LABORATORY REPORT

One bottle of Warner's Safe Remedy, manufactured by the Warner's Safe Remedies Co., Rochester, N. Y., was submitted to the Chemical Laboratory for examination. The bottle contained a brown murky liquid, having an aromatic flavor, the odor of oil of wintergreen being quite pronounced. The specific gravity of the liquid at 15.6 C. was 1.0653. Qualitative tests demonstrated the presence of potassium, trace of sodium, nitrate, glycerin, alcohol, and extractive matter.

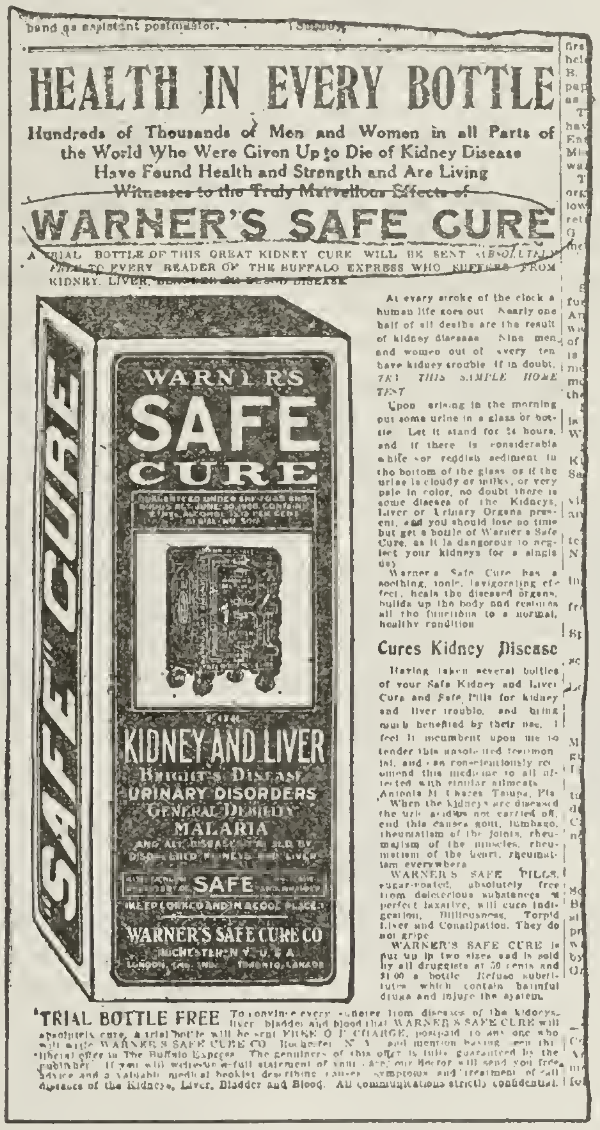
Quantitative estimations yielded the following:

| | |
|---|---|
| Alcohol (by volume) .............................. | 14.40 per cent. |
| Glycerin (by weight) .............................. | 7.72 per cent. |
| Pot. nitrate (calculated from 0.68 per cent. potassium) | 1.75 per cent. |

Each fluid ounce (two tablespoonfuls) contains essentially 4.5 c.c. of 95 per cent. alcohol, 2 c.c. (½ fluid drachm) glycerin and .55 gm. (8½ gr.) potassium nitrate with extractive matter.

Here, then, we have a preparation sold inferentially for the cure of Bright's disease and consisting essentially of alcohol, glycerin and potassium nitrate, with extractives. Alcohol, of course, is contra-indicated in inflammatory diseases of the kidney. Potassium nitrate is a kidney irritant and would tend to aggravate any inflammation that might exist. The label on the bottle of Warner's Safe Remedy declares the presence of 15.5 per cent. alcohol and recommends a dosage of one tablespoonful four to six times a day. The circular wrapped around the bottle recommends "one tablespoonful six or eight times a day." Taken at the maximum dose recommended, one large (pint) bottle of Warner's Safe Remedy would last four days. Such a bottle of Warner's Safe Cure contains an amount of alcohol equivalent to the alcohol in 5 ounces of whiskey. This means that the person suffering from Bright's disease who buys Warner's Safe Remedy and takes it according to directions may get the equivalent of 5 ounces of whiskey every four days. In addition to this he may also be getting a daily dose of 34 grains of potassium nitrate to irritate the kidneys further.

Not only, then, will Warner's Safe Remedy not cure Bright's disease but it may hasten the death of the sufferer who takes it. Those who, suffering from diseases of the kidney, rely on Warner's Safe Remedy, will not only be cruelly defrauded but will, without question, shorten their lives.



band as assistant postmaster.

HEALTH IN EVERY BOTTLE

Hundreds of Thousands of Men and Women in all Parts of the World Who Were Given Up to Die of Kidney Disease Have Found Health and Strength and Are Living Witnesses to the Truly Marvellous Effects of

WARNER'S SAFE CURE

A TRIAL BOTTLE OF THIS GREAT KIDNEY CURE WILL BE SENT ABSOLUTELY FREE TO EVERY READER OF THE BUFFALO EXPRESS WHO SUFFERS FROM KIDNEY, LIVER, BLADDER OR BLOOD DISEASE

At every stroke of the clock a human life goes out. Nearly one half of all deaths are the result of kidney diseases. Nine men and women out of every ten have kidney trouble. If in doubt, *TRY THIS SIMPLE HOME TEST.*

Upon arising in the morning put some urine in a glass or bottle. Let it stand for 24 hours, and if there is considerable white or reddish sediment in the bottom of the glass or if the urine is cloudy or milky, or very pale in color, no doubt there is some disease of the Kidneys, Liver or Urinary Organs present, and you should lose no time but get a bottle of Warner's Safe Cure, as it is dangerous to neglect your kidneys for a single day.

Warner's Safe Cure has a soothing, tonic, invigorating effect, heals the diseased organs, builds up the body and restores all the functions to a normal, healthy condition.

Cures Kidney Disease

Having taken several bottles of your Safe Kidney and Liver Cure and Safe Pills for kidney and liver trouble, and being much benefited by their use, I feel it incumbent upon me to tender this unsolicited testimonial, and can conscientiously recommend this medicine to all affected with similar ailments. Antonio M. Chaves, Tampa, Fla.

When the kidneys are diseased the uric acid is not carried off, and this causes gout, lumbago, rheumatism of the joints, rheumatism of the muscles, rheumatism of the heart, rheumatism everywhere.

WARNER'S SAFE PILLS, sugar-coated, absolutely free from deleterious substances, a perfect laxative, will cure indigestion, Biliousness, Torpid Liver and Constipation. They do not gripe.

WARNER'S SAFE CURE is put up in two sizes and is sold by all druggists at 50 cents and $1.00 a bottle. Refuse substitutes which contain harmful drugs and injure the system.

TRIAL BOTTLE FREE To convince every sufferer from diseases of the kidneys, liver, bladder and blood that WARNER'S SAFE CURE will absolutely cure, a trial bottle will be sent FREE OF CHARGE, postpaid, to any one who will write WARNER'S SAFE CURE CO., Rochester, N. Y., and mention having seen this liberal offer in The Buffalo Express. The genuineness of this offer is fully guaranteed by the publisher. If you will write us a full statement of your case, our Doctor will send you free advice and a valuable medical booklet describing causes, symptoms and treatment of all diseases of the Kidneys, Liver, Bladder and Blood. All communications strictly confidential.

A typical Warner advertisement of a few years ago. Notice the "scare stuff" and the fraudulent "home test."

## CYPRIDOL CAPSULES

### Report of the Council on Pharmacy and Chemistry

Having voted that Cypridol Capsules be refused recognition, the Council directed that for the information of physicians publication of the following report be authorized.

W. A. Puckner, Secretary.

Cypridol Capsules, sold by E. Fougera & Co., New York, are stated to be "Bottled in the New York Laboratories of Vial, late Rigaud and Chapoteaut, Paris," and to contain, in each capsule, 2 mg. (1/32 grain) mercuric iodid (biniodid of mercury) dissolved in a fatty oil. They are claimed to permit the administration of mercury without danger of salivation—an obvious misrepresentation.[1] Cypridol Capsules are marketed in a way to appeal to the public. If they are once prescribed, the directions on the bottle and the full instructions for the treatment of syphilis by means of Cypridol and by other proprietaries sold by Fougera & Co. is likely to lead the patient to attempt the treatment of his malady on his own accord, and thus probably to forfeit his chances of cure. Cypridol is a vicious example of the "ready-to-take" proprietaries.

Cypridol Capsules are in conflict with the Rules of the Council as follows:

Rule 4: The dosage, price, etc., on the label, and the name "Cypridol" blown in the bottle, all tend to a direct self-prescribing by the public. In addition to the objectionable statements on the bottle itself, the preparation is put up in patent medicine style and is accompanied by a circular giving full directions for the use of this and of other proprietaries for the treatment of syphilis in all of its stages. The circular states that "a 1 per cent. solution of bin-iodide of mercury in an aseptic oil" is "An Improved Specific in the Treatment of Syphilis," and after lauding the virtues of Cypridol, gives full directions for the treatment of syphilis in its various stages by means of Capsules of Cypridol augmented, during periodical cessation of treatment, by "small doses of iodide of strontium (Paraf-Javal's standard solution, thirty grains to the ounce)." Further, the circular expounds the need of "a toning up of the general system" and by means of obsolete theories and obviously untrue assertions recommends "*Chapoteaut's Wine* [another of their proprietary preparations], each ounce of which contains 10 grains of phospho-glycerate of lime. This is a delicious, nutritive tonic. A pint bottle costs $1.00."

Rule 6: Whereas it is evident that Cypridol, depending for its effects on mercuric iodid, the ordinary well-known hydrargyri iodidum rubrum of the U. S. Pharmacopeia, must naturally have the properties of a mercuric compound, unwarranted claims such as the following are made:

> "CYPRIDOL does not render patients anemic. Ptyalism never follows the administration of the capsules or injections. On the contrary, patients rapidly put on flesh and keep well. There are no diarrhoeas or other symptoms of intolerance even when the dose is pushed."

Rule 8: The non-informing name "Cypridol" for a mercuric iodid preparation is bound to lead to its use without consideration of the fact that a potent mercury preparation is being used, requiring a careful adjustment of dosage, a consideration of the needs of the individual case, a correct diagnosis, etc. While the advertising propaganda argues that "physicians recognize the advantage of prescribing this solution of mercuric iodide in an aseptic oil under the name of 'Cypridol,' because it does not betray to the laity the fact that mercury is being used," not only the physician but also the patient has a right to know, and ought to know, the potent character of the remedy which is being administered.

It is recommended that Cypridol be refused recognition and that publication of this report be authorized.

## INTESTINAL ANTISEPTIC W-A

### Report of the Council on Pharmacy and Chemistry

The Council voted that Intestinal Antiseptic W-A be refused recognition, and that the publication of the following report be authorized. W. A. Puckner, Secretary.

The Abbott Alkaloidal Company advertises "Intestinal Antiseptic W-A" as

> ". . . A scientifically blended and physiologically adjusted mixture, of the pure sulphocarbolates of calcium, sodium and zinc, grs. 5, with bismuth subsalicylate, gr. 1-4 and aromatics."

---

[1] Physicians who desire to use a solution of mercuric iodid in oil should direct their pharmacist to prepare it according to the method suggested by Lemaire (Repert. pharm., xxi, 97-102, from Chem. Abst., 1909, p. 1444), viz: One gm. of mercuric iodid is dissolved in 50 c.c. sterilized castor oil by warming to about 70 degrees, 3 gm. guaiacol are added and the solution made up to 100 c.c. with sterilized poppy oil. Or according to a later suggestion (Dunning: Proc. Am. Pharm. Assn., 1910, p. 1123): one gm. of mercuric iodid is dissolved in 99 gm. of a mixture of equal parts of sterilized castor and olive oils, by warming on the water-bath.

This formula is in conflict with Rule 1 in that it does not state in what proportion the sulphocarbolates are present.

The name "Intestinal Antiseptic W-A" is in conflict with Rules 4 and 8, since it is therapeutically suggestive.

The preparation is in conflict with Rules 6 and 10, in that exaggerated claims are made for it, no evidence being submitted to prove the superior value of the mixture.

The most serious of these conflicts consists in the exaggerated and misleading therapeutic claims. The advertisements say:

> "This combination has no equal as an antiseptic and inhibitive agent in typhoid fever, diarrhea, dysentery," etc.
>
> "Numerous cleverly devised and scientifically constructed intestinal antiseptics have been introduced to the profession, but not one of them has ever rivaled for one moment these salts in popularity."
>
> ". . . we are convinced that no small share of the credit for the reduction of the death rate in infantile diarrheas is due to the widespread application of this general method of treatment, associated of course with the calomel clean-out and the regulation of diet, now known to be essential."
>
> "But the use of the sulphocarbolates is not restricted to diseases of the alimentary canal, although in the summer diarrheas, gastric fermentation, intestinal indigestion, typhoid fever, dysentery—indeed in all alimentary disturbances—it is the one essential remedy. It is also indicated in practically all infectious diseases."
>
> "Typhoid Fever (in this disease the W-A Intestinal Antiseptic is of great value; used early, with the proper synergistic cleanout, it will often cut short the disease)."

These extreme claims exceed the limits of permissible optimism, unless they are supported by strong dependable evidence. They contrast sharply with the low esteem in which the phenolsulphonates (sulphocarbolates) are generally held. To accept these claims, and to justify encouraging physicians to rely on them, it would be necessary to establish:

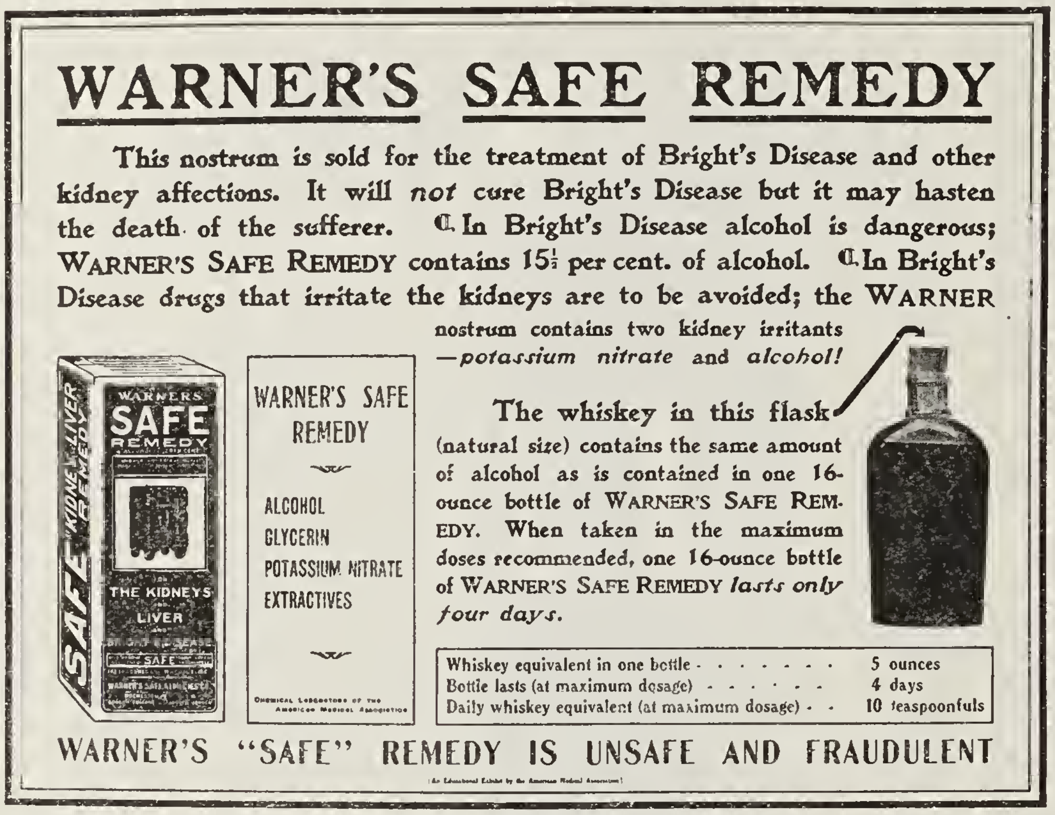
First, that feasible concentrations have a distinct antiseptic action on cultures of intestinal bacteria. This experiment could be easily made, but the claims do not seem to be based on evidence of this kind.

Second, that the preparation actually checks putrefaction in the intestines. There are several methods by which this proof may be attempted; but the claims do not appear to be based on evidence of this kind.

Third, that the preparation actually has a favorable influence on the progress of diseases. This sort of evidence is exposed to so many fallacies that it would have to be gathered very carefully and critically, duly discounting the effect of other treatment; for instance, by comparison with similar cases which do not receive this preparation. This is especially important; and yet we find directions to use this preparation in conjunction with active cathartic treatment, which in itself has considerable influence on the conditions for which this preparation is recommended. No evidence of this kind is presented.

The testimonials contained in the advertisements cannot be considered as serious evidence. None present any indication of accurate record, or proper control of conditions; of the performance of control observations. They are superficial impressions, to which little or no weight can be attached.

It is recommended that Intestinal Antiseptic W-A be considered ineligible for New and Nonofficial Remedies.



**WARNER'S SAFE REMEDY**

**This nostrum is sold for the treatment of Bright's Disease and other kidney affections. It will *not* cure Bright's Disease but it may hasten the death of the sufferer. ¶ In Bright's Disease alcohol is dangerous; WARNER'S SAFE REMEDY contains 15½ per cent. of alcohol. ¶ In Bright's Disease drugs that irritate the kidneys are to be avoided; the WARNER nostrum contains two kidney irritants —*potassium nitrate* and *alcohol!***

WARNER'S SAFE REMEDY

ALCOHOL
GLYCERIN
POTASSIUM NITRATE
EXTRACTIVES

CHEMICAL LABORATORY OF THE AMERICAN MEDICAL ASSOCIATION

**The whiskey in this flask (natural size) contains the same amount of alcohol as is contained in one 16-ounce bottle of WARNER'S SAFE REMEDY. When taken in the maximum doses recommended, one 16-ounce bottle of WARNER'S SAFE REMEDY *lasts only four days.***

| | |
|---|---|
| Whiskey equivalent in one bottle . . . . . . . | 5 ounces |
| Bottle lasts (at maximum dosage) . . . . . . | 4 days |
| Daily whiskey equivalent (at maximum dosage) . . | 10 teaspoonfuls |

WARNER'S "SAFE" REMEDY IS UNSAFE AND FRAUDULENT

Miniature reproduction of an educational poster prepared by the Propaganda for Reform Department. Twenty-eight different posters already prepared, illustrate various phases of the evils of nostrums and quackery. In the original the placards measure 22 by 28 inches. A catalog of the complete set will be sent on request.

## Correspondence

### Justice and Science

*To the Editor:*—In the evolution of medical education, which is going on so rapidly at the present time, a condition has arisen which is anomalous and certainly, from more than one point of view, fundamentally wrong. The proposition is being brought forward, and in some instances is being carried out, to have full-time teachers of medicine and surgery and their allied branches, on salaries of ten thousand dollars or more per year. With the question of the wisdom of full-time professorships in the practical departments of medicine, a matter which is still under debate, I do not wish to deal, but I do want, as a clinician, to speak a word about the injustice which this plan works to the men who are equally deserving of large salaries, not only because of their ability, but because they have deliberately devoted themselves to their special departments of medical science as teachers and investigators, and, in order to be *facile princeps* in their respective departments, have deliberately narrowed their opportunities of making a living. I refer to professors of the so-called fundamental branches in medicine, viz.: chemistry, anatomy, physiology, bacteriology and pathology, who are receiving as a maximum salary four to five thousand dollars per year. It would seem, now that it is so universally agreed that these men shall give their whole time to teaching and investigation, that the next effort should be to see that funds are raised for their generous support and that the collecting of money with which to pay salaries to full-time professors in clinical departments should wait until those men who are already giving their full time are adequately provided for.

It may be said that a clinician cannot be obtained for a full-time professorship for less than ten thousand dollars a year and that a teacher of one of the fundamental branches of medicine can be gotten for five thousand dollars, and that, therefore, the proposition is purely a commercial one, based upon the law of supply and demand; but is this the best way to advance medical science or medical teaching, and is it just? Shall it be said to a young man who is starting on his career, "If you go into medical science and do good work, for a number of years you will receive a mere pittance as an assistant and, when you reach the ultimate goal, a professorship, you will never get more than five thousand dollars yearly, whereas, if you go into clinical medicine or surgery you will before long be self-supporting from your practice, and when you become a professor you will get ten thousand dollars annually"?

For the advance of science three things are necessary. First, devotion to its cause. Second, a mind free from the unavoidable annoyances of a meager salary, and, last, a consciousness that the world in general, and medical men in particular, are enthusiastic and generous supporters of all of those who unselfishly use their great abilities for the good of science rather than for their personal gain. Do the men who control large sums of money, and do the men who control scientific institutions really intend to make such invidious distinctions between able men in clinical medicine and surgery on the one hand and equally able men in the fundamental medical sciences on the other, as to say to a clinician, "We will pay you ten thousand dollars," and to another man, "As you are a physiological chemist or pathologist, we will pay you only five thousand dollars"?

Both men are at liberty at any time to resign their professorships. The clinician on resigning is practically guaranteed a greater income by reason of the title which he has borne in a great institution. The other man, having devoted himself solely to a non-clinical scientific pursuit, has no means of gaining a livelihood except by finding another professorship at a salary no larger than that which he has given up.

In other words, while we discuss the abstract problem of full-time clinical professors, had we not better devote our energies in properly providing for the full-time men already engaged? These are they who not only set an example to the student of unselfish devotion and who perform their task for the work's sake, but who also in most instances lay the foundation upon which the clinician can build. Taking it all in all, is it not a fact that the average investigator and teacher, possessing the genius of original research, is deserving of reward at the hands of colleges and universities at least to the same extent as any other appointee?

H. A. Hare, M.D., Philadelphia.

### Importance of Geriatrics

*To the Editor:*—Canstatt (Krankheiten des höheren Alters und ihre Heilung, Erlangen, 1839) says:

> "Medical literature, especially of the present day, abounds in works on diseases of women and children. The pathology of certain organs and of certain classes of diseases receives exceptional attention. Bare and neglected in comparison with these lovingly fostered medical studies is a field which, if it were cultivated, promises fruitful returns." (Free translation.)

Charcot, in his "Clinical Lectures on the Diseases of the Aged" (Hunt's American translation, 1881), says:

> "The importance of a special study of the diseases of old age cannot be contested at this day. We have come to recognize in reality that, if the pathology of childhood countenances clinical considerations of a special kind, and if it is indispensable that it be known from a practical point of view, then also senile pathology presents its difficulties, which cannot be surmounted except by long experience and a profound acquaintance with its peculiar characteristics."
>
> "The progress of age establishes a wide difference in pathological phenomena, by virtue of its physiological modifications. . . . There do exist special diseases of old age which, in part at least, arise from the general modifications which the economy has undergone. . . . I think enough has been advanced to convince you that a *senile* pathology does exist."

Seidel in his monograph on "Diseases of Old Age" (Wood's monographs, 1890) says:

> "Mistakes are made daily in the treatment of the aged, and the normal mortality of advanced life is considerably increased as a consequence of the hitherto neglected study of the anatomical and physiological peculiarities of the senile organism."

Schwalbe in his "Lehrbuch der Greisenkrankheiten," Stuttgart, 1909, referring to the selection from Canstatt quoted above, says:

> "These still apply in full force, and the fact is more noticeable to-day than it was in the fourth decade of the last century."

The subject is taken up seriously in Germany and especially in France, where three text-books have appeared within a few years. Saundby (Old Age, Its Care and Treatment, London, 1913) quotes fifty-one dated works. Of these, twenty-one are English but only four are of the present century. Of nineteen French works, sixteen are of the present century, and of eleven German works eight appeared since 1900. Not a single American author is quoted, and of 446 authors quoted by Schwalbe there are only six Americans, and three of these are really German physicians. In 1911 five theses on senile conditions were presented to the French Academy. I will not take up here the many reasons why geriatrics should take a place in medicine analogous to pediatrics. I will point out, however, that the pediatrist does not look on the child as an adult with incompletely developed organs and tissues but as a *child*; and the geriatrist (I think the term is applicable) does not look on the aged person as an adult having pathologically degenerated organs and tissues, but as an aged person. The lack of an adequate term expressing the aged person, like the German *Greis*, or the French *vieillard*, has perhaps some influence in perpetuating our antiquated point of view of the aged. If we will realize, for example, that in the aged the normal systolic pressure is about the age plus 100 in millimeters, that the erythrocyte count is about 3,600,000, and that the polynuclear leukocytes are increased, that the urine is diminished in amount, that the urea output is greatly lessened, that albumin and sugar are frequently found without other evidence of nephritis or diabetes, that the normal expiration is about 20 a minute, yet the carbon dioxid output is from 20 to 40 per cent. less than in maturity, etc., we shall not make efforts, such as are often made now, to restore such conditions to the norm of maturity. With a knowledge of senile anatomy and physiology and senile pathology, we can clear ourselves of Seidel's justified charge, for it holds as good to-day as it did nearly twenty-five years ago. The subject, if not the name, is recognized in Germany and it is studied in France, while we are so intent in our efforts to lead the world in surgery and child welfare that we neglect the less promising, less interesting, less remunerative, economically deficient, aged.

Part of what I have said applies also to the public care of the aged. To those who are sufficiently interested in the well-being of the aged to study their welfare, I would recommend a visit to the New York City Farm Colony and compare the result of suitable employment for the aged with other institutions where the aged inmates are not employed. Compare the mental and physical condition of the inmates in homes where the sexes are segregated with these conditions where they are not segregated. The study of the needs, the peculiarities and infirmities of the aged will show how irrational are our present antiquated methods of dealing with the aged.

I. L. Nascher, M.D., New York.

### Facts Concerning Reported Discovery of Germ of Gas Gangrene

*To the Editor:*—Information has come to us that reports have been circulated by a number of American newspapers announcing the discovery by us of the germ of gas gangrene and of a serum for the prophylactic and curative treatment of this condition. We were at first tempted to let these reports pass unnoticed, but, on reflection, we feel that they should not go uncorrected.

The only possible foundation for such an announcement is the fact that we did make bacteriologic studies in a series of cases of so-called "gas" gangrene, and that in a number of them, we were able to isolate *Bacillus perfringens.* Our findings have since been confirmed by Dr. Weinburg of the Institut Pasteur, who has been requested by the French government to make a thorough bacteriologic investigation of the condition. As for our reported discovery of a serum for the treatment of "gas" gangrene, that is a "discovery" of the bacteriologic laboratories of the Associated Press, in which so many other wonderful discoveries have originated.

Hunter W. Scarlett,
Formerly Resident Physician.
F. A. Desjardins,
Resident Physician.
American Hospital of Paris, Neuilly-sur-Seine.

## Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### LITERATURE ON ROENTGENOSCOPY OF THE GASTRO-INTESTINAL TRACT

*To the Editor:*—Please give me information concerning roentgenoscopic diagnosis of diseases of the intestinal tract.

Douglas Ford Robbins, M.D., Minneapolis.

Answer.—The following is a list of literature on this subject:

Mills, R. Walter: Points of Value in Roentgenoscopy of Gastro-Intestinal Tract, The Journal, Oct. 11, 1913, p. 1344.

Chapin, H. D.: Radiographic Studies of Gastro-Intestinal Tract in Infants, The Journal, Oct. 8, 1913, p. 1419.

Case, J. T.: Roentgenologic Observations on Function of Ileocolic Valve, The Journal, Oct. 3, 1914, p. 1194.

Clark, L. P., and Busby, A. H.: Value of Roentgen Analysis of Gastro-Intestinal Tract in Some Types of So-Called Functional Nervous Disorder, The Journal, Feb. 7, 1914, p. 440.

Cannon, W. B.: Early Use of Roentgen Ray in Study of Alimentary Canal, The Journal, Jan. 3, 1914, p. 1.

Carman, R. D.: Technic of Roentgen Ray Examination of Gastro-Intestinal Tract in Interpretation of Screen and Plate Findings, The Journal, Aug. 2, 1913, p. 321.

Albu, A.: Roentgenoscopy in Gastro-Intestinal Disease, *Med. Klin.*, March 1, 1914.

Brown, P.: Roentgenologic Consideration of Relation of Individual Type to Intestinal Stasis, *Boston Med. and Surg. Jour.*, Oct. 15, 1914.

Pfahler, G. E.: Study of Chronic Intestinal Stasis by Means of Roentgen Rays, *Surg., Gynec. and Obst.*, November, 1914.

Marcuse, E.: Roentgen Examination of Stereosis of Small Intestine, *Berl. klin. Wchnschr.*, Oct. 5, 1914.

Eisen, P.: Roentgen Diagnosis of Obstruction in Alimentary Tract, *Wisconsin Med. Jour.*, September, 1914.

Axford, W. H.: Roentgenologic Study of Alimentary Canal, *New Jersey State Med. Soc. Jour.*, July, 1914.

Henriques, A.: Roentgen Examination of Digestive Tract, *New Orleans Med. and Surg. Jour.*, August, 1914.

George, A. W., and Gerber, I.: Observations from the Study of a Thousand Gastro-Intestinal Cases, abstr., The Journal, Oct. 17, 1914, p. 1419.

### KELLER'S TUBERCULIN TEST PLATE

*To the Editor:*—1. What is Keller's Tuberculin Test Plate? 2. Is it reliable for the early diagnosis of tuberculosis? X. Y. Z.

Answer.—1. Keller's Tuberculin Test Plate is a piece of adhesive plaster about the size of a common bunion plaster, in the middle of which is a circle about 2 cm. (0.8 inch) in diameter containing an ointment-like material. The nature of the salve must be judged by its effects. The following are the directions for applying the Tuberculin Test Plate:

> Any convenient place on the abdomen, chest or back may be selected. A little alcohol may be applied if the skin is oily; otherwise it is sufficient to rub gently with dry gauze until very slightly reddened. The parts should be dry when the Plate is applied.
>
> Remove the protective covering, applying the Plate by means of the adhesive, using such force as necessary to cause it to firmly adhere. It should be allowed to remain undisturbed twenty-four hours, at the end of which time it is removed. It is never necessary to apply longer than twenty-four hours.
>
> A positive reaction is evidenced by the appearance of a number of fine red papules. These may be present at the time the Plate is removed, or they may not appear until twenty-four or forty-eight hours later. Also there may be a few present, and more appear later. No opinion therefore should be given until the end of that period.
>
> It is convenient and practicable to designate the reaction by the number of papules: Less than ten, a slight reaction; up to thirty, medium, and larger numbers, a marked reaction.

From the effects described, it seems safe to assume that the material contains tuberculin, and, judging from the mode of application, it is the Moro ointment. This preparation consists of equal parts of old tuberculin and anhydrous lanolin.

2. The Moro test is reliable in case of a positive reaction to determine the presence of tuberculosis in the organism, but it does not discriminate between active and latent tuberculosis. As nearly every person has experienced tuberculous infection before reaching adult life, a large majority of adults give a positive reaction to it. Used by the experienced physician, it may yield valuable information in case of children suspected of tuberculosis. However, as a secret test much needless anxiety will be caused by it.

### ATTENDANCE BY PHYSICIAN ON WIFE IN CONFINEMENT

*To the Editor:*—Is it legal and ethical for a physician to attend his own wife in confinement in the state of Michigan? S. C. J.

Answer.—Yes.

## Medical Education and State Boards of Registration

### COMING EXAMINATIONS

Alabama: Montgomery, Jan. 5, 1915. Chairman, Dr. W. H. Sanders, Montgomery.

Alaska: Juneau, Jan. 5, 1915. Sec., Dr. H. C. DeVighne, Juneau.

Arizona: Phoenix, Jan. 5-6, 1915. Sec., Dr. John Wix Thomas, 200 Nat'l Bank of Ariz. Bldg., Phoenix.

Illinois: Chicago, Jan. 13-15, 1915. Sec., Dr. C. St. Clair Drake, Springfield.

Indiana: Indianapolis, Jan. 12-14, 1915. Sec., Dr. W. T. Gott, State House, Indianapolis.

Iowa: Des Moines, Jan. 19-21, 1915. Sec., Dr. Guilford T. Sumner, Capitol Bldg., Des Moines.

Minnesota: Minneapolis, Jan. 5-8, 1915. Sec., Dr. Thomas McDavitt, 814 Lowry Bldg., St. Paul.

New Hampshire: Concord, December 29-30. Regent, Mr. H. C. Morrison, Concord.

New Mexico: Santa Fe, Jan. 11, 1915. Sec., Dr. W. E. Kaser, East Las Vegas.

New York: Albany, Buffalo, New York, Syracuse, Jan. 26-29, 1915. Mr. H. H. Horner, Chief, Examination Division, State Education Bldg., Albany.

North Dakota: Grand Forks, Jan. 5, 1915. Sec., Dr. G. M. Williamson, Grand Forks.

Oklahoma: Oklahoma City, Jan. 12-14, 1915. Sec., Dr. John W. Duke, Guthrie.

Rhode Island: Providence, Jan. 7, 1915. Sec., Dr. Gardner T. Swarts, State House, Providence.

South Dakota: Pierre, Jan. 12, 1915. Sec. Dr. P. B. Jenkins, Waubay.

Utah: Salt Lake City, Jan. 4-5, 1915. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Vermont: Montpelier, Jan. 11-13, 1915. Sec., Dr. W. Scott Nay, Underhill.

Washington: Walla Walla, Jan. 5, 1915. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

Wisconsin: Madison, Jan. 12-14, 1915. Sec., Dr. John M. Beffel, 3200 Clybourn St., Milwaukee.

### Kentucky June Report

Dr. A. T. McCormack, secretary of the State Board of Health of Kentucky, reports the written examination held at Louisville, June 15-17, 1914. The total number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 70. The total number of candidates examined was 56, of whom 50 passed and 6 failed. The following colleges were represented:

| College | Year Grad. | Per Cent. |
|---|---|---|
| PASSED | | |
| Chicago College of Medicine and Surgery | (1914) | 94 |
| Kentucky School of Medicine | (1908) | 73 |
| University of Louisville | (1910) 82; (1912) 88; (1914) | 81, 81, 82, 82, 82, 82, 82, 82, 83, 83, 84, 84, 84. 84, 85, 85, 85, 86, 86, 86, 86, 87, 87, 87, 87, 87, 87, 87, 87, 87, 88, 88, 88, 88, 90, 90, 92. |
| Eclectic Medical College, Cincinnati | (1914) | 82 |
| Jefferson Medical College | (1913) | 90 |
| Lincoln Memorial University | (1913) 80; (1914) | 82 |
| Meharry Medical College | (1911) 73; (1914) | 82 |
| University of Tennessee | (1914) | 87 |
| Vanderbilt University | (1913) 94; (1914) | 84 |
| FAILED | | |
| Bennett Medical College | (1913) | 69 |
| Louisville Medical College | (1906) | 60 |
| Louisville National Medical College | (1912) | 71* |
| University of Louisville | (1910) 50; (1911) | 74* |
| American Eclectic Medical College | (1893) | 42 |

* Fell below the required average in one or more subjects.

The following questions were asked:

#### ANATOMY

1. Name the bones entering into the formation of the pelvis and give the articulations. 2. Describe the tibia, giving its articulations and points of muscular and ligamentous attachments. 3. Describe the diaphragm and name the openings connected with it. 4. Describe the right and left subclavian arteries, giving points of difference between them. 5. Give the origin of the superior mesenteric artery and its distribution. 6. Give the origin and distribution of the sciatic nerve. 7. Name the membranes of the spinal cord, giving their relations. 8. Name and describe the fissures of the brain. 9. Locate and describe the ligamentum teres. 10. Describe the inguinal canal.

#### PHYSIOLOGY

1. Name the different layers composing the walls of the stomach and give the function of each. 2. Name and discuss several causes of indigestion. 3. Classify foods and tell how to prepare a substitute for mother's milk on a physiologic basis. 4. Give the origin of the various constituents of the blood and describe its circulation. 5. Describe the kidney and functions of its different parts. 6. Describe the construction of the teeth and tell how to preserve them. 7. What are the functions of (*a*) cornea, (*b*) iris, (*c*) retina? 8. (*a*) What are the

functions of muscles? (*b*) Differentiate microscopically between voluntary and involuntary muscles. 9. Discuss the ventilation of a one-room schoolhouse. 10. How is fat digested?

### CHEMISTRY

1. (*a*) What is a carbohydrate? (*b*) A hydrocarbon? (*c*) Give example of each. 2. (*a*) Does the pancreatic juice give an acid or an alkaline reaction? (*b*) To what chemical, or chemicals, is the reaction due? 3. Name two preparations of sodium, giving chemical name and pharmaceutical or common name and symbols. 4. (*a*) Define and give example of a chemical symbol; (*b*) a chemical formula. 5. (*a*) Give an antidote for acute arsenical poisoning. (*b*) How would you prepare it? 6. (*a*) What is a source of ptyalin? (*b*) What effect does it have on starches? (*c*) Do acids decrease or increase its activity? 7. (*a*) What symptoms would lead you to believe you had a case of chronic lead poisoning? (*b*) What is the antidote? 8. (*a*) Give the symbols of silver. (*b*) Potassium. (*c*) Mercury. (*d*) Gold. (*e*) Formula of water. 9. (*a*) What do you understand by the term "oxidation"? (*b*) Give an example. 10. (*a*) Is water an element or a compound? (*b*) What is water, chemically considered?

### BACTERIOLOGY

1. Define (*a*) culture, (*b*) asepsis, (*c*) antisepsis, (*d*) disinfection, and (*e*) germicide. 2. (*a*) Give morphology of tubercle bacillus. (*b*) What are the channels of infection? 3. What are aerobic and anaerobic bacteria? 4. What is sterilization? 5. (*a*) What is immunity? (*b*) How is it acquired? 6. (*a*) Describe the Klebs-Loeffler bacillus. (*b*) Discuss diphtheritic antitoxin. 7. (*a*) Of what significance is the Widal reaction in typhoid fever? (*b*) Describe it. 8. Give conditions favoring bacterial growth and antagonistic to it. 9. (*a*) Mention some culture mediums. (*b*) How is a pure culture made? 10. Differentiate between contagion and infection, and the means employed to prevent either.

### ETIOLOGY AND PHYSICAL DIAGNOSIS

1. (*a*) Define heart block. (*b*) At what age does it most frequently occur? 2. (*a*) Give etiology of malarial fever; (*b*) of yellow fever, and (*c*) mode of transmission to man. 3. (*a*) Give etiology of endocarditis, and (*b*) the two diseases most frequently leading to it. 4. Mention five frequent causes of asthma. 5. Give etiology of arteriosclerosis. 6. Define physical diagnosis and give names of five methods used in examining the thoracic organs. 7. Enumerate the symptoms of catarrhal jaundice; name two other diseases of this region that may resemble it, and differentiate them from catarrhal jaundice. 8. Enumerate the symptoms and physical signs of diffuse peritonitis, and name six conditions within the abdomen that may simulate it. 9. Describe the natural heart sounds, and the causes of each. 10. Name the causes of ascites, and tell how it may be discovered.

### HYGIENE, MEDICAL JURISPRUDENCE, MENTAL AND NERVOUS DISEASES

1. In what way and how is carbon dioxid deleterious to health? 2. How would you construct a camp for those suffering from a contagious disease? 3. Name four diseases that are communicable to man through cow's milk. 4. How would you thoroughly inspect meat for the market? 5. What rules would you advise to prevent the spread of tuberculosis? 6. (*a*) Diagnose and treat infantile paralysis; (*b*) locomotor ataxia. 7. Describe and treat herpes zoster. 8. How would you take a dying statement? 9. How would you construct a post-mortem examination in a case of suspected arsenic poisoning? 10. Diagnose and treat a case of psoriasis.

### OBSTETRICS AND GYNECOLOGY

1. Define (*a*) ovulation, (*b*) menstruation, (*c*) abortion, (*d*) version, and (*e*) subinvolution. 2. What is (*a*) ovaritis? (*b*) salpingitis? (*c*) What is the most frequent cause of each? 3. (*a*) What is dysmenorrhea? (*b*) Give causes and symptoms. 4. (*a*) What is puerperal septicemia? (*b*) What precaution would you take to prevent it? 5. (*a*) Give function of placenta. (*b*) What difficulties may you expect to encounter in its delivery? 6. (*a*) Tell exactly how you would manage a breech presentation. (*b*) What precautions would you take? 7. (*a*) Give indications for the use of forceps. (*b*) State how you would apply them. 8. (*a*) What is the most frequent cause of post-partum hemorrhage? (*b*) How would you manage a case? 9. Give methods of diagnosing pregnancy at the end of the tenth week. 10. (*a*) What is eclampsia? (*b*) Under what condition may you expect it?

### OPHTHALMOLOGY, OTOLOGY AND LARYNGOLOGY

1. Under what circumstances would you advise the enucleation of the eyeball? 2. Differentiate between trachoma and blepharitis marginalis. 3. Give etiology and symptoms of glaucoma. 4. Give symptoms and etiology of iritis. 5. Under what circumstances would you puncture the membrana tympani? 6. Give etiology, symptoms and probable sequelae of acute otitis media. 7. (*a*) What are the symptoms of impacted cerumen? (*b*) How would you manage a case? 8. (*a*) Give etiology of mastoid abscess. (*b*) How would you diagnose same? 9. (*a*) What are the indications for intubation? (*b*) Give technic of the operation. 10. Give symptoms and management of a case of postnasal polypi.

### PATHOLOGY

1. Name the varieties of leukocytes, and give the percentage of each found in normal blood. 2. Name and describe the pathology of the various stages of lobar pneumonia. 3. Give the pathologic changes found in acute infantile paralysis (anterior poliomyelitis). 4. Differentiate between gross symptoms of benign and malignant tumors of the breast. 5. Differentiate between the microscopic examination of (*a*) fibromas, (*b*) sarcomas, and (*c*) carcinomas of the breast. 6. Give the pathology of ulcer of the stomach. 7. Differentiate between ulcer and carcinoma of the stomach. 8. Describe the stomach and liver found post mortem in a chronic alcoholic. 9 and 10. Select four of the five slides and make a diagnosis.

### PRACTICE OF MEDICINE AND MATERIA MEDICA

1. How would you diagnose a case of diphtheria, describe the treatment in detail and tell when it would cease to be infectious. 2. How would you confirm a diagnosis of malaria, and how would you treat it? 3. Describe in detail the treatment of syphilis. 4. What symptoms would lead you to suspect hookworm disease, and how would you confirm the diagnosis? 5. Give the treatment in detail for a 12-year-old child weighing 72 pounds having hookworm disease. 6. Give physiologic action, therapeutics and dosage of tincture of aconite. 7. Give in detail the prevention and curative treatment of tetanus and discuss the physiology of each step. 8. How would you treat an acute suppurative peritonitis? 9. Tell how to immunize a patient against typhoid fever. 10. How would you treat chronic constipation and how would you prevent it?

### SURGERY

1. How would you treat a fracture of the femur? 2. Give diagnostic symptoms of fracture of the base of the skull. 3. How would you recognize an abscess of the appendix and what treatment would you advise? 4. How would you recognize intestinal obstruction and what treatment would you advise? 5. If the foot were crushed at the ankle where would you advise amputation, and why? 6. What treatment would you advise in a depressed fracture of the vault of the skull? 7. How would you treat a Colles' fracture of the forearm? 8. What would be the indications for operation in a penetrating wound of the abdominal wall? 9. How would you treat a comminuted fracture of the olecranon process of the ulna? 10. What treatment would you advise in cancer of the breast?

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## Michigan June Report

Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports the written examination held at Ann Arbor, June 9-11, 1914. The total number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 57, of whom 56 passed and 1 was conditioned. The following colleges were represented:

| PASSED<br>College | Year Grad. | Per Cent. |
|---|---|---|
| Chicago College of Med. and Surg. | (1912) | 87.2 |
| University of Illinois | (1914) | 86.5 |
| University of Louisville | (1914) | 76.5 |
| University of Michigan, Dept. of Med. and Surg. (1910) 85.1; (1912) 89.6; (1913) 78.4, 85; (1914) 83.1, 83.5, 84.7, 84.9, 85.6, 86, 86.3, 86.3, 86.3, 86.4, 86.5, 86.8, 87.3, 87.4, 87.5, 87.5, 87.7, 87.7, 87.8, 87.8, 87.8, 87.9, 87.9, 88, 88, 88, 88.2, 88.3, 88.3, 89, 89.1, 89.4, 89.6, 91.9. | | |
| University of Michigan, Homeo. Med. College (1914) 79, 80, 80.3, 80.4, 80.9, 81.1, 84.5, 85.1, 85.7, 86.3, 86.3, 86.9, 87.6, 88. | | |
| University of Toronto | (1895) | 89 |

One candidate, a graduate of the University of Michigan, Homeopathic Medical College, 1914, was conditioned in one subject.

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## Missouri February Report

Dr. J. A. B. Adcock, secretary of the Missouri State Board of Health, reports the oral and written examination held at St. Louis, Feb. 9-11, 1914. The total number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 47, of whom 38 passed and 9 failed. The following colleges were represented:

| PASSED<br>College | Year Grad. | Per Cent. |
|---|---|---|
| Chicago College of Medicine and Surgery | (1913) | 75 |
| Rush Medical College | (1913) | 84.2, 84.3, 86.4 |
| Kentucky School of Medicine | (1899) | 75 |
| University of Louisville | (1898) | 79 |
| Tulane University of Louisiana | (1910) | 82.8 |
| Johns Hopkins University | (1913) | 80.3 |
| Tufts College Medical School | (1898) | 82.1 |
| American Med. College, St. Louis | (1881) 75; (1903) | 75 |
| Barnes Medical College | (1900) 75; (1907) 75; (1910) | 75 |
| Beaumont Hosp. Med. Coll., St. Louis | (1889) 75; (1893) 75; (1900) | 75 |
| Homeopathic Medical College of Missouri | (1900) | 75 |
| Kansas City Hahnemann Medical College | (1913) | 83.2 |
| Missouri Medical College | (1881) 75; (1890) | 75 |
| St. Louis College of Phys. and Surgs. | (1905) 75; (1913) | 75, 75.5 |
| St. Louis University (1904) 75; (1913) 82; (1914) 81.5, 82.2, 82.6, 87.1. | | |
| University Medical College, Kansas City | (1903) | 75 |
| Washington University | (1893) 75; (1894) 75; (1913) | 81.6 |
| Starling Medical College | (1895) | 83.1 |
| University of Texas | (1913) | 86.6, 87.3, 88.3 |
| FAILED | | |
| Kentucky School of Medicine | (1907) | 68.2 |
| Barnes Medical College | (1910) | 69.1 |
| Ensworth Medical College | (1912) 67.3; (1913) | 67.3 |
| St. Louis College of Physicians and Surgeons (1909) 59.8; (1913) 47.6, 50.4, 51. | | |
| University Medical College, Kansas City | (1911) | 65 |

### New Mexico July Report

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports the written examination held at Santa Fe, July 13-14, 1914. The total number of subjects examined in was 13; total number of questions asked, 100; percentage required to pass, 75. One candidate was examined and passed. Eleven candidates were licensed on credentials. The following colleges were represented:

| PASSED<br>College | Year Grad. | Per Cent. |
|---|---|---|
| Southern College of Medicine and Surgery | (1903) | 83 |

| LICENSED UPON CREDENTIALS | Year Grad. | Total No. Examined |
|---|---|---|
| University of Colorado | (1913) | 1 |
| Northwestern University | (1913) | 1 |
| Rush Medical College | (1890) | 1 |
| University of Louisville | (1912) | 1 |
| Tulane University of Louisiana | (1909,1) (1914,1) | 2 |
| Baltimore Medical College | (1911) | 1 |
| Detroit College of Medicine | (1900) | 1 |
| Kansas City Hahnemann Medical College | (1910) | 1 |
| Missouri Medical College | (1885) | 1 |
| National University of Mexico | (1888) | 1 |

### Wisconsin July Report

Dr. John M. Beffel, secretary of the Wisconsin State Board of Medical Examiners, reports the practical and written examination held at Milwaukee, June 30-July 2, 1914. The total number of subjects examined in was 24; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 66, of whom 63 passed and 3 failed. Thirty-two candidates, including 1 osteopath, were licensed through reciprocity. The following colleges were represented:

| PASSED<br>College | Year Grad. | Per Cent. |
|---|---|---|
| Bennett Medical College | (1913) | 82 |
| Chicago College of Med. and Surg | (1914) | 77, 82 |
| Northwestern University | (1914) | 86 |
| Rush Medical College | (1913) 84; (1914) | 87, 87, 89 |
| Univ. of Illinois | (1913) 81, 89; (1914) | 81, 81, 84, 84, 86, 86 |
| Johns Hopkins University | (1908) 81; (1914) | 84, 90 |
| Harvard University | (1914) | 87 |
| Marquette University | (1913) 76, 84; (1914) | 77, 77, 78, 79, 79, 80, 80, 80, 80, 80, 80, 81, 81, 81, 81, 81, 82, 82, 82, 82, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 86, 86, 86, 87, 88, 89. |
| FAILED | | |
| Chicago College of Med. and Surg | (1910) | 69 |
| University of Louisville | (1913) | 67 |
| Milwaukee Medical College | (1912) | 65 |

| LICENSED THROUGH RECIPROCITY<br>College | Year Grad. | Reciprocity with |
|---|---|---|
| University of Colorado | (1902) | Colorado |
| American College of Med. and Surg | (1905) | Illinois |
| Chicago College of Med. and Surg | (1910) (1911) (1912, 2) (1914) | Illinois |
| Hahnemann Med. Coll. and Hosp., Chicago | (1904) (1913) | Illinois |
| Northwestern University | (1910) (1912) (1913 | Illinois |
| Rush Medical College | (1911, 3) (1913, 2) | Illinois |
| University of Illinois | (1912) | Illinois |
| Physio-Medical College of Indiana | (1897) | Ohio |
| Drake University | (1907) | Minnesota |
| State Univ. of Iowa, Coll. of Homeo. Med | (1904) | Iowa |
| Univ. Med. College, Kansas City | (1903) (1907) | Missouri |
| Albany Medical College | (1903) | New York |
| Cornell University | (1899) | Minnesota |
| Jefferson Medical College | (1903) | Iowa |
| Medico-Chirurgical College of Philadelphia | (1903) | Penna. |
| University of Pennsylvania | (1909) | New York |
| Woman's Medical College of Pennsylvania | (1901) | New York |
| University of Texas | (1902) | Texas |
| Royal University of Christiania, Norway | (1890) | Iowa |

### Tennessee Reciprocity Report

Dr. A. B. DeLoach, secretary of the Tennessee State Board of Medical Examiners, reports that two candidates were licensed through reciprocity during January and February, 1914. The following colleges were represented:

| LICENSED THROUGH RECIPROCITY<br>College | Year Grad. | Reciprocity with |
|---|---|---|
| Tulane University of Louisiana | (1896) | Mississippi |
| University of Virginia | (1912) | Virginia |

## Book Notices

Précis de Chirurgie de Guerre. By Edmond Delorme, Médecin Inspecteur Général de l'Armée. Cloth. Price, 4 francs, 50. Pp. 218, with illustrations. Paris: Masson et Cie, 1914.

In the preface the author says that "this compend has been set forth hastily after the unexpected declaration of war, during the mobilization and since the beginning of hostilities, and that too while in Paris or during the course of my missions, no matter where, during the too short moments of the day and especially during the hours of the night. I know its imperfections, but writing it chiefly from memory it expresses a vision broader and more certain than if it had been otherwise prepared." When it is understood that this compend was written in less than sixty days at odd moments during the busiest time imaginable of the General Medical Inspector of the French army, and that it contains matter showing the effects of the modern high-velocity bullets, bearing date as late as August 20, one may have some realization of the magnitude of the task accomplished. The author describes the firearms in use by the various nations at war, and discusses the ballistics of each and the character of the wounds produced by the different projectiles. It is interesting to note what the author has to say regarding the use of the dumdum bullet, about which so much has been said from time to time in the daily press. "At the beginning of every war there is a question of the employment of explosive bullets, there is a question of it to-day. We have seen the wounded in this campaign who have been the cause of the reproduction of this error. The frightful havoc which has been seen is so different from that commonly observed that it seems impossible to connect them with the action of a bullet which in other respects makes only a minimum aperture. It is, however, not so. The explosive wounds in these cases are produced by bullets of exceedingly high velocity, more or less broken into fragments in their course through the tissues. The fury with which our soldiers many times have been precipitated upon our enemies, their attack at very short range, account sufficiently for these cases without one having to search for other explanations." The rather common belief that the modern small caliber high velocity bullet produces a simple, small, clean-cut, perforating wound, which has therefore given rise to the term "humane bullet," seems not to be borne out by the experiences of the author. He says: "It is indeed stretching it too far for the sake of a paradox to apply the term 'humane' to a projectile which traverses many men at short range and which can exercise its murderous action in a zone of more than 3,000 meters. The greater the velocity the more serious the lesions produced and the graver the fractures of the bones. . . . At short range the mortality is appalling." Bullet wounds of the head, chest and abdomen are fully considered, and the treatment of all bullet wounds is characterized by a tendency to careful, sound conservatism. The chief object of the compend is to furnish that great horde of surgeons, who have been suddenly called on to go to the front, with a concise statement of the principles and exigencies of military surgery. This it does in an excellent manner, and gotten out as it was under the most trying circumstances, is a monument to the indefatigable energy of the author.

Psychology, General and Applied. By Hugo Münsterberg. Cloth. Price, $1.75 net. Pp. 487. New York: D. Appleton & Co., 1914.

This book is intended obviously for the use of classes in college and university. Only an actual test can show its value for this purpose, but the author has struck the keynote of practice by furnishing a book which teaches psychology as a means to an end rather than an end in itself. The arrangement is somewhat different from that of the ordinary text. First, the author has omitted the details of anatomy of the nervous system which were a common feature of other books. He precedes the main discussion by an introduction which states the realm of the subject. Book I is devoted to causal psychology, which includes fundamental principles and is characterized as "psychology without a soul." Book

II, on purposive psychology, gives the internal meaning, the understanding of the soul. In Book III, on applied psychology, the author goes farther than is usual in books on this subject. The author points out in the preface that he considers not only individual, but also social processes, that is, the relations of the individual to the community. In the section on applied psychology special sections are devoted to educational, legal, economic, medical and cultural aspects. As a guide to some of the big possibilities of the subject the section on medical psychology is interesting. A bibliography of important English references is added.

Die akute und chronische infektiöse Osteomyelitis des Kindesalters. Auf Grund Eigener Beobachtungen und Untersuchungen. Von Dr. Paul Klemm, K. R. Staatsrat, Oberarzt des Krankenhauses vom Roten Kreuz. Paper. Price, 9 marks. Pp. 261, with 8 illustrations. Berlin S. Karger, 1914.

This monograph is based on a study of 320 cases of osteomyelitis in children which have come under the author's observation during the past ten years. The author compares the bone marrow with lymphatic tissue, and although he acknowledges that some of the medullary cells show specific differences so that these may be regarded as a specific tissue, yet the bone marrow as a whole he considers as belonging to the lymphatic system. With this conception of the bone marrow in mind he attempts to show that osteomyelitis is essentially a disease of lymphatic tissue and that its course is exactly that of a disease of this tissue in other locations. The specific characteristics of the disease are not due to any specificity of the diseased marrow tissue, but find their explanation in the fact that lymphatic tissue here is enclosed in rigid bony walls which are affected by the diseased marrow in a particular manner. The author thinks that too much attention has been devoted to the changes in the osseous tissue and too little to those in the marrow and that an explanation of the various changes in the osseous tissue is to be sought in the disease of the lymphatic tissue. The arguments in support of these views are well presented, and the points brought out are illustrated by numerous case histories. It is an interesting, instructive and readable book.

Operative Surgery of the Nose, Throat and Ear for Laryngologists, Rhinologists, Otologists and Surgeons. By Hanau W. Loeb, A.M., M.D., Professor of Ear, Nose and Throat Diseases in St. Louis University, in Collaboration with Joseph C. Beck, M.D., R. Bishop Canfield, M.D., and Others. Vol. 1. Cloth. Price, $6. Pp. 390, with 409 illustrations. St. Louis: C. V. Mosby Company, 1914.

This book is a worthy addition to the numerous treatises on this special subject. It will enable the operator to comprehend very clearly the most advanced technic in this field of surgery, without spending unnecessary time in going over the pathology, etiology or symptomatology, with which he is supposed to be familiar. The object of the book is to present the method of operating, the indications and contra-indications, after-treatment and results. The work is to be especially commended for admirable illustrations, most of which are original. The author has been assisted by a number of collaborators all of whom are well known in this special field, and the sections devoted to laryngoscopic and gastroscopic examinations, as well as the chapter on plastic surgery, are especially commendable. The second volume of the work, not yet issued, is to be devoted to the more specialized surgery of the nasal cavities, the pharynx and larynx.

A Text-Book of Military Hygiene and Sanitation. By Frank R. Keefer, A.M., M.D., Lieutenant-Colonel, Medical Corps, United States Army. Cloth. Price, $1.50 net. Pp. 305, with 47 illustrations. Philadelphia: W. B. Saunders Company, 1914.

The author is professor of military hygiene in the United States Military Academy, West Point. As a guide to the layman who takes service in a medical corps the book may be considered as meeting the requirements. It throws in for good measure a chapter on alcohol and narcotics which cannot harm and may do good. The physician who accepts army work should know what the book contains in order that he may be able to correlate his work to the best advantage with that of other officers.

# Miscellany

## In the Field Hospitals

Prof. Dr. Rudolf Lennhoff contributes an article to the *Vossiche Zeitung*, which gives in a chatty way a great deal of information regarding field hospitals under war conditions. Dr. Lennhoff says:

> It is part of the nature of the field hospital that the physicians who have established it cannot remain there long. If the body of troops to which they are assigned advances they must follow in order to be able to give succor to new wounded at another place. As soon as the conditions for an advance seem to be favorable and one may assume that the already occupied territory can no longer be won back by the enemy, the army of physicians follows. These physicians relieve those of the field hospital, which then becomes a war hospital, at whose disposal there are usually more ample means for the care of the wounded. Thus it was with us. One day new physicians came from Brussels well equipped with new supplies from which we could complete our stock. With them came a large number of volunteer nurses and German sisters of the Red Cross. After the conclusion of the business affairs connected with the transfer our wagons were hitched up again; our column left this field of endeavor in order to await somewhere else the order for new work. We took a hearty farewell from the wounded. There was scarcely one who grumbled at his fate, except about the fact that he was no longer permitted to fight at the front. A few days ago we saw a sergeant through whose stomach a bullet had passed from the front to the rear, five weeks before, and who was now seeking his division in order to fight against the enemy anew.
>
> The ambition of the majority is to get at the enemy again as quickly as possible. Many are permitted this privilege with astounding rapidity, even when the number and bloody condition of the bandages made the case appear a very heavy one.
>
> One man was brought in with thick bloody bandages around his head, hand, breast and abdomen, all as he says the result of a single shot. The man was lying flat on the ground when the bullet hit him. It first passed through the nail on his left thumb, then the upper edge of his right ear, had bored through the ear behind the ear lobe, then penetrated under the collar bone into the muscles of the breast, the ribs were slightly grazed and, finally, a cut, 3 centimeters in length, was made in the skin of the abdomen. Altogether there were ten wounds and all of them were harmless. This is easily comprehensible because of the nature of the wounds, but the harmlessness of other shots seems like a miracle. A sergeant of cavalry was brought on a peasant's cart from one of the hot fights at Termonde. He had safely passed through five dangerous parole rides in spite of heavy shooting, and the iron cross decorated his breast. This time a bullet had struck him. Anxious to carry out his orders, he had ridden on until a second shot stretched his horse on the ground. His comrades had to go on. It had taken him nearly an hour until he was able to creep out from under the dead horse. With difficulty he had dragged himself a few kilometers further. Then he met two peasant women with a dog cart. He rode on this for two hours until he met a column whose physicians made the first bandage for him. Then the horse cart was obtained on which he was brought to us. The shot had passed in an almost straight line through his thighs without touching the bones and the important blood-vessels and nerves. He came into the same room in which a sergeant lay, who was in daily life an attorney at the supreme court. A bullet had penetrated through his neck from right to left and had likewise not touched any vital parts. The pressure of the interior bleeding caused nerve pains in his hands, but these were diminishing from day to day. A bullet had entered the neck of another man obliquely from above under the ear lobe and had emerged on the other side next to the larynx without causing any damage. Three Belgian soldiers were also faring comparatively well. Men of the sanitation company had found them one morning lying in the bushes at the edge of the field. They had attempted three times in the course of the day to get them out, and every time hostile fire had driven them back until the evening darkness had concealed them. All three were heavily wounded. Two had lain outside for five, the other one for eight days; after their few provisions had given out they had lived from heet roots. The majority of our German wounded consisted of reservists and members of the "landwehr." All of them were splendid fellows. It was a pleasure to chat with them. When they told of their marches, of their patrols and fights, no one could notice that they were people whose terms of active duty was long past and who had left the shop, the estate, the office chair and the school platform only a few weeks ago.

## Don'ts for Nurses

1. Don't forget to be on hand when the doctor is calling, and stay until he goes and write down all orders. 2. Don't ever appear in sick room with a "long face," it matters not what may have been said by the patient, as you must remember always that you are dealing with one who is not normal, a sick brain, whose emanations are not what they would be, well. 3. Don't ever confer with or have anything to do with the servants of the household, except when business calls, and then only in carrying out the doctor's orders. Always treat help with kindness. 4. Don't forget

that you belong to a profession; never be too intimate with any one around the house. 5. Don't ever tell the household what the doctor says—don't gossip. 6. Don't forget that the doctor should give prognosis and diagnosis. 7. Don't fail to anticipate anything possible that could contribute to the comfort of your patient. 8. Don't forget that noises must be avoided. Your shoes must not squeak. Noisy shoes may seem a small matter to you, but at times will greatly disturb your patient. Move furniture softly. 9. Don't forget that neatness about the patient's room, as well as yourself, is absolutely essential. 10. Don't forget that your teeth must be beyond criticism, as the breath is foul if they are dirty or decayed. 11. Don't forget you must serve your food in an appetizing way, be it a glass of buttermilk or a tray full of dishes. 12. Don't ask sick patients what they want to eat. 13. Don't forget that promptness is everything. The patient must not remind you of the time for medicine, food, bath, etc. 14. Don't ever offer an excuse of any description for anything either to doctor or patient. 15. Don't whisper about the sick room. 16. Don't forget that cleanliness is next to godliness. 17. Don't slam doors. 18. Don't ever forget that you stand between the dead and the living—and your mission is to relieve God's sufferers, and *do be amiable*.—J. D. Griffith, M.D., Kansas City, Mo.

### Protection Against Cold for Troops in the Field

A German translation has recently appeared of a Japanese work describing the measures to protect against cold which were found most effectual in the Japanese army during the winter campaign in Manchuria. Every man had an extra pair of boots, mittens and foot cloths, to change at night. They were made to eat often and to keep awake those inclined to drop to sleep on the march or in changing guards. They were kept from doing exercise that would make them sweat, and they were not allowed to lie down on snow. When straw was not available, they had to shovel the snow away so as to lie on the ground. The clothes and shoes were made larger for winter than for summer wear, to allow for layers of air. The buttonholes and other openings were protected with special care, after small frozen areas had been found on the chest of some of the soldiers, corresponding to the buttonholes. The fingers and feet were rubbed with tallow or other unsalted fat, and mittens were worn over gloves. The mittens were sometimes packed with straw or feathers and the shoes with horse bedding. Fur keeps out the wind better than woolen, and a fur abdominal band proved a great help in extremely cold weather. Flannel suspensories were found indispensable to protect at the latrines. Muffs of fur or felt and wristlets of wool or fur are highly recommended. Whenever the hands were found frozen, it was learned that the men had been wearing knitted gloves. The foot cloth worn instead of socks can be dried in emergencies by wearing it next the body. Wrapping the toes in paper, or the whole foot in a pig bladder was also found useful at times. Battalions were provided with flint and steel for starting a fire when matches were lacking or too damp to light.

### The "Work Treatment" of Organic Diseases

One of the distressing phases of many crippling diseases is the patient's hopeless despair at being unable to hold his place in the world. Herbert J. Hall (*Boston Med. and Surg. Jour.*, Aug. 6, 1914), remarks that, while it has come to be recognized that suitable mental and physical occupation is an indispensable feature of the treatment of the functional nervous diseases, the relief which properly adapted work may afford in organic diseases—chronic, partly disabling conditions—is not yet sufficiently understood. The good results are the saving of the patient's self-respect and interest in life, the economic benefit from his earnings if he is poor, and in some conditions actual physical improvement. In many chronic arthritis cases, Hall says, the muscular spasm and joint thickening yield more readily to purposeful industrial movements than to massage or other remedial exercises. The interest in accomplishing something relieves the muscular tension. In ataxic cases patients grow intensely weary of the meaningless Frenkel exercises. Hall cites the case of a woman apparently doomed to progressive disease of the spinal cord whose gait was greatly improved and whose whole outlook on life was immeasurably brightened through taking up hand weaving, which involves the use of from two to six foot pedals besides the dexterous throwing of a shuttle. In many cases of progressive blindness, it is suggested, a gain would be made if, during the coming on of the blindness, the patient were taught a trade which could be carried on with pleasure and profit after blindness was complete.

A number of institutions have adapted various crafts to therapeutic uses. Hall mentions the state colony for the insane at Gardner, Massachusetts, where practically all of the 1,200 patients are kept at work. Under skilled directions the patients make all their clothing, even producing on the place the material for woolen garments. In addition they raise all their own food-supplies, reclaim land and erect new buildings. The Massachusetts General Hospital has established under its own roof workshops for certain chronic outpatients who would otherwise be unable to find employment. The Burke Foundation in New York City finances a series of workshops for patients with incurable chronic heart disease, who would break down under ordinary industrial conditions, but who are thus enabled to become partially self-supporting, and thereby to retain much satisfaction in life.

Hall warns against several mistakes likely to result in discouragement, such as the employment of meaningless work which results in nothing useful or beautiful and permitting overwork or any work at all in unsuitable conditions or at unsuitable times. At the same time, he believes that the risk of overdoing has been largely exaggerated, and that the injunction to "make the patient comfortable; do not bother him with work" too often means a lifetime of unhappiness.

It is best to allow the patient to do work which follows the lines of his old occupation if this is possible. Still, patients whose ordinary vocation is rendered unsafe, sometimes take up new trades with surprising facility. Thus a blacksmith or teamster with a badly compensated heart may become a good hand weaver or maker of clothing. Almost any trade may be adapted. "The important thing to remember is that work should be supplied in some form, even in organic illness, whenever the conditions can be made possible."

### Acute Toxic Reaction to Atophan

G. Marañon, editor of the *Revista Clinica de Madrid*, reports from his own practice, in the issue of July 30, 1914, two cases of acute intoxication from atophan. The first patient was a man long suffering from gout rebellious to ordinary measures. Under a course of atophan he improved. A few months later the symptoms returned and atophan was prescribed again, when symptoms of acute intoxication developed, chills, fever, great depression and a red eruption on the head and neck resembling acute erysipelas, with extraordinary proportions of uric acid in the extremely scanty urine. A month later the same syndrome reappeared anew when he began to take atophan again. The man died a few months later of tuberculosis. The second patient was a young woman who was also improved by atophan after long suffering from pain in one wrist. The pain returning some months later, she took one tablet of atophan and at once developed acute intoxication like the syndrome described in the first patient, with intense pruritus, but no eruption or exceptional uric-acid output. Marañon attributed the symptoms to casual contamination of the atophan, but the same syndrome returned even more severe a few weeks later after taking a single tablet obtained from another source, other patients taking without reaction tablets from the same package. Oyarzabal has recently reported a similar case in a man long subject to gout who had previously improved under atophan but presented the signs of an acute intoxication after taking novatophan. The eczema-like dermatitis which developed in this case proved very rebellious. This man had had dermatitis develop years before when a skin affection was being treated with formaldehyd.

# Medicolegal

## Law Requiring Washrooms for Employees Constitutional

(*People vs. Solomon (Ill.), 106 N. E. R. 458*)

The Supreme Court of Illinois holds constitutional an act to provide for washrooms in certain employments to protect the health of employees and secure public comfort, approved June 26, 1913. The court held that a similar act passed in 1903, which applied only to the owners or operators of coal mines, was unconstitutional on the ground that it was special or class legislation; that the legislature could not require the owners or operators of coal mines only to provide and maintain washrooms for their employees, for the reason that such a law would place on mine owners or operators a burden not borne by other employers of labor, and such enactment would be special legislation. Any act of this kind, to be valid, must apply to all employers of labor similarly situated or to all employers of labor where conditions obtain which would require washrooms. This object was accomplished in the act of 1913 by naming in the first section of the act, specifically certain employments to which the act applies, namely, of every owner or operator of a coal mine, steel mill, foundry, machine shop, followed by the words, "or other like business in which employees become covered with grease, smoke, dust, grime and perspiration to such extent that to remain in such condition after leaving their work without washing and cleansing their bodies and changing their clothing, will endanger their health or make their condition offensive to the public." The purpose of the law is to promote the health and welfare of employees in certain lines of business where the conditions are such that every facility should be afforded for cleanliness, and to provide for the comfort and welfare of those with whom such employees come in contact after leaving their places of employment. The right of the general assembly to enact such laws is under the police power of the state. Nor, as the court construes this law, is it ambiguous and uncertain. It applies to the employments specifically mentioned in the act and to all other like business of permanent character where the same conditions prevail and where there would be the same reasons for the law to apply.

## Liability for Wrongful Removal of Typhoid Fever Patient—Admissible Evidence

(*Lynch vs. Rosemary Manufacturing Co. (N. C.), 83 S. E. R. 6*)

The Supreme Court of North Carolina says that, the jury having accepted the plaintiff's version of the removal from one of the defendant's houses of his wife while sick in bed with typhoid fever, and having rendered a verdict that the defendant unlawfully and wrongfully caused her death, the court finds no good reason for disturbing their conclusion on the issue fixing liability on the company. But the court holds that there was error in an instruction as to the amount of damages, wherein the jury were told they should take all the evidence and say what the wife's earnings would have been during the balance of her life, and about how long they found she would have lived. The rule established by the decisions of this court for the admeasurement of the damages for this kind of an injury is that it is the present net value of the life which has been wrongfully taken. For that error the judgment in the plaintiff's favor for $2,500 is reversed and a new trial is granted on the issue as to damages.

It was urged for error that some of the expert witnesses were allowed to give it as their opinion that the removal was the cause of the wife's death, as it violated the rule that a witness may not express an opinion on the very question at issue between the parties. But the questions objected to were clearly within the rule for the reception of such evidence, being opinions of medical experts as to the cause of the patient's death, predicated on the symptoms of the patient and the attendant facts, assumed to have been found by the jury.

Nor does the court think that there was error in asking a medical witness, on cross-examination, if all recognized medical authorities do not teach that typhoid fever patients must not be moved, if possible to do without it, after the witness, who had treated the patient, had testified for the defendant in effect that the removal, in his opinion, "had not unfavorably affected the patient in this instance, and that, on the facts of the case, would likely increase her chances for recovery." It is very generally recognized that extracts from medical books are not admissible in evidence, and for the very sufficient reason that the author does not write under the sanction of an oath and has not been subjected to cross-examination. Moreover, the decisions of this state are to the effect that statements from these books may not be presented as such in the arguments of counsel nor introduced by means of questions put on cross-examination, as by reading an opposing opinion from a text-book and asking the witness "if it is or is not true." The principle, however, is not as exigent in case of cross-examination, and when a witness has testified as an expert, professing to have special training and knowledge from standard works of his profession, a general question of this kind may be allowed with a view of testing the value of his opinion.

## Assured Having Had Other Complaints than One Causing Death

(*Cunningham vs. Modern Brotherhood of America (Neb.), 148 N. W. R. 918*)

The Supreme Court of Nebraska holds that where the assured, shortly prior to making his application for membership in the defendant association, was treated for catarrh in the head, and still prior to that time had been treated for lumbago or rheumatism in the back, but there was no evidence to show that the particular disease which caused his death had been contracted before the beneficiary certificate was issued, it would not be considered that an inquiry could be made as to whether the disease of which he died was latent in his body. The fact that he had other complaints than the particular one which caused his death, placed the beneficiary under no obligation in case of suit to show that the assured was sound as to the particular complaint causing his death at the time that the certificate was issued and he was admitted to membership. In an action on a beneficiary certificate it is not proper to place the burden of proof on the beneficiary to show that, at the time the certificate was issued, the assured was free from the particular infirmity which ultimately caused his death. Persons engaged in a life insurance business should be required to take the risk that properly belongs to the business, and the right of the beneficiary to recover should not be made to depend on the skill, intelligence and accuracy of knowledge possessed by the assured touching his own physical condition.

## Liability for Causing Malarial Fever

(*Rice vs. Norfolk-Southern Railroad Co. (N. C.), 82 S. E. R. 1034*)

The Supreme Court of North Carolina affirms a judgment in the plaintiff's favor for damages alleged to have been due to the defendant having negligently permitted one of its drains to become clogged, ponding water under the plaintiff's house, with the result, as witnesses testified, of causing his children, aged, respectively, 13, 15 and 18 years, to have malarial fever. The court says that there was evidence of the cost of the physician's bill and medicine and of the plaintiff's loss of the services of his children. There was also the testimony of the physician that the ponded water bred mosquitoes whose bite caused malaria. It is now the accepted doctrine of the medical profession that malaria is transmitted by the bite of a certain kind of mosquito, anopheles stegomyia, and that these mosquitoes are bred in standing water. True, counsel for the defendant expressed his belief that mosquitoes were only bred in running water, and doubted the correctness of the doctrine that malaria was transmitted by their bite; but there was the testimony of the physician to that effect, and the trial court properly left the matter, being one of fact on the testimony, to the jury. Indeed, there was no evidence to the contrary.

# Society Proceedings

## COMING MEETINGS

American Association of Anatomists, St. Louis, Dec. 28-30.
American Physiological Society, St. Louis, Dec. 27-30.
Society of American Bacteriologists, Philadelphia, Dec. 29-31.
Western Surgical Association, Denver, Dec. 18-19.

## JOINT MEETING OF THE NEW ENGLAND PEDIATRIC SOCIETY, THE PHILADELPHIA PEDIATRIC SOCIETY AND THE PEDIATRIC SECTION OF THE NEW YORK ACADEMY OF MEDICINE

*Held in New York, Nov. 5, 1914*

Dr. William M. Polk in the Chair

### Experimental and Clinical Studies in Hemolytic Jaundice, with Special Reference to the Effects of Splenectomy

Dr. Edward B. Krumbhaar, Philadelphia: The experiments which Dr. Pearce, myself and our colleagues have been carrying on for the past three years, though at first concerned with the relation of the spleen to hemolytic jaundice, soon opened up to us the broader problem of the relation of the spleen to blood formation and destruction in general. Our first experiments confirmed and elaborated the earlier observations of Banti and Joannovics that it was more difficult to produce jaundice by means of hemolytic serum in splenectomized than in normal dogs. Attempts to explain the cause of this phenomenon, which was directly related to clinical splenectomy for the cure of various conditions associated with hemolytic jaundice, led us to study the blood changes following splenectomy. We found that anemia always developed, reached the maximum about the third week and dropped to normal in about ten months. Pearce, Karsner and Peet find that the resistance of the red cells is increased after splenectomy both to hypotonic salt solution and to immune serum. Austin noticed that the greatest resistance to jaundice occurred at the same time as the greatest anemia developed. I have found the same resistance and have concluded that the phenomena were partly due to the more resistant erythrocytes, and partly to the fact that less blood is destroyed because there is less blood to be destroyed. In testing the blood-forming powers of the spleen by making a comparison of the blood going to and coming from the organ, some authorities assert that they have found more red cells, white cells and hemoglobin in the splenic vein, but our experiments along these lines were negative and it seems that we must accept the dictum that red cells at least are formed only in the bone marrow. Asher and his pupils have offered as an explanation of the anemia following splenectomy that increased amounts of iron are lost through the stools, but here also our experiments have failed to confirm such an explanation. We found, however, that injection of splenic extracts intraperitoneally have a marked temporary effect in raising the erythrocyte count, the leukocytes and hemoglobin, which is presumably due to the stimulation of the bone marrow. A possible explanation of the anemia following splenectomy is, therefore, that the bone marrow is deprived of a stimulating hormone, and the explanation of the later recovery from the anemia may be found in that the lymph-nodes found enlarged after splenectomy have presumably taken over some of the function of the spleen. Although splenectomized dogs showed less tendency to jaundice when hemolytic agents were administered, nevertheless such agents caused a greater fall in the blood counts, a more lasting damage, and a greater fragility of the red cells than in normal dogs. Apparently the lessened tendency to jaundice is connected in some way with the anemia caused by splenectomy, while the lessened power to recover from the hemolytic anemia must be attributed to the loss of some specific substance from the spleen. Banti has shown evidence of special hemolytic activity of the splenic extracts and of dissociated hemoglobin in the splenic vein, but our observations have failed to substantiate these claims. The unsaturated fatty acids are well known as hemolytic agents and the lessened blood destruction after splenectomy may thus be explained.

A review of the history and a detailed description of the different types of primary splenomegaly with anemia, namely, Gaucher's, Banti's, von Jaksch's and the two types of hemolytic jaundice, the Hayem-Widal, or acquired form, and the Chauffard-Minkowski, or congenital or hereditary form, show that Gaucher's disease has but little in common with the other types of splenic anemia and though the negative character of the symptoms might cause it to be confused with Banti's disease, pathologic examination should admit of a proper differential diagnosis. Although the etiology of Banti's disease is unknown, evidence points to the close causative relationship of the spleen. One would not expect the removal of a largely fibrotic organ to be attended with marked somatic changes, and it is in the earlier stages of the disease that splenectomy has proved most beneficial. The acquired and congenital types of hemolytic jaundice with splenomegaly possess rather characteristic differences and I deem it advisable to follow the Continental custom and consider them as independent conditions. In the congenital type the resistance of the red blood cells to hypotonic salt solution is much diminished, and this furnishes a simple differential test according to the technic which we used.

The cardinal symptoms of these types of hemolytic jaundice with splenomegaly are a chronic enlargement of the spleen, existing with an acholuria, non-obstructive jaundice and anemia, frequently paroxysmal in character and varying in intensity. Increased blood destruction is indicated by increased urobilin in the urine, and various characteristic changes are found in the blood; the red cells show diminished resistance to hypotonic salt solution; there is an increased number of reticulated cells with vital staining, and in the acquired form the phenomenon of auto-agglutination of the red corpuscles. In the congenital form the subjects are more often icteric than sick, while the acquired form is usually ushered in by a definite attack of sickness, the anemia becomes more grave, and the patient is distinctly more anemic than jaundiced. The congenital form seems to be more of an inherited dystrophy of the hemopoietic system, rendering the red blood cells more easily destructible. We have collected reports of eight necropsies and seven splenectomies which showed chiefly congestion of the spleen, especially of the pulp cords, with increased pigment and macrophages. Since therapeutic measures have been so ineffectual, splenectomy seems to offer the most hope for improvement or cure and should be considered, with due regard to conservatism, in all these diseases in which there is evidence of increased blood destruction referable to the spleen. In early Banti's disease and hemolytic jaundice the results of splenectomy have been excellent. In pernicious anemia, although improvement has followed in some cases, the value of splenectomy is more dubious, and this grave operation should be tried only when the indications are clear and other methods have proved unavailable.

### Occurrence and Significance of Melituria in Infants Suffering from Nutritional Disorders

Dr. Oscar M. Schloss, New York: Sugar which has been used in metabolism is carried by the general circulation, and it is obvious that sugar which appears in the urine is derived from the blood sugar. Normal blood sugar in infants ranges from 0.07 to 0.11 per cent., figures practically identical with those that obtain for adults. There is a tendency for the blood sugar to maintain a constant level, but striking changes may occur following the ingestion of carbohydrate food. There is often a definite increase in the blood sugar shortly after a meal which reaches its maximum in from one and one-half to two and one-half hours and then decreases. This increase may be effected by starch as well as sugar, though the increase is slower and to a lesser degree. Owing to this fact the blood used for examinations was withdrawn about three and one-half hours after a meal. There is a distinct relationship between increased blood sugar and melituria. As a rule a continued increase in blood sugar leads to an excretion of sugar in the urine, although this effect may not be immediate. Often the hyperglycemia precedes the melituria for some time. It seems safe to assume that hyperglycemia means a disturbance in the balance between mobilization and consumption of sugar and often signifies a decreased power of burning sugar, provided the patient is afebrile and the diet normal. Most of the early writers considered that the sugar found in the urine of infants suffering from gastro-enteric disorders was lactose derived from the food. Finkelstein and Meyer attached great importance to melituria in nutritional disorders. They divided the cases into two groups: 1. Those in which the appearance of lactose in the urine was considered as indicative of an intestinal lesion through which lactose was absorbed before it was split by the inverting enzymes of the intestinal secretion. 2. When galactose was found in the urine, and it was thought that the underlying cause was a diminished sugar tolerance, the liver probably being at fault.

Our work comprised the study of the blood and urine of 235 infants. The preliminary tests were made by the reagents of Benedict and Nylander, and if the reducing substance was present in sufficient quantity, tests were carried out to determine its nature. There were forty normal infants whose blood sugar ranged from 0.068 to 0.11 per cent. The remaining 195 cases represented nutritional disorders ranging from the milder disturbances to those of severe intoxication. For convenience the cases were divided into mild, moderate and severe. There was an association between the increased blood sugar and the presence of sugar in the urine. As a rule, the cases with melituria showed hyperglycemia. In most instances the percentage of sugar in the urine ranged from 0.05 to 0.1 per cent. In such cases a determination of the nature of the sugar with any degree of accuracy was impossible. In twenty-seven cases the urine at some time contained 1 per cent. or more of sugar and further tests were made to determine its nature. These examinations showed that the sugar was usually galactose or dextrose. Lactose occurred, but not alone, it being always associated with galactose.

The important facts brought out are, therefore: 1. Melituria is usually accompanied by an increase in blood sugar. 2. The sugar in the urine is a monosaccharid. This indicates that a gross lesion of the intestine is not a direct cause of the melituria, but rather that the direct cause is a lowered tolerance to sugar. Our test to determine this tolerance shows definitely that there is a lowered tolerance to sugar in the nutritional disorders.

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## THE COLLEGE OF PHYSICIANS OF PHILADELPHIA

*Meeting held Nov. 4, 1914*

The President, Dr. James C. Wilson, in the Chair

### Pain and Tenderness in Diseases of Spinal Cord, and Their Surgical Treatment

Dr. Charles A. Elsberg, New York: Little attention has been given to the neural origin of abdominal pain. Operations have been performed for supposed gastric disease when the real trouble was gastric crises in the course of tabes. Two patients have been sent into my service with the diagnosis of acute appendicitis. In both instances the patients had Pott's disease with irritation of spinal nerve roots, and areas of skin and muscle tenderness in the right iliac region. I have records of three patients in whom various operations had been performed who were finally found to have a spinal tumor or a neuritis of the nerves of the cauda equina. Another patient operated on for supposed gangrene of the toes, with severe pain shooting down the leg, was finally relieved by an operation for spina bifida occulta. To understand the distribution of painful symptoms in the extremities it is of value to remember the anatomy of the spinal nerve roots. A tumor may press on some of the nerve bundles without compressing the entire spinal root. I removed an extramedullary tumor of the spinal cord between the seventh and eighth cervical segments in a case in which the first and for a long time only symptom was a painful pin and needle sensation in the index finger of the right hand. The tumor was found to have pressed on only the lower nerve root bundles of the seventh cervical posterior root. From several cases of this kind I feel justified in stating that of the nerve bundles that make up the seventh cervical posterior root, the lower supply the index finger and the upper the thumb. In my last hundred laminectomies for spinal disease I have performed six operations on patients who had been treated for long periods for abdominal symptoms. In every case of indefinite abdominal pain and tenderness it is advisable to make certain that we are not dealing with a cutaneous hypersensitiveness which so often simulates real abdominal tenderness.

DISCUSSION

Dr. Charles W. Burr: In a patient seen some years ago the only symptom present was diffuse pain in the right arm. Later there was slight wasting in the muscles around the thumb. The pain was later replaced by painful anesthesia accompanied by marked wasting and gradually increasing palsy in the whole arm. After some time death ensued and at post-mortem there was found in the cervical region a long flat growth that had entered the nerve roots, first the posterior, causing only pain and then the anterior, causing pain and wasting. Had we but known the cause of the trouble, operation would have saved the patient a great amount of pain and probably her life.

Dr. Charles H. Frazier: It is too commonly supposed that pain is a constant and conspicuous symptom of spinal tumor, referred to the peripheral distribution of the segment involved. A number of cases of spinal tumors have been observed in which throughout the course of the lesion there was absolutely no pain. The widely varying results of rhizotomy would seem to throw some doubt on the present conception of the pathways of afferent impulses, and suggest the possibility of the ventral roots having some part in the carrying of afferent impulses. Such a hypothesis has been already advanced by Kidd. Whenever possible a therapeutic test should be applied before operation in order to determine whether interruption of the sensory impulses does not relieve pain. Spiller's suggestion of resection of the anterolateral column of the cord is a most valuable one and appeals to me particularly in cases of uncontrollable pain of the lower extremities, and more especially, because the operation does not necessitate the removal of as many laminae of the spine as would be necessary to cut the required number of lumbar and sacral roots. In the limited number of root resections for pain in my clinic there have been no fatalities, but in a larger series, performed by a number of surgeons, the mortality rate has been estimated at 10 per cent. This is too high. The risks of the operation should be materially reduced. The low rate of mortality in my experience with laminectomy I attribute chiefly to intratracheal anesthesia and to the use of the stovain block.

Dr. Charles A. Elsberg: I am not very enthusiastic about cutting posterior spinal roots in the treatment of the crises of tabes. Professor Foerster states that the only way to get a fairly good result is by an enormous laminectomy, cutting from the fourth or fifth dorsal down to the twelfth, and that even then the result is not certain. I have seen temporary benefit from the injection of stovain into the spinal canal. Laminectomy is an operation in which the mortality should be very small and one which a surgeon after a little experience should be able to do easily. In ninety-eight successive cases we have had no mortality.

### Pathology of Tabetic Ocular Palsies

Dr. William G. Spiller: The ocular palsies of tabes have been regarded by some investigators as nuclear in origin, and the syphilitic ocular palsies as of nerve origin. This view may be disputed. I have studied by microscopic serial sections a typical case of tabes with complete internal and external ophthalmoplegia. The ocular nerves and their nuclei were much degenerated; there was considerable round cell infiltration of the pia, but one of the abducent nerves which was less degenerated than the other showed also less round cell infiltration within the nerve. Round cell infiltration is indicative of the intensity of the syphilitic process. This case would throw doubt on the view that tabetic ocular palsies are nuclear.

### DISCUSSION

Dr. Charles K. Mills: It is not at all uncommon for the diplopia often present in early tabes to disappear rather quickly. This would not occur were the palsies due to nuclear degeneration.

Dr. Daniel J. McCarthy: I would ask Dr. Spiller whether in his opinion tabes still exists, or whether all cases of tabes should be grouped together as spinal syphilis. My feeling is that we have distinct cerebral syphilis which reacts to treatment. Apart from this, paresis and tabes do not react, and when once developed are practically incurable.

Dr. W. G. Spiller: We recognize tabes and paresis, but we must regard them as truly syphilitic diseases. Tabes is caused by the degeneration of the posterior roots from the syphilitic poison. There are cases in which a positive diagnosis between spinal syphilis and tabes cannot be made. There are also cases in which the diagnosis between cerebral syphilis and paresis cannot be made, and these cases show how close the connection between cerebrospinal syphilis and the so-called parasyphilitic diseases may be.

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# *Current Medical Literature*

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Physiology, Baltimore

*December, XXXVI, No. 1, pp. 1-76*

1 *Effect of Temperature on Action of Thrombin and Antithrombin. W. H. Howell, Baltimore.
2 Orientation of Holothurian by Light. W. J. Crozier, Boston.
3 *Effect of Radiant Energy on Lens and Humors of Eye. W. E. Burge.
4 *Physiology of Stomach. A. B. Luckhardt and A. J. Carlson, Chicago.
5 *Secretory Innervation of Hypophysis. I. Rabens and J. Lifschitz, Chicago.
6 Studies of Autonomic Thresholds. W. L. Mendenhall, Boston.
7 Carotid Blood-Flow in Relation to Intra-Abdominal Pressure. R. Burton-Opitz, New York.

1. **Temperature Action on Thrombin and Antithrombin.**—At temperatures approximating the body-temperature, Howell states, the action of antithrombin is greatly augmented. It is probable that this action is of importance in insuring the fluidity of the circulating blood in animals like the mammals in which the content of antithrombin in the blood is small. The effect of high temperatures (60 to 100 C.) in weakening or destroying the action of thrombin is accelerated greatly by the presence of small amounts of neutral salts (NaCl).

3. **Effect of Radiant Energy on Eye.**—Burge summarizes his observation as follows:

> Radiation from a quartz mercury vapor lamp which is sufficiently intense to coagulate egg albumin, egg globulin, vitellin, serum albumin and serum globulin in one hour does not coagulate the protein of the normal lens or of the vitreous or aqueous humors and hence does not affect the transparency of these structures after a continuous exposure of 100 hours. The region of the ultraviolet spectrum effective in coagulating the egg white lies between 265 and 302 microns. The region most effective lies around 265 microns.
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> The lens protein can be modified by solutions of calcium chlorid, magnesium chlorid sodium silicate or dextrose too weak of themselves to affect the transparency of the lens so that ultraviolet radiation can precipitate the modified lens protein and hence produce opacity of the lens. The effective region in case of modification of calcium chlorid is from 265 to 302 microns inclusive. The most effective region lies around 265 microns. Analyses of senile cataractous human lenses show that calcium, magnesium, and in lenses from India, silicates are greatly increased in this type of cataract. The assumption is made that the accumulation of these substances modifies the lens protein in such a way that the short waves of the spectrum can precipitate the protein, thus producing opacity or cataract. In the case of diabetic cataract the accumulation of sugar in the liquids of the body so modifies the lens protein that the short waves of the spectrum can produce opacity, hence the prevalence of cataract in this disease.
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> The above named substances, which so alter the lens protein that the short waves can precipitate it, at the same time decrease the fluorescence of the lens. This suggests that there may be some relation between this latter property and the great resistanc of the normal lens protein to ultraviolet radiation. In looking for the cause of cataract it would seem that at least two factors are to be considered, the one, a modification of the lens protein, and the other, radiation of short wave lengths by which this modified protein can be coagulated. Radiation from the infrared, or the visible region of the spectrum cannot coagulate either the modified or the unmodified lens protein provided the coagulation due to heat be excluded.

4. **Physiology of Stomach.**—According to Luckhardt and Carlson blood from starving animals and animals in pancreatic diabetes transfused into normal animals acts as a temporary stimulus to the gastric hunger mechanism. Excessive hemorrhage is followed by a temporary augmentation of the gastric hunger contractions. Prolonged starvation, pancreatic diabetes and possibly excessive hemorrhage result in the increase of some substance or substances in the blood that act as stimuli to the gastric hunger mechanism.

5. **Secretory Innervation of Hypophysis.**—The results obtained by Rabens and Lifschitz go to show that the presence of secretory nerves governing the activity of the hypophysis cannot be demonstrated by the glycosuria or hyperglycemia methods. The glycosuria resulting from the stimulation of the superior cervical ganglia is undoubtedly due to the effects of prolonged anesthesia and not to an excessive activity of the hypophysis caused by stimulation of a secretory nervous pathway to the gland. The authors suggest that the nerve fibers to the hypophysis described by Dandy may be vasomotor nerve fibers. The fact that no vasomotor nerves have been conclusively demonstrated in the cranial cavity does not prove that such nerves are absent from a complex gland like the hypophysis. And the fact that the anterior lobe has a vastly richer nerve supply than the posterior lobe does not in the least prove that these nerves are of a secretory nature. Stimulation of the cervical sympathetic nerves while the animal is conscious and under physiologic conditions does not produce hyperglycemia, glycosuria or diuresis. In all cases in which the animal is subjected to a crucial operation and prolonged ether anesthesia, glycosuria appears whether or not the superior cervical ganglia are stimulated.

A similar glycosuria occurred when the animal was subjected to mere prolonged anesthesia without even exposing the nerves or ganglia. Subjection to prolonged anesthesia after exclusion of all possible downward impulses to the abdominal viscera through vagus reflexes, with or without stimulation of the ganglia, led to a similar glycosuria. The glycosuria of prolonged ether anesthesia runs a uniform course, the amount of sugar gradually rising to a maximum and then gradually declining. This course is not influenced by the stimulation of the cervical sympathetic nerves, or the superior cervical ganglia.

### American Journal of Tropical Diseases and Preventive Medicine, New Orleans

*November, II, No. 5, pp. 295-355*

8 *Leprosy. Its Treatment in Philippine Islands by Hypodermic Use of Chaulmoogra Oil Mixture. V. G. Heiser, Manila.
9 *Bacteriemic Nature and Laboratory Diagnosis of Leprosy. D. Rivas and A. J. Smith, Philadelphia.
10 Mosquitoes and Sewage Disposal. F. Knab and A. Busck, Washington, D. C.

8. **Chaulmoogra Oil Mixture for Treatment of Leprosy.**—The mixture used in the cases cited by Heiser was prepared as follows: Chaulmoogra oil and camphorated oil; 60 c.c. each; resorcin 4 gm. Mix and dissolve with the aid of heat on a water bath and then filter. The injections were usually made at weekly intervals in ascending doses. The initial dose is 1 c.c. and this is increased to the point of tolerance. The object sought is so to regulate the dose as to prevent reactions of too violent a character. Heiser says that experience shows that this treatment gives more consistently favorable results than any other and it holds out the hope that further improvement may be brought about. It produces apparent

cures in some cases, causes great improvement in many others, and arrests the progress of the disease in almost every instance. He has at present over 20 patients who have become microscopically negative since they began the treatment. The treatment is apparently equally efficacious in all forms of the disease; that is, the tubercular or hypertrophic, the anesthetic and the mixed.

9. **Bacteriemic Nature and Laboratory Diagnosis of Lepra.**—In support of the bacteriemic nature of lepra, that is that *B. lepra* exists in the circulating blood, Rivas and Smith have the following evidence: 1. *B. lepra* is found in the blood collected from healthy parts of the skin which are apparently normal and from which the micro-organisms are usually absent on section. 2. By the acetic acid method, *B. lepra* either singly, in pairs, in masses or in bundles is detected in the venous blood. 3. The presence of *B. lepra* in the form of lepra cells or phagocytosed by endothelial cells and more especially by lymphocytes in the venous blood. And finally, they suggest that the apparent or actual growth (at least temporarily) of *B. lepra* in cultures made from the venous blood may be an indication of the resemblance of leprosy to other bacteriemic diseases.

### Journal of Biological Chemistry, Baltimore

*November, XIX, No. 3, pp. 305-443*

11 Immunization Against Anticoagulating Effect of Hirudin. M. Vera and L. Loeb, St. Louis.
12 Value of Proteins of Cereal Grains and Milk for Growth in Pig, and Influence of Plane of Protein Intake on Growth. E. V. McCollum, Madison, Wis.
13 Effect of Alkali on Permeability. W. J. V. Osterhout, Boston.
14 *Gastro-Intestinal Studies III (Studies on Water-Drinking XXI). O. Bergeim, M. E. Rehfuss and P. B. Hawk, Philadelphia.
15 Influence on Growth of Rations Restricted to Corn or Wheat Grain. E. B. Hart and E. V. McCollum, Madison, Wis.
16 Action of Rennin on Casein. A. W. Bosworth, Geneva, N. Y.
17 Acidosis in Omnivora and Herbivora and Its Relation to Protein Storage. H. Steenbock, V. E. Nelson and E. B. Hart, Madison, Wis.
18 Effective Principle in Thyroid Accelerating Involution in Frog Larva. M. Morse, Madison, Wis.
19 Is Antagonistic Action of Salts Due to Oppositely Charged Ions? J. Loeb, New York.

14. **Gastric Stimulation by Water.**—The authors claim that water (ordinary or distilled), either cold (10.5 C.) or warm (50 C.) as small a volume as 50 c.c. is a very strong gastric stimulant and in certain instances yields an acidity of over 100 c.c. (N/10 NaOH to neutralize 100 c.c. of juice), in less than twenty minutes. In the average normal individual water produces fully as great a stimulation (as measured by acidity and enzyme values) as does an Ewald test meal, and the acidity values follow a similar type of curve. Identical volumes of water introduced into the stomach of the same man during the same afternoon yielded similar acidity values. Under all conditions the increased acidity following water stimulation is accompanied by increased peptic activity, although the two types of values do not necessarily run parallel.

It was impossible to demonstrate any latent period for the human gastric glands. Therefore a prolonged and spread contact with the stomach mucosa is not a necessary preliminary to stimulation, as Pawlow and others have claimed. The introduction of 100 c.c. of distilled water into a stomach made empty by lavage was followed by the removal of samples at one-minute intervals which showed total acidity values of 19.5, 26.0, 49.5, 63.5 and 79.5. In one experiment definite evidence was obtained that 500 c.c. of water left the stomach in ten to twenty minutes after its introduction. In a single instance a very pronounced continued digestive secretion was observed. At least 225 c.c. of gastric juice of relatively high acidity were secreted after an initial stimulus afforded by 50 c.c. of distilled water (50 C.). Since water stimulates the gastric glands to activity when no food is present in the stomach as well as when there is a digestive task to complete, it seems to the authors a waste of glandular energy to drink water between meals. It would seem that water could best further the digestive plan when taken with meals.

### Journal of Experimental Medicine, Lancaster, Pa.

*December, XX, No. 6, pp. 545-641*

20 *Effect of Gentian Violet on Protozoa and on Tissues Growing in Vitro, with Especial Reference to Nucleus. D. G. Russell, New Haven, Conn.
21 *Effect of Various Tissue Extracts on Growth of Adult Mammalian Cells in Vitro. A. J. Walton, London.
22 *Experimental Typhoid Infection of Gall-Bladder in Rabbit. H. J. Nichols, Washington, D. C.
23 *Proteotoxins (Anaphylatoxins) and Virulence. H. Zinsser and J. G. Dwyer, New York.
24 *Method of Counting Actual Number of Purkinje Cells Present in a Given Area of Cerebellum and Its Application in Ten Clinical Cases. F. W. Hitchings, Cleveland.
25 Agglutination Phenomena in Lobar Pneumonia. H. T. Chickering, New York.
26 Successful Cultivation of Skin Epithelium of Adult Frog, Rana Pipiens. E. Uhlenhuth, New York.

20. **Effect of Gentian Violet on Protozoa.**—The fact that embryonic and adult tissue of the frog will grow in vitro in the presence of gentian violet of a far stronger dilution than that necessary to kill many bacteria, as determined by Russell, lends encouragement to efforts now being made by him to apply the observations on the bactericidal effect of gentian violet and allied stains to the treatment of disease. Moreover, the ability of growing cells to rid themselves of this dye would indicate that it may be possible to apply the dye to infected tissue and count on the cells to eliminate the material after its work had been done. In Russell's experiments, for example, successful tissue growths were obtained when gentian violet 1 to 20,000 were used, yet *Bacillus subtilis* will not grow in 1 to 100,000 dilution and grows very badly in 1 to 1,000,000 dilution.

21. **Growth of Adult Mammalian Cells in Vitro.**—Walton found that the majority of tissue extracts stimulate the growth of connective tissue, but liver extract inhibits it. The extracts are to a certain extent specific in their action on the growth of parenchymatous cells. Some cells are stimulated by one extract and inhibited by another, and those extracts which inhibit one type of parenchymatous cell may stimulate another type. Homogenous and autogenous extracts are equally efficacious in their action on the growth of cells.

22. **Experimental Typhoid Infection of Gall-Bladder in Rabbit.**—The following subjects are considered by Nichols: (1) pathogenicity of a living sensitized vaccine, (2) pathogenicity of first transplant from a living sensitized vaccine, (3) the regular production of lesions, (4) the gall-bladder lesion as a test of immunity, (5) the curative effects of vaccines, and (6) the practical bearing of experimental work. Altogether, ninety-seven animals were used and forty gall-bladder lesions were observed.

Nichols states that Besredka's living sensitized vaccine, given intravenously, does not produce a typhoid lesion of the gall-bladder in the rabbit. The first transplant of this vaccine is capable of producing this lesion. Hence this vaccine is not entirely safe to handle. Regular infections of the gall-bladder have not been produced by carrying a known pathogenic strain on rabbit blood agar, by successive passage through animals, or by the use of freshly isolated strains. No evidence could be demonstrated in the rabbit of the immunity produced in man by vaccination with a whole killed vaccine. Vaccine treatment did not cure the gall-bladder lesions.

Nichols concludes that with the present methods of producing infections in the chimpanzee and the rabbit, neither of these animals is suitable for deciding the problems of the immunization of man by vaccines. These problems must be settled by actual experience with large numbers of men kept under close observation.

23. **Proteotoxins and Virulence.**—The experiments reported on by Zinsser and Dwyer show that proteotoxin (anaphylatoxin) produced with typhoid bacilli and active guinea-pig serum, by the general method of Friedberger, possesses aggressin-like action in that, when injected together with sublethal doses of bacteria, it renders them lethal. This action is not specific, since even when typhoid bacilli are used in its production, the proteotoxin possesses this property not only for typhoid bacilli, but for staphylococci and prodigiosus bacilli, the only other organisms with which the

authors have worked. This action is manifest in the experiment only when quantities of proteotoxin are used which can produce a certain degree of systemic poisoning. It is not due to anti-opsonic action since the phagocytosis of staphylococci in the presence of active serum takes place readily in spite of the presence of relatively considerable amounts of the poison.

The authors suggest that the aggressin-like action of the proteotoxin is probably due to the leukopenia that it causes. It is not likely that this leukopenia is dependent on a negative chemotactic action, in the ordinary sense of this term, but it is probably due to the general intoxication of the animal, resulting among other things in the poisoning of those tissue elements which ordinarily react to infection with the mobilization of leukocytes in the circulation.

24. **Method of Counting Purkinje Cells.**—In the application to clinical cases of the method of counting Purkinje cells Hitchings found that increasing nerve cell exhaustion is accompanied by increasing nerve cell disappearance although it is recognized that theoretically complete nerve cell exhaustion could be present without nerve cell disappearance on account of the individual dying before phagocytic action could take place. Hitchings is convinced that this disappearance of nerve cells corroborates the theories and observations made on phagocytosis of nerve cells, inasmuch as it shows that nerve cells disappear from the brain. There were 16.6 per cent. fewer cells in the case with the maximum cell exhaustion (57 per cent.) than in the case of the normal man ( 2 per cent.).

### Journal-Lancet, Minneapolis

*December 1, XXXIV, No. 23, pp. 615-642*

27 *Transplantation of Bone (Inlay Method) in Ununited Fractures. M. S. Henderson, Rochester.
28 Eye in General Practice. E. D. Putnam, Sioux Falls, S. Dak.
29 Public Health. C. J. McGurren, Devils Lake, N. Dak.
30 *Herter's Infantilism. O. W. Rowe, Duluth.
31 Typhoid Carriers as Causative Factor in Institution Epidemics: Methods for Finding and Controlling Same. E. H. Trowbridge, Faribault.

27. **Transplantation of Bone in Ununited Fractures.**—Henderson records thirty-two cases of delayed union in the long bones in which the patients were treated by transplantation of bone. In the total number the results have been very satisfactory. Five failures occurred, two in ununited fractures of the neck of the femur, two in the humerus and one in the forearm. The remaining twenty-seven cases have been successful in every instance, and all but a few patients are so far recovered as to insure a good functional result. Speaking of methods of transplantation, Henderson says that a piece of cortical bone may be removed from the tibia and placed as an intramedullary transplant in the humerus, but clinical observation goes to show that this is really a foreign body, is not in a field normal to it, and gradually undergoes absorption, but in its absorption it is conducive to osteogenesis. Wherever possible, the inlay method is preferred to the intramedullary by Henderson, for one may then place periosteum to periosteum, cortex to cortex, and medullary lining to medullary lining. He does not believe that the question of bony contact is so important in fractures as in using pieces of bone to bridge the long gaps, for there is no difficulty in obtaining an abundance of contact. Generally speaking, as much and as close approximation as possible is desirable.

Asepsis is a very desirable factor, though not absolutely essential. Instances of successful transplantation for compound ununited fractures have been noted in spite of infection. Transplants obtained from the same individual are universally acknowledged to be superior to those obtained from other individuals or from other species. The age of the patient is important. Grafts grow best in the young and in middle-aged people, although, as in other conditions, age alone is no guide for some people are younger at 50 than others at 40. Absolute fixation is necessary to prevent the graft from moving about. This fixation is, of course, obtained according to the type of fracture being treated. The periosteum Henderson regards as a limiting membrane, vascular in character, which plays an important part in the nourishment of the bone, and is of sufficient importance to demand preservation when possible.

30. Abstracted in The Journal, Oct. 31, 1914, p. 1601.

### Michigan State Medical Society Journal, Grand Rapids

*December, XIII, No. 12, pp. 681-734*

32 *Surgical Treatment of Facial Paralysis. E. H. Beckman, Rochester, Minn.
33 Recent Developments in Pathology and Etiology of Pneumonia. T. D. Gordon, Grand Rapids.
34 Symptomatology, Diagnosis and Prognosis of Lobar Pneumonia. C. H. Johnston, Grand Rapids.
35 Treatment of Pneumonia. C. G. Jennings, Detroit.
36 Pleuritic Effusions and Empyema Subsequent to or Co-Incident with Pneumonic Attacks. V. C. Vaughan, Jr., Detroit.
37 Pneumonia Mortality and Prevention. J. L. Burkhart, Lansing.
38 Mendelism and Its Meaning. L. H. Harvey, Kalamazoo.

32. **Surgical Treatment of Facial Paralysis.**—Surrounding the nerve anastomosis with fresh section of vein has been used in the Mayo clinic in three cases. Beckman states that the section of vein protects the anastomosis with a thin cylinder which is already lined with endothelium and would seem to protect the sutured ends from the encroachment of connective tissue. In the three cases in which it was used, the restoration of function has been more perfect than in one case in which the anastomosis was surrounded by fascia and muscle. An inch or inch and a half section of the facial, external or anterior jugular vein is slipped over the spinal accessory nerve before the anastomosis is made and afterward moved along until it completely covers the anastomosis. In all of the operations, four in number, they have used the main trunk of the spinal accessory nerve and made an end-to-end anastomosis.

### New York Medical Journal

*December 5, C, No. 23, pp. 1097-1144*

39 *Tonsillotomy Versus Tonsillectomy. T. R. French, New York.
40 Unusually Large Ureteral Calculi. L. Buerger, New York.
41 *Backache. C. Ogilvy, New York.
42 Fracture of Clavicle. W. E. Hartshorn, New Haven, Conn.
43 Intravenous Treatment of Arthritic Processes. A. Comstock, New York.
44 Local Anesthesia in Hernia Operations. C. P. Knight, Stapleton.
45 Urinary Findings in Various Pathologic Conditions of Alimentary Canal. S. R. Klein, New York.
46 Intracranial Diseases from Ear. A. Bardes, New York.
47 Technic of Vaccination. B. Diefendorf, Canajoharie.

39. **Tonsillotomy Versus Tonsillectomy.**—Because of the possible existence of a tonsillar function, also because of the subsequent pharyngeal deformity and the consequent alteration of the quality of the voice occasioned by tonsillectomy French considers it desirable to leave the capsules in the tonsillar fossae whenever possible. While all extensively diseased tonsils should be enucleated, he believes that it is probably safe to say that at least 80 per cent. of enlarged tonsils do not contain foci of infection and, therefore, do not need to be completely removed, and, indeed, unless obstructive to voice or respiration, do not need to be removed at all. In cases in which there is a doubt of the character of the interior of the tonsils, but which are brought to operation for the removal of irritating or obstructive adenoid growths, a fairly accurate knowledge of the condition of the crypts or of the presence of pus sacs or pockets can be obtained by removing, at the beginning of the operation, a substantial portion of one tonsil and submitting it at once, in a brilliantly illuminated field, to examination under a finely ground loupe with a magnification of from 5 to 10 diameters. If the tonsil from which the section was taken is found to be apparently free from disease, and the clinical history is without significance, the remainder of the gland should be removed by complete tonsillotomy—that is, down to the capsule. The opposite tonsil, if not obstructive, may then with propriety be left alone, but if obstructive, it also should be removed by complete tonsillotomy. If the exploratory section, however, shows that one tonsil is diseased, then both tonsils should be enucleated. The base left after a considerable part has been removed for examination, can be as readily enucleated as if a part had not been removed.

41. **Backache.**—The cause of backache Ogilvy states is very often found to be a postural deformity with a resulting muscle strain. The cause of the postural deformity is very frequently weak feet. A sacroiliac joint strain, with or without muscle strain, is responsible for a number of cases. The diagnosis of muscular rheumatism should seldom be made, as by so doing one is simply evading the question. When myalgia is present, an infectious origin should be sought for.

### Pennsylvania Medical Journal, Athens

*November, XVIII, No. 2, pp. 91-170*

48 *Banti's Disease: Report on Operative Cases. J. Sailer, Philadelphia.
49 Recent Advances in Diagnosis in Pediatrics. J. F. Sinclair, Philadelphia.
50 Duration of Infection in Scarlet Fever. M. Ostheimer, Philadelphia.
51 Hip Disease. J. Ridlon, Chicago.
52 *Dependent Intercostal Drainage in Acute Empyema. T. T. Thomas, Philadelphia.
53 Local Application of Radium in Surgery. I. Levin, New York.
54 Use of Natural and Artificially Prepared Radio-Active Solutions in Internal Medicine. G. D. Kahlo, White Sulphur Springs, W. Va.
55 Intravenous Injection of Radium Element. J. B. Bissell, New York.
56 Radium in Cutaneous Lesions. W. A. Pusey, Chicago.
57 Comparison of Uses of Roentgen Ray and of Radium with Lantern Demonstrations. W. S. Newcomet, Philadelphia.
58 Development of Tuberculosis Campaign in Pennsylvania. A. P. Francine, Philadelphia.

48. **Banti's Disease.**—Three cases of Banti's disease were studied by Sailer. In all three splenectomy was performed. Two of the patients recovered and one died but in the last case death was due less to the operation than to the massive hemorrhages that preceded it, and in the hope of stopping which the operation was performed. One patient never had massive hemorrhages but occasionally had severe attacks of pain in the intestines after which occult blood could be found, and on one occasion had an attack of pain in the left flank subsequent to which blood was found in the urine, so that Sailer feels reasonably safe in concluding that a small renal hemorrhage occurred. The interesting features of the first case are the comparatively brief course, two and one-half years; the severe paroxysms of pain which can be ascribed to hemorrhages not only from the gastro-intestinal tract but also from the kidneys; the large size attained by the spleen in the short time, the absence of any sign, macroscopically, of change in the liver at the time of the operation; a prolonged and complicated postoperative period and ultimate apparent recovery. The three cases are reported in detail.

52. **Dependent Intercostal Drainage in Acute Empyema.**—Thomas cites nine cases. He says that the object of treatment should be to provide a drainage opening which gives free drainage and admits as little air as possible. This is accomplished best by the intercostal opening at the bottom of the cavity large enough to admit the ordinary rubber tube. The constantly escaping pus through and around the tube will prevent the entrance of air except on forced respiration as in crying and coughing. This is as easily and safely made as the higher opening, and can be done in most homes. The lower opening will more quickly relieve the patient of the septic symptoms, lower the mortality, lead to a quicker convalescence and earlier closure of the cavity and sinus, than the higher opening.

## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Medical Journal, London

*November 21, II, No. 2812, pp. 865-908*

1 *Treatment of Wounds in War. W. W. Cheyne.
2 Principles of Wound Treatment as Established by Lister and Subsequent Modifications in Treatment. F. M. Caird.
3 *Borderland of Disease. G. Rankin.

1. Also published in the *Lancet*, Nov. 21, 1914. See Abstract No. 12.

3. **Borderland of Disease.**—Rankin's closing paragraphs are a good summary of what he touches on his paper. He says:

> The subject of borderland illnesses is extensive, but these desultory notes and illustrative cases may stimulate some interest in questions affecting the earliest departures from the high level of perfect health. Perhaps there is almost no such thing as "perfect" health, but it is possible by careful inquiry and patient investigation to make sure that we do not found a firm opinion on a casual observance of physical signs or a mere negation of subjective symptoms, but that we look a little more sharply after collateral evidence— that, in short, we forage inquisitively in the borderland, in which more often than we believe, we will find evidences of minor imperfections that so often escape discovery. It would be a provident and wise plan if every man went to his physician for a thorough overhaul once in six months, not because he was driven to him on account of feeling ill, but because he was led to him by the desire to keep well. As custom now dictates it, the physician is only sought out when there is an evil to remedy, but the day is not far distant when he will be retained in order that the evil may be, as far as possible, averted.
>
> It is true that we are more frequently consulted about trivial ailments than on account of acute and serious disorders; nay more, our time is often vexatiously encroached on by having to listen to a long tale of imaginary woes and a formidable recital of aches and pains for which we can find no physical explanation, but, if my contention is right, all such patients are on the borderland of disease. Their discomforts, whether physical, mental or emotional, have a foundation in fact somewhere and clearly point to a fault that disturbs the harmony of perfect physiologic activity. The engine is not tuned up to the best work it is capable of, and unless adjusted in time, some part must inevitably become permanently faulty, and constitute the blemish which spells premature consignment to the human scrap-heap. "Prevention is better than cure" is truer to-day than ever before, and we will do much to justify the proverb and to hasten its full realization if we direct our attention more and more to the borderland country and the evidences which are constantly to be found there of the earliest movements on the part of the enemy of mankind.

### Dublin Journal of Medical Science

*November, III, No. 515, pp. 321-400*

4 Radium. J. Joy.
5 Treatment of Exophthalmic Goiter by Roentgen-Rays. T. G. Moorhead.
6 Summary of Eleven Years' Experience of Radium on Superficial Cancer with Exhibition of Cases Nine Years Cured. C. M. O'Brien.

### Lancet, London

*November 14, II, No. 4759, pp. 1133-1184*

7 *Clinical Study of Glycosuria. N. Tirard.
8 Some of the Problems of Gunshot Fractures. E. W. H. Groves.
9 Incidence of Plague in Europe. C. Strickland.
10 Oculomotor Paralysis of Otitic Origin. F. H. Westmacott.
11 Occurrence of Acute Emphysematous Gangrene (Malignant Edema) in Wounds Received in War. R. H. J. Swan, I. Jones and J. W. McNee.

*November 21, No. 4760, pp. 1185-1232*

12 *Treatment of Wounds in War. W. W. Cheyne.
13 Splenomegalic (Hemolytic) Jaundice Associated with Bile Pigment in Urine. T. R. C. Whipham.
14 Pityriasis Rosea of Gibert. E. G. Little.
15 Traumatic Rupture of Liver; Laparotomy; Recovery. L. H. Taylor.
16 Morphologic Types of Bacilli as an Element in Prognosis in Pulmonary Tuberculosis. H. R. Wilson.
17 Wounds Observed During Three Weeks' Fighting in Flanders. G. H. Makins.

7. **Study of Glycosuria.**—On the principle of early relief of pent-up pus, of early removal of gangrenous tissues, and the adoption of measures to prevent septic absorption, Tirard suggests going a step further and adding yet another theory for glycosuria which may knit together in a new light the results of clinical observation, of physiologic experiments, and of pathologic investigations. While greater influence on glycosuria is exerted by diet rather than by drugs, the remedies which have proved most efficacious, the salicylates, are those ordinarily credited with the power of controlling toxic processes resulting from the growth of micro-organisms. From the experimental side glycosuria has been induced in dogs by injecting into the pancreas irritants which have produced pancreatitis or extensive sloughs. By the removal of sloughing tissues, as in carbuncles, in perforating ulcers, and in gangrene, glycosuria is quickly reduced.

Tirard believes that these observations, collectively, warrant the suggestion that some cases of glycosuria depend on a perversion of pancreatic secretion due to toxic absorption. If this view is correct it may lead to the employment of a vaccine to counteract the toxic influence. He cites a number of cases in which the operation caused the disappearance of sugar. A case in point is the following: The patient was a man, aged 53, suffering from gangrenous phimosis, and the surgeon was averse to operation owing to the presence of sugar in the urine. The history showed that during two years there had been increasing frequency of micturition and some loss of weight. Four days before the patient saw Tirard he had been markedly drowsy and had complained of parched mouth and dry tongue. Although the specific gravity when first examined was 1040, it speedily fell after the removal of large gangrenous sloughs, and within a month it was extremely difficult to obtain any reaction for sugar. The sugar ultimately disappeared until the patient had an attack of tonsillitis, when during the high temperature sugar was again found to be present for a short time.

Tirard urges that the adoption of this view should encourage greater readiness to remove gangrenous tissues at an early stage, and that operations of greater magnitude might well be reserved until the quick reduction of sugar has permitted greater liberality of diet.

12. **Treatment of Wounds in War.**—Cheyne points out that the chances of rendering a wound aseptic are comparatively small after twenty-four hours, and practically *nil* after forty-eight hours; indeed, after that time he would not make any attempt to disinfect the wound. If, therefore, the case does not come under treatment within twenty-four hours no one can blame the surgeon or any system of treatment for the septicity of the wound. The reasons given by Cheyne as to why practically all wounds in the present war become septic are: (1) because there is often long and unavoidable delay in collecting the wounded and commencing treatment; (2) because the wounds may be very large, complicated and almost impossible to disinfect thoroughly; and (3) because in a good many cases no attempt is made to disinfect these wounds, or if it is made it is utterly inefficient.

As to the period of time during which it is advisable to attempt disinfection of the wound, Cheyne's opinion is that it is only during the first twenty-four hours that it is at all likely that bacteria can be eradicated, and indeed after twelve hours the result is not at all certain. During the first twelve hours, however, the great majority of wounds, unless they are large and irregular or complicated with extensive comminution of bone, can, he says, be rendered aseptic quite readily and immediately, and if proper precautions are taken afterward will remain aseptic, and thus the troubles resulting from the primary soiling of the wound will be avoided. The first point is to kill not only actively growing bacteria, but also the spores of bacilli. Cheyne prefers phenol to iodin as an antiseptic because it dissolves in the natural oil of the skin and so can extend its antiseptic action down the hair follicles and the orifices of the sebaceous glands. If more than twenty-four or possibly forty-eight hours have elapsed since the infliction of the wound any attempt at general disinfection of the wound would be an injudicious and harmful procedure, and still more so if suppuration has begun. The skin should be cleansed and disinfected and if there is any earth or gross dirt still visible about the wound the tissues involved should be cut or clipped away and the raw surface daubed with phenol. Apart from this, which is only occasionally necessary, Cheyne emphasizes that the important point is to provide the freest possible escape for discharge, and in order to obtain this it is often necessary to enlarge the original openings and to make counter openings. Further, any foreign bodies which are readily accessible should be removed, but at this stage it is not advisable to open up fresh wounds in the deeper tissues in order to hunt for bullets or pieces of shell, for this merely exposes fresh tissues to infection unnecessarily before the body generally has developed its full resisting power. The actual drainage of the wounds must be carried out by the use of as large drainage tubes as can be introduced conveniently with holes of suitable size in their sides; when there are counter openings, pass the tube through from one opening to the other.

As regards dressings in these cases, Cheyne says, aseptic dressings are not only useless but injurious. The septic discharge soaks into them, and decomposes there, and the dressing simply becomes a septic poultice which poisons the wound. Antiseptic dressings are better. Cheyne uses cyanid gauze next the wound with salicylic wool outside. His experience is that it is best to lay only a few layers of antiseptic gauze over the wound to prevent it being soiled by the clothing or blankets, and to apply boracic fomentations and change them frequently. Wherever it is possible, however, in the case of large wounds and those involving bones or joints, constant irrigation with normal saline solution is by far the best method of treatment. The irrigation is at first continued day and night, but as the discharge gets less and the wound begins to heal, boracic fomentations may be substituted during the night, but the irrigation should be continued during the day till healing is nearly complete. Cases in which gangrenous processes set in, a water bath, frequently changed with a little iodin or permanganate of potash in the water is the best treatment.

As to the removal of the missile which has done the damage, if it is present in the main wound, or is doing harm by pressure or otherwise, it should be removed at once, but not uncommonly fragments of shell or bullets pass into the tissues for a considerable distance from the main wound, and if left alone may become encapsuled and not do any harm and the wound of entrance will heal quite well. Such fragments can be removed by a separate incision later if necessary.

### Bulletin de l'Académie de Médecine, Paris

*November 3, LXXII, No. 34, pp. 231-242*

18 Antityphoid Vaccine Sterilized with Iodin. (Autorisation de préparer et de débiter un vaccin antityphoidique sterilisé par l'iode.) Netter.
19 Large Doses of Chloral in Treatment of Tetanus. Demmler.

*November 10, No. 35, pp. 243-258*

20 Treatment for Compound Fracture of the Femur. (Du traitement des fractures de cuisse par projectiles de guerre infectées, appareil réalisant la contention de la fracture et le pansement facile de la plaie.) E. Quénu.
21 Surgical Treatment of Wounds of the Nerves. (Note sur l'intervention chirurgicale dans les blessures des nerfs des membres par projectiles de guerre.) H. Walther.

### Berliner klinische Wochenschrift

*November 2, LI, No. 44, pp. 1757-1780*

22 Eczema and Neurodermitis in Children. A. Lehnert.
23 Megalocytes in Anemia. (Zur Frage der diagnostischen Bedeutung hämoglobinreicher Megalocyten.) L. Dünner.
24 Gunshot Wounds of Nerves in the Arms. (Der Kriegssanitätsdienst in Berlin. VI.) E. Froehlich.
25 Technic for Roentgenoscopy of the Viscera. (Einfache Aufnahmetechnik zur Röntgenuntersuchung der Baucheingeweide.) A. Henszelmann.
26 *Blindness from Atoxyl. (Zur Atoxylamaurose.) F. Makrocki.
27 Medical Ethics and Regulation of Medical Practice during Wartime. (Aerztliche Rechtsfragen zur Kriegszeit.) H. Lieske.

26. **Blindness Under Atoxyl.**—The atoxyl was given very cautiously but the patient, a woman of 63, became totally blind after taking 0.725 gm. of atoxyl in all in nine doses in less than two weeks.

### Correspondenz-Blatt für Schweizer Aerzte, Basel

*October 31, XLIV, No. 44, pp. 1377-1392*

28 *Vaccine Therapy in Gonorrhea. (Kritisches zur Vakzinetherapie der Gonorrhoe, zugleich experimenteller Beitrag zur Begründung der "ableitenden" Therapie.) B. Bloch.

28. **Vaccine Therapy of Gonorrhea.**—Bloch has not had as good results with intramuscular vaccine therapy as some have reported, but his experience in forty cases seems to show that the intramuscular and subcutaneous methods have no untoward by-effects as a rule. Only a few instances of complications have been published in which the preceding vaccine therapy might be incriminated. In these cases epididymitis or salpingitis, keratitis, a rash, transient cerebral symptoms or parenchymatous nephritis, developed in one case each. Bloch administered the vaccine in a few cases by intravenous injection and the results surpassed his highest anticipations. The reaction was very severe, both local and general, but the rapid subsidence of the gonorrheal arthritis and epididymitis, mucosa processes and pros-

tatitis testified to the therapeutic influence of the procedure. The idea occurred to him that the intense reaction—rather than any specific influence—was responsible for the benefit. To test this he treated three other patients with unusually severe gonorrheal arthritis by intramuscular injections of antityphoid vaccine. The febrile reaction was followed by prompt subsidence of the joint symptoms and finally a complete cure. Bloch does not venture to generalize from these three cases, but he thinks they sustain Gerhardt's statements in regard to the possible favorable influence of intercurrent infectious diseases on the course of chronic affections. (Summarized in The Journal, 1912, lix, p. 2194.) Such experiences cast doubt on the specific nature of certain reactions; antibodies against both typhoid and gonococcus infection, for example, are liable to be generated together. It sustains the old theory of revulsion and counter-irritation and suggests an explanation for the benefit reported from tuberculin in various supposedly non-tuberculous diseases.

### Deutsche medizinische Wochenschrift, Berlin

*October 29, XL, No. 44, pp. 1905-1928*

29 *Treatment of Tetanus. V. Czerny. Concluded in No. 45.
30 *Subcutaneous Injections of Magnesium Sulphate in Tetanus among the Wounded. A. Falk.
31 Gunshot Wounds of the Lungs. (Lungenschüsse.) A Schmidt.
32 To Hasten Healing of Wounds. (Sparsame und beschleunigte Wundbehandlung im Kriege.) G. Ledderhose.
33 Injury of the Ears at the Front. (Die ohrenärztlichen Aufgaben im Kriege.) E. P. Friedrich. (Ohrenerkrankungen im Felde.) W. Kümmel.
34 Technic for Taking Medical Photographs. (Zur Technik der medizinisch-photographischen Aufnahme.) A. E. Stein.

29. **Tetanus.**—Czerny states that half of all the wounds that come into his hands are the jagged tears made by shrapnel and that tetanus threatens to decimate these wounded. There were 29 cases at Heidelberg alone up to the end of September. The fine hospital trains which make such an imposing display at expositions are unable to care for even a tenth of the wounded in the present gigantic battles. The wounded have to be taken to the rear in freight trains that have brought horses and other supplies to the front. There is no time to clean them properly and Czerny urges that two or three empty cars be carried along so that these can be cleaned and the wounded then transferred to the cleaned ones on the trip. By such care during the transportation it may be possible to ward off tetanus. In September he had four cases of tetanus that had developed on the way although the journey lasted only two days, and now the distance to be covered sometimes requires an eight-day journey. He cites Larrey's observation during the Napoleon campaigns that sudden changes in temperature and bad conditions in regard to transportation increased the number of cases of tetanus, and Czerny adds that the recent cold and wet weather has probably contributed to the increasing prevalence of lockjaw.

In treatment he suggests that as the tetanus toxin is destroyed by heat, it might be possible to sterilize the wound with superheated air or diathermia. Iodoform and Peruvian balsam, he says, might likewise check the growth of the bacteria. He thinks that primary amputation should not be rejected so absolutely as is the rule now. Two of his tetanus patients recovered after amputation. A third died without the contemplated amputation and necropsy revealed that the limb had been shattered much more seriously than its aspect revealed. All wounds should be given preventive antitetanus serum treatment when tetanus is prevailing; he had a patient once who died of acute trismus the sixth day after he had scratched his nose on the thorn of a rose. The wounded should be protected against jars, drafts and nervous shocks. A preventive injection of antitetanus serum should be given the same day as the injury, especially if it is a shell wound. He reiterates that local muscular spasm in the vicinity of the wound is often the first sign of trouble.

30. **Subcutaneous Injection of Magnesium Sulphate.**—Falk anesthetized the spot first with subcutaneous injection of 2 or 3 c.c. of a 1 per cent. solution of novocain, and then injected the 30 per cent. solution of magnesium sulphate. With inadequate doses, the spasms were exaggerated. If they did not subside spontaneously, they were controlled with chloral or another injection of the sulphate. The dose had to be 5 or 6 gm. to show any effect in the mild and moderately severe cases. No injurious by-effects were observed with single doses of 9 gm. up to a daily dose of 24 gm. One patient had 20 gm. given for six days in succession with good effect. In the very severe cases it is well not to be too timid with the dosage. As much as 12 gm. was given at one time in some cases without apparent harm. Under the magnesium the spasms relaxed in about an hour so that the patient could be raised to a sitting position and fed. Mild doses of chloral and morphin were given with the magnesium at times, although it was constantly borne in mind that the action of other drugs superposed on the magnesium might further depress the respiration function. An average of three injections were made in the twenty-four hours, as the symptoms returned, when the patients complained that their chests felt tight or they could not swallow. This feeling of tightness in the chest was generally the precursor of severe convulsions, and hence it calls for vigorous dosage.

### Deutsche Zeitschrift für Chirurgie, Leipzig

*August, CXXXI, Nos. 1-2, pp. 1-188*

35 Operative Treatment of Cleft Palate. (Die Gaumenspalte. Die verschiedenen bisher angewandten Operationsmethoden und deren Klassifikation.) R. Drachter.
36 Torsion of Hour-Glass Stomach. (Volvulus ventriculi bei Sanduhrmagen.) R. Richter.
37 Operative Treatment of Pulmonary Tuberculosis. (Pneumolysia interpleuralis.) F. Torek (N. Y.); (Anatomisch technische Studie zur Frage der Pneumolyse.) G. Mertens.
38 Intestinal Cystoid Pneumatosis. R. Faltin.

### Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

*August, XL, No. 2, pp. 187-330*

39 Advanced and Full-Term Extra-Uterine Pregnancy. W. Beckmann.
40 *Extra-Uterine Pregnancy Ruptured in the Early Months. J. Olow. Continued from No. 1.
41 Aims and Technic of Thyroid Treatment. G. Schmauch.
42 Properties and Uses of Radio-Active Substances. A. Eder.
43 Incubator Treatment of Prematurely Born and Weak Infants. H. Betke.
44 Gynecology and Psychiatry. B. S. Schultze.

40. **Ruptured Extra-Uterine Pregnancy.**—Even in acute cases of ruptured extra-uterine pregnancy some authors advise expectant treatment, for they hold that if the patient does not die immediately she is apt to survive without an operation, which is therefore unnecessary. Even among those who admit the advisability of operating there is a dispute as to whether it should be immediate or deferred. Many American physicians advocate the latter plan. Others hold that each case should be treated individually, which is equivalent to expectant treatment with later secondary operation. When it comes to the advanced cases, there are still more operators who advise late operation or none at all. Olow advises immediate operation as a rule in all cases. He holds that intraperitoneal hemorrhage from any cause requires an immediate operation. It is impossible to decide which cases will recover if left alone. The advocates of deferred operation do not wish to operate in shock, but he believes that shock in extra-uterine pregnancy is as a rule due to the anemia, and will, therefore, increase rather than decrease. In the advanced cases the patient is always in danger of renewed hemorrhage if the operation is not performed, and this danger more than offsets the advantage of waiting for recovery from the anemia of the first hemorrhage. To show the advantages of routine operating over individualistic treatment in advanced cases, he compares his sixty-four cases with those of Scanzoni, who advocates individualistic treatment. Comparison of the figures shows that the results of operation are fully as good with reference to life, capacity for work and for conception, etc., and much better with reference to the time required for recovery.

### Münchener medizinische Wochenschrift

*November 3, LXI, No. 44, pp. 2161-2196*

45 Congenital Status Thymo-Lymphaticus; Three Cases. H. Schridde.
46 Cosmetic Depilation. (Die Entfernung des Frauenbartes.) K. Unna.

47 Fatal Male-Fern Poisoning in a Clinically Latent Case of Addison's Disease. (Filixvergiftung.) F. Schotten.
48 Comparative Dosage of Roentgen and Gamma Rays. W. Gerlach.
49 Nervous and Mental Disturbances among Combatants. (Nervöse Erkrankungen bei Kriegsteilnehmern.) R. Wollenberg.
50 Antitetanus Serum. (Zur Heilserumbehandlung des Tetanus.) A. Heddäus.
51 Circular of Directions before Naval Battles. (Leitsätze für die erste Behandlung von Seekriegsverletzungen.) M. zur Verth.
52 Roentgen Examination at the Front. (Röntgenuntersuchungen im Kriege.) G. Loose.
53 Spectacles for the Gunners. (Schiessbrillen.) F. Schanz.
54 Surgical Experiences in the Field. (Chirurgische Beobachtungen und Erfahrungen im Felde.) H. Schlange.

### Wiener klinische Wochenschrift, Vienna

*November 12, XXVII, No. 46, pp. 1471-1500*

55 *Experiences with Gunshot Wounds of the Skull. (Hirnschüsse.) O. Marburg and E. Ranzi.
56 *Gunshot Aneurysms; Thirteen Cases. H. v. Haberer.
57 War Wounds of the Eyes. (Kriegsverwundungen des Auges.) S. Bernheimer.

55. **Gunshot Wounds of the Skull.**—Marburg and Ranzi conclude from their experience with thirty-three cases that operative treatment is required for wounds from bullets striking at a tangent if there is evidence that the bone has been depressed and there are clinical symptoms of irritation or functional deficit. Also in cases of direct penetrating wounds when the projectile is close to the surface. Deep-seated projectiles can also be removed if severe symptoms develop, but the outlook is not very promising. On the other hand, prolapse of brain tissue indicates a more severe and diffuse brain process, causing edema or swelling of brain tissue, and the prospects are so bad that operative intervention is not advisable as the trouble is too generalized.

56. **Gunshot Aneurysms.**—Von Haberer gives an illustrated report of thirteen cases of gunshot aneurysm and emphasizes the importance of waiting for the virulence of the germs to become attenuated when the traumatic aneurysm has become infected. He condemns any attempt to operate as long as there is the slightest discharge from the wound, unless one's hand is forced by serious symptoms. In two of his cases there were no signs of infection but the pain was so intense that he operated without further delay, during the first three weeks. In the four other non-infected cases he waited until the fifth or sixth week. In the infected cases, the course was more favorable in those operated on without too long delay, and he thinks that the technic is of greater moment than the interval since the development of the aneurysm. He exposes the artery above and throws a loop of thread around it, but does not apply a constricting band to shut off the circulation from the limb. With the loop of thread he is prepared for all contingencies and can shut off the flow of blood at will, while the retention of the circulation otherwise is a great advantage.

In some cases a peculiar contraction of the knee was the first sign to call attention to the popliteal aneurysm; in others isolated radial paralysis was the first symptom of an axillary aneurysm. In still other cases sensory disturbances gave the first warning. The aneurysm may not develop for some time after the wound. In several instances the men were taken from the train already started on their way back to the front, apparently entirely cured of their wound from a bullet passing through a limb or the axilla. All his patients promptly recovered after the operation, only one, in advanced sepsis when first seen, required amputation. In one case the bullet entered the cheek and passed out through the neck on the other side causing an aneurysm involving the internal carotid and the jugular vein. There was a tendency to paralysis on the side of the entrance of the bullet, but this gradually subsided after the operation.

### Riforma Medica, Naples

*September 19, XXX, No. 38, pp. 1037-1064*

58 *Post-Traumatic Nervous and Mental Affections. (Sulle neuro-psicopatie post-traumatiche.) L. Bianchi. Commenced in No. 37.

*September 26, No. 39, pp. 1065-1092*

59 *Post-Infectious Pituitary Syndrome. (Sindrome ipofisaria adiposogenitale post-infettiva.) R. Massalongo and P. Piazza. Commenced in No. 38.
60 *Diseases of the Blood-Producing Organs with Enlargement of the Spleen. (Sulle emopatie splenomegaliche. VIII.) G. Rummo.

*October 3, No. 40, pp. 1093-1120*

61 Mongoloid Idiocy. (3 nuovi casi d'idiozia mongoloide osservati a Cagliari.) M. Manca.
62 Improved Staining Technic for Sections. (Le colorazioni su sezioni libere non sparaffinate.) E. L. Tocco.

58. **Traumatic Nervous and Mental Affections.**—Bianchi emphasizes the difference in the course of post-traumatic neuroses and psychoses according as the patient has a claim for an indemnity or not. When there is no question of an indemnity, he usually recovers promptly and completely, but when there is a claim for damages or a pension pending, this keeps alive the consciousness of the injury even in the most upright. Those inclined to malingering at first may actually convince themselves in time of the truth of their statements, and really develop the neurotic symptoms assumed at first.

59. **The Hypophysis Triad: Obesity, Genital Disturbances and Disease in the Pituitary Body.**—In the three cases related, a man of 26 and two women of 17 and 40, previously apparently normal, became obese during convalescence from pneumonia or typhoid, the weight rapidly increasing to actual pathologic proportions and menstruation ceasing. The clinical picture seemed to be the same as that described by Fröhlich as the adipose-genital hypophysis syndrome. No tumor can be detected in the pituitary region and the trouble seems to be the result of the toxic-infectious influences from the pneumonia or typhoid on the pituitary body, arresting or perverting the internal secretion of the posterior lobe. Cases are on record in which the morbid cause was apparently in the adrenals, the genital glands or the thyroid, but the pituitary body takes the lead in this respect. The cases described confirm anew the functional interaction or synergism between the pituitary body and the genital glands. In acromegaly (syndrome resulting from excessive hypophysis functioning) there are phenomena suggesting hyperfunctioning on the part of the genital glands, while in the above adipose-genital hypophysis syndrome, the trouble is due to deficient pituitary functioning. Degeneration or sclerosis from infectious-toxic influences is liable, as well as a tumor in the pituitary body, to induce the hypophysis triad syndrome. This assumption is sustained by the gradual retrogression of the obesity in the case of the older woman under systematic treatment with extract of the posterior lobe of the pituitary body. She lost weight rapidly and diuresis increased, but the arrested menstruation did not reappear. The two other cases date from the era before introduction of organotherapy.

60. **Diseases of the Blood-Producing Organs with Enlargement of the Spleen.**—This article is the eighth of a series of clinical lectures on this topic at the bedside of patients. Rummo takes up in turn the leukemias, Banti's disease and other affections involving the blood-producing organs, and discusses the differentiating points and the treatment.

### Hospitalstidende, Copenhagen

*November 11, LVII, No. 45, pp. 1345-1368*

63 Paratyphoid Intoxication; Fifty Cases. (Epidemien paa Frederiksholms Kanals Kaserne 1912.) K. Lunn.

### Ugeskrift for Læger, Copenhagen

*November 5, LXXVI, No. 45, pp. 1931-1962*

64 *Enlarged Glands with Chronic Rheumatism of the Joints. (Om Svulst af Kubitalglandlerne ved Polyarthroitis chronica rheumatica.) V. Ellermann.

64. **Enlarged Glands with Chronic Joint Disease.**—Ellermann relates that he found the spleen and numerous lymph-glands enlarged in a case of subacute polyarthritis in a child in 1909, and since then he has systematically examined for enlarged glands all his patients with joint trouble. Excluding all dubious cases and those with venereal disease, tuberculosis and uricacidemia, he lists twenty-eight cases of rheumatism in the joints of nine months to seven years' duration. In 50 per cent. the cubital lymph-nodes were enlarged. In normal conditions these glands are not palpable, and they are seldom enlarged with other affections.

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## ORTHOPEDIC SURGERY

### ITS SCOPE AND ITS FUTURE *

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The practice of medicine embraces all branches of the healing art, and has no natural boundaries within itself. No man or set of men can appropriate a portion of it, claim it as private property, and warn trespassers off. Medicine is like the surface of the earth; what belongs to one body of men to-day may belong to another to-morrow. The fit shall take what the unfit cannot hold. Constant change is the symbol of life, and distinguishes scientific from sectarian medicine.

Specialties spring up in answer to a demand for concentration, for no one man can cover the entire field. All knowledge that the student unearths becomes, not his property nor the property of those associated with him in a similar line of work, but the property of the entire medical profession.

So long as a specialty is contributing to the advancement of knowledge, it tends to hold its ground, and to advance its borders. When it stops, other specialties encroach on it. It must take up new ground to avoid absorption either piecemeal by other specialties, or bodily by general medicine and by general surgery. Such a change of ground we have witnessed recently in gynecology. Whether the gynecologists can maintain their new position remains to be seen. If they succeed to the field of abdominal surgery, they will succeed to it, not by claiming that they are entitled to it, but by demonstrating that they are best equipped to hold it. When in my childhood's happy days I would say to my esteemed parent that I was "entitled" to this or to that, he would answer: "My son, you are entitled to just what you can get."

Orthopedic surgery was born to a strenuous life, and has held its borders, never sharply defined, by constant struggle. Its right to the name of a specialty, as you know, is still disputed. It is not recognized generally in medical schools as worthy of a faculty chair, and in many large communities it is not represented exclusively. Its pioneers devoted themselves largely to perfection of mechanical devices, and to accumulation of clinical data, but this knowledge has been appropriated quite rightly by our confrères, who are capable of applying much of it reasonably well with the aid of a skilled mechanic. We have no exclusive title to it. It does not "belong" to us.

We cheerfully acknowledge the remarkable work of the early orthopedists, but we shall gain nothing by pointing back to it. Their deeds reflect no luster on us. To dwell on former greatness is a symptom of degeneracy.

No one can say what our future will be, but that we are in the midst of a change, not on the verge of one, is evident. See what even now is taking place within our ranks. Compare our programs with those of orthopedic meetings of twenty years ago. Work of most diverse kinds is laid before us, demanding recognition and giving an intimation of the modern conception of the scope of orthopedic surgery.

Some there are who maintain that what was good enough for our predecessors is good enough for us. While we may not agree with them unreservedly, it will be well not to neglect that line of endeavor which gave our specialty birth. We must remember, however, that this branch of our work is shrinking constantly. Pott's disease formerly "belonged" to us without question. Orthopedists devise operations for ankylosing the spine, and the general surgeon invades our field—a good example of the changing boundaries of medicine.

Many, imbued with the scientific spirit, and impatient of didactic statement, devote themselves to the task of proving what we are wont with great complacency to regard as established truth, and they maintain with some fervor that much of it is not only not established, but is not even true. We must listen to them, though their discoveries throw into the scrapheap the theories gained by years of hard work. By animal experimentation and by laboratory investigation they will put our knowledge of the diseases of the body framework on a sound basis. Here surely lies part of the work of orthopedic surgery in the future.

The specialty must be stripped of every rag of the garment of mysticism which so persistently clings to it.

Diseases of bones and of joints furnish many of the baffling problems of modern medicine. They affect tissues whose histology, physiology and pathology are almost unopened books. We cannot understand disease in tissues of whose structure and function we are ignorant. Here is a work to fire the imagination of the young. A few years spent in patient investigation may bring more lasting renown than a lifetime of clinical observation.

We have been too ready to draw conclusions without sufficient foundation of fact. One of the great needs in orthopedic surgery is the accumulation of solid facts.

Some diseases of bones and joints are said to "belong" to the general surgeon, others to the internist, but the field is open to all, and is almost unplowed.

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* Chairman's address, read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, June, 1914.

A subject, until recently sadly neglected, now forces wide attention. I allude to fractures and dislocations. The general surgeon claims them. They are his if he can hold them. The orthopedist maintains that his mechanical training gives him greater skill in their management. He must demonstrate his skill. He has done so in some instances, notably in congenital dislocations and in certain fractures about the hip and shoulder. The vogue of open treatment of fractures may be interpreted as a reaction against the slipshod methods of the past. It will stimulate at least to more exact conservative treatment.

Functional disorders are becoming fewer in number as an organic base is found for many of them. Some orthopedists maintain that an error in mechanics of the body framework is responsible for certain of these diseases. Their views, while in many instances still largely theoretic, are worthy of a respectful hearing, but not, let me remind you, of acceptance until they are definitely proved. Let us beware the wiles of those brilliant men who urge us to cut loose from sound pathology and scientific proof, to follow them along the easy paths of attractive speculation. These paths lead to confusion.

In other instances an organic cause has been established. The orthopedic surgeon finds one for "idiopathic" sciatica and lumbago, and for intercostal neuralgia. Whose rights does he infringe thereby? Certainly not those of internist or neurologist.

Some regard orthopedic surgery as a narrow specialty. To me it appears potentially the broadest in medicine. These are but a few of the possible fields of activity. Orthopedic surgery is what we make it, and in brief includes everything that we can do better than others.

The future is in the hands of the younger men. Trained for scientific research as we never were, and starting where we finish, they shall climb the heights of knowledge which our feeble eyes see but dimly in the distance. Let us applaud bravely when they bring the structures which we have built up crashing about our ears. This is progress.

"Not as though I had already attained, either were already perfect; but I follow after——. I count not myself to have apprehended, but this one thing I do: Forgetting those things which are behind, and reaching forth unto those things which are before, I press toward the mark."

Lane Hospital.

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**Habit as a Pathological Factor.**—The "bad habits" which are so characteristic of the various psychoneuroses may find their counterparts in perversions of the structural activities of the cells—that is, in bad habits of body (cachexias). Thus, for example, we find a tendency to the laying on of fat (lipomatosis, adiposis dolorosa, etc.)—i. e., to the formation of a tissue less highly organized than the normal—frequently associated with absence of the reproductive function (e. g., following the menopause, castration, etc.). The meaning of this is that function must go on somehow, and, in default of the "discontinuous growth" (reproduction) which normally succeeds ordinary "continuous" growth when maturity is reached, the individual, unless he has found some other active outlet for his energies, tends often, as the saying is, to "run to fat." Any one of the separate organs, also, which fails to express its normal capabilities is apt to begin to energize on a subnormal plane; witness fibromyomas in the non-functioning uterus. . . . A bodily habit, whether bad or good, is a group of cellular activities which have evolved together and grown into a complex which . . . is difficult to break up.—Arthur J. Brock, *Edinburgh Med. Jour.*

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# A PLEA FOR A MORE EXTENSIVE OPERATION IN CANCER OF THE BLADDER*

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After considering various subjects as possible topics for my address, I chose the one concerning which I really can give you fewest facts. I hope, however, that these few facts and the suggestions to which they give rise may arouse you to renew your attack on cancer of the bladder along lines that differ a little from those which we have in the main been following.

In my opinion there is no chapter in urinary surgery that is so absolutely discouraging as that which deals with our end-results—our so-called "cures" in cases of malignant disease of the bladder. I will grant you that our palliative treatment is very successful, that we make many of these sufferers very comfortable; but I feel that I am not ready to confess that we are reduced to nothing more than palliation in these cases.

If in any series of cases one mixes in a certain number of papillomatous cases—the large massive ones that have the appearance of a bladder tumor—one can get figures which are not absolutely discouraging. If, on the other hand, we deal with the carcinomatous growths that are primary in the bladder—squamous celled cancers, adenocarcinomas and the mucous cancers of the bladder, the growths which infiltrate and lead to metastases—our ultimate cures are almost none.

In the past few years we have increased very much the extent of our resections for malignant disease of the bladder and we have also made transplantation of the ureters relatively common, carrying out this maneuver whenever there was a reasonable question of the ureters coming into the diseased area. In spite of these more sweeping operations, I believe there is a very definite doubt whether our end-results are any better. Mine I am sure are not. I very much doubt if the number of permanent cures is at all proportionate to the increased immediate mortality of this more extensive operation.

This whole subject has come to me with particular force of late, as I have been studying up my cases of infiltrating bladder growths. I find records of twenty-nine cases, in eighteen of which operation was performed. Of these eighteen patients operated on, there was only one who was without signs of recurrence at the end of three years after operation. I am unable at the present moment to report on this patient's condition as I am not able to get into communication with him; but so far as I know he continues free from symptoms. There is another patient who has been operated on relatively recently, and I do not know that he has a recurrence; in fact, I believe he has not. All the others are either dead or have definite recurrences. I believe and hope that these figures are worse than the average, but fear they do not exaggerate the condition much.

It is wholly unnecessary, before this Section, to emphasize the importance of early diagnosis of cancer of the bladder, what its first symptoms are, and what its cystoscopic appearance is. Neither shall I deal with the technic of operation, but shall devote my time to a consideration of what I believe are certain basic principles in its treatment.

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* Chairman's address, read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

In the study of my cases there came out certain facts, more or less disconnected, but that have, I think, a definite bearing on the question of the treatment of cancer of the bladder. In the first place, the one patient who has fulfilled the minimum arbitrary requirement that allows one to speak of cure in connection with cancer treated surgically—that is, the expiration of three years without signs of recurrence—was one of the patients whose operation was least extensive, though it was carried out about a month after the appearance of his first symptom, hematuria—the earliest case that has come under my care. This patient presented cystoscopically simply a little granular-looking area that was fairly widely removed laterally; it was not, however, very deeply removed. The incision went into the muscular layer only, not through it. Another important fact came out in the study of the condition found at the necropsy on one of my patients, who, a year before, had had a mucous cancer removed from the vertex of his bladder. This growth, including the full thickness of the bladder wall, was removed with a wide margin by the transperitoneal method. Though at operation I had been unable to find glands, at necropsy there were huge masses of retroperitoneal glands that were cancerous. More recently, I have chanced to notice in three other patients, on whom I did palliative operations, that the glands within the abdomen were involved.

It seems to me impossible to overestimate the importance of these two observations, illustrating (as I believe they do) fundamental points in the treatment of cancer of the bladder. The first, if I interpret it rightly, illustrates the fact that when a bladder growth is actually limited to the mucosa, we may excise it and have reasonable hope that there will be no recurrence. This depends on the generally accepted belief, which I believe is perfectly reasonable when we consider the storage function of the bladder, that its mucosa is either entirely without lymphatics or very poorly supplied with them, and that while a growth is actually confined to this layer there is nothing in the way of metastasis possible, the only extension being by continuity. The simple removal of a growth at this time destroys it *in toto*.

This accounts for what has been observed from time to time; namely, that freedom from recurrence has by no means been confined to the cases that have had wide removal of their growth; that it has appeared from time to time in patients whose growth has been excised with a very small area of healthy tissue. I believe that I am right in saying that in some of these cases, as in my own case, the microscopic examination left no doubt that the growth was really carcinoma.

Regarding the second point that I believe of importance—the finding of masses of carcinomatous abdominal glands at necropsy, and in three instances, of lesser glands at the time of operation—I believe that this illustrates at least one important route, probably *the* important route, by which these growths become disseminated. Though I felt no glands at the time I resected this man's bladder they may have been there at that time. Whether they were or not, I believe that this question of the lymphatics, both vessels and glands, is a most important one in the treatment of cancer of the bladder, one from which we may reasonably look for help.

In operations for cancer of the breast, tongue and stomach, and in the more modern methods of extirpation of the uterus and rectum, the lymphatic system is taken into very definite consideration and an attempt is made to remove diseased lymphatics and glands, with, so far as one can judge, improved results as regards cures. So important is this that it seems justifiable to increase the operative risk greatly in order to accomplish it. In cancer of the bladder, although we have had most disappointing results with present methods, we have simply widened our areas of resected bladder, still absolutely ignoring the possible part played by the lymphatics.

I think this is rather remarkable when we consider how essential a part of the plan of the modern surgical attack on malignant disease in other situations the tracing out of the course of the lymph-vessels has proved, and how carefully the removal of the diseased focus has been followed by the removal of the lymphatics and glands. I think at once of two possible reasons why this has not been done in cases of cancer of the bladder. One is the tradition that metastasis comes only late in these cases and that a dissection of the pelvic lymphatics would, therefore, be unnecessary. The other is that the operation would be so severe as to be impracticable in patients over 50—the age at which we see most cases of cancer of the bladder.

I am not ready to concede that this is necessarily so. I feel, however, that we should give this subject careful, attentive study in the hope that we may materially increase the number of patients who remain well following the removal of a cancer of the bladder. I am convinced that the most of our operating in this field is what one might fairly call "puttering"; we busy ourselves with little things and avoid great essentials. I feel that the removal of the lymphatics will be followed by better ultimate results than we now get.

Before an operation of this sort can be standardized it will be necessary to gain a wider knowledge of the lymphatics of the bladder than is generally possessed at present—whether or not different regions drain uniformly by the same channels. It will be necessary to find what cases it is useless to submit to so extensive a procedure. When this has been done, I believe that it will be found that a careful removal of the pelvic lymphatics will diminish the number of recurrences, much as seems to have taken place in the Wertheim operation for cancer of the uterus.

There is still another point that has a definite bearing on our method of operation. This is the fact that in ten out of twenty-nine cases the bladder growth had its seat so close to the bladder outlet as to make its local removal impossible without destroying the bladder outlet, in which case its total removal with the transplantation of the trigon and ureters would seem the rational procedure. I have always felt that total cystectomy was too fearful a mutilation to be often advised; yet if my series of cases is an average one, we must evidently advise it in one case in three if we are to remove the primary growth adequately—the first essential for successful treatment in all malignant disease. If in these cases the lymphatic current is found to be such that we can preserve that part of the trigon with the ureter openings and transplant it successfully into some part of the intestinal tract, preferably a part that has been shut off from the rest, to act as a new urinary bladder—if we can do this, the horror of total cystectomy will be materially lessened. Surgically there can be no question of the excellence of Watson's double lumbar nephrostomy as a preliminary to total cystectomy; personally, I feel I should not wish it. However, I think that unpleasant as total cystectomy is, we must expect to carry it out relatively frequently or else, because of inadequate removal of the local focus of disease, give up all hope of cure in a considerable proportion of cases of cancer of the bladder.

My contentions are that with every effort to recognize malignant disease of the bladder early, it will nevertheless be impossible to operate on more than an occasional patient when the disease is confined locally; in order to hope for better results in our treatment of cancer of the bladder, we must include as an essential part of our operation a dissection of the lymphatics of the pelvis; this must be done by routine, much as a dissection of the axilla is made in all breast cases except a few that are clearly too advanced to make this of advantage. When the local removal of the diseased area necessitates cystectomy, it must be carried out, or it is perfectly evident before we begin our operation that we shall fail in our object, that of stamping out the disease.

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# SUBTOTAL CYSTECTOMY *

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Cancer of the bladder constitutes 3 per cent. of all cancers in the male. Up to comparatively recent times we have had no adequate surgical technic for extirpation of malignancy in this organ. This is due to a number of factors, most important of which are: (1) the difficulty of conservation of the terminal ureters; (2) the lack of a definite surgical anatomy; (3) the questionable reparative power of the bladder, and (4) the hesitancy to attack the problem along definite surgical lines. An ideal extirpative operation for vesical neoplasm will be a technic which conserves or reconstructs the three natural orifices of the bladder, and one that removes the tumor *en masse,* with ileac adenectomy when the glands are involved.

In a consideration of this ideal operation there are certain facts to be thought of. It has been observed by a number of men and repeatedly demonstrated to me that if the three orifices of the bladder are conserved the bladder will regenerate and provide a functionating urinary receptacle. Another consideration is the desirability of a wide free exposure of the entire posterior surface of the bladder and base. Such a procedure may be accomplished either by transperitoneal dissection or as an entire extraperitoneal technic. In my earlier cases I regularly used a transperitoneal method but of late have carried out the technic entirely extraperitoneally. Where possible the anterior or pubovesical attachments are left intact. To meet the operative requirements both ureters must be constantly in sight; the lateral ileac extraperitoneal spaces readily available for exploration, and the entire bladder except the anterior portion freely mobilized. I believe that benign papilloma are at the present writing best treated by Oudin current. I believe that if any operative procedure is to be carried out for a vesical neoplasm, that neoplasm must be considered as actively or potentially malignant, and any operation for its removal must not be a simple excision but must be radical, along definite anatomic lines—in short, a *subtotal* cystectomy.

## TECHNIC OF SUBTOTAL CYSTECTOMY

*Description.*—An operation for removal of a part or all of the bladder. Generally speaking, most operations involving the removal of a portion of the bladder are considered under the head of cystectomy, complete removal of the bladder being more in the nature of an operative curiosity than a feasible surgical procedure. The operative procedures may be carried out intraperitoneally or transperitoneally or as a straight extraperitoneal operation. It has been repeatedly observed that the bladder possesses wonderful reparative powers, and it has been demonstrated that from two-thirds to three-fourths of the bladder may be removed with subsequent adaptation to form an efficient urinary receptacle.

*Incision.*—This may be transverse or a median longitudinal incision (cystotomy). The longitudinal incision begins 1 inch above the navel on the left side and extends downward to the symphysis.

Step 1: The anterior sheath of the rectus muscle is divided about 1 cm. to the left of the mid-line and the left rectus displaced outward. The posterior sheath, above the semilunar fold of Douglas, is divided and the peritoneal fat exposed from the navel to the symphysis. By gently swabbing the fat and loose connective tissue up toward the navel, three important structures or surgical landmarks are brought into view. In the median line is found the urachus extending from the navel to the vesical apex. From the navel to each side of the urachus are found the obliterated hypogastric arteries, represented as divergent fibrous cords. These structures having been located, two procedures are in order: either to open the peritoneal cavity and continue the operation as a transperitoneal procedure, or to carry out the operation entirely as an extraperitoneal incision.

Step 2: The peritoneum is incised from the navel down to a point corresponding to the semilunar fold of Douglas. The patient is placed in an extreme Trendelenburg position and intestines gently deposited in the upper portion of the abdominal cavity. The pelvic cavity is thoroughly walled off by one or two long continuous rolls of sterile gauze. Two laparotomy pads are attached at each end of the wound in order to protect the incision from implantation of tumor cells.

Step 3: The urachus is grasped at the lower angle of the peritoneal incision by a Barret intestinal forceps. Traction is made upward, throwing into relief the obliterated hypogastric arteries as they divaricate to enter the true pelvis. The left obliterated hypogastric artery is grasped with forceps and traction made upward and to the right. By blunt dissection between the obliterated hypogastric artery and lateral wall of the pelvis, the left vas deferens is brought into view as it courses along the pelvic wall to the inner side of the obliterated hypogastric artery.

Step 4: A blunt single hook retractor is passed under the left vas deferens and gentle traction exerted. Blunt dissection is continued downward along the course of the vas deferens, and the pelvic ureter is uncovered as it bends inward above the fascia of the pelvic floor to enter the bladder, the ureter at this point being crossed on its inner side by the vas deferens. A similar exposure is made on the opposite side and the right ureter exposed. Any radical procedure directed to the extirpation of neoplasm of the bladder must have the two ureters exposed and constantly in view. This is the essential point in any radical technic.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

Step 5: The urachus is divided close to the summit of the bladder and traction is made on the bladder downward toward the symphysis. From the two points of lateral dissection previously made the peritoneum is stripped off the fundal surface of the bladder. The denudation extends deep into the rectovesical space and the peritoneal culdesac of Douglas is pushed upward and backward. If the peritoneum is found firmly attached to the bladder and already the seat of malignant infiltration, this area is left undisturbed and a wide encircling incision made about the infiltrated peritoneum. If the peritoneum is not infiltrated, the entire bladder, except the anterior or pubovesical attachment should be freely mobilized, both ureters free, and the superior poles of the vesical and the upper portion of the posterior surface of the trigone in sight. The entire procedure can be carried out without entering the peritoneal cavity. Occasionally, the peritoneum is torn into and should be brought together with No. 1 plain catgut. No hemorrhage of any moment should have been encountered and the venous ooze should have been readily controlled by hot wet pads.

Step 6: The denuded lamella of peritoneum is carefully attached to the upper end of the abdominal incision, so that, for all further operative procedures, the peritoneal cavity is to all intents and purpose closed.

Step 7: The bladder is grasped high up on the posterior surface and an incision is made in the longitudinal direction, about 1 inch in length. Through this opening an inspection of the bladder is made and the topography of the tumor determined. The incision is extended in any direction that may be necessary for proper operative exposure. Since, in the majority of instances, the tumor will be found to occupy the summit, side or trigone of the bladder, an incision downward in the posterior median line, which splits the organ in half will be the usual incision of election.

Step 8: The neoplasm is excised *en masse,* together with a wide margin of healthy, uninvaded tissue comprising the entire thickness of the bladder wall. The exposure of the ureter, which has already been made, now becomes of prime importance. If the ureter is affected it is divided between the ligature above the growth and the distal portion is removed with the tumor. The proximal portion is allowed to remain undisturbed until partial closure of the bladder defect is accomplished.

Step 9: The hiatus of the bladder wall after excision of the tumor is partially repaired (the method of closure being similar to the Connell intestinal suture with No. 2 chromic gut), a stab-wound is made through the bladder wall at a point approximating the normal ureteral opening and the proximal portion of the divided ureter drawn through this opening by a thin dressing forceps.

Step 10: The ureter is brought through the stab-wound and anchored to the bladder wall. About ½ or ¾ inch of the ureter is allowed to protrude into the bladder. Two flaps are made by dissection of the ureteral stump and the flaps turned back and anchored *in situ.* The remaining defect in the bladder is closed with a Connell suture as above and drainage of the bladder instituted by means of a stab, button-hole incision, anterior to the line of incision and at a point that will correspond to the highest point of the bladder when the operation is completed. Through this aperture a No. 26 F. soft rubber catheter is drawn and sutured *in situ.* A drainage-tube inserted in this manner insures against leakage along the tube into the perivesical space.

Step 11: The final step is the reposition of the peritoneum over the vesical suture line and an accurate closure of the peritoneum. If the peritoneum is invaded by the growth, the involved portion is resected with the growth and the peritoneal hiatus closed after the usual fashion, particular care being taken to prevent a peritoneal suture line being superimposed on a bladder suture line. A cigarette drain is inserted into each lateral space leading down to the ureter and the abdomen closed with Figure 8 silkworm sutures. In addition, a self-retention catheter is inserted.

### COMMENTS

The operative treatment of tumors of the bladder has been inadequate in preventing local recurrence and implantation metastases. In a case of malignant tumor, the tumor *per se* should not be handled and the excision must be through all the coats of the bladder and the peritoneum adjacent to the bladder wall if found to be infiltrated. The wide denudation in the preceding technic can be made with the patient in a high Trendelenburg position, either intraperitoneally or extraperitoneally.

The vas deferens in the male offers the most reliable and quickest way of reaching the terminal ureter. The blunt dissection along the lateral walls of the pelvis allows for the exploration about the ileac vessel for metastatic glands.

In the female the relation to the uterine artery allows for an accurate localization of the terminal ureter.

Any cystectomy for vesical tumor should be radical along the lines indicated above. In substance there is no difference between intraperitoneal and extraperitoneal surgery for this class of work. Leakage, if it does occur, does not take place into the peritoneal cavity when the peritoneum has been sutured carefully with a serous approximation of surfaces. If after opening the bladder a malignant neoplasm is excavated or sessile, cauterization of the base or surface of the tumor is a procedure of undoubted palliative value. After excision, searing the cut edges before suturing is a very wise precaution. The use of 50 per cent. resorcin or 1:5,000 mercuric chlorid, swabbed about the bladder, is useful in destroying any detached tumor particles.

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## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. CHUTE AND SQUIER

Dr. Eugene Fuller, New York: Cancer of the bladder has, as a rule, been treated in a very haphazard and unsatisfactory manner. Such work as Dr. Squier has shown is certainly beautiful. It gets down where the disease is in the cases that are so operable, and leaves practically nothing to chance. We have been inclined in most cases to rely on sparking and to sit back and do nothing else, which is a bad thing, although in certain cases the spark has done good and is the approved treatment. It is only in certain cases, however. I had one case in which I operated for cancer of the floor of the bladder, and the man was living ten years afterward. In that case I resected a large portion of the bladder. I made a suprapubic incision, transfixed the whole mass, took it out, and got a perfect result. Operating like that is more or less haphazard. Five years afterward I operated in this same case for a little recurrence in the stump, and took that out. It is advisable in these cases to operate radically. Again, there may be a case in which one thinks one has done radical work and is disappointed. Not long ago I had such a case in which I resected a considerable portion of the bladder. The man, I thought, was doing extremely well; he got up; but five weeks after the operation he had a spontaneous fracture of the upper thigh from metastasis. I do not think we could manage radically cases like that which Dr. Squier reported, except by the careful method which he described.

Dr. John L. Atlee, Lancaster, Pa.: I report two cases with a great deal of reluctance. I had, recently, two cases of cancer of the bladder in which I did a total extirpation. The first one I did simply because I did not know what else to do. The man had a cancer in the location shown by Dr. Squier, I would say, possibly half again as large. In the cases that I had seen in which no attempt had been made to relieve, the patients had suffered so that I felt I was justified in making the attempt. In that case I did a total extirpation, simply skinning the bladder from the prostate. The ureters were stitched together where they crossed the rectum and were transplanted together like the barrels of a double-barreled gun. The abdomen was drained, and a large rubber tube placed in the rectum. That man is 52 years old. There was very little shock. His recovery was very satisfactory. The control of his rectum was very satisfactory. He also had satisfactory sexual intercourse. He lived nine months and died from recurrence. He had pain in the region of the kidney, which I thought was due to an ascending infection, but at necropsy the glands were involved all over that side, and I felt that the pain was more due to the glands than to an ascending infection. Both ureters were full of turbid urine, and there was no evidence that I could see of an ascending nephritis. The second patient was operated on about two months later, about eight months ago. The man was 63 years old. The operation was done the same way, except that the ureters were cut higher up, and the left ureter was stitched into the sigmoid. That man is still alive, although he does not look well. He had one attack of ascending infection on the left side, with pain and rise of temperature, but he recovered. He was feeling well when I saw him three weeks ago, but he does not impress one as being a healthy man.

As I said, I did these operations with, possibly, no justification except to try to save the patients from a terrible death. If the lymphatic drainage of the bladder is as free as some authorities claim, that is, not only into the pelvic glands, but also into the inguinal glands and into the saphenous glands, a block dissection of the bladder is impossible. Therefore, if a block dissection is necessary it would be impossible in the bladder, because it is difficult enough in the Wertheim operation. If we applied it as a palliative operation the chance is that the patient would die as soon from infection as he would have died from metastasis. I was surprised at the comfort these men had in passing the urine from the rectum. They would go all night without urinating. One of the men was strong enough to go back to work, but did not have to do so. Both men expressed themselves as perfectly satisfied with that method of voiding urine.

Dr. Francis R. Hagner, Washington: The point Dr. Squier makes about getting at the ureter first and separating the bladder afterward, simplifies the operation very much. I have not done this operation by his method, but I have taken calculi out of the ureter by the same method. It is possible to get a better exposure than in any other way I know of. Dr. Chute has spoken of infection of the glands in these patients. Any one operating on such a patient and seeing large glands would remove them. It is a question whether it would do any good. We know the glands are not involved until late in the disease, and I have seen necropsies on such patients in which there was no involvement of the glands. Some years ago I presented a method of operating on growths of the fundus and lateral walls of the bladder by cystoscoping the patient, and under visual inspection outlining the growth with traction sutures. One of the weak points in the removal of growths from the bladder is the traumatism to the growth, and by this method it is easy to remove them without traumatism. One patient was operated on four years ago and has had no recurrence; one over three years ago, with no recurrence, and another died recently from some intercurrent trouble with no evidence of recurrence.

Dr. R. L. Rigdon, San Francisco: What would Drs. Squier and Chute do in such an instance as this? Just before leaving home I examined a patient who presented a well-defined, rather small tumor, occupying the right side of the bladder, including the bladder neck, apparently taking in the urethral orifice. Let us take it for granted that from a general point of view that man is suitable to be operated on. Whether or not the ureter is involved does not seem to make much difference because we can transplant that; but when I go back home what shall I do for that man? If I operate on him I must remove the sphincter of the bladder, at least a portion of it. I was in hopes that some of our members would report a brilliant series of cases treated by means of the spark so that I might be saved the necessity of doing a more radical operation on that patient.

Dr. B. A. Thomas, Philadelphia: The rationale of the extraperitoneal and the transperitoneal route of approach in these cases with the partial excision of the bladder described by Dr. Squier is certainly the most valuable suggestion which has yet been offered in cases of cancer. I strongly believe that the method *par excellence* for treatment of papillomas of the bladder, whether single or multiple, is the method of high-frequency desiccation or sparking by the Oudin high-frequency current, and I have treated no less than thirty tumors in this manner, with very excellent results. How does Dr. Squier distinguish between carcinoma and papilloma? I think the impression that he desires to make is that this operative method is applied only in undoubted cancer of the bladder, but I would enjoin the importance of this differentiation, in view of the superior advantage of the electric-spark treatment in cases of papillomas. We all know that in papillomas there may be two sites at which epithelial degeneration and cancerous formation take place; these are, superficially and at the pedicle attachment with the bladder-wall. Even though the surface of the growth is cancerous, the pedicle may not be, and one can cure such epithelial superficially degenerated tumors, if one is able to make the differentiation, by the high-frequency spark. On the other hand, if there be cancerous degeneration of the pedicle, the only method of treatment is that which has been described by Dr. Squier.

Dr. Louis E. Schmidt, Chicago: I am in accord with Dr. Squier's statement that one should start out intelligently. In other words, the diagnosis must be accurate as to the location and extent. If a tumor is located on the left side of the bladder it would be rather unnecessary so far as his procedure is concerned, to separate the right side of the bladder completely, because, with a thorough understanding as to the location, the parts can be separated as was shown. I am in the habit of avoiding the intraperitoneal operation. If the tumor is located low down, not involving the ureter, I do not do the so-called Watson or intraperitoneal operation. I separate the peritoneum sufficiently far from the tumor, and if I see that the peritoneum is adherent it is then opened up sufficiently distant and can then be closed before the tumor is excised. One of the mistakes frequently made—at least I have seen it and have made it myself—is to distend the bladder to such an extent that the bladder-wall is of paper thinness. By so doing you easily rupture the bladder when stripping off the peritoneum. I prefer not to distend the bladder to any extent, and the procedure can be carried out as Dr. Squier has described it. I do not believe that the extent of bladder tumors plays such an important part in the prognosis, although we have always been told that the larger the tumor the greater the possibility of metastasis, particularly glandular. I operated nine years ago for a spindle-celled sarcoma, which is fairly malignant I think we will agree, when the entire bladder except the trigon was removed. This individual now has a bladder which is absolutely not to be recognized from any other bladder. He can hold his urine from eight to twelve hours, and has absolutely no vesical symptoms. In the past two months I have operated on him for an inguinal hernia. In this person there was certainly no glandular involvement. I have cases of resection of the bladder for cancer in which operation was done seven years ago with transplantation of the ureter. I have several cases in which resection of the bladder was done four or five years ago when a part of the trigon was removed, with a fair-sized portion of the posterior wall of the bladder. If, in those instances, there had been any marked metastasis in the glands, four or five years is a fairly long time, though it does not absolutely exclude the possibility that these individuals may die of cancer. In the last six months I have made three extensive operations for cancer, and the patients are still living. In opening the abdomen, however, it is well worth while always to examine for glandular enlargement. I believe that if enlarged glands are found it is almost a hopeless proposition. So far as resection of the neck of the bladder is concerned, I think many patients who have been operated on will be relegated to a different field of therapy.

Dr. Granville MacGowan, Los Angeles: The character of most of these tumors can be fairly differentiated by the careful use of the cystoscope. I do not use the high-frequency current for sparking a tumor that looks at all suspicious. If it is frankly a papilloma, it can usually be destroyed by the high-frequency current unless situated just above the bladder neck where they are difficult to get at. If a tumor is sessile or manifestly indurated, I consider it a cancer and regard as foolish the application to it of any mode of electricity or cautery except through a suprapubic incision. One must remove more of the bladder than just enough to get whatever is manifestly cancerous. I deprecate the use of the knife or scissors. There are electric cautery points made from iridoplatinum that are extremely efficient, easy to manipulate and allowing rapid work. After the removal of the tumor, any bleeding vessels should be ligated. I have had extremely satisfactory results with resection by the electric cautery, when not more than one-half of the bladder surface was included in the growth. I operated on one woman in 1900 for a cancer by this method, who was well until 1906 when another cancer appeared in an entirely different portion of the bladder. This was removed in the same way and she was well until 1911 but died in 1913 of cancer of the bladder. From 1906 I used the cystoscope on this patient two or three times a year and she had no cancer until 1911. With regard to Dr. Rigdon's case, if the cancer is situated on the vesical neck and it is hopeless to attempt to excise it without taking away the neck, I would not be deterred by regard for the internal sphincter, because I have removed bladder necks in operations for cancer of the prostate, with after results showing that the internal sphincter is negligable with reference to the retention of urine. In such a case the most reasonable thing to do is to side-track the bladder. If the bladder were removed as a receptacle for the urine by such an operation as was done by Dr. Atlee, I think it would solve the problem. I object to the use of the knife in cancer, because if a metastasis has not already taken place, it is easy to cause one by squeezing some of the cancer-cells into the open blood-vessels or the lymph-channels. The cautery seals up both blood-vessels and lymph-spaces. The cautery provides against the carelessness of one's assistant and of one's self. The cautery will cut, if you have the right kind.

Dr. William E. Lower, Cleveland: This is one of the most important unsolved problems that we have in genito-urinary surgery. Many of the operations on other parts of the genito-urinary tract are being more or less standardized, but this is an extremely annoying one, at least it is to me, and as Dr. Chute has stated, it is an operation that one does not expect very much from, but sometimes the results are surprising, showing a resistance to a particular kind of growth perhaps, rather than to any particular kind of operation. I think we make one mistake in these cases in not requiring our patients to come back for inspection as often as they should; after operation for cancer of the breast the surgeon asks his patient to report every three months. We wait until they have symptoms. If the patients come back every three months as I am having them do now, and we use a cystoscope, we can discover a recurrence, if any appears, fairly early, and at a time when remedial measures may be used, but if we wait for such objective symptoms as hemorrhage, etc., it may be too late. I recall one case that I reported before, in which I removed the tumor suprapubically by excision, and in less than four months it recurred. By the judicious application of the spark I have been able to keep the patient perfectly well now over three years. It was not a radical operation. In another case in which we did a radical operation we found that metastasis had already occurred and the patient was dying from metastasis in the bones. I am hopeful that this problem will be worked out in some way, because, as it is now, it is most discouraging and most unsatisfactory to be obliged to give the present results of operation for malignant tumors of the bladder to a patient presenting himself with such a lesion.

Dr. Martin Krotoszyner, San Francisco: The rapidity with which malignant bladder growths will occasionally recur and increase in size was made manifest to me recently in the case of a woman of 41 in whom a portion of the bladder had been resected for carcinoma. A few months afer this operation a careful cystoscopic examination revealed a normal bladder, but about two months later a large mass was seen to occupy the whole left side of the viscus. Since the patient refused any operative interference, I proceeded to fulgurate the neoplasm and the rapidity of the onslaught of the malignant infiltration became manifest through the fact that from one week's sitting to the next, new growth of carcinomatous tissue became visible within the fulgurated area. This case was to me another proof of the futility of treating malignant bladder-growths with the spark.

Dr. J. Bentley Squier, New York: With regard to the differential diagnosis referred to by Dr. Thomas, I simply state that the majority of vesical tumors are potentially malignant, if not clinically so, at the time we see them. I believe that one should not spend too much time in experimenting with the high-frequency current on any tumor unless there are unmistakable signs of improvement at once. Otherwise, get busy and operate. I think we will all agree with that. I have never had the opportunity to try Dr. Hagner's operation. It would strike me as being the ideal radical operation on a cancer, if one could outline the extent of the tumor beyond any question of doubt before extirpation is attempted, and I would recommend it as a wonderful operation for carcinoma situated in the vertex of the bladder. Dr. Schmidt asserts that one should make a correct diagnosis of the extent of the tumor by the cystoscope. I do not believe one can make an absolutely accurate diagnosis as to the extent of a vesical tumor by means of a cystoscope.

Dr. Schmidt: I said as nearly as possible. I said the location, not the extent, because I do not believe we can look through the bladder wall.

Dr. Squier: He says he should not open both lateral perivesical spaces because if the tumor is situated on one side one can locate it without so doing.

Dr. Schmidt: I mean that when the tumor is on one side of the bladder it is not necessary to peel the entire bladder out. One can feel the extent of the tumor. I think anybody who has done any surgery of the bladder will agree with me.

Dr. Squier: Dr. Schmidt is correct. I think that by the use of the cystoscope one cannot tell how much of the bladder-wall is involved in carcinoma. Therefore I believe that a general mobilization of the bladder gives one a greater ability to handle it correctly, Dr. Schmidt's criticism to the contrary notwithstanding. With regard to Dr. MacGowan's statement that he would not operate on these cases until they are ready to go to the grave—

Dr. MacGowan: I didn't say that. I said unless I could circumscribe the growth I did not care to operate.

Dr. Squier: My criticism of your remark would be the same. I defy you to outline it through the cystoscope.

Dr. MacGowan: I did not mean through the cystoscope.

Dr. Squier: What other criterion have you?

Dr. MacGowan: That was with reference to high frequency and the differentiation of a tumor that was manifestly a papilloma and one suspiciously a cancer. I would use high frequency on all those that clearly appear to be papillomas, and on account of the superficial action of the high-frequency spark I would not tease anything that looked as if it might be a cancer. I would either leave them alone if too extensive or if there were too large a number of them, or operate on them by the galvanocautery.

Dr. Squier: I am glad Dr. MacGowan has made his meaning clear. With regard to the knife or cautery, one is not cutting the cancer with the knife. Therefore, what is the objection to it? One is cutting the healthy bladder wall. Dr. Lower really voiced what I had in mind. It was not to describe any operation for carcinoma of the bladder which I thought would work in every case. I know in how many of my own cases it will not work, because I have tried it and I know exactly the results it will produce. I merely offered it so that some of us would go home and evolve a technic which would do something. We have sat back long enough and opened bladders and sent the patients home and have not given the patient a chance for his life. He is worse off than before. We have stimulated the cancer and given the patient a suprapubic fistula in many cases, and instead of being only unfortunate we have made him a nuisance to the community by making him smell of urine all the time. Let us do something definite or not do anything. The only criticism I would have is this, that if one is going to do a considerable resection of the bladder and depend on the line of sutures to prevent leakage into the perivesical space and possibly into the peritoneal cavity, the chance of primary union would be infinitely better following the use of the knife than the use of the cautery.

Dr. MacGowan: One can freshen the edges afterward and then put in the sutures and it will result in perfect union.

Dr. Squier: I do not question whether it is possible, but whether it would happen often enough to make it desirable.

Dr. A. L. Chute, Boston: There is little to be said concerning Dr. Rigdon's case. If you are going to give the patient a chance to be permanently well, all the malignant disease locally must be removed, including, in this instance, the bladder outlet. I see nothing to do but to perform a cystectomy, treating the ureters as seems best.

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**Surplus Energy and Progressive Evolution.**—It appears to me that this power of profiting by experience lies at the root of our problem, and that in it we find a chief cause of progressive evolution. Jennings speaks of the principle involved here as the "Law of the readier resolution of physiological states after repetition," and, similarly, I think we must recognize a law of the accumulation of surplus energy as resulting therefrom. Let us look at the case of the accumulation of food-yolk by the egg-cell a little more closely from this point of view. Every cell takes in a certain amount of potential energy in the form of food for its own use. If it leads an active life, either as an independent organism or as a constituent part of an organism, it may expend by far the greater part, possibly even the whole, of that energy upon its own requirements, but usually something is left over to be handed down to its immediate descendents. If, on the other hand, the cell exhibits very little activity and expends very little energy, while placed in an environment in which food is abundant, it will tend to accumulate surplus energy in excess of its own needs.—Arthur Dendy, *Medical Journal of Australia.*

# CERTAIN MINUTE CYSTS OF THE METACARPAL BONES FOLLOWING TRAUMA, AND THEIR CLINICAL RECOGNITION

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While cysts of the long bones are not infrequently encountered, yet those involving the short bones of the extremities have received little or no attention. I have recently met two examples of pea-sized cysts situated, respectively, in the head and the base of a metacarpal. Both of these immediately followed trauma (contusion of bone); by reason of persistent pain and "wincing" tenderness both would have passed for subperiosteal fracture, although there was no swelling or ecchymosis; there was no enlargement of the bone, and there were no signs of inflammation. It was only by close scrutiny of the roentgenograms that the faint outline of each cyst was detected. Operation gave immediate and complete relief in both cases.

Case 1.—Miss M. J., aged 61, cook, reported at the Surgical Outpatient Department of the University Hospital (Case Record 40013) March 11, 1914, with the history of an injury, incurred sixteen months previously, to the base of the first metacarpal bone of the right hand. Since then there has been pain, which has gradually increased in severity. Clinically, there was localized tenderness similar to that elicited in fracture, but not quite so severe or "wincing." There were no other signs of inflammation. A roentgenogram revealed a cavity the size of a pea at the ulnar corner of the base of the first metacarpal bone. Under nitrous oxid anesthesia an incision was made along the ulnar border of the base of the metacarpal bone. The tendon of the extensor pollicis longus and the carpometacarpal joint, which were hard by, being carefully avoided, the cavity was readily entered with a narrow chisel, and was curetted. It was packed with iodoform gauze, and a dressing and a splint were applied. On her return the next day the patient stated that she had been free from the boring pain for the first time in sixteen months. On discharge, two weeks later, the wound was all but healed.

Case 2.—Mr. J. W., aged 33, machinist, reported at the Surgical Outpatient Department of the University Hospital (Case Record 40893) June 18, 1914, with the history of an injury, inflicted five weeks previously, to the head of the third metacarpal bone of the right hand, which had been struck a severe blow against a metal oil-guard. Pain started at the time of the injury, and has persisted. It shoots down to the finger-tips. It is worse when he grips; there is none at night. Clinical examination revealed limitation of motion at the third metacarpophalangeal joint, and "wincing" tenderness at the head of the metacarpal. A roentgenogram revealed no fracture, but on close scrutiny a pea-sized cyst at the radial side of the head of the metacarpal and anteriorly.

Under nitrous oxid anesthesia and Esmarch anemia, an incision was made just to the radial side of the extensor tendon of the middle finger, and the bone was exposed by retracting the capsular ligament. The bone was removed from the proximal and radial portion of the head until the cyst was emptied. It was pea-sized and filled with clear, tenacious mucoid material. The cyst wall was curetted, phenolized and packed with iodoform gauze. The edges of the deep fascia were approximated. Hemostasis was secured and skin edges were approximated. A splint was applied. After the operation the patient stated that immediate relief from the shooting pain was afforded.

A roentgenogram, taken when the wound was entirely healed, shows the remains of the cyst cavity outlined by iodoform powder, which was inserted into it at a dressing a few days after operation. The cavity is much diminished in size.

A review of recent literature reveals but one case that may be compared with mine. McDill[1] reports a cyst in the distal half of the fifth metacarpal bone. It began three years previously as a small, painless swelling which gradually increased for a year, when it swelled rapidly, became painful, and was opened, giving exit to stringy mucopus, and discharged at intervals for the remaining two years. The roentgenogram shows an oval cyst with one end at the neck of the bone and the other just below the middle of the shaft, of which it occupies two-thirds of the width and one-fifth of the length. The shaft is not expanded. McDill says: "So far no case has been reported in the long bones of the hands or feet." Silver,[2] in a series of ninety-seven cases of bone cysts, found but one each in a metacarpal and metatarsal bone. Elmslie,[3] in an extensive review of the subject, says: "Most of the cysts of the metacarpal and metatarsal bones and of the phalanges have been definitely myxomatous, resulting from degeneration in enchondromata."

Robert Jones[4] describes three large cysts in the bones of the hand: expansion was present in all. Indeed, perusal of the literature of bone cysts shows that enlargement was almost invariably present. The cysts, colossal in comparison with mine, with the single exception of McDill's case, represent, without doubt, advanced stages of pathology. This, together with the fact that the whole subject of bone cysts is comparatively recent, forces me to the conclusion that my cases represent the earliest stage, the stage in which it is most desirable to recognize any disease. It must be borne in mind that there was no enlargement in either case; that in both there was the history of localized trauma, of persistent but not severe pain, and of localized but not typically "wincing" tenderness. In fact, there was the clinical picture of a "chipping" fracture with lingering signs, because untreated. It was only by close scrutiny of the skiagram in the first case for such a chip that the minute cyst was discovered. In the second case detection of the cyst was facilitated by the memory of the first case, which had preceded it by only three months.

As to the pathology, I am unable to present any observations. The cysts were so minute that it would have been unjustifiable to resect the bones in order to study the cysts. At operation, each cyst had a sharply defined globular wall, and the contents resembled the vitreous body of the eyeball. By correlation, however, I incline to the opinion that the cysts are the result of hemorrhagic osteomyelitis, which has been described by Barrie and Hillman,[5] who define it thus: "The term hemorrhagic osteomyelitis is meant to embrace a majority of those traumatic, localized, non-infective (so far as we know at present), non-suppurative, low-grade inflammatory lesions that have their onset in spongy bone." The slight trauma in my cases was sufficient to cause fractures of the delicate normal bone trabeculae, producing effusion, hemorrhage, and interference with nutrition, thereby setting up a localized osteomyelitis. The pigments of the blood were absorbed, leaving clear contents, just as occurs in cysts of soft tissues, notably in pancreatic cysts of hemorrhagic origin.

I have noticed several times minute cysts about the size of the head of a pin in the carpal semilunar in roentgenograms taken for other conditions, but doubt if they were true cysts. A study of trabeculae in roentgenograms shows that cysts may be simulated by certain arrangements of lights and shadows. The best way to avoid error is to correlate clinical findings with those of the roentgenogram.

### CONCLUSIONS

1. Cysts of bone should be detected in their incipient stages before extensive destruction of the medulla has taken place.

2. Early operation results in prompt cure, and prevents deformities and extensive bone plastics.

3. A localized trauma followed by persistent but not severe pain, and localized but not true "wincing" tenderness—symptoms and signs of an untreated "chipping" fracture—should arouse clinical suspicion of a minute, early bone cyst, the corroboration of which may be afforded by close scrutiny of a roentgenogram at the site corresponding to that of the localized tenderness.

241 South Thirteenth Street.

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[1] McDill: Ann. Surg., 1913, lvii, 533.
[2] Silver: Am. Jour. Orthop. Surg., 1912, ix, 563.
[3] Elmslie: Brit. Jour. Surg., 1914, ii, 54.
[4] Jones, Robert: Arch. Röntgen Ray, 1907, xi, 316, 342.
[5] Barrie and Hillman: Surg., Gynec. and Obst., 1914, xix, 42.

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# SUPRAPUBIC PROSTATECTOMY*

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On account of the mortalities occurring, no one is exactly satisfied with his technic in prostatectomy, except for the present time, but naturally he thinks that just now it cannot be improved on.

The men who do the greatest number of operations do not necessarily have the best technic for general use, for that which is easy for the one who knows how may be impossible for the other man. Then, too, the operator before a clinic may devise an operation for "sight seeing" for the spectators that will aggrandize himself at the expense of the patient.

Gentleness, thoroughness with simplicity is becoming the more fashionable prostatectomy. The time is also present when an operator is more easily divorced from a false opinion than heretofore.

Prostatectomy seems to have reached the stage where the lesser points are deemed essential.

There are possibly four principal reasons for the suprapubic operation to carry the greatest preference at the present time:

1. The danger of the pus-bathed perineal tube forcing infection into the torn open-mouthed veins and thereby producing emboli and thrombi.

2. The greater ease of local anesthesia in the suprapubic region.

3. The avoidance of trauma through the pelvic diaphragm.

4. The comparative ease and simplicity of postoperative treatment.

From the results following non-irrigation for the control of hemorrhage, it would seem that irrigation was a menace rather than a benefit, especially when the preoperative preparation endeavors to improve the fibrin product of the blood. The clot formed in the bladder assists in checking further hemorrhage. Irrigations were necessary only during times past when the drainage-tube lumen was small.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

For the same reason that a perineal drainage-tube carries a possible danger of forcing pus into the torn open-mouthed veins, so also is a retained urethral catheter contra-indicated. The fact is that even sounding of the urethral canal is quite hazardous as a late postoperative procedure for fear pus will be forced back through the ejaculatory ducts or out of the vas ampulla to infect the epididymis.

The lack of shock is so marked following operation under local anesthesia that it would seem advisable to operate under local anesthesia in all cases to the farthest degree whereby pain is not felt by the patient, supplementing finally general anesthesia, if necessary, until the prostate is removed, then fixing the drain and closing the wound under the retained local anesthesia.

The most perfect postoperative recovery which I have ever experienced occurred in the following case:

Mr. S., aged 76, Feb. 2, 1914, No. 250-S. The man was young for his age. Following a perfect preoperative preparation the patient was operated on under local anesthesia. The skin from just below the umbilicus to pubes and also the deep linea alba were injected with 1 per cent. cocain solution. All fascial and muscular planes laterally were injected with 1:400 novocain, as well as the bladder wall. After opening the bladder (incision extending 1 inch pubically from peritoneal fold) the prostate was injected deeply with 1 per cent. cocain while the pericapsular region was injected with the 1:400 novocain solution. The operation was painless, except for a short period during the prostatic enucleation. A 1-inch drain was purse-stringed into the roof of the bladder; small cigaret drain to Retzius' space; wound was closed without additional local anesthetic. Patient was put to bed without the Fowler elevation, attended by a special nurse, without irrigation for hemorrhage. The only inconvenience in the convalescence, which by the way was not experienced by the patient, was gas collections in the ascending and transverse colon.

At the Los Angeles session, several years ago, I spoke of the importance of chronic colitis playing an important influence in prostatectomized patients. I still think that the subject does not receive the general attention that it deserves. Old prostatics generally have indolent constipated bowels, which are much influenced by the renal toxemia which has induced, from the years of pathology, a chronic inflammation of the colon. This colic pathology is aggravated by and itself superinduces gas distention which opens up another field for toxic absorption, which added to the overloaded kidneys adds another weight toward dissolution.

The toxemia from the distended colon, even when the kidneys show a fairly quantitative and qualitative urine, is so profound that the temperament of the patient will become so disagreeable, so changed, that the nurses' patience will be tried sometimes to the point of breaking.

I have noted flights of temper in these patients which were entirely unnatural and unnecessary. While the distention was giving the patient no discomfort from pain, yet, just as soon as the distention was relieved, the temperature and temperament of the patient returned to normal. One of the principal thoughts of the surgeon should be in his preparatory treatment to correct and in the postoperative treatment to remove the gas distention of the colon.

# THE ULTIMATE RESULTS OF GENITAL TUBERCULOSIS IN THE MALE*

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Genital tuberculosis in the male is a very grave affection. It does not indicate, as many suppose, an infection of the genital tract alone. On the other hand, a careful analysis of many cases shows it to be merely another outbreak of a tuberculous infection which has been smoldering sometimes for years.

In an analysis of 153 cases of epididymal tuberculosis seen at the Massachusetts General Hospital, I[1] found evidence of tuberculosis of other organs, notably lungs, in 35 per cent. In most of these (29 per cent.) the disease was active at the time of entrance to the hospital. In the present series of cases, 154 in all, tuberculosis of organs other than those of the genital tract was found to exist in 55.8 per cent., the lung again being most frequently involved with a total of thirty-five cases, 22.7 per cent. of the whole. Kidney and bone infections came next with seven cases each. Genital tuberculosis is, therefore, to be regarded as but another manifestation of an active tuberculous infection and a lowered resistance on the part of the patient.

Tuberculosis of the genital tract affects the epididymis primarily. So far as I am aware, no case starting elsewhere than in the epididymis has been observed in a now considerable experience; nor, so far as I know, do the records of the Massachusetts General Hospital contain such an instance. Guisy,[2] in 183 cases of genital tuberculosis, found but ten involving the prostate and vesicles alone; while Saxtorph[3] observed only nine in a series of 205 similar cases. Infection starting elsewhere than in the epididymis is, therefore, exceedingly uncommon. In the urinary tract the primary focus is always in the kidney, a fact borne out by ample clinical and pathologic experience.

The general profession is too apt to use loosely the term "genito-urinary tuberculosis." While the genital and urinary organs may each be tuberculous, careful inquiry will show infection of the one tract to be secondary to that of the other. An analysis of the 154 cases now under consideration has shown a tuberculous infection of the kidney in eighteen. Of these, the genital lesion preceded the renal infection in eleven, whereas in seven the kidney was first involved. In one or two other cases, observed by me, but not included here, the latter sequence has also occurred. It is thus seen that the infection extends more often upward than downward, a fact which in my opinion favors strongly the transmission of the tubercle bacillus by the lymphatic route. In those cases in which epididymal tuberculosis of one side is followed by an involvement of the opposite kidney it is to be accounted for by a crossing of the lymphatics at the base of the bladder. If such infection took place by way of the blood-stream it seems reasonable to suppose that the kidney would more often be the primary focus of the genito-urinary tract. On the other hand, one might argue that a greater resistance of the kidney to the onslaught of the tubercle bacillus was the determining factor in the order of events.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Barney, J. Dellinger: Am. Jour. Urol., December, 1911.
2. Guisy: Ann. d. mal. d. org. Gén.-urin., 1906.
3. Saxtorph: Cong. Internat. de Chir. Urin., 1900.

Let us now see what encouragement can be held out to the patient with tuberculosis of the epididymis. Of 154 cases taken from the records of the Massachusetts General Hospital, 113 have been traced since operation. Of these, 31 patients are known to have died of tuberculosis. Eight more have died of other causes, but it seems highly probable that a majority of these were still tuberculous at the time of their death. Sixty are now living. I have personally examined 32 of these men anywhere from two to fifteen years after operation. By letter and otherwise, satisfactory statements of bodily health have been obtained in 28 others now living at from two to twenty-six years after operation. Information as to 13 more, living from one to three years after operation, but since lost sight of, is also included because of certain important facts.

The old saying, "There is no Indian like a dead Indian" is peculiarly applicable to the individual infected with tuberculosis. When we say that until he is dead he is apt to break out with some new manifestation of the disease we are not far from the truth. Four died, in the hospital, within a month after operation, all of miliary tuberculosis, 3 of them so proven by necropsy, giving a figure for the 28, of the 31 whose postoperative length of life is known, of 14.2 per cent. Within the first six months after operation (including the 4 mentioned above) 9, or 32.1 per cent. died, whereas a total of 14, or 50 per cent., succumbed within the first year. From this point, until the end of the sixth year, the death-roll drops rapidly, but we find that during the first six years after operation, 85 per cent. have died. Thus although we see that half of these unfortunates were gathered in by the end of the first year, and over three-quarters of them by the end of the sixth year, it is important to find that 3, or 10.7 per cent. died of tuberculosis between the ninth and eleventh years, a fact which warrants the belief that until at least ten years have elapsed after operation, no patient can be said to be cured. The facts here presented are somewhat different from those of other writers. Lapeyre[4] says that 75 per cent. of these patients are cured, and that a survival of the patients of from four to ten years after operation is to be expected. Brunt and Brungner[5] reported 56 per cent. of favorable remote results, while Haas[6] speaks of 45 per cent. of permanent cures. In my opinion these figures are misleading for the reason that the patients have not been followed over a sufficient number of years. Taking my own cases for a period of six years after operation I find that in a total of 58, of whom I know the definite results, 24, or 41 per cent., have died of tuberculosis.

An analysis of the particular manner in which the tubercle bacillus gave its death blow is illuminating. In 7, or 22.5 per cent., a general miliary process closed the scene, while in an equal number renal tuberculosis was the determining factor. Lung involvement came next in order with a percentage of 16.1 per cent. The cause of death in 10 others was given simply as "tuberculosis" without reference to the organs involved, while "meningitis" and "fistula in ano" each claimed one victim. That these 31 dying of tuberculosis were already doomed seems clear when we see how extensive was the involvement, either in the past or at time of operation, of organs other than those of the genital tract. In 15 (practically 50 per cent.) the lungs were already involved at time of entrance to the hospital, kidney and bone infections coming next in order with 4 cases each. Other tissues and organs such as larynx, joints, meninges, glands and middle ear each contributed their quota. Yet none of these cases, in spite of evidences of tuberculosis elsewhere, was considered by the surgeon as a bad risk.

Of the group now known to be living at periods of from two to twenty-six years after operation (sixty in all), the lungs were affected only 8 times, kidney 3 times, and other organs once or twice each. Among the thirteen heard from within the first year or two after operation, but trace of whom has since been lost, lung tuberculosis was found in three instances.

The extent of the genital lesions of the living and of the dead was about the same. In most a single epididymal infection was found, while the prostate and seminal vesicles were involved in about the same proportion of cases in all groups.

The urines of those now dead contained pus, blood, albumin and casts in various combinations in 77 per cent., while of the patients living the urine was pathologic in but 38 per cent.

The guinea-pig test of the bladder urine in these cases has been sadly neglected both before and after operation. Yet it is a point of the utmost importance, not only for purposes of diagnosis, but also of prognosis. If a positive test is obtained, it shows either that there is renal involvement, or that the bladder has become infected by way of the prostate. Even with the urine free from tubercle bacilli we may find it to contain pus, blood and albumin. These elements, in the presence of marked bladder irritability, may well lead us to suspect tuberculosis of the kidney, and if this exists that organ must be first dealt with. In eight out of ten of this series tubercle bacilli were found in the urine before operation. In six patients now living and seen by me, guinea-pigs have been inoculated with the bladder urine. Four, formerly negative, have since developed tuberculous kidneys and give a positive test. One patient whose kidney was removed for tuberculosis six years before the genital lesion developed now has a urine free from tubercle bacilli. Four other cases are likewise negative, and were so before operation. One of these has since had a relapse in the second epididymis.

Seventeen of the 32 patients seen by me have had a fresh outbreak of tuberculosis since the removal of their first epididymis. In 4 the second epididymis has become involved, while in 4 others kidney tuberculosis (bilateral in one case) has intervened. Three patients have developed ischiorectal abscesses with a persistent fistula in ano, 2 are now suffering from disease of the bone (one of the hip, one of the spine) and 1 case each of phthisis, corneal ulcer, glandular tuberculosis and funiculitis has been seen. In other words, the fire has not yet burned itself out.

Of the 31 who died of tuberculosis, 15 developed tuberculous foci after operation elsewhere than in the genital tract, and succumbed later to additional and more extensive exacerbations of the disease. Thirteen of the 32 patients seen by me have thus far presented a clean score except for the epididymal infection. In most instances they have gained weight and seem to be in perfect health. The remainder are or have been handicapped, as described above, by other manifestations of the disease. I have observed elsewhere[7] that azoospermia obtains in tuberculosis of the epididymis (even when unilateral) in 85 per cent. Further observations confirm this statement. I also remarked that the lesion in question did not disturb the sex function. This conclusion is also still sound. Even after double orchidectomy the adult seems to be unaffected as regards his masculinity. Two of our patients, so handicapped, asserted that they were perfectly normal from a sex point of view in regard to both desire and ability to perform the sexual act.

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[4] Lapeyre: Arch. gén. de Chir., July, 1912, No. 7.
[5] Brunt and Brungner: German Cong. of Surgeons, 1901.
[6] Haas: Beitr. z. klin. Chir., 1901, xxx.

We now have the records of nearly 100 epididymectomies at the Massachusetts General Hospital. I have remarked elsewhere[8] that not one of these patients has yet been obliged to submit to a subsequent orchidectomy. This statement still holds true in spite of the fact that the testicle, in our experience, is clinically tuberculous in 44 per cent. of cases, and microscopically so, in cases of orchidectomy, in 66 per cent. In other words, where experience and judgment are exercised, the testicle need rarely be removed with the epididymis.

In sixty-nine of the patients analyzed here the prostate and seminal vesicles were found to be tuberculous at the time of entrance to the hospital. Many of those now living have since been examined by me at various intervals of time after operation. In most instances the induration, nodularity and tenderness of the prostate and vesicles, present before operation, has subsequently disappeared entirely, or decreased in extent. In a few the condition is the same as before operation. In two instances the process continued after operation, and formed an abscess which opened spontaneously, or was drained, with the establishment of a permanent perineal fistula, from which urine has leaked at times. This experience, although brief and incomplete, substantiates the belief which I have always held, namely, that the prostates (including seminal vesicles) which are markedly tuberculous had best be left alone, and, like those which are only slightly or moderately infected, will generally take care of themselves after removal of one or both epididymes. I regard attempts at complete excision of the tuberculous prostate and seminal vesicles as not only useless but impossible.

A broad view of the whole subect of surgical tuberculosis, and of genital tuberculosis in particular, demonstrates beyond question that, taken all in all, the odds are against the patient. The longer he can live and fight down any particular outburst of the disease the better able he is, in most instances, to overcome the next exacerbation. It all comes down to a question of immunity. Once fortified in this manner a patient can ward off an onslaught of the tubercle bacillus, which, under other circumstances, would get the upper hand in a short time. While we have all seen patients with surgical tuberculosis, who have fought single handed a winning battle for many years, we should not hesitate to bring to their relief the best of hygienic treatment, the regular and continuous administration of sandalwood oil, and the use of tuberculin. The latter should be given only after operation, must be given cautiously and intelligently, and should be employed for an almost indefinite time. Under these conditions whatever natural immunity the patient may possess, or has acquired, will be raised to the highest possible point, a factor which I believe will give the victims of this disease a better outlook in the future than they have had in the past.

## SUMMARY

1. Tuberculosis of the genital tract is accompanied by old or active lesions in other organs in more than 55 per cent. of cases, most of them being in the lung.

2. The genital tract is usually first attacked in cases of genito-urinary tuberculosis.

3. Over 27 per cent. of 113 patients traced have died of some form of tuberculosis. Within a period of six years after operation 41 per cent. of 58 patients have died of this disease. Of the deaths from tuberculosis, 14.2 per cent. occurred within one month, 32.1 per cent. within six months and 50 per cent. within one year after operation. During the first six years 85 per cent. died, while between the ninth and eleventh years 10.7 per cent. succumbed. Miliary, renal and lung tuberculosis are, in order, the final types of the disease. A large majority of those dying of tuberculosis had had one or more outbreaks of the disease both before and after operation. My experience warrants the conclusion that until at least ten years have elapsed after operation, no patient can be said to be cured of tuberculosis.

4. The records of those now living show a much smaller percentage than do those of the dead, of other tuberculous processes before operation, but many of them have since developed other foci. As 81 per cent. of those examined and 28.5 per cent. of those corresponded with are still within the six-year period, in which I found that 85 per cent. of deaths had occurred, it is to be expected that the deaths in this group, from tuberculosis, are not yet at an end.

5. While genital tuberculosis, even if unilateral, results in sterility in most cases, neither the disease nor the operation for its relief, including double orchidectomy, seems to impair masculinity in any way.

6. In none of my cases of epididymectomy has the patient returned for a subsequent orchidectomy, although in three instances (one has already been mentioned) there has occurred a tuberculous funiculitis, simulating testicular involvement.

7. My experience has shown that although the prostate and seminal vesicles are involved in most cases of epididymal tuberculosis, their condition will improve or heal after removal of the epididymis. Radical surgical treatment of these organs is unnecessary and unwise.

8. The long life and good general condition of many of my patients, even although suffering from repeated outbreaks of tuberculosis, shows that the survival of the patient depends largely on his ability to immunize himself to the disease. Therefore our efforts must be directed, not merely toward suitable surgical treatment, but also toward helping him develop that immunity which is so important. For this purpose hygiene, sandalwood oil and tuberculin are essential.

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## ABSTRACT OF DISCUSSION

**Dr. B. C. Corbus**, Chicago: I am particularly interested in the point that Dr. Barney makes with reference to establishing an immunity in these cases. During the last two years I have been interested in the work of Dr. Karl von Ruck of Asheville, N. C., with regard to the immunization of children and adults in general tuberculosis, and have recently done some work in his laboratory. I came to realize the possibility of immunization before surgical interference is attempted. We all realize how necessary it is to put our patients in the best possible condition to withstand any kind of a surgical operation, no matter what the infection may be, but most surgeons apparently desire to operate as soon as possible in a case of surgical tuberculosis. That it is absolutely necessary to remove every caseous focus that exists, is granted. In immunization before operation, the idea is to use a vaccine that contains all the particles of the tubercle bacillus in proper proportion, a vaccine that will stimulate the formation of antibodies in every part, the patient's serum being tested for these antibodies before operation, so that one can demonstrate whether the patient has a specific resistance. This seems to me to offer more advantage than an immunization afterward.

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[7] Barney, J. Dellinger: Boston Med. and Surg. Jour., 1912, clxvi, No. 11.

[8] Barney, J. Dellinger: Boston Med. and Surg. Jour., 1913, clxviii, No. 25.

**Dr. Robert H. Herbst**, Chicago: I agree with Dr. Barney that if not in all, in most cases of genital tuberculosis we find the process beginning in the epididymis. The reason for this is obvious if we stop to consider that in the epididymis we find small tortuous blood-vessels on the walls of which the tubercle bacillus readily implants and forms a focus of infection. From a therapeutic point of view I think that it is well to divide cases of genital tuberculosis into two classes: first, those in which the process is limited to the epididymis; secondly, those in which we have to deal with an involvement of the cord, prostate and seminal vesicles. In the first class epididymectomy or orchidectomy with removal of a part of the cord will, as a rule, be followed by good results. In the second class, however, in which the process has extended to the lower end of the genital tract, the patient is far better off without surgery and instead should be relegated to tuberculin treatment with the usual hygiene for tuberculosis.

**Dr. J. H. Cunningham, Jr.**, Boston: I have recently looked up the necropsy records of the Boston City Hospital in cases recorded as tuberculous epididymitis. In twenty such cases a microscopic examination was made of the prostate and seminal vesicles. It is interesting to note that. out of these twenty cases, in eleven the disease was bilateral in the epididymis, and in nine it was unilateral. Of these twenty cases the prostate was involved in eleven; the seminal vesicle also in eleven. When the vesicle was involved the prostate was also involved in each instance. Of the eleven bilateral cases of tuberculous epididymitis, involvement of the seminal vesicle was bilateral in seven and unilateral in four. Of the twenty cases the testicle was involved in only four. In two of the cases involving the epididymis, vesicles and prostate the lesion in the epididymis was caseous, suggesting primary tuberculosis in the epididymis, there being an acute miliary infection of all the visceral organs in these two instances. There are unquestionably cases of tuberculous epididymitis in which it is impossible clinically to detect tuberculosis in the prostate or seminal vesicle even when it is there, and the successful dealing with the condition within the scrotum by surgical measures, allows the disease in the prostate and vesicle to remain quiescent or at least not to progress to the point of producing symptoms in most instances. Especially is this true if these patients receive tuberculin and carry out the hygienic measures which have been proved to be beneficial in controlling tuberculosis wherever located. This postoperative treatment is most important after the primary focus is removed, because clinically, as in these twenty cases in which necropsy has been performed, we have found that the majority of the patients with tuberculous epididymitis have associated tuberculosis in the vesicles, prostate or elsewhere in the body.

**Dr. E. L. Keyes, Jr.**, New York: I have seen but one case of relapse of tuberculosis in the testis after removal of the epididymis. The patient had had one epididymis removed for tuberculosis two years before. At that time he had a tuberculous ischiorectal abscess and fistula which were not touched. The scrotum healed after the removal of the epididymis, the testicle being left in, but broke open six months later. He returned to the hospital, with an extension of the process around the rectum, involvement of the opposite epididymis and a relapse in the testicle which had been left behind after the removal of the epididymis. I agree with Dr. Barney that the testicle can always be saved when it is mechanically possible to remove the epididymis and still leave the testicle some blood-supply, but I wish to report this single instance of recurrence after apparent healing subsequent to epididymectomy.

**Dr. J. D. Barney**, Boston: I understood Dr. Herbst to say that in cases in which the prostate and vesicles were involved, surgery had better not be done. We have found in a previous analysis of a great many cases that in 75 per cent. the prostate and seminal vesicles are involved, and I made the remark then that probably a great many more were involved that we could not detect because it is possible in the vesicle and prostate to get early foci which cannot be felt with the finger. I think 75 per cent. is conservative. If one goes on the basis of these figures and if one adopts Dr. Herbst's belief it leaves a very small percentage that can be operated on. I have shown the results in a great many cases in which the prostate and vesicles were distinctly involved before operation and in which they are now so nearly healed that it is very hard to detect any tuberculous foci in them. That, it seems to me, is the answer to this objection.

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# OBSERVATIONS OF THE RESULTS OF SEVEN MONTHS' EXPERIENCE WITH SALVARSAN IN THE TREATMENT OF SYPHILIS

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AND
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In March, 1914, we published[1] the results of our observations with neosalvarsan in the treatment of syphilis. This report showed that after five intravenous injections of neosalvarsan combined with intensive mercurial treatment, the Wassermann reaction had become negative in 33.3 per cent. and remained positive in 66.7 per cent. of the cases treated. These results were considered so poor that it was believed a further use of neosalvarsan at this institution was not warranted. Since Jan. 10, 1914, salvarsan has been substituted for neosalvarsan, and the results of that substitution are here recorded.

Seventy-four cases of syphilis have been treated at the Prison Hospital during the past seven months. Twenty-five of these cases have been selected for report in this paper. These twenty-five cases have received their entire treatment at the Prison Hospital, and the original and all subsequent serum tests have been performed by the same medical officer (Capt. Charles Craig, Medical Corps, U. S. Army). In the remaining forty-nine cases the treatment was started elsewhere, the original Wassermann test having been made by other medical officers; in short, the treatment of these cases was simply continued at this institution.

Each patient here reported has received four intravenous injections of 0.6 gm. of salvarsan and twelve intramuscular injections of 100 mg. of the salicylate of mercury. The salvarsan has been given at ten-day intervals, the mercury, two injections a week. No bad effects from the intramuscular injections of the mercury have been noted. The prisoners here are all engaged in active outdoor work, and state that they have felt no discomfort in the muscles following injections. The intravenous puncture has been employed in each administration of salvarsan.

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[1] Nelson, Kent, and Haines, E. F.: Observations of the Results of Nine Months' Experience with Neosalvarsan at the United States Military Prison Hospital, Fort Leavenworth, Kan., The Journal A. M. A., March 28, 1914, p. 989.

Table 1 shows that no reaction followed the administration of salvarsan regardless of the stage of the disease. It has been stated by some that there are a greater number of reactions following the use of salvarsan than when neosalvarsan is used. The cases treated at this hospital do not bear out this statement. We consider all cases severe in which the temperature is above 102 F., with or without other symptoms; moderate, when the temperature ranges from 100 F. to 102 F.; mild, normal temperature to 100 F. Cases are deemed as having no reaction when there are no high temperature and no symptoms.

TABLE 1.—REACTIONS ACCORDING TO THE STAGE OF DISEASE

| Stage of Disease | Number of Cases | Total Number of Injections | Reactions<br>Severe | <br>Moderate | <br>Mild | <br>None | Percentage of Negative Reactions |
|---|---|---|---|---|---|---|---|
| Primary .... | 1 | 4 | 0 | 0 | 0 | 4 | 100 |
| Secondary .. | 17 | 68 | 0 | 0 | 0 | 68 | 100 |
| Tertiary .... | 1 | 4 | 0 | 0 | 0 | 4 | 100 |
| Latent ...... | 6 | 24 | 0 | 0 | 0 | 24 | 100 |
| Total ..... | 25 | 100 | 0 | 0 | 0 | 100 | 100* |

* Average negative.

An analysis of Table 2 shows that 64 per cent. of the cases here reported have become negative and 36 per cent. remained positive. Our report on neosalvarsan showed that after each patient had received five intravenous injections, combined with intensive mercurial treatment, 33.3 per cent. became negative, and 66.7 per cent. remained positive. In other words, with salvarsan we have obtained nearly twice as many negative reactions as with neosalvarsan, 64 per cent. of the cases becoming negative against 33.3 per cent. with neosalvarsan. Five intravenous injections of neosalvarsan were used, where only four of salvarsan were given. It was stated in our report on neosalvarsan that the results of our work with that drug did not seem to warrant the belief that neosalvarsan should be given in the proportion of 3 to 2 of salvarsan, but that it should be given either 6 or 8 to 2. The results that have now been obtained with salvarsan seem to prove this statement, for four injections of salvarsan have given nearly twice as many negative Wassermann reactions as did five injections of neosalvarsan.

TABLE 2.—THE RESULTS OF TREATMENT WITH SALVARSAN ON THE COMPLEMENT-FIXATION TEST IN THE VARIOUS STAGES OF SYPHILIS

| Stage of Disease | Total Cases | Became Negative<br>No. | <br>Per Cent. | Remained Positive<br>No. | <br>Per Cent. |
|---|---|---|---|---|---|
| Primary ...... | 1 | 1 | 100 | 0 | 0 |
| Secondary .... | 17 | 12 | 70.7 | 5 | 29.3 |
| Tertiary ...... | 1 | 0 | 0 | 1 | 100 |
| Latent ....... | 6 | 3 | 50 | 3 | 50 |
| Total ...... | 25 | 16 | 64 | 9 | 36 |

Repeated Wassermann tests have been made in all the cases here reported, all by the same medical officer (Capt. Charles Craig) who likewise made all of the serum tests of the cases reported in our work on neosalvarsan. We have thus secured an absolute uniformity of technic and interpretation of the serum reactions, thus giving accurate data regarding the results of our treatment as indicated by the Wassermann reaction.

Table 3 shows that out of 16 cases that became negative, 5 were during the first month, 9 were negative by the second month, 13 by the third month, and 15 at the end of the fourth month. In other words, 15 of the 16 negative results were obtained by the end of the fourth month. In our report on observations with neosalvarsan, a similar table to Table 3 of this paper showed that out of 68 cases 23 became negative. One the first month, 1 the second, none the third, 3 the fourth, 3 the fifth, 4 the sixth, etc. In other words, at the end of four months, 5 of our cases out of a total of 23 negative had shown a negative reaction; or, more briefly stated, with neosalvarsan 21 + per cent. of our negative cases showed the negative reaction within four months, whereas with salvarsan 93 + per cent. of the negative cases showed the negative reaction within four months. This demonstrates very clearly the rapidity of action of the two drugs.

TABLE 3.—RELATION OF THE STAGE OF SYPHILIS TO THE TIME OF DISAPPEARANCE OF COMPLEMENT FIXATION AFTER TREATMENT WITH SALVARSAN

| Stage of Disease | Total Cases | Month<br>1st | <br>2d | <br>3d | <br>4th | <br>5th | <br>6th | <br>7th | Total Negative |
|---|---|---|---|---|---|---|---|---|---|
| Primary ......... | 1 | .. | .. | .. | 1 | .. | .. | .. | 1 |
| Secondary ....... | 17 | 4 | 3 | 3 | 1 | .. | .. | 1 | 12 |
| Tertiary ......... | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Latent ........... | 6 | 1 | 1 | 1 | .. | .. | .. | .. | 3 |
| Total....... | 25 | 5 | 4 | 4 | 2 | .. | .. | 1 | 16 |

TABLE 4.—RELATION OF THE INTENSITY OF THE COMPLEMENT FIXATION TO THE DISAPPEARANCE OF THE REACTION AFTER TREATMENT WITH SALVARSAN

| Character of Reaction * | Total Cases | Became Negative<br>No. | <br>Per Cent. | Remained Positive<br>No. | <br>Per Cent. |
|---|---|---|---|---|---|
| ++ | 14 | 6 | 42.8 | 8 | 57.2 |
| + | 6 | 6 | 100 | 0 | 0 |
| +— | 5 | 4 | 80 | 1 | 20 |
| Total.... | 25 | 16 | 64 | 9 | 36 |

* A + + reaction represents an absolute inhibition; a + reaction, any degree between 75 per cent. and absolute inhibition; a + —, any degree between 50 per cent. and absolute hemolysis.

A study of Table 4 shows that the stronger the serum reaction, the fewer cases that became negative. With a + + reaction 42.8 per cent. became negative, with a + reaction 100 per cent., and with a + — 80 per cent. These results do not differ in any material way from those obtained by us with neosalvarsan.

Table 5 shows that in the 6 negative + + cases all of the negative reactions were obtained by the end of the fourth month; that all of the + cases were negative by the end of the third month; and 3 out of the 4 negative + — cases were negative by the end of the second month. In our report on neosalvarsan 40 + + cases were recorded, 13 became negative, but

TABLE 5.—RELATION OF THE INTENSITY OF THE COMPLEMENT FIXATION TO THE TIME OF DISAPPEARANCE OF THE REACTION AFTER TREATMENT WITH SALVARSAN

| Character of Reaction | Total Cases | Month<br>1st | <br>2d | <br>3d | <br>4th | <br>5th | <br>6th | <br>7th | Total |
|---|---|---|---|---|---|---|---|---|---|
| ++ | 14 | 1 | 1 | 2 | 2 | .. | .. | .. | 6 |
| + | 6 | 2 | 2 | 2 | .. | .. | .. | .. | 6 |
| +— | 5 | 2 | 1 | .. | .. | .. | .. | 1 | 4 |
| Total...... | 25 | 5 | 4 | 4 | 2 | 0 | 0 | 1 | 16 |

at the end of the fourth month only 2 of the 13 had shown the negative reaction. Nineteen + cases were reported, 6 of which became negative, 2 showing the negative reaction at the end of the fourth month. Nine + — cases were recorded; 4 became negative, only one of which showed a negative reaction by the end of the fourth month. A study of Table 5 shows clearly as does Table 4 the more rapid action of salvarsan.

### CONCLUSIONS

1. Four injections of salvarsan combined with intensive mercurial treatment have given nearly twice as many negative serum reactions as did five injections of neosalvarsan with mercurial treatment.
2. The best authorities state that with our present methods of treating syphilis we cannot expect to obtain over 70 or 80 per cent. of negative Wassermann reactions. Salvarsan has given us 64 per cent. of negative serum reactions, whereas neosalvarsan gave 33.3 per cent. in nine months.
3. The drug should be used which will bring about the best results in the shortest possible time. We believe that our work with neosalvarsan and salvarsan will clearly demonstrate that salvarsan is the drug.
4. A greater number of reactions should not follow the use of salvarsan.
5. The complement fixation is of the greatest value in diagnosis, or as an indicator to the results of treatment.
6. We believe that the results reported in this paper are of such a character as not to warrant the further use of neosalvarsan in the military service; and to all others who desire to give their patients the best possible results in the shortest possible time.

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# FACTORS GOVERNING VASCULAR DILATATION AND SLOWING OF THE BLOOD-STREAM IN INFLAMMATION *

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Inflammation is a process characterized by symptoms which have been referred, directly and indirectly, to changes in caliber of blood-vessels, and to other less definite changes which are grouped under the term "changes in permeability" of vessel-walls. The changes in caliber have been used in explanation of the increased redness and of the apparent increase in temperature of an inflamed area. The phenomena of exudation, including emigration and diapedesis, have been referred to "changes in permeability." These latter phenomena always follow the former.

Vascular dilatation is a normal, physiologic process by which the blood-supply of an organ is increased during physiologic activity. It is an adaptive mechanism. It occurs under any circumstances which bring about increased metabolic activity, and appears under all sorts of conditions which are unassociated with the symptoms or morphology of inflammation. Nevertheless, it is a fundamental phenomenon of the inflammatory process; therefore, in discussing that process, it is necessary to offer an explanation of vascular dilatation.

It has been said that the dilatation of the blood-vessels is due to paralysis of the vasoconstrictors, to irritation of the vasodilators or to both; or, finally, to paralysis of the muscular fibers of the arterioles. It was shown by Cohnheim, however, and the fact has been substantiated by more recent workers, that the vasomotor nerves play no essential part in the phenomenon of dilatation in inflammation. Cohnheim said that "the vessels are wont, under the influence of the agents employed by us, to dilate very much more than is ever the case in paralysis of the vasoconstrictors or stimulation of the vasodilators," and he also called attention to the fact that if croton-oil were rubbed on a rabbit's ear, a considerable time might elapse before the evidences of dilatation appeared. If the nerves were active the dilatation should appear promptly and not be delayed. The reaction is delayed. Adami suggests that "section of all the nerves passing to any region of the body should have such an effect, that injury should be unaccompanied by the ordinary vascular reaction," were the nerves alone the cause. The reaction, however, occurs. Moreover, while it is true that an active hyperemia may be induced by removal of vasomotor influences, the congestion may be increased by the use of croton-oil or heat. The events occur in the same order and in the same degree, though at a different rate, if all nervous influences be excluded. Removal of nervous influences, therefore, has no essential effect on the vascular dilatation of inflammation, and the whole inflammatory process may proceed normally in the absence of nervous activities. So it appears that none of the phenomena of inflammation are governed by the nervous system, and that nervous influences have the same importance in inflammation as in other processes, namely, in merely modifying the process—increasing or decreasing the rapidity of its production.

Cohnheim believed that the phenomena of inflammation were the results of molecular changes in the vessel-walls, and definitely stated his belief in the chemical nature of the process. He said that a change of chemical character is undergone by the vessels in inflammation, and that this brings about atony of the muscular coat, which permits dilatation, increase in frictional resistance, and permeability. It was only many years after these statements were made that any definite information commenced to accumulate as to the actual course of events.

Gaskell and Langley have suggested that vascular dilatation "in muscle and perhaps elsewhere" might be due to products of metabolism formed by the activity of the tissue, and Gaskell, later, showed that lactic acid causes dilatation of the vessels of the frog and that even in very low concentration, acids tend to produce vasodilatation. Still later, Bayliss showed that lactic acid and carbonic acid were equally effective in causing dilatation of blood-vessels. Schwarz and Lemberger, and later, Ishikawa, showed that weak acids, which are produced as a result of increased cellular activity, bring about vascular dilatation. In 1907 the evidence had accumulated to such a degree that Verworn formulated the rule that "the increase of the blood-supply in a functionally active organ must be based on a physical self-regulation which takes place as a result of the fact that metabolic products of the tissue cells influence the cells of the vessel-walls in that part so that the vessels dilate and more lymph is formed."

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* In the following pages I have attempted to correlate a considerable amount of experimental data which has accumulated on the subject of vascular dilatation.

In 1912, Starling said that the great increase in the blood-flow through muscles during muscular exercise is probably brought about largely by chemical means. "It has been shown," he said, that "the presence of blood containing lactic acid or carbon dioxid causes a marked dilatation of the blood-vessels of a limb." Hooker called attention to the fact that carbon dioxid, in minimal effective amounts, always relaxes vascular muscle. Still more recently Markwalder and Starling have shown experimentally that carbon dioxid is directly effective in producing dilatation of the coronary arteries and of the heart itself. They have also shown that "the most potent agent in causing dilatation of the coronary vessels is nonvolatile metabolites produced by the heart muscle.[1]

It seems possible that the vascular dilatation of inflammation is merely an exaggeration of a normal process and that the differences which exist between the two are due to variations in the duration of the circumstances which condition the reaction, and in the intensity of the reaction. The matter may be stated in this way: When sufficient chemical damage is done to the vessel-walls to produce a dilatation of a certain degree, the same influence which conditions the dilatation produces other changes in the vessel-walls which permit of exudation. In other words, the dilatation is merely the expression of the action of influences which are acting, in point of time and intensity, beyond the physiologic limits. Under physiologic conditions the blood-flow is increased during the dilatation. Under abnormal conditions it is first increased and then slowed. It is only when the point of slowing beyond normal limits is reached that the process becomes pathologic. Under physiologic circumstances an increase of metabolites causes dilatation, and this effect is due to changes in the vessel-walls which make possible a more rapid flow of blood through the vessels, and an increased oxygen delivery to the tissues, together with increased water transport (as is shown by the increased lymph-flow). In inflammation the dilatation is more marked, is less transient, the blood-stream is eventually slowed, and, beside an increased water transport, there is also a movement of blood-cells which follow the stream of water through the vessel-walls.

Perhaps this may be stated as follows: After an injury to any organ or tissue the local conditions are such that increased metabolic activity is required. There is more than the physiologic amount of useless material to be removed. Some of this must be so changed, chemically, that it can be used as food by neighboring cells. Useless material must be carried away to the sewers of the tissues—largely the lymphatics. To do this work the healthy tissue-cells must increase their activities, and, as a result of this, there must be a local increase of metabolic end-products (metabolites), including carbon dioxid and other substances which latter depend partially on the tissue involved. Any disturbance of equilibrium in the tissues produces profound variations in the chemical activities of the cells, with the result that they overproduce substances which, reacting on the intracellular and intercellular substances, change their physical state. Even the movements of migratory cells are modified under such circumstances. It is such changes in chemical activity which lead to increased production of carbonic acid and lactic acid, which, as has been shown, produce vasodilatation.

Many writers, and most recently and most convincingly, Martin Fischer, have shown how acids influence water absorption and secretion. When tissue is destroyed and when metabolism is increased an accumulation of acids tends to occur. The presence of acid causes swelling of the protoplasm of all the cells in the zone of action. Vascular and extravascular cells and intracellular substance are alike involved. This swelling of the colloidal substances produces several effects: it leads to a decrease in tone of the musculature of the blood-vessels, and it increases the viscosity of the endothelium.[2] The loss of tone is the important factor in the dilatation of the vessels, for were the tone to remain normal it is probable that no more than a very transient dilatation would take place in any vessel possessing a muscular coat. A transient dilatation is a physiologic process. Loss of muscular tone depends, apparently, on physicochemical conditions in the muscle-fibers which render them less ready to contract. It amounts to fatigue, and is quite analogous to the loss of cardiac tone produced by fatigue of the myocardium, which results in cardiac dilatation. (After all, the heart is merely a modified blood-vessel so that what is true for other parts of the circulation should be equally true for it.) A fatigued muscle—cardiac, vascular, or skeletal—is more easily stretched than a normal one. It seems then, in the heart as in the blood-vessels, that accumulation of metabolites or lack of oxygen leads to conditions which are analogous to fatigue, and when in this condition the muscle-fibers are capable of being stretched by a normal blood-pressure or even by one which is lower than normal.

Dilatation of blood-vessels is due then to physical and chemical changes in the musculature which are produced by deficient oxidation and accumulation of metabolites including carbon dioxid. Normally this dilatation is more or less transient and is unassociated with exudation. In inflammation it is more or less permanent and is associated with exudation.

Following dilatation, in inflammation, the blood-stream becomes slower than it normally is in the absence of the inflammatory process. For many years this phenomenon has been attributed to increased frictional resistance between the blood (particularly the blood-cells) and the vessel-walls. It has been said, for instance, that the leukocytes act as though they were sticky. And yet no satisfactory explanation has been used to account for this stickiness. Still, it seems, the accumulated evidence makes it seem possible to discuss this phenomenon in more fundamental terms than was formerly possible, and to apply the physicochemical facts of dilatation to this question of slowing of the blood-stream.

In studying this phenomenon (of slowing) under the microscope one of the earliest things noticed is a moderate swelling of the endothelial cells of the capillaries, a swelling which resembles in some respects that seen when one adds a drop of dilute acetic acid to a suspension of cells of any origin. This endothelial swelling precedes, though briefly, the slowing. Somewhat later the blood-cells themselves begin to swell, and when both these phenomena of swelling are noticeable the stream has already begun to slow. This swelling is due to the presence of acids, which, as is well known, cause swelling of the colloidal substances of the tissues, including the intercellular substances. It is entirely possible that other substances than acids (urea?) may produce it. However that may be, it has been shown by many writers that the various acids which occur normally and pathologically in the tissues, are active in this respect. It seems to be true that in simple edema the swelling is due to the presence of various acids.[3] Bechhold says that edema fluid from which the carbon dioxid is removed is acid to phenolphthalein, and Strassburg and Ewald had previously shown that the carbonic acid content of edema fluid is higher than that of venous blood. Moreover, Hoppe-Seyler found, in similar fluids, valerianic, succinic, butyric and lactic acids. If this is true in simple edema fluids it is certainly equally true of the liquids present in such an abnormal process as inflammation, in which metabolism is modified to a greater degree. We should expect to find the same acids present in greater amounts, and we might expect to find others also, for instance, beta-oxybutyric and aceto-acetic acids.

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[1] Kubota (Mitt. med. Gesellsch. Tokio, 1913, xxvii, No. 21) has recently said that the vascular dilatation occurring as a result of stimulation of the vasodilators is dependent on an increase in acidity in the products of metabolism (Ztschr. f. Biochem. u. Biophys., 1914, xvi, 194.)

[2] It is of course obvious that the question of viscosity in this connection is an extremely complicated one. Nevertheless, there is evidence that variations in acidity or alkalinity produce increases of viscosity in blood-serum and, therefore, in the tissue (cellular) colloids.

Many writers have shown that increases of carbon dioxid or decreases in oxygen in the blood are productive of cellular swelling. Limbeck says that the volume of the blood-corpuscles varies according to the carbon dioxid content. Koranyi and Bence commented on the fact that, in the presence of carbon dioxid, the blood-corpuscles take up water from the serum, and, recently, L. F. Henderson has stated the modern conception of the normal influence of carbon dioxid on the blood-cells. He says:

> In each complete cycle of the circulation there occurs a complete cycle of changes between the constituents of the corpuscles and the plasma. As the blood flows through the tissues and receives $CO_2$, the volume of the red blood-corpuscles increases from entrance of water coming from the plasma, chlorin simultaneously passing in the same direction. In the lungs, with the escape of carbonic acid, the process is reversed. There seems to be no doubt that this process is largely dependent on changes in reaction, accompanying changes in the concentration of carbonic acid.

If this be true in the normal process, the same features of cellular swelling must be more marked in the abnormal, especially since the latter are largely accentuations of the former.

It must be apparent that, aside from any changes in consistency, this cellular swelling must produce a purely mechanical effect on the rate of the blood-flow. For if endothelial cells and blood-corpuscles increase in volume then the blood-stream must be interfered with to at least a certain minimal extent. This is of some importance, because a maximum of oxygen is needed at the point of injury, and any decrease in the rate of the blood-flow will diminish the supply of that element. Araki and Zillessen have shown that every loss of oxygen results in increased production of acid.

There is abundant evidence that carbonic and other acids have other effects than mere increase in volume of the cells. The one which interests us at this point is viscosity changes. Bechhold says, in this connection, that acids bring about increased viscosity of albumin. He says, further, that the ionization of albumin is increased by acids, and that the albumin ion shows a higher viscosity than albumin in the undissociated state. Hoeber has brought evidence that increases of carbon dioxid in the blood run parallel with hydrogen-ion concentration, and Pauli and Handovsky have reported that ionization of serum albumin depends on hydrogen-ion concentration, which in its turn is the cause of increased viscosity. Adam found that saturation of the blood with carbon dioxid produces a maximum increase in viscosity, and he further found that if the carbon dioxid were replaced by oxygen, the viscosity would sink to a minimum, and again increase with carbon dioxid additions. Koranyi and Bence likewise showed that the viscosity runs parallel with the carbon dioxid content. Blunschy said that ventilation of the blood reduces viscosity and reported that although seven hours of skiing lowered the viscosity of the blood 14 per cent. one and a quarter hours of forced exercise in a closed room raised it 4.5 per cent. He also found that venous blood-corpuscles exhibited a higher viscosity than arterial ones. Determann and Hess demonstrated the fact that the blood was increased in viscosity during stasis. W. Ostwald states that a pure albumin, prepared from blood, reacts exceedingly promptly to small traces of acids. He has demonstrated that in albumin solutions the changes are enormous. For instance, an addition of 0.015 normal hydrochloric acid increases the viscosity from 1.0623 to 1.2937. He further says that the maximum increase occurs with 0.02 normal hydrochloric acid. With other acids the maximum is higher.

There are numbers of other citations that might be used in this connection. Those given will, however, suffice for the point. They show, I believe, that decrease in the rapidity of the blood-stream in inflammation is the result of two factors: increase in volume of the cells of the blood and of the endothelial cells lining the blood-vessels, and increased viscosity of the blood as a whole. It has been suggested that both these factors depend on abnormal production of carbonic and other acids.

During exercise, in the normal individual, the carbon dioxid production runs above the normal during rest. This increase is sufficient, as has been shown, to produce a transient vascular dilatation by which the oxygen supply is increased sufficiently to take care of the moderate acid increase, and to counteract it. In the inflammatory process, however, the acid accumulation is too rapid to allow of immediate drainage. The cells are rapidly affected, and the circulation is slowed. This results in still greater disturbances of oxidation and other acids than carbonic acid accumulate. These acids produce still greater changes in viscosity and swelling and eventually the circulation is completely stopped. The experiments of Amberg and Knox, Amberg, Loevenhart and Grove, and Loevenhart and Eyster, support this conception. Loevenhart and Grove produced evidence that the oxygen in such compounds as sodium iodosobenzoate and iodoxybenzoate is physiologically active and capable of being utilized by the body for purposes of physiologic oxidations, and, later, Loevenhart and Eyster showed that those substances give up some of their chemically active oxygen in passing through the tissues. Amberg and Knox showed that such substances reduce the inflammatory reaction when they are introduced into the circulation.

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[3] If the recent statements of Michaelis (Deutsch. med. Wchnschr., 1914, No. 40, p. 1170) holds, then there is some basis for believing that normal water transport from the capillaries is a matter of variations in acidity. Michaelis says that while the blood maintains an exact grade of alkalinity ($H = 0.45 \times 10^{-7}$) the tissues are neutral ($H = 1.5 \times 10^{-7}$).

The basic fact in all this seems to be the relative (eventually absolute) lack of oxygen, a fact to which Cohnheim first called attention when he said that the slowing of the blood-stream was proportional to the decrease of the oxygen supply.

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# AN UNUSUAL FORM OF BIRTH PALSY

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During a difficult or protracted labor and especially in instrumental deliveries, nerve plexuses or individual nerves may suffer more or less considerable damage. Palsies of limbs or segments of limbs follow. The most frequent occurrence is the well-known Duchenne-Erb or upper arm type of paralysis. Here the injury is done to the brachial plexus either by direct pressure with the obstetrician's finger or hook which attempts to bring out of the pelvis the overextended arms or else by pressure with the blade of the forceps. The damage is done either in the axilla or in the supraclavicular region. The forced elevation of the arm within the pelvis may *per se* produce a traction on the brachial plexus or a compression of some of the roots of the latter between the drawn back clavicle and the transverse processes of the cervical vertebrae. The following muscles are involved in this form of birth palsy: deltoid, biceps, brachialis anticus, supinators, supraspinatus and infraspinatus muscles. Their palsy is dependent on the involvement of the roots of the fifth and sixth cervical nerves. The position of the arm is so characteristic that its recognition presents no difficulty. The humerus is rotated inward, forearm extended and hand pronated.

Besides this classical type of palsy occurring during birth other forms have been observed.

The *inferior plexus palsy type,* which is characterized by paralysis of the flexors of the hand, thenar, hypothenar and interossei muscles, and also by oculopupillary symptoms (myosis, retraction of the eyeballs, narrowness of the palpebral fissure), is caused by a lesion of the seventh and eighth cervical and first dorsal roots. This form of paralysis may occur during birth.

The *complex type,* namely, a combination of the upper and lower forms of brachial palsies with the predominance of one over the other, and extension to neighboring roots have also been observed in instrumental deliveries.

Individual nerves may be injured in difficult deliveries.

A lesion of the *circumflex nerve* and consequently paralysis of the deltoid muscle alone have been recorded.

*Bilateral palsy* was seen by Jolly. In such cases the upper arm is usually spared. The forearm and hand, and also the pectoralis major, latissimus dorsi and triceps are involved. The fifth and sixth cervical roots are evidently intact.

The following case is an example of still another variety of obstetric palsy which appears to be an unusual occurrence, as in the literature at my disposal I was unable to find a similar case:

The infant whose photograph is here appended was born at term but with great difficulty. Dr. Charles Mazer, through whose courtesy I was able to study this case, reports that there was a breach presentation and forceps was applied in the mento-occipital position for a final delivery of the head.

The peculiar feature about the palsy is that first of all it is bilateral, symmetrical and identical in the two forearms. The paralysis is confined to the flexors of the wrists exclusively. When the child is pricked with a pin or when she cries, the arms are raised perfectly. She is seen to be able to elevate, abduct, adduct, rotate, pronate and supinate the arms and forearms. The wrists remain extended in all these movements. The fingers are all flexed as in a normal condition. On the photograph the right arm is seen raised and the elbow flexed during the act of crying when the right upper limb was pricked with a pin.

In order to obtain perfect extension of the wrists, namely, equally on the radial and ulnar sides, two muscles which control the flexion of the wrist must give way to the extensors. They are: the flexor carpi ulnaris and the flexor carpi radialis. The first is innervated by the ulnar nerve and the second by the median nerve.

As the fingers remain flexed in spite of the extension of the wrist, it is evident that there is integrity of the flexors digitorum sublimis and profundus which control the flexor function of the second and third phalanges, also of the interossei muscles which flex the first phalanx.

The nerves supplying the flexors carpi arise in the upper third of the forearm on the ulnar and radial sides. Is it plausible that an injury, such as compression or contusion, should occur at that particular level and produce a lesion of one special nerve filament without involving other closely located nerves and muscles? The manipulations during an artificial delivery when the arms are elevated in the pelvis are such that pressure is exercised directly on the brachial plexus, or else the arms may be so overstretched that the damage produced in the plexus may be caused by overdistention of the latter. It stands to reason that a lesion of any of the branches of the brachial plexus is apt to be involved. It depends on the size of the area pressed on. The position of the arms in the pelvis at a given moment may be such as any manipulation from outside may involve a large or a small nerve of one or another bundle.

In the case recorded here evidently the two branches of the median and ulnar nerves supplying the flexor carpi radialis and flexor carpi ulnaris, respectively, became involved during the accoucheur's manipulation. The damage was done to those filaments of the seventh and eighth cervical roots which enter into the formation of the ulnar and median nerves but which become separated from the main trunks at the level of the upper third of the forearm to enter the corresponding muscles.

The case is interesting from several points of view:

1. The unusual seat of the palsy. I found no similar occurrence in the literature at my disposal. It adds, therefore, a new variety of birth palsy to those mentioned above.
2. The bilaterality of the palsy and its symmetrical distribution.
3. The strictly precise limitation of the lesion to the nerve filaments supplying two muscles having identical function on the radial and ulnar sides, namely, flexor carpi ulnaris and flexor carpi radialis.

1812 Spruce Street.

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**Preventogram.**—A few days' precautions on your part, in case your child is ill, may save the life of your neighbor's child.—Pittsburgh *City's Health.*

# EARLY RECOGNITION OF PULMONARY TUBERCULOSIS BY STUDY OF LYMPHOCYTIC PICTURE AND ALBUMIN CONTENTS OF SPUTUM

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Since the discovery of the tubercle bacillus by Robert Koch in 1882, the examination of the sputum of a suspected tuberculous individual has rested chiefly in demonstrating either the presence or absence of the bacillus. In many cases a diagnosis has been based entirely on these findings, more particularly in cases of doubtful physical signs. It is now well known that a sputum negative as to Koch's bacillus does not exclude pulmonary tuberculosis even in the presence of either negative or positive physical findings.

In recent years much work has been done to aid the diagnostician in arriving earlier at more definite conclusions, and this labor has demonstrated that much can be learned from a study of the various components of the sputum both chemically and microscopically, particularly at a time when the sputum is supposed to be still free from the bacillus and the tuberculous process is yet in its preincipiency or has not progressed far beyond that stage. It is now generally accepted that the presence of the albumin content in the sputum is in itself not conclusive evidence of a pulmonary tuberculous process in the absence of tubercle bacilli. It is, nevertheless, in a great many instances a determining factor in sputum analysis.

In combining the chemical examination of the sputum for the presence of albumin with the microscopic study of the picture presenting in the field, but in the absence of tubercle bacilli, we may arrive in many cases of suspected tuberculosis at a more definite conclusion and earlier than is possible by either method alone. Attention was first called to the increase of a cellular element in the sputum as an early sign of a tuberculous pulmonary infection by Wolff-Eisner in 1907. He directed observation to a noticeable increase in the small mononuclear lymphocytes in the sputum in many cases of beginning tuberculous pulmonary disease and to the fact that the total increase of these small cells may number all the way from 33 to 90 per cent.

The presence of the small mononuclear lymphocytes in body fluids other than sputa is considered fairly clear evidence of the presence of an active tuberculous process; and this all goes to stamp tuberculosis per se as a lymphocytic disease. In cytodiagnosis it is a great aid in determining if the aspirated fluid is of a tuberculous nature, and a preponderance of these small lymphocytic cells in the fluid is always considered as being from a tuberculous source. For instance, in an acute pleural exudate showing more than 50 per cent. of lymphocytes the diagnosis of a tuberculous infection is justifiable, and in a meningeal exudate of a tuberculous nature 90 per cent. of all cells are mainly lymphocytes. Again, in a tuberculous peritonitis, which is usually of mixed infection, the exudate contains many lymphocytes, degenerated polynuclears and mononuclear leukocytes; still the frequency of the small lymphocytes points to a tuberculous nature and the same undoubtedly applies to sputum as being that derived from a tuberculous source.

In a suspected, beginning pulmonary tuberculosis the presence of a lymphocytic picture of the sputum under the microscope should stimulate a persistent search for the bacillus, and although they may be so few that they may escape detection entirely even after repeated examinations, such lymphocytic sputum, if most carefully observed at frequent intervals and over long periods of time, will sooner or later demonstrate the presence of Koch's bacillus. If now with such a microscopic observation we combine a chemical sputum analysis for the presence of albumin according to the methods advanced by Roger and Levy-Valanci and many other competent and accurate observers, we may arrive at a positive conclusion and clinch our diagnosis away in advance of being able to demonstrate the presence of the tubercle bacillus.

One hundred and ninety-nine samples of sputa obtained from suspected tuberculous individuals were very thoroughly examined; in nearly all cases a most careful search was first made for the presence or absence of the Koch bacillus; then in addition a painstaking study of the presenting microscopic sputum picture as to the preponderance of the small corpuscular element, and lastly this was verified by a chemical examination for the presence or absence of the albumin content. Out of this total of 199 sputa examinations, 53 were bacilli positive and were designated as sputa obtained from positively tuberculous individuals; 40 out of the 53 also gave in addition a positive albumin test, 2 giving a negative index, and in 11 the albumin test was made but not recorded. Out of this number, 40 also gave in addition a distinct lymphocytic picture, showing a preponderance in every field of the small mononuclear cells; in 8 lymphocytosis was absent, that is, no noticeable increase in small cells; 2 gave a distinct leukocytosis and in 3 no record was filed.

If in this way we can dispose of 53 samples of sputa as positive, as shown by the presence of the tubercle bacillus, irrespective of the presence of the albumin content, or of the lymphocytic picture, there still remain 146 specimens which are bacilli negative and which should be classified by further observation as either positively or negatively tuberculous sputa. Out of this number of 146 sputa examinations in which no bacilli were found on careful and repeated tests, 40 gave a distinct lymphocytic picture and an albumin content in variable amounts. Can these 40 specimens be considered sputa procured from tuberculous individuals in the absence of positive bacilli findings? If lymphocytosis is as characteristic of tuberculous sputa as it is of the serous effusions in the tuberculous; in fact, if tuberculosis is a lymphocytic disease, then these 40 sputa samples can be considered as expectorated material obtained from presumably tuberculous subjects, all these examinations in each case strengthened and controlled by a positive albumin content. Now 34 more sputa examinations out of the same series showing the tubercle bacillus absent gave a negative lymphocytic picture under the microscope, but a positive albumin content in variable amounts by chemical analysis, whereas 17 others, also bacilli negative, were also negative for albumin but positive for the mononuclear cells, showing a lymphocytosis of more than 50 per cent. Again, can these 17 sputa samples with a positive lymphocytic content, but negative for albumin, also be considered samples of expectorations secured from tuberculous subjects?

It is much more in evidence that sputa presenting a distinctly lymphocytic picture with a positive albumin content in the absence of tubercle bacilli speak very probably for tuberculosis, but in the absence of albumin in an otherwise positive lymphocytic sputum the evidence is not quite so conclusive and yet it points very strongly as being of tuberculous origin.

It may be of interest at this point to refer to a few case histories in which the sputum examination under the microscope gave a field in which the small mononuclear lymphocytes predominated, but with an absence of the tubercle bacillus or only an occasional one after many fields had been scrutinized, all controlled by a positive albumin content.

Case 1.—Miss F., aged 24, came under my care Feb. 14, 1912, a fairly well-developed girl, general appearance good, complaining of a slight pain in the back and a tired feeling, giving the following family history: Father aged 61 in good health, mother aged 60, well. Three sisters and one brother living and well. One brother died four years ago at the age of 30 from stomach disease and another died ten years ago at the age of 19 from some pulmonary disease, very probably tuberculosis. The patient states that she has never been sick excepting in childhood at the age of 3 when she had a severe attack of whooping-cough. As stated above, the patient's appearance was good, fairly well-nourished, skin normal, no cachexia. Physical examination on percussion gave a slightly higher note in the interscapular region to the left of the spine extending upward toward the left apex; over this area the resonance was slightly impaired and the whispering voice somewhat intensified; anteriorly above and below the clavicle the note was also somewhat higher; no râles, pulse 94, temperature 98.8, time 4 p. m. left pupil dilated; systolic blood-pressure, sitting, 100.

Diagnosis: Incipient pulmonary tuberculosis. Sputum Examination: In looking over many fields an occasional tubercle bacillus was found, but of all the most characteristic feature was the pronounced lymphocytic picture. Every separate field was full of the small mononuclears averaging about 90 per cent. of the total cellular element, and in addition by chemical examination the sputum was found to be massively albuminous. Patient succumbed in January, 1914, from generalized tuberculosis.

Case 2.—Mrs. McC. Physical examination warranted a diagnosis of pulmonary tuberculosis first stage and examination of the sputum elicited the following facts: Owing to the tenacious consistency of the sputum, it was necessary to mix it with an equal amount of distilled water, and from this diluted expectorated material, smears were prepared. All these smears when stained gave a most distinctly lymphocytic picture, the small mononuclears being everywhere greatly in excess. In looking over each field very carefully, no tubercle bacilli were observed, when in the tenth field a single bacillus, morphologically and tinctorially, was seen. Now by actual count 250 more fields were most carefully scrutinized, but not another single bacillus could be demonstrated, and besides the preponderance of small mononuclear lymphocytes, the sputum was found to be massively albuminous. I now began to entertain some doubt if I had really seen a bacillus. Might not that have been an artifact? To satisfy myself on that point, I submitted some of the sputa to the antiformin method of examination. To 10 c.c. of the diluted sputum, I added drop by drop pure antiformin until a clear solution was obtained; then 8 c.c. of 95 per cent. alcohol were added and the whole centrifuged and from this sediment a smear was prepared in which I found five distinct groups of bacilli with from four to six bacilli in each group.

Case 3.—Mr. W., formerly of this city but now residing in California, consulted me, June 25, 1912. Patient was in fairly good health, doing an office business and at his desk every day. He had a slight hacking cough of about a month's duration and he requested that an examination be made and that a prescription be given to stop the cough. Pulse was 86, temperature 98. Physical examination gave slight evidence of a bronchitis. The sputum examination did not show a single bacillus in a careful scrutiny of innumerable fields, but everywhere there was a distinct lymphocytosis of the small mononuclears, besides moderate amount of albumin. Eight days after I injected 1 mg. Koch's tuberculin O. T. intracutaneously, which was followed by a most positive reaction. A sputum examination made from expectoration secured two days after this positive finding gave the same lymphocytic picture as in the sputum examined ten days before, with the same moderate amount of albumin; but in addition many tubercle bacilli, chiefly in groups, were demonstrable.

Case 4.—Miss V., aged 19, living out of town, first consulted me March 21, 1914. Physical examination permitted the diagnosis of pulmonary tuberculosis, slightly past incipiency. At that time the clinical picture was at variance with the physical findings, the patient being apparently a very well-nourished girl, but now the case is very active. At the first visit the sputum examination showed a most distinct predominance of the small mononuclears and in addition a moderate amount of albumin. This in itself was so pronounced and positive that the sputum was labeled as that obtained from a positively tuberculous person. After long and careful search I was finally rewarded by finding a single bacillus. By the antiformin method, I was able to demonstrate positively the presence of the tubercle bacillus; six were found in all, four singly and two in a group.

Case 5.—Miss M., nurse, aged 32, came first under my care in June, 1913. There were no cough, no pain and no loss in weight, only a little tired feeling. Pulse was 88, temperature 98.4. Physical Examination: Apex, right, posterior muscle spasm, harsh breath sounds, some sonorous râles; anteriorly right, fremitus distinctly increased, prolonged expiration, harsh breathing and a few fine inspiratory râles. A dry pleurisy developed which under immobilization of the chest wall with adhesive straps gradually subsided. Diagnosis: Incipient pulmonary tuberculosis with a secondary pleurisy. Sputum examinations at that time gave the following findings: Not a single bacillus could be found after examination of a countless number of fields, but a distinctively lymphocytic picture was everywhere plainly noticeable, and besides a moderate amount of albumin was present.

The parallelism between the lymphocytic sputum picture on the one hand, and the positive albumin content of the expectorations on the other, was so evident in all of these histories, and in nearly every one of the above-conducted chemical and microscopic examinations, that a fairly positive diagnosis of pulmonary tuberculosis could truthfully be made on these findings alone.

On the remaining sputum examinations, 55 in all, which were bacilli negative, the following observations were made: Seventeen did not show tubercle bacilli, albumin or lymphocytosis; consequently they were all labeled as sputum samples secured from positively non-tuberculous persons. In 36 of the remaining 38 specimens, a negative bacillus finding was recorded; of 2 no record can be found. In 4 of this series the sputum was too bloody to warrant an albumin test; in 7 others the albumin content was not recorded; the remaining all showed albumin in variable amounts, and as to the cellular constituents of the sputum of the last series, I can state that in 14 the lymphocytic picture was not clearly studied or accurately noted, in 5 a distinct leukocytosis prevailed, and the remaining showed no preponderance of either small or large lymphocytes or of leukocytes.

From these observations and studies made both chemically and microscopically on 199 samples of sputum secured from suspected tuberculous persons, it is reasonable to permit a justification of the following conclusions:

1. A sputum lymphocytosis showing under the microscope 50 per cent. or more of the small mononuclear leukocytes (lymphocytes) with a moderate amount of albumin by chemical test speaks very strongly for the presence of a pulmonary tuberculosis.

2. In preincipient or incipient cases of pulmonary tuberculosis a lymphocytic sputum is usually present with a greater or lesser albumin content; in this the tubercle bacillus may be entirely absent or only an occasional bacillus found.

3. The presence of the mononuclear lymphocyte in sputum in preponderant amounts and a positive albumin test, is simply the forerunner or near the beginning of positive findings, for the tubercle bacillus if not already present in the expectorations will soon be found.

4. In a sputum giving a lymphocytic picture in the absence of tubercle bacilli, a positive albumin content has been demonstrated; this is confirmatory evidence that the sputum is that from a person suffering from pulmonary tuberculosis, and hence:

A careful microscopic study of every sample of sputum under examination should first be made for either the presence or absence of the tubercle bacillus; if this is negative and with a preponderance of the small mononuclear leukocytes in every field with a positive albumin finding by chemical test, in moderate amount, we are justified in assuming that the source of this expectoration is that found in a positively tuberculous individual.

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# MYIASIS OF THE URINARY PASSAGES

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Myiasis is the general term applied to the occurrence of dipterous larvae in man. Though the larvae of many flies have been found, those most common are from the *Fannia scalaris*, the small fly frequently seen in the spring darting actively about under chandeliers or other pendent objects. A common name for it is "latrine fly," from its favorite resort.

This fly lays its eggs in dark, moist places, and the larvae may appear in from one to eighteen hours, depending on the warmth of the place of deposit. The larvae are full grown within from six to twelve days, but under favorable conditions, three or four weeks may elapse before they enter the pupal stage.

The literature on the subject is limited. Osler's "Practice" devotes a page to the general subject of myiasis, but does not mention its occurrence in the urinary passages. Stiles in Osler and McCrae's "System of Modern Medicine" gives up a few lines to the general subject only. The Library of the Surgeon General's Office furnishes but few titles.

Captain P. S. Lelean[1] collected a series of thirty cases. The earliest one was reported by Ambroise Paré in 1582. In most of these cases the larvae were believed to be those of the *Fannia scalaris* (formerly *Homalomyia*). He relates one remarkable case of myiasis externa. In 1842 an eminent London physician wrote as follows:

> I saw hundreds of worms escaping from the skin. The carpet was covered with them where she stood dressing. They had the power of ejecting themselves to a distance of from 12 to 20 inches.

In 1899 Lieutenant-Colonel Smith saw a dipterous larva spring 3 feet. The saltatory powers of the cheese skipper will be recalled.

Cipriani[2] reports the case of a woman vagrant, badly constipated, who passed dipterous larvae in quantities from the vagina. A rectovaginal fistula existed. Cipriani believed that the eggs had been deposited on food and hatched in the lower bowel. The hard fecal masses in the rectum had aided the larvae in producing an ulcer which had perforated the rectovaginal septum, allowing the passage of the larvae into the vagina.

Réné Chevrel[3] makes a careful analysis of all reported cases of myiasis of the urinary passages, and adds a case of his own. He concludes that only twenty such cases have been reported, six of which he regards as authentic, ten probable and four doubtful. His own case makes seven which are authentic.

He is of the opinion that while dipterous ova may be carried into the urinary passages by sounds or catheters, or in water used for irrigating, they generally are deposited about the meatus urinarius where are found the conditions favoring their growth, namely, darkness, moisture, warmth, oxygen and food, which last is furnished by a gonorrheal or other albuminoid discharge. The eggs hatch promptly and the young larvae pass into the urethra and on into the bladder in search of food. They require but little oxygen, and in the experiments carried out by Chevrel were kept under water for hours, becoming active when taken out. There is always some air in the urethra and probably in the bladder.

The contamination is favored by sleeping without cover in hot weather, flies having free access to the genitals and anal region. Women, wearing longer gowns than men, are less affected. On the other hand, women and children without proper underclothing are more liable to infection.

Chevrel's case was that of a paralytic of 55, wife of a farmer, who was left alone all day on a chair which had been converted into a commode by removing the seat and winding the framework with rags, the receptacle for the dejecta being placed on the floor and the flies being free to swarm at will about the buttocks. She passed larvae with the urine, daily, from May 19 into July.

### REPORT OF AUTHOR'S CASE

Oct. 29, 1914, H. P., man, aged 32, living on a small farm in Virginia, who had been attending my service at Emergency Hospital, brought to my office an object that he had passed with the urine, which was later identified as a larva of *Fannia scalaris*. He had voided similar objects with the urine October 19 and 28, but had not brought them to me thinking that I would laugh at him.

This man had a chronic posterior urethritis and for some months had been in the habit of urinating in a glass when at home. This glass he kept in the shed at the rear of his house, turned upside down on a shelf, and it was always rinsed after using. He had been using a small syringe of hard rubber for urethral injections and had kept this wrapped in paper and in a closed drawer, so that, apparently, the larvae could not have been in the glass, nor the eggs or larvae in the syringe.

About 8 o'clock in the morning, while digging potatoes in his garden, he was seized with an intense desire to urinate, hurried to the shed, felt something pass with the urine and found the larva in the glass. He saw no motion. I received it two hours later and it was in a perfectly fresh condition.

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[1] Lelean, P. S.: Brit. Med. Jour., 1914, i, 245.

[2] Cipriani: Il Morgagni, 1902, xliv, 384.

[3] Chevrel, René: Arch. de parasitol., 1909, No. 3.

He has seen no larvae since nor was he able to find any in the feces after diligent search.

Contamination probably took place while seated long at stool, the flies being attracted by the presence of a slight urethral discharge. That larvae were voided ten days apart would indicate that they were from different infections. The larvae had evidently penetrated the prostatic urethra, judging by the patient's sensations, though the cystoscopic findings were negative.

I believe that the patient's word may be relied on and that this may be considered the eighth authentic case of myiasis of the urinary passages.

I am indebted to Dr. L. O. Howard, entomologist of the U. S. Department of Agriculture, for the identification of the specimen and for the copy of Chevrel's article.

223 Bond Building.

# ADRENAL PRECOCITY

## PRECOCIOUS DEVELOPMENT OF THE EXTERNAL GENITALS DUE TO HYPERNEPHROMA OF THE ADRENAL CORTEX

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The case to be reported presents one of those rare conditions of childhood in which with the precocious appearance of hair on the face and pubes, and the equally precocious development of external genitals, there appears an abdominal tumor due to the growth of a hypernephroma of one adrenal body.

In an exhaustive article on this subject, with the report of one case, Jump, Beates and Babcock[1] have collected from the literature records of seventeen cases, their own case making the eighteenth. In all the cases the conditions present were verified by a more or less complete necropsy. Other cases they find reported, but without necropsy, so that the diagnosis is in doubt. In one case necropsy showed both adrenals apparently normal, but the necropsy was brief, and the examination evidently superficial. Of the eighteen cases reported, fourteen were girls and four boys. In all there was an overgrowth of hair on the pubes, in fourteen an overgrowth on the face and in five in the axilla. There was overgrowth of the body, due to fat or muscular development, in all; facial acne with rough skin in some; precocious menstruation and development of the breasts in only one. Pigmentation of the skin was present in many, but in none anything like Addison's disease. Some showed mental precocity, but the majority were dull. There was a tendency in all to the development of the male characteristics at the expense of the female in the girls, and an intensification of the male characteristics in the boys. In all of the cases the tumor was found to involve the adrenal cortex, and in no case was a tumor of the medulla alone found associated with this precocious development.

As showing the peculiar change in sexual development, one case is referred to of a girl of 16 whose menstruation began when she was 15 years old and ceased after one year. At this time she had developed a mustache and beard, and hair on her thorax. She became fat and her voice became masculine.

Of the eighteen cases reported, all patients died before they were 16 years old. Some were operated on and died shortly after. In others the growth was inoperable when the patient came under observation. Because of the hopeless character of the disease without intervention, the authors properly advise exploratory operation in the early stages of the development of the disease, hoping that the removal of the adrenal at an early stage might result in a cure.

### REPORT OF CASE

T. R. F., boy, aged 5 years and 10 months, was referred to me July 6, 1914, by Dr. E. A. Moore, the family physician. In his letter arranging for the consultation the doctor referred to the precocious sexual development and to the presence of an abdominal tumor, the removal of which was desired. In reply to the letter I suggested that the case belonged to the rare class described in the journal referred to, and that it would probably be found inoperable. A few days later the patient came in, accompanied by his father and an uncle, Dr. N. F. Mason of Columbus. He was rather underdeveloped when born. The father thought the sexual development commenced when he was about 18 months old. He commenced to talk and walk at 9 months, and at 10 months he could talk well and "run like a partridge." After that his mental development ceased to keep pace with his physical. When he was 3 years old there was hair on the pubes and face, and he had a voice like a man, according to Dr. Mason. He was active and vigorous, and was quite useful in running errands. Probably in December, 1913, it was noticed that his abdomen was getting larger, and this enlargement continued and became quite rapid. The surface of the body became roughened, and covered more or less with sores, particularly on the chest and back, and acne developed on the face. The patient in height and weight was about normal for his years. The facial expression, however, seemed to be that of a man of 35 or 40. He had been shaving for some time. The face was badly marked with acne. There were great crusts over the upper chest and back. The chest looked very much as though it had been burned by Roentgen rays. The genital organs were apparently those of an adult, except that the testicles were small and not completely descended.

There was a large tumor in the abdomen, this being most pronounced on the left side. It was extensively adherent, and somewhat nodular. There seemed to be a second mass over toward the right, but no connection between the two could be determined. The legs were decidedly bowed, but this the father attributed to his walking so early. The child could utter some words, the voice being that of an adult, but he was mentally a mere child.

As the tumor was large and extensively adherent, and the child's general condition poor, it was evident that no operation should be considered and the child was sent home. While he was under my observation the urine was obtained, which was normal, though containing a faint trace of albumin. Blood-examination revealed; hemoglobin, 85 per cent.; red cells, 4,480,000; leukocytes, 14,000; polynuclears, 81 per cent.; small lymphocytes, 13.6 per cent.; large lymphocytes, 5.4 per cent.

The child's general condition remained about the same after his return home, but with gradual failure, and he died the morning of August 29. The necropsy was made by Drs. E. R. Shilling, pathologist to Grant Hospital, and H. M. Brundage, pathologist to Mt. Carmel Hospital, who reported as follows:

"Height 42 inches; chest measurement 24 inches, waist measurement 32 inches. Facial expression of a man of 40. Penis 4 inches long, with marked development of pubic hair. Testicles in the canal. Feet and legs enlarged. Linea albicantia distributed over the abdomen and around the ankles. The brain was removed, and appeared normal in every way. Pituitary body appeared normal, and was removed for sections. Thyroid and parathyroids small but otherwise normal; were saved for sections. In the abdomen was a large tumor, lying between the layers of the mesentery of the descending colon. On removal could peel the kidney out of its capsule and easily traced its vessels and the ureter along the capsule of the tumor. The kidney was evidently normal and functionating. The tumor weighed about 15 pounds, and measured 12½ by 9 inches with numerous small nodules protruding. On section the mass was very soft, well marked off into medulla and cortex, its origin evidently the left suprarenal gland. Right kidney normal, but its suprarenal gland was about the size of a walnut, red and friable. The liver was full of metastatic nodules. Other organs of the abdomen negative. The lungs contained numerous metastatic nodules. Other organs of the chest normal. Pieces of the tumor were removed for section."

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[1] Jump, H. D.; Beates, Henry, Jr., and Babcock, W. W.: Precocious Development of the External Genitals Due to Hypernephroma of the Adrenal Cortex, Am. Jour. Med. Sc., 1914, cxlvii, 568.

Microscopic examination of the tissues by Drs. Coons, Shilling and Brundage showed the pituitary body and the pineal gland to be normal; also the thyroids and parathyroids. The kidney showed a chronic diffuse parenchymatous nephritis. The testicles were normal for a boy of his age. The large abdominal tumor was typical of rapidly growing hypernephroma, involving the adrenal cortex. The right adrenal showed a beginning hypernephroma similar to the left.

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# A SIMPLIFIED METHOD FOR THE INTRAMENINGEAL INJECTION OF NEOSALVARSAN IN SYPHILIS OF THE NERVOUS SYSTEM [*]

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Since Swift and Ellis[1] published the technic and the results of their method of introducing salvarsanized serum into the subdural lumbar spaces, there have been a number of reports from those using the original method and several modifications of the method, notably by McCaskey,[2] Fordyce[3] and Pilsbury.[4] There is no question that the technic is elaborate, not altogether free from danger (Lorenz[5]) and it gives no idea of the amount of salvarsan used. It is not known also what the combination of salvarsan and serum is which is injected.

Swift and Ellis found neosalvarsan solutions less irritating to monkeys when given subdurally. We found the same relation between the two drugs in dogs and in rabbits. Salvarsan, first used by us in very dilute solution, has been put aside for neosalvarsan, which seems far preferable for intrameningeal use.

Ravaut[6] gives neosalvarsan in hypertonic solution. He uses 0.3 gm. in 5 c.c. distilled water, which gives a solution such that 1 drop equals 1 minim. Of this he gives from 3 to 12 drops by means of a special syringe, diluting it with spinal fluid. This seems an unnecessary waste of a rather expensive drug, especially if only one injection is to be given. Wile,[7] in this country, has used Ravaut's technic with some success.

After a year's experience with the method about to be described, I feel justified in presenting it and recommending it. Ravaut's work was unknown to me until several months after we had used the method at the Milwaukee County Hospital and in private cases. In my hands the method has been most satisfactory, and, I believe, fulfils the requirements for simplicity and rationality of procedure. The patients, especially tabetics, often have an exacerbation of pains in the legs or of girdle pains, but these pass off over night, only rarely necessitating a hypodermic of morphin.

There can be no doubt that in order to render the maximum service to patients, treatment must not be so complicated that only a few exceptionally trained men in conjunction with well-equipped laboratories can administer it. It must ever be our aim to simplify therapeutic procedures so that many will be able to benefit thereby. The point in the treatment of cerebrospinal syphilis is to get the spirillicide drug to the infecting agent in the spinal cord and brain with the least harm to the patient but the greatest harm to the parasite.

It has always been our custom to inject neosalvarsan intravenously and intrameningeally at the same sitting. We have never given the latter alone except in one case of negatively reacting tabes in order to control the lightning pains.

## TECHNIC

We require freshly sterilized 0.5 per cent. saline solution made from freshly distilled water; a sterile 25-c.c. glass-stoppered cylinder; a sterile 1-c.c. pipet and 10-c.c. pipet graduated in 0.1 c.c.; two sterile medicine glasses; a 20-c.c. sterile Luer syringe, with needle; a 10-c.c. Record syringe, sterile; a spinal puncture needle with stylet into which the end of the Record syringe fits, sterile; some form of arm constrictor, sterile sponges, towels, alcohol and iodin.

Nine-tenths gm. neosalvarsan is dissolved in 18 c.c. of the saline solution. One c.c. of this equals 0.05 gm. One c.c. of this to 9 c.c. saline is Solution 2. Four c.c. of Solution 2 to 6 c.c. saline is Solution 3. One c.c. of this contains 2 mg. of neosalvarsan. With all the materials and glassware ready these solutions may be prepared at the bedside.

With the 20-c.c. syringe the 17 c.c. neosalvarsan is given intravenously. The patient is then turned over on his side. Before the spinal needle is introduced 1, 2 or 3 c.c. of Solution 3 is drawn into the Record syringe. I usually do not give more than 2 c.c. or 4 mg. The spinal puncture is then made and as soon as the fluid is flowing freely the syringe containing the neosalvarsan is fitted to the head of the needle and gentle suction made until the syringe is full of spinal fluid. After holding a brief time the whole is *very* slowly and at the least amount of pressure injected into the meninges through the needle *in situ*.

(Note: Should more than 4 mg. be used the dilution can be made stronger as required, although 6 mg. has been my maximum dose and from 2 to 4 mg. the usual dose.)

## ADVANTAGES

We claim for this method: (1) maximum of safety; there is no increase in pressure, no introduction of a large amount of foreign material, no shock from differences in temperature of the spinal fluid and the solution injected; (2) absolute control of dosage.

Several times a blood-vessel has been struck and the spinal fluid has been quite red in color. The injection of this blood-stained fluid has not resulted in one particle of harm as far as we could determine.

Injections are given one to two weeks apart, and the results and number of injections are controlled by serobiologic reactions of blood and spinal fluid.

141 Wisconsin Street.

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[*] From the Medical Clinic of the Milwaukee County Hospital.

1. Swift, H. M., and Ellis, A. W. M.: New York Med. Jour., 1912, xcvi, 53; The Treatment of Syphilitic Affections of the Central Nervous System with Especial Reference to the Use of Intraspinous Injections, Arch. Int. Med., September, 1913, p. 331.
2. McCaskey, G. W.: The Autoserosalvarsan Treatment of Syphilis of the Central Nervous System, The Journal A. M. A., May 30, 1914, p. 1709.
3. Fordyce, J.: The Treatment of Syphilis of the Nervous System, The Journal A. M. A., Aug. 15, 1914, p. 552.
4. Pilsbury, L. B.: Paresis Patients Treated with Intraspinal Injections of Salvarsanized Serum, The Journal A. M. A., Oct. 10, 1914, p. 1274.
5. Lorenz, W. F.: Wisconsin Med. Jour., 1913, xii, 171.
6. Ravaut: Quoted by Wile (Footnote 7).
7. Wile, Udo J.: The Technic of the Intradural Injections of Neosalvarsan in Syphilis of the Nervous System, The Journal A. M. A., April 11, 1914, p. 1165.

## A CASE OF ULCERATIVE PNEUMOCOCCUS ENTERITIS WITH PERITONITIS FOLLOWING LOBAR PNEUMONIA

Clara M. Davis, A.B., M.D., Lansing, Mich.

The following case is reported as being of interest because of the comparative rarity of the condition, the interesting operative findings and the recovery of the patient.

*History.*—S. P. T., a mulatto laborer of good habits, aged 56, was seen first, March 3, 1910. He had had typhoid fever in his teens; an operation for hemorrhoids at 30, and for ten or twelve years preceding the present illness, more or less "stomach trouble" aggravated by chewing tobacco, and characterized by gas, soreness in the pit of the stomach and attacks of pain under the right lower ribs extending through, beneath the right shoulder blade and to the right shoulder. These attacks were usually accompanied by huge hives. The patient had been feeling poorly all the fall and coughed a little. Family history as far as patient knew was negative as to tuberculosis.

*Present Illness.*—February 10, following exposure and chilling, patient had typical attack of lobar pneumonia involving the right lung; crisis occurred on the ninth day; since then he has coughed moderately and raised a fair amount of purulent sputum but has not gained any strength and has constant distress in his stomach with tenderness over the upper abdomen; bowels have not moved for two days.

*Physical Examination.*—Temperature 97.6, pulse 72, slightly irregular and rather poor quality; respirations 19. Patient moderately emaciated, sweating profusely, conjunctivae subicteric; tongue heavy yellowish coat, breath foul; chest shows slight dulness, increased vocal fremitus and bronchovesicular breathing over lower lobe of right lung; abdomen slightly below level of ribs; extreme tenderness in upper abdomen, especially in epigastrium to the right of midline, right hypochondrium and just above and to left of umbilicus.

Sputum examination showed only many pneumococci and pus cells, no tubercle bacilli. Leukocytes 9,800.

Urine examination was negative.

*Treatment and Course.*—Calomel, $\frac{1}{4}$ grain every hour for five doses, to be followed by a saline, was ordered and a liquid diet.

March 4, temperature was between 97.6 and 98.8, pulse between 78 and 85; bowels moved freely and patient vomited a large quantity of dark green bile. There was less pain and tenderness but increased weakness.

March 5, temperature 98.4; pulse 76, tongue clean, breath no longer foul; patient felt better.

March 6, temperature 99.3, pulse 88, respirations 20. Patient complained of great pain and tenderness in gall-bladder region, slight hiccup and mild distress in urinating. Three large herpes appeared on the lips. Abdominal examination showed tenderness as in first examination; urine showed neither albumin nor casts. Leukocytes 10,600. One brown liquid stool was obtained by enema.

March 7 and 8 there was no material change except for cessation of hiccup and less pain and tenderness. Herpes appeared on lips, border of tongue and pharynx. Bowels moved by enema; small brown, soft stool, some mucus.

March 9, patient much worse; vomited some dark blood, passed several black tarry stools; microscopic examination of stool showed an enormous number of pneumococci. Examination of patient showed temperature 98, pulse 104, respirations 22, peritonitic facies, scaphoid abdomen, with rigidity, especially in upper abdomen above umbilicus. Leukocytes 18,000, 75 per cent. of polymorphonuclears. Patient was removed to hospital and laparotomy under light ether anesthesia was done by Dr. L. W. Toles late in the afternoon, at which time patient's condition was poor. Pulse 120, temperature 98.4 and abdomen slightly distended.

*Operative Findings.*—The abdomen was opened by an incision in the gall-bladder region parallel and to the right of the median line, and the peritoneal cavity was found to contain a fairly large amount of thin pink-tinged fluid with a few fibrin flakes. Stomach was normal; gall-bladder small, dark and shriveled; liver very small and apparently atrophic. The small intestine throughout its entire length was thickened, intensely congested, almost hemorrhagic and the seat of numerous small acute ulcers showing as more deeply congested spots softer than the surrounding areas. These ulcers were most numerous in the upper part of the jejunum and decreased in number in the ileum, especially the lower portion. In a somewhat hasty examination no perforation was found and no ulcers were seen in the large intestine. Appendectomy was done, the abdomen closed and the patient left the table in very poor condition. Pulse 120 and of poor quality. Strychnin, $\frac{1}{30}$ grain, was administered hypodermically, and normal saline was given on the table.

*Postoperative History.*—Eight ounces more of saline were given by rectum and strychnin, $\frac{1}{30}$ grain hypodermically, as soon as patient returned from operating room. For the first four days patient's condition was very poor, hiccup being severe and almost continuous; from three to four black tarry stools daily; pulse from 100 to 116, temperature from 97 to 100; more herpes appeared in the mouth and in the alae nasi and lobes of the ears. Those on the tongue were particularly distressing.

March 13, six days after operation, right ear ached slightly for an hour, at the end of which time, discharge appeared. Cultures from this gave pure growth of pneumococci. Hiccup stopped on the fifth day after operation, melena after the eighth, and patient was discharged March 26, the seventeenth day, but was in bed at home for ten days longer, during which he complained of pain and tenderness in the wrists and ankles. The herpetic vesicles along the tongue developed into shallow ulcers, which were extremely painful and did not clear up for several weeks longer.

Three months later patient had regained his normal weight, 150 pounds, and was able to go to work.

The condition was not correctly diagnosed prior to operation. The history suggestive of gall-stones and chronic cholecystitis made an acute cholecystitis of pneumococcus origin seem probable, but with the appearance of melena, duodenal ulcer had to be considered. The peritonitis could have been a consequence of either, and therefore gave no aid to diagnosis. Not enough importance, it is probable, was attached to the rather profuse appearance of fresh herpes during the early days of the illness. Also since the gastrointestinal complications and sequelae of lobar pneumonia have received rather scant attention in description of that disease, the possibility of pneumococcus enteritis did not occur to the observers.

## AN UNUSUAL CASE OF SCREW-WORMS IN THE NOSE AND NASAL ACCESSORY SINUSES

George U. Huber, M.D., and Frank L. Flack, M.D., Coffeyville, Kan.

J. M., farmer, aged 66, was referred to us Oct. 5, 1914, for hemorrhage of the nose. This patient had had trouble with his nose for several years. One year ago last August his nose began to discharge and became very sore. About this time a traveling medicine man came through his part of the country selling an inhalation powder for treatment of diseases of the nose. He purchased a large amount of this medicine for use and to be doubly certain of a cure traveled with the medicine man for several months and took treatment under his directions.

At varying intervals large masses of necrotic material were discharged from his nose. Following this he was relieved. Up until two weeks ago his condition had remained about the same. At this time a fly went in one nostril and came out of the other. Following this trouble he became rapidly worse. October 2, he felt something moving in his nose and called a regular doctor who saw him several times and gave him treatment. This was of but little benefit. Finally the doctor injected chloroform and removed seventy-two Texas screw-worms. The patient's condition remained serious and he was brought to the hospital for treatment. At this time a Wassermann test was made which was strongly positive.

Under general anesthesia the following conditions were discovered: The walls of the right antrum of Highmore were completely necrosed and the antrum filled with worms. The middle turbinate on the right side was markedly necrosed. The right frontal sinus was open, and the right ethmoidal cells exposed. The walls of the antrum on the left side were partly necrosed. The turbinate on this side was partly necrosed and the ethmoidal cells exposed. The right eye was swollen shut and a worm was found in the lacrimal sac. These worms were the ordinary Texas screw-worms measuring about 1 inch in length and about 1/8 inch in diameter. Forty were removed at operation. On the right antrum a Cadwell-Luc operation was performed. On the left antrum a Denker operation was done. The Ballenger turbino-ethmoidectomy was performed on both sides. The right frontal sinus was curetted. The right canaliculus was split and the lacrimal duct probed. All sinuses were packed with iodoform gauze, after a thorough irrigation with a 10 per cent. solution of chloroform.

The after-treatment consisted in blowing iodoform into the nose and sinuses for one week and a vigorous course of antisyphilitic treatment. After a week the man was in a much improved condition and left the hospital.

This patient had a long-standing specific necrosis of the bones of the nose and accessory sinuses which undoubtedly attracted the fly carrying the larvae and furnished favorable conditions for their growth and reproduction.

Oct. 27, 1914, the patient was cured of the worms, and the nose looks perfectly healthy except for the damage done by the specific necrosis previously.

## OIDIOMYCOSIS IN PORTO RICO

E. R. Hildreth, M.D., and A. C. Sutton, San Juan, P. R.

While about 150 cases of oidiomycosis have been recorded, we think this is the first case noted in Porto Rico. The diagnosis was made from an examination of fresh specimens of pus in 10 per cent. sodium hydroxid solution, and of stained smears. The pus, which was rather whitish, contained numerous doubly-contoured, oval and spherical bodies, frequently budding, and in the sodium hydroxid solution highly refractive. They varied from 10 to 15 microns in diameter. Besides there were many smaller spherical bodies about 3 microns in diameter.

*History.*—Mr. D. A., aged 40, a native of San Juan, Porto Rico, who had never been off the island, was first seen in our clinic at the Presbyterian Hospital, San Juan, July 22, 1914. He complained of painful lumps on his legs, and also cough and pain in his chest. Statements regarding any family history were unreliable.

*Present Illness.*—The first nodule appeared about the middle of May, on the outer part of the left leg, about 4 inches below the knee. About one month later two more appeared, one on the front of each thigh about 3 inches above the knee. Two weeks later two more came out; one on each leg 3 inches above the last ones. They began as small, hard lumps under the skin, and became steadily larger, until about an inch in diameter, when they softened in the center. They were always extremely painful from the start. The patient had had attacks of pain in his chest every two or three months for the past two or three years, accompanied by a cough with a slight amount of tenacious phlegm.

*Physical Examination.*—The oldest nodule was an inch and a half in diameter. The center showed distinct fluctuation. The outer edge was very hard and the surrounding tissues were somewhat infiltrated. The skin over all of them was a deep purple. The lesion just above the largest one had likewise begun to soften. The others were simply hard, painful, subcutaneous nodules. The inguinal glands on both sides were distinctly palpable.

There were no marked physical signs in the chest. There was, however, slight dulness at the left base, accompanied by a louder respiration and more prolonged and higher pitched expiration than at the right base. The sputum was never examined because the expectoration ceased before the second visit.

*Treatment.*—The nodules which showed fluctuation were incised and drained with iodoform gauze. By the next visit they had become deep, punched-out ulcers, which were then kept on a wet mercuric chlorid dressing. Ichthyol ointment was used to rub on the other nodules. The patient was given potassium iodid internally, 10 drops three times a day, increasing 1 drop each dose to 20 drops of a solution of 50 gm. of potassium iodid in 50 c.c. of water.

The patient showed steady improvement. The symptoms in the chest disappeared. The nodules on the legs became smaller and smaller. All the pain disappeared. When last seen, a month and a half after the first visit, he seemed fully recovered.

# New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

**RADIUM BROMIDE.**—$RaBr_2$.—The anhydrous radium salt of hydrobromic acid.—The market supply is a mixture of radium bromide and barium bromide and is sold on the basis of its radium content.

*Actions and Uses.*— See Radium.

*Dosage.*—See Radium.

*Radium Bromide, Radium Co. of America.*—Radium bromide is supplied in the form of a mixture of radium bromide and barium bromide. It is sold on the basis of its radium content. All deliveries are made subject to the test of the U. S. Bureau of Standards or any reputable university or radium expert whom the buyer may designate at the time of purchase.

Manufactured by the Radium Co. of America, Sellersville, Pa.

*Radium Bromide, Standard Chemical Co.*—It is supplied in the form of a mixture of radium bromide and barium bromide for use in applicators, inhalatoriums, and injection solutions and is sold on the basis of its radium content.

Manufactured by the Standard Chemical Co., Pittsburgh, Pa. (The Radium Chemical Co., Pittsburgh, Pa.).

Pure anhydrous radium bromide, containing 58.6 per cent. of radium (Ra), is a white or slightly brownish crystalline substance, soluble in water.

The presence of radium can qualitatively be demonstrated by electroscopic or by photographic methods.

The quantitative determination of radium is carried out according to the method of Rutherford and Boltwood (Rutherford's "Radio-Active Substances and their Radiations").

**RADIUM CARBONATE.** — $RaCO_3$. — The anhydrous radium salt of carbonic acid.— The market supply is usually a mixture of radium carbonate and barium carbonate and is sold on the basis of its radium content.

*Actions and Uses.*— See Radium.

*Dosage.*—See Radium.

Non-Proprietary Preparation:

*Radium Carbonate, Standard Chemical Co.*—It is supplied in the form of a mixture of radium carbonate and barium carbonate for use in applicators. It is sold on the basis of its radium content.

Manufactured by the Standard Chemical Co., Pittsburgh, Pa. (Radium Chemical Co., Pittsburgh, Pa.).

Pure radium carbonate, containing 79.0 per cent. of radium (Ra), is a white or slightly brownish salt insoluble in water, decomposed by acids.

No gases are given off spontaneously from anhydrous radium carbonate by reason of the decomposing action of the radiations, as is the case with the chloride and bromide.

The presence of radium can be demonstrated qualitatively by electroscopic or by photographic methods.

The quantitative determination of radium is carried out according to the method of Rutherford and Boltwood (Rutherford's "Radio-Active Substances and their Radiations").

## NON-PROPRIETARY BRANDS OF ACCEPTED ARTICLES

*Arbutin, Merck.*—Merck and Co., New York.

*Radium Chloride, Radium Co. of America.*—Radium chloride is supplied in the form of a mixture of radium chloride and barium chloride. It is sold on the basis of its radium content. All deliveries are made subject to the test of the U. S. Bureau of Standards or any reputable university or radium expert whom the buyer may designate at the time of purchase.

Manufactured by the Radium Co. of America, Sellersville, Pa.

*Radium Sulphate, Radium Co. of America.*—Radium sulphate is supplied in the form of a mixture of radium sulphate and barium sulphate. It is sold on the basis of its radium content. All deliveries are made subject to the test of the U. S. Bureau of Standards or any reputable university or radium expert whom the buyer may designate at the time of purchase.

Manufactured by the Radium Co. of America, Sellersville, Pa.

The following preparation has been accepted for inclusion with the appendix to New and Nonofficial Remedies:

Antiseptic Supply Co., New York.

*Cupric Applicators* (Copper Sulphate 20-25 per cent.).—Wooden sticks 6½ inches long, tipped with a mixture of copper sulphate, alum and potassium nitrate, containing from 20 to 25 per cent. of copper sulphate, packed in gelatin tubes. Each stick is to be used but once.

# *Therapeutics*

## PREVENTION IS GREATER THAN CURE

(*Continued from page 2229*)

### XIII

### CARE OF THE TEETH AND MOUTH

The importance of oral cleanliness is becoming more widely recognized. The discovery that individuals, apparently well, may be carriers of pathogenic germs, especially of the bacillus of diphtheria, of the pneumococcus and of the bacillus of influenza, makes persons so infected a menace to their associates. How frequently the pneumococcus causes pneumonia in one who carries this germ accidentally is of course not known. Whether an individual who develops pneumonia always receives an acute infection with this germ, or whether, becoming debilitated by an influenza or a cold caused by some other germs, he has his resisting power so reduced that the pneumococci present in his mouth and throat cause active infection, cannot readily be determined. Streptococci and staphylococci are of frequent occurrence in the mouth, especially when there are decayed teeth, or diseased gums, tonsils, noses or any of the sinuses surrounding these regions. Whether these germs so present in a person's mouth frequently or infrequently infect others need not be considered. It is certain that the carriers of the germs are a constant source of danger to themselves, not only on account of the local disturbance, which may become more or less permanent with more or less disorganization or disintegration of solid tissues, but also from the danger of septic and pyemic infection. From such local infections joint inflammations are frequently caused, whether or not this is the case with true rheumatism, endocardial inflammations, and possibly such serious blood disturbances as pernicious anemia or leukemia. More or less serious glandular disturbances may occur from these local putridities or suppurations and the lungs are in constant danger from infection from these organisms. Some of these bacteria may also cause conditions that allow an infection by tubercle bacilli. Chronic nephritis must also be listed as an occasional consequence of a local infection in the mouth, nose or throat.

More or less constantly these pathogenic germs must be swallowed with food, drink and saliva. Probably most of them are killed by the hydrochloric acid of the gastric juice, provided the stomach is normal. If the stomach secretions are imperfect or if there is a chronic congestion of the mucous membrane of the stomach, many of these germs doubtless pass alive into the intestine and may there be a cause of a chronic enteritis or an infection of the gall-bladder, or they may possibly disturb the pancreas, and may be the cause of an ultimate incurable organic disease or incurable blood disturbance.

The corollary of the foregoing, and the possible and more or less frequent results of mouth infection which have not been overestimated, is cleanliness of the mouth, nose and throat. The teeth and mouth should at least be thoroughly cleansed on rising in the morning and on going to bed at night. A thorough use of the tooth-brush with such tooth-powders or tooth-pastes as seem advisable, depending on the age of the person and the condition of the gums and the character of the deposits that occur on the teeth, should be made daily. Some teeth cleanse readily and do not require a very stiff brush or very harsh treatment. Others need a stiffer brush and a powder, not too soapy, for complete removal of all deposits. If the gums bleed readily, they should be hardened with simple astringent washes, either a dilute alcohol or a dilute astringent tincture such as myrrh, or a tannic acid wash. Potassium chlorate mouth-washes and gargles are very soothing to irritated mucous membranes, but ordinarily any simple alkaline wash or mildly antiseptic solution as borax or boric acid solutions will be found sufficient, with the proper rubbing of the gums with a not too hard tooth-brush, or rubbing the gums with the fingers, that is, massage. The powder selected for cleansing the teeth is generally alkaline, with chalk or magnesia, but it has been shown that acid cleansing preparations, especially the acid fruits, are more efficient in causing the death of bacteria that occur in the mouth.[1] Whatever powder is chosen, it should contain no hard crystals that could possibly injure the enamel of the teeth.

A few children have never been taught to cleanse their teeth at all; many children have never been taught the proper manner of cleansing their teeth. Consequently, it should be the duty of the trained nurses of schools not only to examine the condition of the teeth and mouth of the children, but also to instruct them how to use their tooth-brushes, and what the hygiene of the mouth means. Some physicians urge that there should be daily gargling with some simple mouth-wash or physiologic saline solution, and also urge the snuffing into the nostrils and then expelling of such solutions. Theoretically, cleansing of the nostrils from the dust and bacteria inhaled should be a daily duty. Washing the mouth and throat with some simple solution should also be daily done. Practically, however, it is difficult to enforce such advice. Also, as far as the nostrils are concerned, solutions and sprays may irritate the mucous membrane, or may remove Nature's protective mucus. For this reason it may not be advisable generally to recommend washing of the deeper parts of the nostrils with antiseptic or other solutions.

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[1] Oral Cleanliness, Therapeutics, The Journal A. M. A., Nov. 8, 1913, p. 1719.

The removal of hopelessly decayed teeth and the filling of the cavities in teeth that can be preserved are essential to health. The trained nurse should discover such teeth in children and strongly advise, if not insist, that they be properly attended to. Alveolar abscesses, or other localized infection, should be treated by the physician or dentist until cured. Temporary frequent washing of all pus parts, unless the cavity is more or less closed, with hydrogen peroxid solutions, the dilution depending on the part affected, is efficient until the diseased part can be more thoroughly treated.

Pyorrhea alveolaris, very frequent in adults, very rare in children (unless the child is generally debilitated, or in children who have rickets) is a germ disease that is cured only by the most persistent and continuous treatment. Cleanliness and antiseptic washings are the means of prevention, but these rarely will cause a cure. Iodin treatment by the dentist will sometimes cure up pockets of infection. In inveterate cases vaccines, especially autogenous vaccines, have many times proved efficient. Sinus diseases are well treated only by nose and throat specialists.

Let it be urged that it is a mistake to retain too long a tooth that is causing disturbance. Many a serious condition and a great deal of jaw, and even antrum trouble has been caused by trying to preserve a tooth that is diseased at its root, or has a pocket of infection running down from the gum toward the root. A tooth that is diseased and cannot be well treated from the surface and which tends to cause serious disturbance of the fifth nerve, and especially if the pain comes in spasms, cannot be too soon removed. Dentists are often too conservative. Roentgenograms of the conditions in a jaw will often show a diseased tooth, or ill-placed teeth, which may be the cause of pain.

A few more suggestions might not be out of place.

First, the tooth-brush should not only be a good one, and not have loose bristles to cause injury or to be retained in the mouth or throat, but the brush should be deposited in an antiseptic solution. Of what value is it to cleanse the germs from the mouth and teeth and then allow them to grow in the tooth-brush to become a source of infection for following days? After using, the tooth-brush should be cleansed and placed in a test-tube or a bottle holder with alcohol or in a weak formaldehyd solution, as 1 part of liquor formaldehydi to 25 parts of water.

Second, the constant and frequent use of hydrogen peroxid solutions, which has become more or less of a fad with many persons, is a mistake. It is not good for the teeth, and not good for the gums, although it is used and should be used in septic or infected conditions, but not then for too long.

Third, the teeth and mouth should receive a great deal of care and attention during all illness, whatever that illness may be.

Fourth, before all operations which are not of the emergency type, the teeth and gums should be put into good condition by the patient's dentist. Before operation in all cases the mouth, teeth and gums should be thoroughly cleansed and cleaned with hydrogen peroxid or other antiseptic solution.

## ADENOIDS; HYPERTROPHIED TONSILS; OTORRHEA; CERVICAL ADENITIS

While any one or any two of these conditions may occur without the others, they are all more or less closely associated, and the schoolteacher and the trained nurse should take note if any one of them is present in a child, and the child should then be sent to the medical inspector or medical examiner. The importance of treating hypertrophied and diseased tonsils has already been discussed. The association of mouth and throat diseases with cervical adenitis is well understood. Also the necessity for removing obstructive adenoids which hinder proper breathing and prevent the removal of dust particles and germs and the warming of the air, requires no discussion.

Adenoids not only cause and allow nasal catarrh, recurrent tonsillitis, chronic pharyngitis, and even bronchitis with perhaps, later, the development of cervical adenitis, but they may also be a cause of obstruction of the eustachian tubes and disturbance and infection of the ears. They may allow infection of the sinuses associated with the nostrils, and they may prevent the proper development of the bones of the face, the proper growth of the nose and cause that vacant, open-mouth expression, which is so perfectly characteristic of this simple but frequent condition. It is needless to urge that the earlier obstructive or hypertrophied adenoids are removed, the less likely are complications to occur and the more normal will be the growth of the bones of the face, nose and jaw.

The seriousness of discharging ears will be recognized when Dr. N. P. Stauffer's statements[2] are repeated, that, of 90,000 deaf persons in the United States according to the census of 1900, 51,000 were deaf from childhood, that 75 per cent. of deafness is caused by discharging ears, and that 75 per cent. of discharging ears is due to adenoids and hypertrophied tonsils.

With acute adenitis the child has a high temperature, and it is soon recognized that he is sick. It should be remembered that a child may have folliculitis in the nasopharynx which may give infection to others much the same as follicular tonsillitis. With chronic enlargement of the cervical glands the little patient's temperature and nutrition should be carefully studied. Also, any focus of infection in the throat should be noted.

The best management for the individual patient with an enlarged gland or glands is for the decision of the family physician. Not all enlarged cervical glands are tuberculous; not all enlarged glands should be removed. A suppurating gland, however, should never be neglected. Also, chronically enlarged cervical glands may become infected with tuberculosis, or may be the beginning of more serious glandular trouble, as Hodgkin's disease. In other words, enlarged glands should always be looked on with suspicion, and generally the parents should be advised that the child should not remain in school, but may perhaps attend an open-air or open-window school. The treatment should be decided by the family physician. It should be noted, however, that iodid surely, and arsenic perhaps, will stimulate a tuberculous process to more widespread activity. Whatever is done, it should be emphasized that a child with enlarged glands of the neck is under suspicion of ill health as long as such glands are in evidence.

*(To be continued)*

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2. Stauffer, N. P.: New York Med. Jour., Oct. 10, 1914, p. 705.

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SATURDAY, DECEMBER 26, 1914

On account of the large amount of space occupied by the Index in this issue of The Journal, certain departments have been omitted entirely and others abbreviated.

## THE INDEX

This issue of The Journal contains the index to the current, or sixty-third, volume of The Journal, including the current medical literature which has been listed from week to week. The Index contains references to original articles in over two hundred of the leading medical journals of the world, including those of the principal foreign countries.

The Index consists of two parts — an author and a subject index. Under "Authors" appear the names of all who have contributed articles to The Journal or to any other journal listed in the current literature department, as well as the names of those whose papers are abstracted in the medical society reports in The Journal. Under "Subjects" will be found complete references to all reading-matter in The Journal and references to the original articles in all domestic and foreign journals listed, arranged under the subject of the article with double entry when necessary and with numerous cross-references to facilitate the use of the Index. The figures in bold-faced type refer to reading-matter in The Journal.

The "Guide to Current Medical Literature," under which title the Index appears in pamphlet form,[1] contains, in addition, the titles of the articles listed, arranged chronologically and by journals, as in the Current Medical Literature Department. It is issued in separate form for convenience—to make it unnecessary to handle the bound volume of The Journal.

Just preceding the Index a list of the journals indexed during the past six months is given. Any foreign journal, except those starred, will be lent by The Journal to subscribers and members in the United States with the understanding that it will not be held over three days. Requests for journals should be addressed to the Library of the American Medical Association and six cents in stamps should be enclosed. This covers the average expense of mailing a journal. The addresses of the domestic journals are given, and these can be obtained direct from the publishers. No domestic journal will be lent, as these can be obtained direct from the publishers as easily and as quickly as from us.

## PITUITARY EXTRACT AND MILK SECRETION

It cannot be denied that the secretion of milk is subject to nervous influences. Nevertheless physiologists have not yet succeeded either in producing secretion by the method suggested by experience with other secretory structures, namely, by stimulation of nerves going to the mammary glands, or in stopping a secretion in progress by section of such nerves. It is a well-established belief that the secretion and composition of the milk may be affected reflexly through the nervous system, as for example under the influence of the emotions. The action may even be reciprocal, as in the case of the pelvic organs, when the act of suckling excites tonic contractions of the uterus.

Food has some influence on the make-up of the milk; yet this factor is relatively so subordinated to others that in current speech the quality of the milk is regarded as a matter of "breed versus feed." Aside from both of these agencies, the nervous and the dietary, which may act on the mammary gland, one is impelled to ask how the flow is initiated or regulated from time to time in the individual. We approach here the question of the existence of galactagogues.

In 1910 Drs. Ott and Scott[1] of the physiologic laboratory at the Medico-Chirurgical College of Philadelphia found, in the goat, that during the early nursing period an intravenous injection of an extract of the posterior part of the hypophysis rapidly and greatly increased the secretion of milk. The infusion starts the flow in about one minute; it reaches its height (under the conditions of experiment) in four minutes, after which it rapidly falls to normal. As a concrete instance of the extent of this response we may quote one trial in which the flow of milk was 5 drops during five minutes before introduction of 5 drops of a pituitary extract by vein, and 405 drops in the same time thereafter. Extracts of other glands of internal secretion—corpus luteum, pineal body and thymus—may increase the milk flow fourfold in five minutes, whereas the pituitary product is by all means the most powerful galactagogue, increasing it a hundredfold or more. The ovary minus the corpus luteum has no effect whatever.

Soon after these observations were confirmed by Schäfer and Mackenzie[2] on other species of lactating animals. They found that the extract of the anterior lobe of the pituitary was inactive. Later Mackenzie[3] observed that the galactagogue substance is present in the pituitary body not only of lactating females, but also of non-lactating females and of males.

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[1] The Guide to Current Medical Literature may be obtained from the Association office at 50 cents a copy.

[1] Ott, I., and Scott, J. C.: The Action of Infundibulin upon the Mammary Secretion, Proc. Soc. Exper. Biol. and Med., 1910, viii, 48.

[2] Schäfer, E. A., and Mackenzie: Proc. Roy. Soc. (B), 1911, lxxxiv, 16.

It need scarcely be remarked that such observations promptly suggested the application of the findings to cows and to lactating women. In the case of cattle the total effect of administration of pituitary extract on the total daily yield of milk has been negative.[4] The reason for this is made probable by studies of Hill and Simpson[5] at Cornell University. They observed, it is true, that the intravenous injection of pituitary extract (whole gland or posterior lobe alone) leads to an immediate secretion of milk very rich in fat. The effect, however, quickly passes off. There is a corresponding diminution in the yield of milk at the next milking period, and to some extent in the percentage of fat, so that in the twenty-four hours there is practically no increase in the total quantity of milk or of fat obtained.

Schäfer, in 1912, observed slight transitory effects from introduction of pituitary extract in a human subject. The most significant observation, however, is one recently reported by Hill and Simpson[6] in a healthy young married woman nursing her second baby, in the fifth month of lactation. Intramuscular injection of a commercial preparation equivalent to 20 mg. of the dried infundibular portion of the gland was followed, in ten minutes, by a marked increase in the amount of milk secreted. After a latent period of from twenty to thirty seconds the mother could feel the milk "coming into the breasts," and a few minutes later abdominal pains were experienced, presumably due to increased intestinal peristalsis. The milk withdrawn after injection was rich in fat, the average figure for the three experiments being 5.5 per cent. as compared with 3.4 per cent. for three days when no pituitary extract was administered. In the milk yielded twenty-four hours after injection the fat content was still somewhat above the normal. Although no quantitative estimations were made, judging from the mother's experience in nursing the child, it would appear that the quantity of milk obtainable by it on the morning after the injection was diminished.

The import of these observations must not be exaggerated. They afford no evidence of any increased production of milk. But the demonstration of a chemical influence manifested by altering the rate of secretory discharge is of itself an interesting accomplishment quite aside from any further immediate application thereof.

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[3] Mackenzie: Quart. Jour. Exper. Physiol., 1911, iv, 305.

[4] Compare Gavin: Quart. Jour. Exper. Physiol., 1913, vi, 13.

[5] Hill, R. L., and Simpson, S.: The Effect of Pituitary Extract on the Secretion of Milk in the Cow, Proc. Soc. Exper. Biol. and Med., 1914, xi, 82.

[6] Hill, R. L., and Simpson, S.: The Effect of the Intramuscular Injection of Pituitary Extract on the Secretion of Milk in the Human Subject, Am. Jour. Physiol., 1914, xxxv, 361.

## THE SUPRARENAL BODIES AND KIDNEY FUNCTION

Although the nature of the supply of vasomotor nerves to the kidney and the conditions which bring them into activity are fairly well known, additional factors which may control the flow of urine are far from being completely elucidated. Most writers on the physiology of the kidneys deny the existence of specific secretory nerves for these organs, although Asher and Pearce have suggested that the vagus and splanchnics are direct secretory nerves to them. There is a tendency in some quarters to postulate the occurrence of specific chemical excitants or diuretics, formed in the body and acting as do the group of stimulants now classed as hormones.

Experimenters who have busied themselves with the physiology of the renal secretion have at times been brought face to face with contradictions which they could not explain on a purely vasomotor basis, that is, by corresponding alterations in the blood-supply. In the course of an investigation in this field Cow[1] was struck by the different effects produced by perfusing the kidneys directly through the renal arteries and through the aorta. After the exclusion of possible sources of difference in the condition of the experiments, the only feasible explanation appeared to be that in the perfusions through the aorta the fluid in some way passed through the suprarenal glands before reaching the kidneys. A further examination of the anatomic possibilities showed that there exists, at any rate, a possible channel through which the products of the suprarenal bodies can reach the kidneys directly and without either dilution or oxidation in the general circulation.

There is nothing essentially unique in the demonstration of a direct vascular connection between the medullary portions of the suprarenal bodies and the kidneys. It has long been known that vessels in the neighborhood of the kidneys anastomose with vessels connected with adjacent parts. Such anatomic interrelations have been described between the vessels of the kidney, suprarenal and large intestine.[2] As the result of Cow's work it now appears that under certain conditions epinephrin in appreciable amount is poured directly into the kidneys from the suprarenal bodies and consequently produces a diminution in the flow of urine. This effect is precisely what takes place on stimulation of the splanchnic nerves which, in turn, are known to be the path by which fright or excitation of afferent nerves causes a reflex exhaustion of the epinephrin content of the suprarenal bodies.

In the light of this newer knowledge it may be possible to explain the findings of Asher and Pearce[3] without introducing the hypothesis that the kidney has a direct secretory innervation. According to Cow we may assume that the stimulation of the splanchnics (as conducted by Asher and Pearce) produces an outflow of epinephrin from the suprarenal bodies and that some, at any rate, of this finds its way directly to the kidney, producing a diminution in the flow of urine. The novelty of this contribution consists in the implication that the suprarenal bodies may be regarded as direct regulators of urinary activity.

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[1] Cow, D.: The Suprarenal Bodies and Diuresis, Jour. Physiol., 1914, xlviii, 442.

[2] Tuffier: Rev. de chir., 1890, p. 390. Quénu and Lejars: Etude sur le système circulatoire, Paris, 1894.

[3] Do the Kidneys Have Secretory Nerves? Editorial, THE JOURNAL A. M. A., Dec. 6, 1913, p. 2073.

## BACTERIOLOGIC STANDARDS FOR DRINKING WATER

About two years ago a commission was appointed by the Secretary of the Treasury following recommendations made by the United States Public Health Service to investigate the quality of drinking water furnished to travelers by common carriers. Affecting as it does all who travel, the question is one of practical importance to public health authorities. The commission was asked specifically to recommend standards of purity for drinking water supplied to the public by public carriers in interstate commerce. After devoting more than a year to a consideration and discussion of the problem, the commission has not yet arrived at a satisfactory consensus of opinion on a number of minor questions. In the meantime, however, the importance of establishing certain limiting requirements, and the fact that the commission is of one opinion on the essential points of such requirements, have made it seem desirable to incorporate its findings thus far in a progress report.[1] Recommendations contained in this report have been embodied in Interstate Quarantine Regulations in accordance with a letter of promulgation issued by the Secretary of the Treasury under date of Oct. 21, 1914. In the future common carriers will be required to furnish water for passengers in interstate traffic which will comply with the following criteria:

1. Water supplies conforming to the prescribed requirements shall be free from injurious effects on the human body and free from offensiveness to the sense of sight, taste or smell.
2. Supplies of the quality required shall be obtainable by common carriers without prohibitive expense.
3. The examinations necessary to determine whether or not a given water-supply meets the requirements shall be as few and as simple as consistent with the end in view.

The commission's report is specific in pointing out that "the recommendations here presented are limits of permissible impurity and in no sense standards of purity." They are recommended "not as the nearest approximation to purity which it is desirable to attain, but, on the contrary, as the farthest deviations from purity considered permissible in the water-supplies with which this report deals." It is also emphasized that these limits are only for application to the special case in question.

Because of the difficulty in correlating what might be regarded as objectionable physical and chemical properties of water with definite effects on the health of the user, and because of the minor sanitary importance at most of regulating this class of impurities, these questions have been left for further discussion, and the present report deals only with the more important matter of bacteriologic standards. It is furthermore recognized by the commission that strict specifications for a water which shall at all times be undoubtedly safe are justified by reason of the comparatively small quantities of water used by common carriers and the ready availability of methods of purification which permit the furnishing of a water of high bacteriologic purity without imposing an undue burden on common carriers.

The standards proposed, and which have been incorporated in the Interstate Quarantine Regulations, are briefly the following:

1. The total number of bacteria developing on standard agar plates after twenty-four hours' incubation at 37 C. (98.6 F.) shall not exceed 100 per cubic centimeter. The estimate shall be made from not less than two plates showing such numbers and distribution of colonies as to indicate that it is reliable and accurate.
2. Not more than one out of five 10 c.c. portions of any sample examined shall show the presence of organisms of the *Bacillus coli* group when tested by a specified procedure.

The formation of 5 per cent. of gas in lactose peptone broth incubated for forty-eight hours at 37 C. in the original sample, the development of acid-forming colonies on lactose litmus agar plates or of bright red colonies on Endo's medium plates prepared from the fermenting tube, and the subsequent formation of gas occupying 10 per cent. or more of the closed arm in lactose peptone broth inoculated with typical colonies from either of the foregoing plates, constitute the criteria for the presence of organisms of the *Bacillus coli* group which shall be used in interpreting the second specification.

It is further recommended that one portion of 1 c.c. and one portion of 0.1 c.c. of the sample be plated in lactose peptone broth in order to demonstrate more fully the extent of pollution in grossly polluted samples and that the culture mediums and methods used shall be in accordance with the specifications of the Committee on Standard Methods of Water Analysis of the American Public Health Association, as set forth in "Standard Methods of Water Analysis, A. P. H. A., 1912."

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[1] Pub. Health Rep., Nov. 6, 1914.

The reasonable character of these regulations, the feasibility of compliance on the part of the common carriers without undue expense, the degree of protection that such compliance will afford to travelers and the relative simplicity of the routine tests that are recommended are sufficient evidence of the serious thought which has been given to this important matter by the members of the commission, to whom much credit is due for this satisfactory outcome of their labors.

## THE SIGNIFICANCE OF STARCH-DIGESTING ENZYME IN THE URINE

In the evolution of clinical diagnosis in recent years the attempts to find suitable chemical indications of functional disorders have been decidedly conspicuous. Now and then some test, like that involving the altered excretion of phenolsulphonephthalein by the kidneys in conditions of health or disease of these organs, finds a permanent application in practical medicine. The majority of the proposed procedures, on the other hand, represent a momentary enthusiasm on the part of some investigator. He elucidates his method with a few clinical illustrations that seem to demonstrate its utility. Presently the new test is subjected to a rigorous experimental critique and is found to be devoid of the fundamental requisite of a good test, namely, its limitation to well-defined conditions and its applicability to a restricted number of phenomena. Any reaction which fails to possess this feature of being characteristic, that is, of being exemplified by few substances at most or under a few conditions at best, loses its claim to be rated as a "test."

The urine has furnished the basis for almost innumerable attempts to devise functional tests based on chemical reactions. In some cases, as in the detection of glycosuria and albuminuria, the appearance of constituents normally absent from the urine has afforded the diagnostic reaction. In other instances, as in the study of acidosis or other metabolic disturbances, the clinical chemist has learned to ascertain the deviations of normally present urinary components like ammonia and uric acid, from their usual and readily explicable concentration. The ideal aim is to find some easily detectable or determinable substance of which the origin or physiologic history is definite. Too often the variables in the problem are so manifold that the practical solution fails.

The study of the attempts to employ the estimation of the amylolytic power of the urine as a functional test in clinical medicine well illustrates the necessity of learning the underlying facts before the use of a reaction of this sort is advised. A starch-digesting enzyme is commonly present in the urine. It is not difficult to obtain some conception of the concentration of the amylase. The latter is found, within the organism, in digestive glands and their secretions, in the blood and secretion of the kidneys. Diminution of the amylase in the urine has been described as evidence of impermeability of the kidneys. Obviously it is equally logical to conceive a lowered output of the enzyme to be due to diminished production at the various sources from which it is normally derived prior to its renal excretion; or even to an increased destruction of circulating amylase by some physiologic or pathologic agency. And accordingly one finds the urinary output of amylase related by the diagnosticians to altered pancreatic function (leading to an altered return of pancreatic amylase to the blood and thus to the urine). Indeed, from a still different point of view it has even been taken as an index of altered absorption of amylases from the digestive tract and hence as evidence of abnormal gastro-intestinal conditions.

It is not surprising, as King[1] remarks in connection with his elaborate investigation of the blood and urinary amylase conducted at the Hull Laboratory of Physiology of the University of Chicago, that amylase elimination has not been adopted more generally as a diagnostic measure either with a view to testing the functional capacity of the kidney or in order to diagnose pancreatic lesions. The physiologic conditions governing the elimination of the enzyme, as well as its actual source, have not been known definitely enough. The immediate source of the urinary amylase is the amylase present in the blood. King's experiments, as well as those of earlier investigators, show that the variations in the amount of amylase in the urine, independent of the amount in the blood, may depend on the permeability of the kidney, the condition of the renal epithelium, and on the normal physiologic variation in renal activity. It is possible that amylase may act as a stimulus resulting in its own elimination just as does urea or dextrose.

If the amount of amylase in the urine depends not only on the functional capacity of the kidneys, but likewise on the amount finding its way into the blood, how about the source of the latter? There is evidence that the salivary amylase may appear in the urine; for those animals which secrete ptyalin eliminate in the urine more amylase per kilogram of body-weight than those which do not secrete a starch-splitting enzyme into the mouth. Removal of the pancreas results in a decrease in urinary amylase, thereby suggesting that the pancreas is a direct source of amylase. Trauma of the pancreas and lesions causing obstruction to the natural outflow of the pancreatic juice lead to an increase of amylase in the urine, pointing to a direct passage of the enzyme from the gland tissue into the blood. The blood can, therefore, probably receive amylase by at least two paths, namely, directly from the glands and indirectly from the digestive tract. There are unquestionably sources of amylase other than the salivary and pancreatic glands; for even after removal of both of these there is not a complete disappearance of the urinary starch-digesting enzyme. The kidney itself may be a source; the liver, muscles, spleen and leukocytes all contain amylase and may serve as sources. Thus the increase of amylase in the blood and urine of animals dying of acute infections may be due to the greater destruction of the leukocytes accompanying the leukocytosis.

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[1] King, C. E.: Studies on Blood and Urinary Amylase, Am. Jour. Physiol., 1914, xxxv, 301.

King's investigations show further not only that amylases enter the blood directly from the tissues, but also that when once in the blood the enzyme is destroyed much more slowly than is the case during its passage through the intestinal mucosa. Feeding experiments with amylase indicate that only in case the digestive tract is flooded with the enzyme does enough pass into the blood to bring about a significant increase in the urine. Aside from variations in the excretory factor, therefore, there are indications that fluctuations in the amylolytic power of the urine may be due to increased or decreased production of amylase within the body, to an obstruction to the normal outflow from the pancreas or salivary glands, to injury of the pancreas, to decreased absorption from the intestinal lumen, to the liberation of glycogenolytic enzyme, and possibly to leukocytosis. We can well agree with King's conclusion that quantitative estimations of urinary amylase alone would have but little significance as a diagnostic point. Perhaps a long series of tests coupled with an accurate history may serve as a useful supplement in the diagnosis of renal, pancreatic and obstructive lesions.

# Current Comment

## FLAVORS AND VITAMINS

The term "vitamin" was first applied by Funk[1] to a substance isolated from rice and occurring only in the outer portion of the grain, which is removed in polishing rice. The fact that beriberi is caused by an exclusive diet of polished rice, but may be prevented by the addition of this vitamin to such a diet, leads to the conclusion that that disease is due to the absence of this substance from the diet. Other substances have been classed as vitamins, not because of proved chemical relationship to the vitamin of beriberi, but because their presence seems to be necessary to prevent other diseases from developing. Thus Funk believes we have a vitamin of beriberi, one of scorbutus, of pellagra, etc. The discovery of the vitamins has emphasized the value of those elements of the food, which, although present in minute amounts, exercise a determining influence in the utilization of the ordinary articles of diet. The significance of this new knowledge is emphasized by Garrod[2] in his address before the British Medical Association at its recent meeting. As Garrod says, "the immense practical importance of these hitherto unknown factors is in the fact that once the missing element—the vitamine—is discovered, a specific remedy for the disease has been found." That the nutritive value of a diet does not depend wholly on its calorific value must be admitted. The importance of flavors, spices, and of the preparation of food so as to arouse the esthetic senses — in other words, the nutritive value of good cooking — has been pointed out by Sternberg[3] of Berlin, who insists that the science of cookery is not merely the application of chemistry and physics, but rather an application of the physiology of the senses, applied psychology and esthetics. The spices and flavors used by the cook, Sternberg suggests, may be closely allied to the vitamins if not identical with them. They may stand in the same relation to loss of appetite and health in general, that the specific vitamins do to particular diseases. As loss of appetite is frequently the forerunner of deficiency of nutrition, it is possible that special flavors and spices may be required for special cases and that the search for these may reward the investigator with a clearer idea of how to meet many of the indefinite ailments that elude our most precise means of diagnosis. In this connection it is worth while to note the action of harmless microorganisms in producing flavors, possibly containing vitamins. The work of Evans, Hastings, Flint and Hart[4] showed that the development of the characteristic flavor of Cheddar cheese depended on a symbiosis of organisms of various groups impossible to secure from pasteurized milk. With the use of various starters the flavor could be varied, but the process of heating the milk destroyed, in some way, the delicate interrelations of bacteria on which the characteristic flavor of the product prepared from raw milk depends. Such researches suggest unlimited possibilities in a branch of pathology which has hitherto received scant attention.

## THE URINARY CREATININ OUTPUT OF NORMAL WOMEN

In establishing so-called normal values for various bodily functions and likewise in relation to the chemical composition of body fluids and secretions it has been common in the past, for reasons alike of custom and of convenience, to obtain the data from healthy men. In many instances there is no obvious or inherent reason why the facts thus elicited should differ from those which might be furnished by determinations made on the other sex. For example, one would scarcely expect the composition of the circulating fluid in woman to vary essentially from that which pertains in man. The conspicuous difference in the muscular development of most women in contrast with the usual male type suggests the possibility that any factors involving incidents of muscular metabolism might show quantitative variations, particularly in their absolute amounts in the two sexes. That this possibility may be realized is borne out by data which have lately been submitted from the department of chemistry at the Woman's Medical College of Pennsylvania in Philadelphia.[1] Shaffer[2] considers the urinary creatinin an index of muscular catabolism and believes that sex *per se* has no influence on the excretion of this substance. The creatinin coefficient of woman will therefore be comparable to that of man provided that the muscular efficiency and the amount of adipose tissue is the same. In view of this it is interesting to note that the creatinin excretion of a group of women medical students, who might properly be considered as normal individuals, and who were on a strict creatinin-free and creatin-free diet for two days or longer, ranged from 10 to 25 mg. per kilogram of body-weight. A still more recent report of the composition of the urine of a group of women nurses in the Wesley Memorial Hospital, associated with the Northwestern University Medical School in Chicago,[3] makes it evident that the subjects studied exhibit a low creatinin excretion in comparison with the usual values found for men. There is no peculiarity in the distribution of other nitrogen factors, and no reason is apparent why there should be. Quite possibly, as has been suggested, in the case of creatinin, the fact of lower muscular development and perhaps of lower muscular tone will account for the observed findings. Shaffer has found that what he calls the creatinin coefficient, that is, milligrams of creatinin nitrogen per kilogram of body-weight, ranges from 8 to 11 for normal men. In the case of the twenty-six women referred to[1] the comparable coefficient was below 8 in all but two cases. The latter exhibited unusual muscular development and were accustomed to vigorous gymnastic work. It is probable, from the large series of data on the female sex thus made available, that individual women who through training have maintained a good muscular tone may excrete creatinin in amounts comparable with men. The fact that the average woman tends to confine herself to sedentary occupations and neglect physical exercise, so that her muscular efficiency is reduced in comparison with that of men of the same stature, will doubtless explain the relatively low output of creatinin of females.

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[1] Funk, Casimir: Die Vitamine, Wiesbaden, 1914.

[2] Garrod: Brit. Med. Jour., Aug. 1, 1914, p. 233.

[3] Sternberg, W.: Arch. f. Verdauungskrankh., 1914, xx, No. 2, abstr., The Journal A. M. A., May 23, 1914, p. 1696.

[4] Evans, Alice C.; Hastings, E. G., and Hart, E. B.: Bacteria Concerned in the Production of the Characteristic Flavor in Cheese of the Cheddar Type, Jour. Agric. Research, June, 1914, p. 167. Hart, E. B.; Hastings, E. G.; Flint, E. M., and Evans, Alice C.: Relation of the Action of Certain Bacteria to the Ripening of Cheese of the Cheddar Type, ibid., p. 193.

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## THE LESSONS OF A UNIQUE CASE OF DIABETIC ACIDOSIS

An intelligent mastery of many of the problems that arise in the practice of medicine calls for an accurate appreciation of quantitative factors. The ophthalmologist who is making adjustments of a delicate nature depends on careful measurements of certain functions of vision and parts of the eye for guidance in his procedure. Every therapeutist who administers drugs ought to have more than a superficial knowledge of their dosage. Even in matters of diet the importance of a knowledge of the fuel value of foods has begun to be recognized. It is surprising at times to note the errors which creep into applied medicine owing to ignorance of standards: in other words, to a lack of acquaintance with the quantitative features of the subject. A patient is given a quart of milk a day—scarcely 800 calories of food—and is expected to be maintained on it. Infinitesimal doses of active agents are expected to initiate heroic changes. A characteristic case is frequently shown in the treatment of acidosis in which the administration of alkali is indicated, but the quantities prescribed, though large in comparison with customary or even large doses of alkaloids or iodids or salicylates, are nevertheless sometimes almost insignificant in their relation to the acidity to be neutralized or corrected. In diabetic acidosis the quantity of the pathologically occurring acids in the urine often reaches from 15 to 20 gm. a day. It has been known to reach 150 gm., in which beta-oxybutyric acid predominates over its companion diacetic acid. These colossal amounts call for enormous quantities of alkali carbonate for their neutralization. Czapski[1] has recently described what is, as far as we are aware, one of the most extreme cases of profound acidosis ever recorded. The patient, a youth aged 16, passed through two severe periods of intense acidosis with threatening coma, at the Krankenhaus am Friedrichshain in Berlin. During the first of these, in which the beta-oxybutyric acid approached 90 gm. on each of four days, an untoward outcome was averted by intravenous injection of 100 gm. and more of sodium bicarbonate per day. In a second period, ending in death, the output of beta-oxybutyric acid and aceto-acetic acid together reached 143 gm. as a daily maximum, and persisted at about 100 gm. or more during nine days. The total output of these acids in ten days prior to the fatal outcome was more than a kilogram (1,085 gm.). More than 900 gm. of sodium bicarbonate were administered during this period without producing even a neutral reaction in the urine. These are unique data, the reliability of which is attested by the fact that they were collected in the clinic of an expert in this field of medicine, Magnus-Levy. Previous recorded cases involving an excretion of more than 100 gm. of these organic acids per day have shown a persistence of three days at best before either marked improvement or death ensued. There can be little doubt, from other facts furnished in the chemical report of Czapski, that the acids existed in part actually free in the urine; that is, there was a large deficit of bases to serve in the neutralization equilibrium. It is obvious that under such circumstances heroic doses of alkali carbonate and every available channel of introduction — by mouth, intravenously or subcutaneously — are called for. Grains of bicarbonate must be replaced by drams.

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[1] Tracy, Martha, and Clark, Elizabeth E.: The Excretion of Creatinine by Normal Women, Jour. Biol. Chem., 1914, xix, 115-117.

[2] Shaffer, P. A.: The Excretion of Kreatinin and Kreatin in Health and Disease, Am. Jour. Physiol., 1908, xxiii, 1-22.

[3] Hull, Mary: Some Observations on the Excretion of Creatinin by Women, Jour. Am. Chem. Soc., 1914, xxxvi, 2146.

[1] Czapski, L.: Beitrag zur Kenntnis und Behandlung des Coma diabeticum, Inaug. Diss., Berlin, 1913; Ein Fall extremster Acidosis im Verlauf des Diabetes mellitus, Arch. f. exper. Path. u. Pharmakol., 1914, lxxvii, 218.

## NEWS OF THE WAR

In the index in this number of The Journal an increase may be noted in the number of headings devoted to war subjects. The words "war," "army," "wounded" and "wounds" are followed by numerous references occupying from three to ten times the amount of space devoted to them in previous indexes. In this issue of The Journal also appears a letter from Sir William Osler[1] which, as he states, should interest his friends both in the United States and Canada — and does this not embrace the whole profession? The views which he expresses concerning the surgical and the sanitary aspects of the war are of the highest scientific value.

# *Medical News*

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

## ILLINOIS

### Chicago

**Personal.**—Dr. Frank A. Stahl has returned after five months abroad.——Dr. George W. Mahoney was elected vice-commander and Dr. Frank P. St. Clair, surgeon, of the Veteran Corps of the Seventh Infantry, Ill., N. G., at its third annual meeting, December 19.

**To Boil Water.**—Health Commissioner George B. Young, on December 17, sent a warning to all persons living within the district bounded by Chicago, Belmont and Western Avenues and Lake Michigan, to boil all drinking water until further notice, on account of typhoid infection having been found in the wells of the Chicago Avenue pumping station.

## INDIANA

**Academy of Medicine Incorporated.**—The Academy of Medicine of Logansport has been incorporated under the laws of the state, without capital stock. The directors are Drs. Rodney E. Troutman, Charles H. McCully, Henry B. Hill and others.

**Personal.**—Dr. George W. Brown has resigned as health officer of Frankfort on the ground of inadequate compensation.——Dr. Fred M. Towles, Indianapolis, fell on the pavement, December 2, and suffered a compound fracture of the right leg.——Dr. Thomas Ray Morrison, Churubusco, is seriously ill at Lynn, Fla., as the result of a cerebral hemorrhage.

## IOWA

**Small-Pox Rather than Vaccination.**—In a family at Davenport a case of small-pox occurred in a son, who was removed to the isolation hospital. Vaccination of the other members of the family was advised by the health authorities. This was refused. A week later the family was placed in strict quarantine because five other members of the family developed pronounced cases of the disease.

**Personal.**—Dr. M. Charles Mackin has been appointed first assistant superintendent of the Clarinda State Hospital, succeeding Dr. George Donohoe, Knoxville, promoted to superintendent of the Cherokee State Hospital, succeeding Dr. Mathew N. Voldeng promoted to superintendent of the new State Epileptic Colony, Woodward.——Dr. Arthur C. Echternacht has resigned as health officer of Mason City.

**Foot-and-Mouth Disease Interferes with Agricultural Courses at State College.**—On account of the presence of foot-and-mouth disease in some sections of the state and the great danger of spreading it further through public meetings of farmers, Iowa State College has decided not to hold its usual short course for farmers at Ames, December 28 to January 2, this winter. Dates for extension department courses in counties now under quarantine are also to be canceled.

## KENTUCKY

**Epizootic Among Rabbits.**—The state fish and game commission has appealed to the State Board of Health to investigate the cause of the death of many rabbits in Carlisle County. [It will be remembered that a similar outbreak has been reported from Indiana.]

**Memorial Operating Room Opened.**—A new operating room in memory of his father, the late Dr. Charles A. Long, was presented to the Masonic Widows' and Orphans' Home, Louisville, recently by Charles R. Long. The gift was accepted by the president of the board of directors and Dr. Ap Morgan Vance, president of the medical board of the institution.

**Personal.**—Dr. Joseph F. Cook, Louisville, while crossing the street, was struck by an automobile recently, suffering injuries of the head and body.——Dr. Virgil F. Barker, Newport, has returned from abroad.——Dr. William E. Gary, chief milk inspector of Louisville, was attacked and beaten by two men at his house in Avoca.——Dr. Anderson D. Park, Rockport, has been elected president of the Rockport Deposit Bank.——Dr. Charles A. Nevitt, Lexington, has returned home after an operation for appendicitis.

## LOUISIANA

**Personal.**—Dr. Randell Hunt, Shreveport, has been elected president; Dr. H. W. Schofield, vice-president, and Dr. Louis Abramson a director of the Caddo Parish School Board.

**Pesthouse Should Be Burned.**—Dr. Oscar Dowling, Shreveport, president of the State Board of Health, after a personal investigation of the New Orleans Small Pox Hospital, reports that the building is unfit for human habitation and should be burned.——The city is making arrangements for the construction of an isolation hospital.

**Improvements of Leprosarium.**—A contract has been let for $39,560 to improve the State Leper Home at Indian Village, Iberville Parish. Under this contract the home will acquire two large new cottages, a clinical building, a powerhouse, electric light, cold storage, and a refrigerator plant and the system of sewerage, drainage and plumbing.

**Rucker Testifies on Rat Proofing.**—At the hearing of the case instituted to test the validity of the rat proofing ordinance of New Orleans, Assistant Surgeon-General William C. Rucker, U. S. P. H. S., gave a review of the work done by his department and detailed the state and city activities which resulted in the eradication of bubonic plague from New Orleans.

**Fraternity Chapter Installed.**—On December 10 the Alpha of Louisiana chapter of the Alpha Omega Alpha Medical Scholarship Society was installed at the medical department of Tulane University, New Orleans.

## MINNESOTA

**Follow-Up Society Organized.**—The Association of Patients and Ex-Patients of the Minnesota State Sanatorium for Consumptives has recently been organized. Its purpose is to follow up all patients discharged from the sanatorium, find suitable work for the people who are recovering their health, and secure health legislation to advance the interests of the convalescents. Only persons who have been patients at the State Sanatorium, Walker, for three months or more, are eligible for membership. Dr. George William Beach, superintendent of the sanatorium, is chairman of the association and its official organ is the *Pine Knot*.

## MISSOURI

**Personal.**—Dr. William H. Hays, Hannibal, was accidently shot in the right leg while on a hunting trip, December 3, and is under treatment at the Levering Hospital.

**Club Organized.**—The Physicians and Surgeons Club of Springfield was organized December 1, with an initial membership of thirty-eight. Dr. Frank B. Fuson was elected president; Dr. Joseph W. Love, vice-president, and Dr. Murray C. Stone, secretary-treasurer.

**State Board of Health.**—The State Board of Health held an examination at St. Louis for applicants for license to practice, December 14, 15 and 16.——The board has begun the free distribution of prophylactic typhoid vaccine manufactured at the state university under the supervision of Dr. Mazyck P. Ravenel.——The board is giving free antirabic treatment to persons bitten by animals. The serum is supplied by the United States Public Health Service and administered under the direction of the state bacteriologist at Jefferson City.

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[1] Correspondence, Medical Notes on England at War. Sir William Osler, The Journal, this issue, p. 2303.

### St. Louis

**Memorial Meeting.** — Washington University Medical School held a memorial meeting for Dr. Washington E. Fischel, a recently deceased member of the faculty. Dr. Abraham Jacobi of New York was one of the principal speakers.

**Free Antitoxin.**—As the result of a report of thirty new cases of diphtheria on December 2, Dr. Max C. Starkloff, health commissioner, has obtained from the comptroller an appropriation of $1,000 for the purchase of antitoxin to be used for the poor.

**Visit of Dr. Vaughan.**—Dr. Victor C. Vaughan, Ann Arbor, Mich., President of the American Medical Association, was the guest of the St. Louis Medical Society at its meeting on December 12, and addressed the members on "Professional Ideals." Dr. Abraham Jacobi of New York also delivered a short address.

**Children's Hospital Opened.**—The St. Louis Children's Hospital was thrown open for the reception of patients on December 3. On December 12, 13 and 14 the buildings were inspected by the physicians of the city. The hospital is connected with Washington University Medical Department and the Barnes Hospital.

**University Dispensary Opened.**—The new dispensary of the Medical School of Washington University was opened December 14. This institution has facilities for the treatment of 150,000 patients a year. The clinics of Washington University on Jefferson Avenue, O'Fallon Dispensary on Locust Street and St. Louis Children's Hospital, were closed December 12, and the patients formerly treated are now being sent to the new dispensary which occupies two floors of one of the new university buildings on Euclid Avenue. One of the special activities of the new dispensary will be the social service department which will have in its charge the investigation of the home conditions which produce disease, and devise plans for correcting them.

## NEW YORK

**Free Wassermann Test.**—Dr. Frederick W. Sears, health officer of Syracuse, announced on December 9, that henceforth the Wassermann test will be given free of charge to any person in the city who desires it.

**Sanatorium Proposition Defeated.**—By a vote of sixteen to eleven, the Otsego County Board of Supervisors, on December 11, defeated the proposition to put the question of the erection of a county tuberculosis sanatorium to a vote at the general election next fall.

**New Tuberculosis Hospital.**—A special committee of the Board of Supervisors of Cattaraugus County, appointed to establish a county tuberculosis sanatorium, met in Olean December 10, and signed the final papers which gave the county title to land in Rock City as a site for the institution, the construction of which will begin in the early spring. The building will accommodate from 36 to 40 patients.

**Message to Health Officers.**—The current issue of *Monthly Bulletin of the New York State Department of Health* contains a message to the health officers of New York state from Dr. Montgomery E. Leary, Rochester, president-elect of the New York State Sanitary Officers Association, in which he outlines a plan for still further increasing the usefulness of the association in the promotion of public health. This plan includes the establishment of branches of the association in every county, and of auxiliary organizations among the laity.

### New York City

**Personal.**—Dr. Alvah H. Doty has been appointed consulting expert on communicable diseases in the State Department of Health. Dr. Theobald Smith has been appointed consultant in animal pathology.

## PENNSYLVANIA

**Will Establish Private Hospital.**—The Southern Schuylkill County Medical Society has decided to establish a large private hospital at Schuylkill Haven.

**Personal.** — Dr. B. F. Haagen, Altoona, was seriously injured in the spine and left arm by the overturning of his automobile in Collinsville, December 7.——Dr. J. Clyde Enos, Charleroi, sustained a fracture of the skull and injuries to the spine in a collision between his automobile and a street car.——Dr. Johnston McLanahan, Chambersburg, is reported to be seriously ill with heart disease.

### Philadelphia

**Personal.**—Drs. Charles Snowden Pancoast and E. Kilbourn Tullidge, sailed December 8 for Genoa, Italy, on their way to Vienna where they will serve as volunteers in the military hospitals.

**Fair for War Relief.**—At the Made-in-America fete held in Horticultural Hall, December 14 to 16, the proceeds of the doctors' booth were devoted to the sending of surgeons and medical supplies for the relief of those in the war zone, and the proceeds of the American Ambulance Ball, December 15, were utilized for the establishment of beds in the newly planned Philadelphia ward of the American Ambulance, Paris.

## TEXAS

**Personal.**—Dr. E. D. Fyke, Fort Worth, has been appointed state health officer.——Dr. Irvy L. McGlasson, for four years state quarantine officer at Galveston, will relinquish his office and return to Waco to practice February 1.——Dr. Morris H. Boerner, Austin, has resigned as assistant state health officer, to take effect January 15.

**Free Diphtheria Antitoxin for the Poor.**—Diphtheria is said to be prevalent throughout the state of Texas, though in a mild form. Arrangements have therefore been made through the State Board of Health with local health officers, whereby those unable to pay for it may obtain diphtheria antitoxin free in the larger cities of the state and at very low prices in other portions of the state.

**State Board Appointments.**—The governor has made the following appointments of the State Board of Health: Drs. Lawrence W. Hollis, Abilene; Carl W. Hoeflich, Houston; Louis M. Weinfield, San Antonio; Hugh L. McLaurin, Dallas; William D. Littler, Fort Worth; Harmon J. Childress, Gilmer, and E. M. Wood, Georgetown.——State Board of Medical Examiners: Drs. J. J. Williams, Groesbeck; John H. McLean, Fort Worth; Arthur M. McElhannon, Sherman; John S. McCelvey, Temple; William B. Collins, Lovelady; H. B. Mason, Temple; L. S. Scothorn, Dallas; Horace C. Morrow, Austin; Thomas J. Crowe, Dallas; Marion A. Cooper, Childress, and F. M. Butencourt, Falls County.——Quarantine Officers: Drs. Duke H. Huffaker, El Paso; S. E. McCain, Brownsville, Marquis D. L. Jordan, Velasco; Everette O. Arnold, Corpus Christi; Justus S. Davidson, San Felipe, and H. C. Hall, Laredo; and Registrar of Vital Statistics: Dr. William A. Davis, Jr., Jourdanton.

## WISCONSIN

**Personal.**—Dr. Ray R. Harris, formerly in charge of the Old Sanatorium, Prairie du Chien, has moved to Dubuque.——Dr. George Clyde Stimpson, White Creek, has been appointed an intern in the Elgin State Hospital.——Dr. George Wallace Nott, Racine, fractured his right wrist while cranking his automobile, December 8.

## CANADA

**Faculty Offers Base Hospital Personnel.**—The faculty of McGill University has offered the personnel for a mammoth base hospital for foreign service. The British war office has accepted this offer and the personnel and equipment will leave for England in March.

**Personals.**—The following medical men from Hamilton, Ont., will go with Canada's second war contingent: Drs. Geo. D. Farmer, Ancaster, Ont.; Daniel P. Kappele, William L. Silcox, William F. Nicholson.——Dr. John B. Leathes left Toronto December 13 for England, where he will take up his new duties in the University of Sheffield.——Dr. William E. Struthers, chief medical inspector of schools in Toronto, has resigned and has been appointed chief medical officer of the Workman's Compensation Board of Ontario.——Dr. Fernand L. de Verteuil, Vancouver, B. C., was the medical officer of the *Good Hope*, recently sunk off the Chilean coast.——Dr. Francis J. Folinsbee, Edmonton, Alberta, has been appointed resident house physician to the Great Ormond Street Hospital for Sick Children, London, England.——Dr. Robert Mayrand, Quebec, is on active service in the war zone as surgeon of Base Hospital No. 1.——Recently a bust of the late Dr. Emily Stowe was presented to the city of Toronto by a number of her friends. Dr. Stowe was the first woman physician to practice medicine in Ontario.

## GENERAL

**Church Medical Laboratory.**—The medical laboratory authorized by the Missouri Conference of the Methodist Church, South, is to be named the Missouri Valley Foundation for the Conservation of Health. Dr. Daniel Morton, St. Joseph, is secretary of the board and Dr. William H. Minton, St. Joseph, a member of the foundation.

**Bequests and Donations.**—The following bequests and donations have recently been announced:

Boehme Tuberculosis Camp, Evansville, Ind., $1,000 by the will of Mrs. May Stockwell.

Jackson County, Mich., Antituberculosis Society, residence on West Washington Street, Jackson, to be held in trust after the death of his daughter, Mrs. Julia A. Mersereau, by the will of R. Bruce Coltrin.

Methodist Hospital, Philadelphia, $3,000 by the will of Elizabeth Brines.

A worthy Hospital in Philadelphia, $5,000 to endow a bed for persons suffering from cancer, by the will of Caroline J. Cammerer.

**Meeting of Seaboard Physicians.**—The Seaboard Medical Association of Virginia and North Carolina held its nineteenth annual session in Goldsboro, N. C., December 8, under the presidency of Dr. John Rainey Parker, Goldsboro. Dr. William L. Rodman, president-elect of the American Medical Association was the guest of honor at the meeting and delivered an address on "Cancer." Norfolk, Va., was selected as the 1915 place of meeting and the following officers were elected: president, Dr. Israel Brown, Norfolk, Va.; vice-presidents, Drs. Cicero F. Griffin, Winston, N. C.; Beverley R. Kennon, Norfolk, Va.; J. R. Parker, Gatesville, N. C., and John W. Winston, Norfolk, Va.; secretary, Dr. Clarence P. Jones, Newport News, Va. (reelected), and treasurer, Dr. George A. Caton, New Bern, N. C. (reelected).

## FOREIGN

**Revision of Italian Pharmacopeia.**—In August the committee was appointed which is to have charge of the revision of the Italian pharmacopeia. It consists of Prof. E. Paterno, senator of the realm and incumbent of the chair of general and analytic chemistry at the University of Rome; Prof. V. Cervello, professor of materia medica and pharmacology at the University of Palermo; L. Pesci, director of the institute for chemopharmaceutics and toxicology at the University of Bologna; the pharmacist, A. Quercia of Bari, and T. Bosio of Turin.

## WAR NOTES

**Typhoid Epidemic Denied.**—Gen. M. P. Melis, chief of the Belgian Medical Corps, in a London dispatch of December 9, denies the report that typhoid fever is epidemic in the Belgian army.

**Red Cross Funds to Turkey.**—The American Red Cross on December 16, cabled to the American ambassador in Constantinople, $10,000 to assist in the maintenance of numerous hospitals in Turkey.

**The Budapest Red Cross Unit.**—The Red Cross unit located at Budapest in charge of Dr. Charles McDonald of New York City, has established a hospital with accommodations for 200 wounded.

**Red Cross Work in Servia.**—The Servian Prime Minister and the Minister of Foreign Affairs have notified the American Minister at Bucharest, Romania, that the American Red Cross unit, under the direction of Dr. Ryan, has taken over the hospitals at Belgrade, Servia, including the medical personnel and pharmacists.

**Artificial Pneumothorax on the Firing Line.**—Rist relates that a rapidly progressing tuberculous process in the right upper lobe with stormy onset in September, 1913, was arrested by artificially induced pneumothorax, and the young Frenchman took his place last August on the firing line. For a month he was subject to the vicissitudes of the rapidly shifting front rank in the active campaign but came through it in good condition, free from fever or cough. Some effusion in the pleura had helped to maintain the compression of the lung. A little effusion had been noticed just before he left for the front.

**Canada Aids Red Cross Work.**—The Canadian Red Cross Society has been requested to equip five field hospitals and three field ambulances for the Canadian Contingent. They will aggregate 2,000 beds, a capacity about four times that of the Toronto General Hospital. They will consist of two general hospitals, of 520 beds each; one clearing hospital, 200 beds; two stationary hospitals, 200 beds each, and three field ambulances, 150 beds each. The Aesculapian Club, Toronto, has voted $200 to the Belgian fund; $100 to the Canadian Patriotic Fund and $50 to the fund for comforts for Canadian soldiers.

## LONDON LETTER

London, Dec. 4, 1914.

### The War

Among the wounded the almost complete absence of rifle bullet wounds is striking; they constitute only about 1 or 2 per cent. The rest are due to shrapnel and to "high velocity" percussion shells. The shrapnel bullet does not make a very bad wound, though it often drives clothing in, but the wounds made by large pieces of common shell are horrible. Heads, arms, feet, etc., are blown off, and in other cases most dreadful flesh wounds and fractures result. The shell fragments drive clothing and mud deep into the tissues and cause both tetanus and spreading gangrene in many cases. The latter are treated by free incisions and injections of hydrogen peroxid subcutaneously, and if the treatment is begun soon enough, life and sometimes limbs are saved. Most of the tetanus cases are fatal, in spite of prophylactic serum.

#### GALLANTRY OF ARMY SURGEONS

As stated in previous letters, death has taken a heavy toll from the army surgeons, who have shown great bravery in the discharge of their duties. Only about a dozen Victoria crosses, granted only for extraordinary bravery in the field, have been awarded so far in this war, although our troops have fought with all their traditional valor. Another high distinction is the "Distinguished Service Order" (colloquially called the "D. S. O."), which has been awarded to fifty-eight officers in recognition of their services. The list includes three army surgeons who showed great bravery in attending to the wounded under fire. Since my last list another army surgeon has died of wounds, and another is "missing." In the battleship which was blown up, apparently as the result of an accident, three naval surgeons perished.

#### THE BELGIAN WOUNDED

Some further particulars with regard to the part played by this country in succoring the Belgian wounded may be of interest. When the Germans occupied all the important towns, the Belgian hospitals fell into their hands. The wholesale exodus of the population included all the wounded who could be moved, and furnished a gigantic problem. The British Red Cross was first approached, but as its duty was to attend to the British wounded, it was unable to use its organization. However, they gladly subscribed $5,000, and a "Wounded Allies Relief Committee" was formed. Subscriptions were raised and a small number of convalescent were brought from Antwerp to England. Premises for a hospital were secured at a seaport, Ramsgate. Two English physicians were sent over to Ostend just before its evacuation, and found the appalling condition of 10,000 wounded and 3,000 more to arrive on the morrow. Every available space and even railway sidings were crowded by the wounded. There were few surgeons or trained nurses and hardly any medical stores. The British government then came to the rescue and sent transports which brought away the wounded to England, where the naval and military authorities helped to disembark them. In the meantime telegrams were sent to the mayors of a number of large towns asking if they would receive batches of fifty wounded Belgian soldiers and see that they were properly treated at the local hospitals, to which they readily assented. The Admiralty sent to Ostend as many as five transport ships in thirty-six hours, and from October 12 to 15, 12,000 wounded were brought away. At the present time 18,000 wounded Belgians are under treatment in England. When they become convalescent they are sent to private houses whose owners have offered their hospitality. Thus by the cordial cooperation of the government and private citizens this gigantic problem has been efficiently solved.

#### OUTBREAK OF TYPHOID FEVER IN THE BELGIAN ARMY

An epidemic of typhoid fever is threatening in West Flanders and Northeastern France. Many of the Belgian soldiers have been attacked, which is causing some concern to the British Army Medical Service, lest the disease should spread to our troops who are fighting in close cooperation with the Belgians. Cases are coming into Calais at the rate of about ten a day. The British Red Cross has acted with great promptitude and made an immediate grant of $50,000 for the Belgian soldiers at Calais suffering from typhoid fever. The French authorities have given orders for a ship to lie in the dock basin to which the fever patients will be conveyed as soon as the diagnoses are made, and arrangements for the erection of an isolation hospital are under way. Thanks to the extensive inoculation of the British troops, very few cases have occurred among them.

### THE MANUFACTURE OF ANILIN DYES

As most of the anilin dyes are manufactured in Germany and their import has been prohibited since the war, a difficulty has been created in the textile industries. To meet this emergency the government has endeavored to induce British manufacturers of dyes to turn their attention from the making of dyes for export to the making of dyes necessary for our own industries. To aid those manufacturers the government has taken steps to persuade works used for the distillation of coal-tar to produce the intermediate bases of the dyes which hitherto have been mainly obtained in Germany. But these emergency arrangements will supply no more than one-third of the consumption of dyes in this country. It has been proposed to form a national organization for the production of dyes, and the government has offered to support it on the conditions that those engaged in it subscribe the whole of the ordinary capital and that they also undertake to continue to buy their dye-stuffs from this cooperative concern. If the consumers will subscribe $12,000,000, the government is prepared, subject to a certain control, to guarantee debenture interest on another $7,500,000. The government will require that it have two nominees on the board, that it have the right of veto to secure that the concern shall remain permanently under British control, and that the large consumer shall have no advantage in price over the small consumer.

### ESTABLISHMENT OF A LARGE HOSPITAL FOR THE WOUNDED

The government has placed at the disposal of the War Joint Committee of the British Red Cross and the St. John Ambulance Association the new Stationery Office in London which will be adapted to the needs of a hospital for the wounded. It is estimated that the hospital will contain 1,650 beds. An appeal is being made to the public for their equipment and money is being subscribed at the rate of about $50,000 a day; $125 provides a bed and its necessary equipment. To each bed so provided will be affixed a tablet with the donor's name.

### THE PREVENTION OF VENEREAL DISEASE

A national council for combating venereal disease has been formed with the support of the leaders of the medical profession, the churches and others. It marks an important advance in the campaign initiated by Major Leonard Darwin, president of the Eugenics Education Society. Sir Thomas Barlow, who presided at the inaugural meeting, pointed out that, while war conditions limited the possibilities of the movement in some respects, they also opened up opportunities which must not be missed. The aggregation of large bodies of young men in camps offered them a special field. The military authorities were fully alive to their own duties in this regard, and were even now devising an educational scheme for meeting the need in this great national emergency. If they should require aid from the outside, the medical profession would not be slow to put their shoulders to the wheel. The work was heartily welcomed by Lord Kitchener. But the subject had its civil as well as its military aspect, and there was ample room for cooperation by civil authorities and by organizations for social welfare, and not least by women, both medical and lay, and by those excellent agencies which were providing tents and means of sane recreation for the soldiers. While the problem was primarily medical, its solution could not be attained without the hearty cooperation of every kind of agency for social betterment. He moved that the following aims be the objects: 1. To provide accurate and enlightened information as to the prevalence of these diseases, and as to the necessity of early treatment. 2. To promote the provision of greater facilities for their treatment. 3. To increase the opportunities of medical students and practitioners for the study of these diseases. 4. To encourage and assist the dissemination of a sound knowledge of the physiologic law of life in order to raise the standard both of health and of conduct. 5. To cooperate with the existing associations, to seek their approval and support, and to give advice when desired. 6. To arrange, in connection with such organizations, for courses of lectures, and to supervise the preparation of suitable literature. 7. To promote such legislative, social and administrative reforms as are relevant to the foregoing aims and objects.

### THE SALE OF DRINK TO SOLDIERS

Another danger to soldiers is being guarded against. The government has issued an order giving the naval and military authorities power to close all saloons within any area for certain hours, either generally or as respects the members of the army and navy. Attempts to elicit information for the enemy by giving or selling intoxicants to seamen or soldiers is made an offense.

## BERLIN LETTER

Berlin, Nov. 24, 1914.

### The War

According to the latest reports from the seat of war, the number of cases of typhoid and dysentery observed is still small. Whether the opportunity for infection is lacking or the extensive protective inoculations to which our troops have been subjected against typhoid explain this fact cannot be decided at present. The injection material is prepared for the most part according to the improved process of Fornet, at least in Berlin and in the army laboratories, especially in the Kaiser Wilhelm Academy for the instruction of army surgeons. Also the hygienic institutes of the other federal states prepare typhoid and cholera vaccines. With the exception of two persons who wandered over the border, cholera has not been observed in Germany, which is all the more remarkable since it is constantly prevalent in Austria, particularly in the neighboring province of Galicia, and the communication of the disease is facilitated by the combination of the armies. The troops have also been inoculated against cholera but not to so great an extent as against typhoid. In the proceedings of the individual medical societies, which have almost wholly been converted into unions of military surgeons, tetanus occupies a prominent place as formerly. There is still no agreement as to the success of tetanus antitoxin, but the reports of favorable results seem to be increasing. The injection of magnesium sulphate secured at least a symptomatic success, and many an author believes that he has observed a curative effect. It is quite remarkable to what an extent the scientific enthusiasm of our physicians comes into expression under the difficult conditions in the field. In many places scientific societies have been formed in the hostile countries, where from time to time discussions occur. In Lille, a German clinic has been organized out of the university clinic of the Hospital St. Sauveur, which has been transformed by its conductor, Professor Krönig of Freiburg, into a center of scientific activity for physicians in Lille and its neighborhood. In Namur, a German-Belgian physicians' association has been founded which has already held four meetings with thirty to forty participants under the presidency of the garrison surgeon of that place, Professor Schilling, an investigator of tropical diseases from the Berlin Institute for Infectious Diseases. The interpreter is a Belgian army surgeon who studied in Germany for a number of years. This recalls the fact that also in the Franco-Prussian War Professor Langenbeck founded a scientific association in Orleans. In Berlin almost all of the medical societies have united with the greatest medical association of Berlin and also of Germany, the Berlin Medical Society, so as to scatter the material as well as the audience as little as possible. The society meets once in two weeks instead of every week as formerly, alternating with the army medical society which holds its meetings under the presidency of the former Leipsic surgeon, Professor Trendelenburg, who, since resigning his position, is living in Berlin.

### PHYSICIANS IN CIVIL PRACTICE

As may be seen from the meetings of the Berlin Medical Society, the number of physicians still carrying on a civil practice is diminishing, although somewhat gradually. The continual increase of the armies by the addition of the reserves demands, on the one hand, a greater number of field surgeons to accompany them. On the other hand, the number of wounded accumulating in the hospitals demands a greater amount of surgical treatment. Naturally, the demands for this work cannot be limited to those physicians who have served as army surgeons, but now those are employed in their home hospitals who, for any physical causes, have not been found fit for military service. All these physicians are paid a sum of twenty marks ($5) a day in addition to their expenses. Germany does not lack money and food for these purposes. Not only in Berlin but also in practically all other parts of the country, so far as it has not been laid waste on the eastern and western boundaries, there is no scarcity of food to be noted on account of the war. According to the statement made by Professor Rubner, the physiologist, a few weeks ago in an article in the *Deutsche medizinische Wochenschrift,* there is no need to fear the subjugation of Germany by hunger.

## Marriages

Ossian H. King, M.D., Vincennes, Ind., to Miss Margaret McDonald of Nashville, Tenn., at Vincennes, December 2.

James L. Stewart, M.D., Boise, Idaho, to Mrs. Modjeska Fleharty of California, at Salt Lake City, November 25.

Robert Maffett Palmer, M.D., Pottsville, Pa., to Miss Olive Frances Mayer of Johnstown, Pa., October 22.

John Percival Hewson, M.D., Orange, Texas., to Miss Anna E. Salmon of Wilkes-Barre, Pa., December 3.

Cecil Harrod Dickerson, M.D., Conway, Ark., to Miss Nine Martin of Indianola, Miss., November 25.

Walter M. L. Ziegler, M.D., Philadelphia, to Mrs. Mary Alice Dolson of New York City, November 28.

Henry Joseph Eugene Newnam, M.D., to Miss Lillian F. Hopkins, both of Philadelphia, November 26.

Clarence Herbert Morian, M.D., Arvada, Colo., to Miss Lelah M. Hart of Denver, December 2.

Garrett Lee Hynson, M.D., to Miss Helen Rebecca Sibel, both of Portland, Ore., November 25.

Henry H. Flood, M.D., Baltimore, Md., to Miss Adelaide Selby of Ivory, Md., November 26.

James Berry Gilbert, M.D., to Miss Edna Ruth Wilson, both of Tulsa, Okla., November 29.

Robert L. Schaffer, M.D., to Miss Millie L. Ochs, both of Allentown, Pa., November 30.

Beverly W. Hall, M.D., Bowman, Ga., to Miss Alva Harris at Rome, Ga., November 12.

## Deaths

**George W. Lasher, M.D.** Rush Medical College, 1872; a Fellow of the American Medical Association and formerly president of the Los Angeles County Medical Association and Southern California Medical Society; for twenty-five years professor of surgery in the University of Southern California, Los Angeles, and since 1910 emeritus professor; for eighteen years house physician of the Hollenbeck Hotel, Los Angeles; died at the home of his office associate, Dr. W. F. Perry, in that city, December 4, from cerebral hemorrhage, aged 69.

**Johnston McLanahan, M.D.** Jefferson Medical College, 1865; a member of the Medical Society of the State of Pennsylvania; formerly president of the Medical Society of Franklin County and treasurer of the organization for many years; surgeon of United States Volunteers from 1863 to 1866; president of the Board of Health of Chambersburg for several years and a director of the Chambersburg National Bank; died at his home in that city, December 13, from valvular heart disease, aged 70.

**Jephtha Vining Harris, M.D.**. Tulane University, New Orleans, 1861; assistant surgeon and chief surgeon, C. S. A., and assistant surgeon, C. S. N., during the Civil War; a member of the Florida legislature, 1877; superintendent of public instruction of Monroe County, Fla., for ten years, and collector of customs at Key West, from 1885 to 1889; died at the home of his son in Key West, Fla., November 21, aged 75.

**William H. Capener, M.D.** Western Reserve University, Cleveland, Ohio, 1856; examining surgeon for the Army during the Civil War; surgeon of the U. S. Marine Hospital, Cleveland, in 1860 and 1861; health officer of the city, from 1871 to 1873, and surgeon to the City Infirmary for four years; died at his home in Cleveland, December 2, aged 82.

**Gard Wilmarth Foster, M.D.** Detroit Medical College, 1873; a member of the Medical Society of the State of New York and a specialist in diseases of the eye, ear, nose and throat of Auburn, N. Y.; while en route to Bermuda in search of health, died December 2, in Schenectady, N. Y., from pneumonia, after a surgical operation.

**William Taylor Johns, M.D.** St. Louis College of Physicians and Surgeons, 1912; professor of physiology and serology in his Alma Mater in 1911-12; director of the Western Wassermann Laboratories, Muskogee, Okla.; was found dead in his office in Muskogee, December 7, from tuberculosis, aged 39.

**Moris Drake, M.D.** Medical College of Ohio, Cincinnati, 1881; a Fellow of the American Medical Association and a well-known practitioner of Indiana; died at his home in Shelbyville, December 12, from gastric ulcer associated with and dependent on carcinoma of the stomach, aged 58.

**James Harper Ramsey, M.D.** Western Reserve University, Cleveland, 1871; a veteran of the Civil War; for several years a member of the school board of Bridgewater, Pa.; and once president of the board of health; died at his home in West Bridgewater, Pa., November 25, aged 79.

**Robert Harris Bradford, M.D.** North Carolina Medical College, Charlotte, 1904; surgeon for the Inter-State Lumber Company, at Burgaw, N. C.; died in the James Walker Memorial Hospital, Wilmington, N. C., November 25, three weeks after an operation for appendicitis, aged 36.

**George Edward Maloy, M.D.** University of Vermont, Burlington, 1877; for many years a practitioner of Glencoe and St. Cloud, Minn.; but for the last three years a resident of the Pacific Coast; died at the home of his son in Spokane, Wash., November 25, from carcinoma, aged 59.

**James Ball, M.D.** Kansas City Homeopathic Medical College, 1893; a Fellow of the American Medical Association; for twenty years a practitioner of Ottawa, Kan.; died in Bethany Hospital, Kansas City, Mo., November 26, after an operation for intestinal obstruction, aged 48.

**John M. Fraser, M.D.** Western Reserve University, Cleveland, 1881; a Fellow of the American Medical Association; formerly a member of the faculty of the Wooster University Medical College; died at his home in Cleveland, November 30, from cerebral hemorrhage, aged 62.

**Baldwin Gardiner Cooke, M.D.** College of Physicians and Surgeons in the City of New York, 1879; for more than eighteen years medical and sanitary inspector for the Department of Health of New York City; died at his home in New York City, December 8, aged 59.

**William T. Heidt, M.D.** Savannah (Ga.) Medical College, 1857; one of the oldest members of the Chatham Field Artillery, Savannah, and surgeon of that organization during the Civil War; died at his home in Bloomingdale, Ga., December 7, aged 77.

**Albert Brinkman, M.D.** New York University, New York City 1883; for many years visiting surgeon to the Brooklyn Eye and Ear Hospital; died at the home of his brother in Brooklyn, December 7, from the effects of an overdose of morphine, aged 52.

**Josiah Claire Violet, M.D.** Northwestern University Medical School, Chicago, 1910; a Fellow of the American Medical Association and formerly a resident of Chicago; died in Pomona, Cal., where he had gone in search of health, November 22, aged 32.

**Jacob F. Trump, M.D.** University of Vermont, Burlington, 1881; a specialist of diseases of the eye, ear, nose and throat of Hamilton, Ohio; died in Mercy Hospital in that city, December 8, after the amputation of his right leg for gangrene, aged 63.

**William Robert Moore, M.D.** Starling Medical College, Columbus, Ohio, 1889; a member of the Ohio State Medical Association and a member of the staff of the Deaconess Hospital, Ironton, Ohio.; died at his home in that city, December 4, aged 41.

**George Dexter Bullock, M.D.** Jefferson Medical College, 1886; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; died at his home in Weymouth Landing, Mass., December 6, aged 55.

**George Herbert Burke, M.D.** Chicago Homeopathic Medical College, 1898; a member of the Hospital Corps during the Spanish-American War, with tropical service; died at his home in Wabash, Ind., December 4, from heart disease, aged 51.

**Thomas Osborne Hunter, M.D.** Memphis Hospital Medical College, Memphis, Tenn., 1889; a pathologist and health officer of Biloxi, Miss., and at one time state registrar; died suddenly in Biloxi, December 3, from heart disease, aged 46.

**Wesley J. Green, M.D.** Atlanta (Ga.) Medical College, 1888; a member of the Medical Association of Georgia; for many years a practitioner of Clayton, Ga.; state senator from 1898 to 1900; died in Clayton, Ga., November 28, aged 51.

**Sumner A. Stacy, M.D.** New York Homeopathic Medical College, New York City, 1886; died at his home in Adamsville, Ohio, December 4, from valvular heart disease, aged 57.

**John Harrod, M.D.** Eclectic Medical Institute, Cincinnati, 1887; died at his home in Fort Wayne, Ind., December 8, from heart disease, aged 53.

**William Grange Dolan, M.D.** Rush Medical College, 1902; a member of the Minnesota State Medical Association and for twelve years a practitioner of Cloquet, Minn.; died in Jacksonville, Fla., December 5, from diabetes, aged 37.

**Charles S. Albertson, M.D.** Homeopathic Hospital College, Cleveland, 1882; a member of the staff of the Oswego (N. Y.) Hospital and of the Medical Society of the State of New York; died at his home, December 7, aged 62.

**Elias Lawrence Brownell, M.D.** University of Vermont, Burlington, 1868; a pioneer practitioner of Dickinson County, Iowa; died at his home in Spirit Lake, Ia., about December 2, from sciatic rheumatism, aged 71.

**Elden Cromwell Sturman, M.D.** College of Physicians and Surgeons, Keokuk, Ia., 1897; a member of the Iowa State Medical Society; died at his home in Hartford, Ia., November 29, aged 45.

**Robert W. Sharp, M.D.** Eclectic Medical Institute, Cincinnati, 1873; a member of the Ohio State Medical Association; died at his home in Buckland, Ohio, about November 22, aged 64.

**Milton I. Hatfield, M.D.** Eclectic Medical College of Pennsylvania, Philadelphia, 1870; died at his home in Warren, Ohio, November 30, five weeks after a surgical operation, aged 69.

**John W. Morgan, M.D.** Medical College of the State of South Carolina, Charleston, 1857; formerly of Minden, La.; died at his home in Coushatta, La., November 29, aged 84.

**James A. Wamsley, M.D.** Jefferson Medical College, 1878; of Philadelphia; died at the German Hospital in that city, December 4, after an operation for appendicitis, aged 63.

**Harvey M. Dally, M.D.** Medical College of Indiana, Indianapolis, 1881; a physician and druggist of Pontiac, Ill.; died at his home in that place, November 29, aged 59.

**Louis Seraphin Poulin, M.D.** University of the Victoria College, Coburg, Ont., 1867; died at his home in St. Alexandre d'Iberville, Que., September 26, aged 70.

**Isaac R. Hogue, M.D.** Hahnemann Medical College, Chicago, 1892; for many years a school teacher; died at his home in Elkhart, Ind., December 2, aged 82.

**Ira John Schott, M.D.** Hahnemann Medical College, Chicago, 1887; of Naperville, Ill.; died suddenly from heart disease in that place, November 21, aged 54.

**James R. Seymour, M.D.** Eclectic Medical Institute, Cincinnati, 1883; died at his home in Raymond, Ill., November 28, from cerebral hemorrhage, aged 65.

**Solomon Singer, M.D.** University of Toronto, Ont., 1903; a coroner of Toronto; died at his home in that city in October, from typhoid fever, aged 37.

**John Edward Waterhouse, M.D.** University of Colorado, Boulder, 1912; died at the home of his mother in New Orleans, November 27, aged 26.

**Shelvey Maddox, M.D.** Eclectic Medical Institute, Cincinnati, 1881; died at his home in Monroe City, Mo., November 28, from diabetes, aged 61.

**Alexander Peter O'Malley, M.D.** New York University, New York City, 1876; died at his home in Wilkes-Barre, Pa., December 12, aged 61.

**John T. Anderson** (license, Indiana, 1897) a practitioner since 1893; died at his home in Swayzee, Ind., about December 1, from pneumonia.

**John Winfield Reith, M.D.** Hahnemann Medical College, Philadelphia, 1905; died at his home in Lancaster, Pa., December 9, aged 32.

**Adeline Wilkins Wildes, M.D.** Boston University School of Medicine, 1881; died at her home in Roxbury, Boston, December 6, aged 74.

**John August Lock, M.D.** Eclectic Medical College of the City of New York, 1910; died at his home in Brooklyn, December 4, aged 31.

**Thomas Henry Moore, M.D.** Maryland Medical College, Baltimore, 1912; died at his home in Willimansett, Mass., October 21, aged 26.

**Henry Reid McCullough, M.D.** Trinity Medical College, Toronto, Ont., 1887; died at his home in Harriston, Ont., October 21, aged 49.

**James Frederick Shurtleff, M.D.** Albany (N. Y.) Medical College, 1867; of Rock, Mass.; died in Middleboro, Mass., October 22, aged 72.

**Charles Henry Reed, M.D.** University of Pennsylvania, Philadelphia, 1878; died at his home in Philadelphia, November 24, aged 62.

**Harold Middleton Shephard, M.D.** McGill University, Montreal, 1910; died at his home in Ingersoll, Ont., October 20, aged 27.

**John Clossom Ray, M.D.** University of the Victoria College, Coburg, Ont., 1862; died at his home in Toronto, Ont., October 17.

**William S. Turner, M.D.** Vanderbilt University, Nashville, Tenn., 1882; died at his home in Blakemore, Ark., December 1, aged 60.

**Sidnar Morgan** (license, Colorado, ten years of practice, 1900) died at his home in Denver, Colo., November 23, aged 60.

**C. H. Bates, M.D.** Kentucky School of Medicine, Louisville, 1871; died at his home in Osyka, Miss., September 23, aged 67.

**George Mitchell, M.D.** Bellevue Hospital Medical College, 1866; died at his home in Wallaceburg, Ont., October 2, aged 78.

**Willard A. Hall, M.D.** Miami Medical College, Cincinnati, 1876; died at his home in Yoakum, Texas, December 2, aged 63.

**Robert Lee Rye, M.D.** University of Louisville, Ky., 1897; died suddenly at his home in Porter, Okla., December 4, aged 43.

**Allan Aleyne Mathews, M.D.** Rush Medical College, 1879; of Oak Park, Ill.; died November 19, aged 61.

# *Correspondence*

### Medical Notes on England at War

*To the Editor:*—I dare say my many friends in the United States and Canada would like to have a few notes of my recent experience during these busy months.

It has been an extraordinarily interesting sight to watch the transformation of a peaceful commercial country into an armed camp. As regards soldiers, four months ago England was in the same blissful condition as the United States. One knew there was an army, but a soldier was never seen. To-day khaki is the "only wear," and there are more than 1,000,000 in training, and some 300,000 at the front, a larger expeditionary force than England has ever had on the Continent. And there is a fine spirit abroad. Every one is working, the Irish question is dead, an intense pride has been raised in the army, there is every confidence in the navy. At the first blush it really looks as if war were a good thing, a fine tonic to the country at large; but behind all this is the tragedy of the shambles at the front, and the hospitals are full of poor fellows battered and shattered, so that one has not to go far to realize the truth of Sherman's famous words that "War is Hell."

For the medical work England was not wholly unprepared. The lessons of the South African War sank deeply and gave a good many men now in the prime of life a most helpful experience. Then in the reorganization of the territorial army five or six years ago the country was divided into military districts, in each one of which a base hospital was organized. Thus Sir Alfred Keogh, the Director-General, and Colonel James came here, met the profession, explained the details of the reorganization, and left the matter in the hands of a committee who nominated the staff, selected the buildings, and arranged for nurses. This was all on paper, but the skeleton was laid down, and the large examination schools selected as the hospital. The plans for the alterations had been prepared, and life had been kept in the organization by an annual meeting. And so it turned out that within two weeks after the order for mobilization, Colonel Ranking, the administrator, had the schools ready for a hospital of nearly 500 beds, and a staff organized. The same has taken place in the other centers throughout the country, so that ample accommodation was provided, both for the sick among the territorials and Kitchener's new army, and for the wounded who soon began gradually to be sent back from the front. At present in Oxford there are nearly 1,000 beds available, as the town hall and the workhouse have been added and about eighty beds provided at the Radcliffe Infirmary. Up to date, between 2,000 and 3,000 wounded have been treated.

Private enterprise has also furnished excellent hospitals. The Committee of American Ladies in London has opened the American Hospital at Paignton, near Torquay in Devonshire, in the splendid house handed over to it by Mr. Paris Singer. There are 200 beds, and an additional sixty beds will be provided. The work is in charge of Dr. Beal of the American Red Cross.

The Canadians resident in London have opened a hospital near Shorncliffe, which is in charge of Dr. Armour and myself, in a house provided by Sir Arthur and Lady Markham. The resident surgeons are Dr. Wallis of Guelph and Dr. Stewart of Calgary. Miss Macmahon of Toronto, formerly one of the assistant superintendents at the Johns Hopkins Hospital, is in charge with a group of Canadian nurses.

From the base hospital in Oxford the convalescents flow over to Blenheim Palace, the library of which has been converted into a ward for sixty patients, and to Lady Wantage's at Lochinge, and to Mr. Mortimer Singer's at Milton Hill. The latter is one of the most ideal hospitals I have ever seen. Mr. and Mrs. Singer were about to move into their newly arranged house, but have converted it into a hospital for 150 beds, and are providing everything for the comfort of the soldiers.

In Cambridge, Birmingham, Bristol and London large hospitals have been opened, and many of the Metropolitan hospitals have set aside a certain number of beds, so that one may say that the accommodation throughout the country both as regards hospitals and convalescent homes is ample.

Altogether, the health of the troops in the training camps has been excellent, and, fortunately, until recently the weather has been good. Up to date there has been no typhoid to speak of. Inoculation is not compulsory, so that a number of us have been going about the camps lecturing to the men, the large majority of whom have readily submitted to inoculation. The country districts in England are singularly free from typhoid, so that there is not much risk of wide-spread epidemics in the camps, and in the British expeditionary forces there have been very few cases. There has only been one case at Paignton, and only four or five here. I saw a couple in the hospitals at Brighton. In these first four months of the war we may say that typhoid has played no part. Major Russell's recent figures of the results of inoculation in the American army have been of great value in convincing officers of the value of the procedure.

The outstanding medical feature of the campaign in France and Belgium is that wounded, not sick, are sent from the front. So far, disease has played a very small part and the troops have had wonderful health, in spite of the exposure in the trenches. The damage has been from the pointed bullet, the round shrapnel bullet, and from fragments of the shrapnel case, and the severity of the wounds caused are in this order. From the military point of view, the modern bullet is not a very effective agent. At the right spot it kills; but it may pass harmlessly through head, chest or abdomen, and may splinter a bone without causing sepsis. The orifices of entrance and exit are small, heal rapidly, and the high velocity appears to sterilize the tract. I have seen one case of bullet through the frontal lobes, four through the chest, and two through the abdomen without serious symptoms. The chest cases are of special interest, as one would not think it possible for a bullet to pass through pleura and lung without damage. At Paignton there have been three cases without pleurisy or hemothorax. In one the bullet entered the second right interspace, passed through the anterior mediastinum and the margin of the left lung and came out in the second interspace, about four inches from the left sternal border. Cough and hemoptysis followed, but the patient rapidly recovered. In another man the point of entrance was to the left of the nipple and the exit below the angle of the right scapula. He spat blood at first, but when I examined him about two weeks later there was no friction, flatness or effusion. A Belgian at Shorncliffe, wounded a week previously by a bullet through the right lung, had the same negative features. The patient in the next bed had hemothorax, with moderate fever, from a bullet which had passed through the right lung at the level of the fourth rib. When hemorrhage follows, there may be fever at first, though not necessarily, and if left alone, the symptoms subside, the clot organizes, the plasma is absorbed, and the affected side becomes immobile, with narrowed interspaces and even rapid contraction.

It would not seem possible that a bullet could go through the abdomen without doing any harm, but a Highlander at the base hospital, Oxford, had the wound of entrance about two inches to the left of the navel and the exit about three inches from the spine. He had had no abdominal symptoms, but had a bad shrapnel wound of the leg. In another man at Paignton the bullet entered from behind, and the roentgenogram showed it not far from the navel. No symptoms followed. The modern rifle bullet may leave a clear wound which quickly scabs over and heals rapidly. A Belgian student at Shorncliffe had a bullet through the bridge of the nose — fortunately a good-sized one — with little or no damage except a frontal sinusitis. The round shrapnel bullet does more harm, with a bigger orifice and a larger, and sometimes rugged, exit. This is an artillery war in which shrapnel does the damage, tearing flesh, breaking bones, and always causing jagged, irregular wounds. And here comes in the great tragedy — sepsis everywhere, unavoidable sepsis! The conditions on the battlefield have made it impossible always to give first aid, and within twelve and twenty-four hours the ragged open wounds have become infected from the clothing or the soil. The surgeons are back in the pre-Listerian days and have wards filled with septic wounds. I have seen sights that remind me of student days at the Montreal General Hospital when all the compound fractures suppurated, and we dressers really had to dress wounds. It may be possible to improve conditions, and already the transport of the wounded from the front has been hastened, and measures are being taken to provide simple antiseptics; but the wound of shell and shrapnel is a terrible affair, and infection is well-nigh inevitable. It is surprising what may be done in some of the worst cases. Among the first batch of German wounded admitted to the Oxford base hospital was a man with high fever, right hemiplegia and aphasia. He had a large wound of the skull on the left side. I saw him with Mr. Whitelocke, as meningitis was feared, but after the wound was freely opened and a part of a bullet and a bit of his cap were removed, the temperature fell, the paralysis cleared, and he has made a complete recovery. An interesting point is the extent of suppurating surface that may exist without fever so long as free drainage exists. It is, however, a slow tedious business, with a type of wound demanding much nursing and dressing. Two points then stand out prominently — the comparative mildness of the wounds of the high-velocity bullet, and the wide-spread prevalence of sepsis in the crusted and lacerated shrapnel wounds.

Two other infections have caused trouble. The fighting has been in highly cultivated districts where the tetanus bacillus thrives, so that many cases have developed. At first there was not sufficient antitoxin, but now it is given at the front as early as possible. There have been only two deaths here among seven cases. At Paignton two very severe cases recovered. The intrathecal method as warmly recommended by Park has been used. The other infection is more serious, an emphysematous wound gangrene, due to an anaerobic gas bacillus. It appears within the first four days of the injury and may prove rapidly fatal by sepsis. The emphysematous swelling, the spreading discoloration, gaseous discharge and terrible odor make the diagnosis easy. The phlegmon bacillus of Fränkel is a widely distributed organism, and infection probably comes from the soil.

There will be countless opportunities of studying lesions of the nervous system, particularly of the peripheral nerves. I have already seen several cases of severe neuritis of the type described in the monograph of Moorehouse, Mitchell and Keen, with great swelling. One patient at the American Hospital with a clean bullet wound high up on the inside of the arm has complete loss of power of the arm, with agonizing pain and great swelling. Later, it would be worth while for the government to concentrate these cases in one large hospital, as was done during the Civil War, and gave the authors just named their great opportunity. Perhaps the case that has interested me most was a paraplegia spastica cerebralis. The man, a private in the Lancashire Fusiliers, had a bullet wound at short range, which ploughed along the parting of his hair for about 3 inches, grooving the bone. It happened on September 13, and he was unconscious for a time, had loss of power in the legs and was carried into the cart. He gradually recovered the use of his legs, but has developed a spastic gait, with great increase in the reflexes. Another point of interest is the paralysis of the flexors of the feet, with some wasting. This makes the gait very remarkable, a combination of the spastic and steppage. No doubt here there was a bilateral hemorrhage, and an anatomic condition similar to that which occurs in Little's disease.

At the Beechborough Hospital there was a remarkable spurious aneurysm, in a Belgian shot through the right cheek; the bullet passed through the mouth, under the jaw beneath the skin of the neck, and was just below the left clavicle. The cervical triangle was filled with a pulsating mass, without thrill or bruit. It appeared to be a traumatic aneurysm, but Dr. Armour removed the bullet, relieving the tension, and the pulsation has gradually disappeared. It was probably hematoma with communicated pulsation. At Paignton there was an arteriovenous aneurysm of the left brachial which seemed doing very well at first, but then began to increase rapidly, so that Dr. Beal did an Antyllus operation.

Considering the distance that the wounded men have had to travel; from the front to the clearing hospital, then by ambulance train to the base hospitals, by ship to one of the ports, then by train or motor ambulance to the general hospitals—well termed a *via dolorosa*—their condition has been remarkable. The mortality has been everywhere very low.

I am sure your readers would like also to hear of the work which is being done to help our Belgian colleagues who have suffered so terribly. Within a week after the fall of Louvain one of the professors called and told such a sad story of their plight that we organized a university committee to offer hospitality to any who cared to accept, and my wife wrote at once to her friends in the United States asking for help. There are now sixteen Belgian professors here, with their families numbering nearly 100, for whom have been provided houses or lodgings, and who are given monthly grants for their support. The money for this has very largely come from our friends in the United States; and I would like here to express the indebtedness of the committee to Dr. J. William White of Philadelphia, and to Mrs. Futcher of Baltimore. The financial position has been greatly relieved by the kind offer of the Rockefeller Foundation to subsidize any science professors who wish to continue their work at English universities. The two most distinguished medical professors are Professor Denys, who is working in the laboratory here, and Professor Van Gehuchten in the Research Hospital at Cambridge, both from Louvain.

WILLIAM OSLER, Oxford, Dec. 4, 1914.

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## Sodium Chlorid in Bright's Disease

*To the Editor:*—Dr. Lowenburg's article in THE JOURNAL, Nov. 28, 1914, p. 1906, is of immense interest from the point of view of the effects of various mineral salts on metabolism, as well as of sodium chlorid in dropsy.

That sodium chlorid, taken into the circulation, will, under certain circumstances, cause water retention in the tissues (edema), I am fully convinced, but there may be, and there probably is, some other factor necessary for the production of that result. My opinion is that some etiologic factor is to be found in a peculiar condition of the tissues (such condition, in some degree, not unlike what we meet in chilblain cases), as well as in the pathologic condition of the kidneys. It is not generally known, perhaps, that potassium salts will counteract this water retention in the tissues by causing the sodium salts to be eliminated, and some articles of diet, such as potatoes, cereals, etc., which contain potassium in considerable quantities, will often prevent sodium chlorid from producing its characteristic effects on the tissues. Hence, probably one of the reasons for some contradictory results obtained by different clinicians owing to inattention to these details.

I have now in mind one particular case in point, which came under my observation in London, J. G., a man about 50, a plumber by trade, who had an attack of acute nephritis with albuminuria, general anasarca and other characteristic symptoms. The patient improved under treatment and resumed work in the spring of 1907. He felt tolerably well during the summer, but the case eventually ran into the chronic form, the condition of the patient becoming worse every winter through renewed attacks. He was admitted into the Middlesex Hospital during the winter of 1909-1910 and left little improved, to be sent shortly after to the Marylebone Infirmary. At that time he could walk fairly well, but had general edema and ascites. His condition, however, became gradually worse, notwithstanding the treatment he received and the continual use of Southey's tubes to reduce the dropsy, until during the last two months of the six which he remained in that institution, he was quite unable to walk owing to his size and weight from the dropsy. He could only move about in the corridors and in the yard with the use of a bath-chair which he wheeled with his hands. He thought that he would die if he remained there any longer, and he prevailed on his wife to take him out, although she had no other means to support him and herself than her daily labor at scrubbing. This was in the autumn of 1910. I was then asked to prescribe for him. On inquiry, he told me that his diet in the infirmary had consisted chiefly of salt fish and, having read at that time several articles on the effects of sodium chlorid in producing water retention in the tissues, I put him on a salt-free diet and on articles of food containing potash such as unsalted potatoes *ad libitum*, cereals and various vegetables. He also had milk and buttermilk, and was allowed the fat of bacon. The only medicine he had to take was the mistura alba (magnesium sulphate and magnesia) sufficient to keep his bowels in action, and occasional doses of potassium bicarbonate by the mouth. Before the end of three weeks he walked to my office unaided, a distance of more than half a mile, and told me he had lost over 6 inches around the waist, his legs and arms were much reduced in size and he felt much more comfortable. The urine was clearer and contained less albumin. In another month he began to do some work, and when I left London, in May, 1911, he was still able to work to earn his living. I heard of him a few months after I left and was told that he kept fairly well, but I have heard nothing more since.

I feel convinced that, in this instance, the continual aggravation of the dropsy was due to the ingestion of sodium chlorid from the salt fish of the food, and the rapid improvement of the symptoms to the sudden cutting off of the salt supply to the tissues, together with the elimination of sodium chlorid by the administration of potassium salts both as a medicine and in the diet.

It is not improbable, therefore, that the benefits obtained by the administration of Ringer's solution in these cases are due to the potassium contained in it and perhaps also to the calcium. I doubt that the sodium contained in Ringer's solution has any share in the benefits derived from its administration, except in so far as it may be converted, by the presence of potassium and calcium salts, into some other sodium salt having less power to produce water retention than the chlorid and thus be rendered more easy of elimination.

I am inclined to think also that chronic cases of dropsy offer a safer means of finally judging of the effect of sodium chlorid in producing edema than acute ones, because the latter present greater reactive and recuperative powers to overcome the effect of sodium chlorid, even if injurious, than the former. On the other hand, it must be borne in mind that when the elimination of the excessive sodium chlorid is prolonged to a degree of salt starvation of the tissues, which require sodium chlorid as a normal constituent, an opposite condition may be developed which might produce a nephritis of a special character.

Paul Z. Hebert, M.D., New York.

# Medical Education and State Boards of Registration

## COMING EXAMINATIONS

Alabama: Montgomery, Jan. 5, 1915. Chairman, Dr. W. H. Sanders, Montgomery.

Alaska: Juneau, Jan. 5, 1915. Sec., Dr. H. C. DeVighne, Juneau.

Arizona: Phoenix, Jan. 5-6, 1915. Sec., Dr. John Wix Thomas, 200 Nat'l Bank of Ariz. Bldg., Phoenix.

Illinois: Chicago, Jan. 13-15, 1915. Sec., Dr. C. St. Clair Drake, Springfield.

Indiana: Indianapolis, Jan. 12-14, 1915. Sec., Dr. W. T. Gott, State House, Indianapolis.

Iowa: Des Moines, Jan. 19-21. 1915. Sec., Dr. Guilford H. Sumner, Capitol Bldg., Des Moines.

Minnesota: Minneapolis, Jan. 5-8, 1915. Sec., Dr. Thomas McDavitt, 814 Lowry Bldg., St. Paul.

New Hampshire: Concord, December 29-30. Regent, Mr. H. C. Morrison, Concord.

New Mexico: Santa Fe, Jan. 11, 1915. Sec., Dr. W. E. Kaser, E. Las Vegas.

New York: Albany, Buffalo, New York, Syracuse, Jan. 26-29, 1915. Mr. H. H. Horner, Chief, Examination Division, State Education Bldg., Albany.

North Dakota: Grand Forks, Jan. 5, 1915. Sec., Dr. G. M. Williamson, Grand Forks.

Oklahoma: Oklahoma City, Jan. 12-14, 1915. Sec., Dr. John W. Duke, Guthrie.

Rhode Island: Providence, Jan. 7, 1915. Sec., Dr. Gardner T. Swarts, State House, Providence.

South Dakota: Pierre, Jan. 12, 1915. Sec. Dr. P. B. Jenkins, Waubay.

Utah: Salt Lake City, Jan. 4-5, 1915. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Vermont: Montpelier, Jan. 11-13, 1915. Sec., Dr. W. Scott Nay, Underhill.

Washington: Walla Walla, Jan. 5, 1915. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

Wisconsin: Madison, Jan. 12-14, 1915. Sec., Dr. John M. Beffel, 3200 Clybourn St., Milwaukee.

### Alaska July Report

Dr. Harry C. DeVighne, secretary of the Alaska Board of Medical Examiners, reports the written examination held at Juneau, July 7-8, 1914. The total number of subjects examined in was 12; total number of questions asked, 66; percentage required to pass, 75. The total number of candidates examined was 4, all of whom passed. The following colleges were represented:

| PASSED<br>College | Year Grad. | Per Cent. |
|---|---|---|
| Rush Medical College | (1912) | 82 |
| Albany Medical College | (1912) | 77.7 |
| Jefferson Medical College | (1910) | 75.5 |
| McGill University | (1897) | 75 |

### Rhode Island July Report

Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, reports the practical and written examination held at Providence, July 2-3, 1914. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 80. The total number of candidates examined was 14, of whom 10 passed and 4 failed. The following colleges were represented:

| PASSED<br>College | Year Grad. | Per Cent. |
|---|---|---|
| University of Illinois | (1914) | 80.7 |
| University of Maryland | (1914) | 81.7 |
| Harvard University | (1910) | 91 |
| Tufts College Medical School | (1912) 90, 92.6; (1914) | 84.9 |
| Coll. of P. and S. in the City of N. Y. | (1895) 80; (1906) | 86.9 |
| Columbia University | (1911) 84.4; (1914) | 86.7 |
| FAILED | | |
| Boston University | (1914) | 75.5 |
| Tufts College Medical School | (1905) | 63.5 |
| Medico-Chirurgical College of Philadelphia | (1914) | 74.5 |
| Meharry Medical College | (1914) | 66.5 |

# Miscellany

### Harrison Bill Becomes A Law

During the last three years frequent mention has been made in The Journal of the efforts of Congress to enact a law for the control of traffic in habit-forming drugs. (April 18, 1911, p. 1276; Aug. 2, 1913, p. 360; Jan. 24, 1914, p. 316.) As has been previously stated, two of the three measures known as the Harrison bills were enacted at the last session of Congress. These provided for the regulation of the manufacture and importation of drug preparations containing opium or coca leaves or any of their compounds. The third bill, intended to regulate the interstate traffic in habit-forming drugs, presented difficulties which were not encountered in the other two measures. Congress has no power to enact regulations for the sale of any article within state boundary lines; the question whether or not it has the power to restrict trade in an article solely for the public good is one on which there is a diversity of opinion. Consequently the method resorted to in most restrictive measures of this class is to draft them under the guise of revenue measures and to regulate them through the levying of a tax. This method was followed in the Esch phosphorus bill by which Congress imposed such a heavy revenue tax on matches made with white phosphorus as practically to prohibit their sale as an article of common use. The same plan has been resorted to in the third Harrison bill. This bill, after lengthy discussion and considerable amendment, finally passed the House, June 26, 1913, and the Senate, Aug. 11, 1914. The differences between the amendments made in the House and the Senate were so great as to make it necessary to refer the measure to a conference committee. On October 17, the conference committee reported an agreement and the amended measure was adopted by the Senate, the House adjourning without action. Following the reassembling of Congress, the report of the conference committee was again taken up and on Thursday, December 10, the bill was finally passed by the House. On account of the great amount of discussion which has been excited by the bill and its interest to and effect on the medical profession, an abstract of the law is given herewith.

### Explanation of the Bill

The title of the act is "An Act to provide for the registration of, with collectors of internal revenue, and to impose a special tax upon all persons who produce, import, manufacture, compound, deal in, dispense, sell, distribute or give away, opium or coca leaves, their salts, derivatives or preparations and for other purposes."

Section 1 provides that after March 1, 1915, every person who performs any of the acts mentioned in the title shall register with the collector of internal revenue of the district his name and place of business and shall pay a special tax of one dollar a year. Employees of registered persons, officers of the United States government, lawfully engaged in purchasing the drugs named for the army, navy, public health service or government hospitals and prisons are exempt. Only registered persons shall be permitted to perform any of the acts mentioned in the title. The term "person" is expressly defined to include partnerships, associations, companies or corporations.

Section 2 provides that no person shall sell, barter, exchange or give away any of the drugs mentioned except on a written order on a form issued by the Commissioner of Internal Revenue and supplied only to registered persons. Such orders shall be issued in duplicate, the original to be preserved by the person filling the order and the duplicate to be preserved by the person issuing it, for a period of two years and kept so as to be accessible to inspection by any officer of the treasury department or of state, territorial district and municipal officers. The exemptions under this section were the subject of the most prolonged discussion. As the bill finally passed, it provides that this section shall not apply to the dispensing or distribution of any of the drugs named, to a patient, by a physician, dentist or veterinary surgeon registered under the act in the course of his professional practice, provided that the physician, dentist or veterinary surgeon shall keep a record of all such drugs dispensed or distributed, showing the amount, the date and the name and address of the patient, except such as may be dispensed or distributed to a patient on whom such physician, dentist or veterinary surgeon shall personally attend. This record is to be kept for a period of two years, subject to inspection. The sale of any of the drugs mentioned, on a written prescription issued by a physician, dentist or veterinary surgeon, is also exempt but the person filling the prescription is required to keep the prescriptions on file for a period of two years. The sale of drugs to foreign countries is exempt, subject to the regulations of the country importing them, as is also the sale of drugs to any properly authorized government officer or state, territorial, district, county or municipal official purchasing supplies for a public hospital or prison.

The commissioner of revenue is authorized to prepare suitable blanks to be sold to dealers, the price not to exceed one dollar per hundred and the name of the purchaser using the blank is to be written or stamped on it by the collector of internal revenue. No other persons are permitted to use the forms. Special provisions are made for the administration of the act in Porto Rico, the Philippine Islands and the Canal Zone.

Section 3 provides that all persons registered under the provisions of the act shall, whenever required to do so by the collector of the district, make a full and correct statement on oath of the quantity of the drugs he has received and the names of the person from whom he has received them.

Section 4 prohibits any except registered persons from shipping or delivering any of the drugs mentioned in interstate commerce. Common carriers and employees are exempt.

Section 5 provides that duplicate orders and prescriptions shall be open to the inspection of all authorized agents of the treasury department and officers of any state, territory or municipality. Certified copies of such statements can be secured on the payment of a suitable fee. No persons are permitted to disclose the information contained in the returns except in the matter designated above. Copies of the names of all persons listed in any district may be secured on payment of one dollar for each one hundred names.

Section 6 provides that the act shall not apply to preparations or remedies which do not contain more than 2 grains of opium or more than ¼ grain of morphin or more than ⅛ grain of heroin or more than 1 grain of codein to the fluidounce or, in the case of solid preparations, to the avoirdupois ounce or to preparations for external use only or to decocainized coca leaves or other preparations of coca leaves which do not contain cocain.

Section 7 provides that all existing laws for the collection of internal revenue taxes are to be applied to the special taxes imposed by this act.

Section 8 provides that the possession of any of the drugs mentioned on the part of any unregistered person shall be regarded as presumptive evidence of the violation of the law. Employees of registered persons, nurses under the supervision of registered physicians, physicians themselves registered under the act, proper officials, warehouse men holding possession of goods for registered persons and common carriers transporting such goods are exempt.

Section 9 provides a penalty of not more than $2,000 fine or imprisonment for not more than five years or both for violations of the act.

Section 10 authorizes the commissioner of internal revenue to appoint such persons as may be necessary to carry out the provisions of the act.

Section 11 appropriates $150,000 to make the act effective and Section 12 provides that this act shall not be regarded as modifying the national Food and Drugs Act or the act of 1909, prohibiting the importation of opium.

# Medicolegal

### Compulsory Vaccination Compatible with Compulsory School Attendance

*(People vs. Ekerold (N. Y.), 105 N. E. R. 670)*

The Court of Appeals of New York affirms a judgment holding a father liable for the penalty provided by the education law for a failure to cause his son to attend on instruction notwithstanding the father made the defense that he did not believe in vaccination and the school authorities had refused to allow the child to attend school without being vaccinated. The court says that the question which within certain limits was presented here was whether the statute and the by-laws of the board of education in New York City adopted under and in accordance with the statute requiring vaccination as a condition of attending the public schools were under ordinary conditions so unusual or oppressive that a parent should be allowed to make his unwillingness to comply therewith a basis for not sending his children to school, for that was what the position of the defendant amounted to. The court does not think that they were of such a character. Under this court's decision in Re Viemeister, 179 N. Y. 235, it must assume that the law requiring vaccination of children in the public schools is a proper one. The statute requiring vaccination was adopted in its present form in 1893. The provision requiring attendance on instruction was first adopted in 1894. It does not seem reasonable to assume that it was the legislative intention in passing both of these statutes relating to attendance at school to provide and have it come to pass that the unwillingness to comply with the one requiring vaccination might be turned into a good excuse for disobeying the other one concerning attendance. It does not require much spirit of prophecy to foresee what would follow a contrary construction of the statutes. So far as the evidence disclosed, the defendant's refusal to comply with the requirements of attendance at school was arbitrary and capricious, and as one read the record and argument of his counsel the impression somehow arose that he was more interested in asserting his right to refuse to comply with the law than he was actuated by the purpose of protecting his child from some possible or supposed injury. Moreover, the vaccination statute under consideration applies only to the public schools, while it is well known that there are schools of other kinds and classes which might have been attended by the defendant's child where attendance would not have been subject to the condition which he urged as an excuse for his failure to send his child to school. It might or it might not be that that would entail expense, and even if it did it would not be sufficient to excuse the position and situation of the defendant. We are made well aware at the present day that the government in the exercise of its police powers does impose many regulations which involve trouble and expense, and such trouble and expense have not been regarded as an excuse for non-compliance.

### Marriage of Drugged Physician to Nurse Annulled

*(Waughop vs. Waughop (Wash.), 143 Pac. R. 444)*

The Supreme Court of Washington affirms a judgment annulling the marriage in this case of a physician to a nurse, on account of the mental incapacity of the plaintiff at the time the marriage ceremony was performed. The court says that he was 46 years of age, and she 30 years of age. He had been for many years afflicted with insomnia, and had at times taken drugs in large quantities to overcome it. His mother, to whom he was greatly devoted, had been ill for some time, and he had been her physician and nurse. On Jan. 26, 1913, her condition was so alarming as to cause him great mental worry. Prior to that date he had casually met the defendant two or three times. On and after that date she visited his home daily, and after a day or two kept him at her sanitarium at night and gave him drugs and hot baths, as she said, to produce sleep. She claimed that they became engaged about January 30. He said that he had no recollection of either a courtship or engagement. She kept him under her control until February 4. On the forenoon of that day they applied for a marriage license, which the auditor, at the suggestion of the plaintiff's friends, refused to issue. In the afternoon they met at the home of his pastor, where the plaintiff was examined by two physicians who agreed that he was not then mentally competent to enter into the marriage relation, owing to excessive use of drugs. But despite the advice of the physicians, the advice and protest of the pastor, and the earnest protest of the plaintiff's relatives, they procured a license at 11:30 that night and were married at midnight. They lived together at the sanitarium conducted by the defendant from February 4 until February 12, when the plaintiff left the defendant, and on the next day brought this action to annul the marriage. The court thinks that it was correctly decided that the plaintiff was mentally incompetent at the time of the marriage, and that the marriage was not validated by consummation or ratification. The law presumes sanity rather than insanity, and competency rather than incompetency. It follows that one who asserts his incompetency to enter into a contract, whether it be a contract of marriage or one of another nature, must establish his incompetency at the time the contract was entered into by clear and convincing evidence. It is equally well settled that, where one is induced to make a contract by the artifice or fraud of the other party to the contract, less evidence will suffice to annul it. If the plaintiff's incapacity was such that he was incapable of understanding the nature of the contract, incapable of understanding the obligations assumed by the marriage, or if he was in a state of mental bewilderment to the extent that he yielded without demur to the suggestion of the defendant and she procured the marriage to be entered into, he had a right to secure its annulment, unless he consummated or ratified it after his competency was restored, which he did not do.

### Manslaughter in Failure to Provide for Child

*(State vs. Staples (Minn.), 148 N. W. R. 283)*

The Supreme Court of Minnesota holds that a parent who by culpable negligence fails to provide care, nurture, sustenance, and medical assistance to a child wholly incapable of supplying its own wants, and so causes its death, is guilty of manslaughter in the second degree, under the statute of that state which provides that the offense of manslaughter in the second degree is committed by the killing of a human being, when done without a design to effect death, "by any act, procurement, or culpable negligence . . . which . . . does not constitute the crime of murder in the first degree, nor manslaughter in the first degree." The allegations were sufficient in an indictment which charged that the defendant became the mother of a male child, that after its birth and on the same day she wilfully made an assault on said child, and by acts, procurements, and culpable negligence she did wilfully neglect to provide care, nurture, sustenance, and medical assistance and aid to preserve its life, but wholly neglected it, and that in consequence thereof the life of said child was shortened and it did languish and die, etc.

### What Constitute Insane Delusions

*(Coffey et al. vs. Miller et al. (Ky.), 169 S. W. R. 852)*

The Court of Appeals of Kentucky says, in this will-contest case, that an insane delusion is an idea or belief which springs spontaneously from a diseased or perverted mind without reason or without foundation in fact. It is distinguishable from a belief which is founded on prejudice or aversion, no matter how unreasonable or unfounded the prejudice or aversion may be. If it is the product of a reasoning mind, no matter how slight the evidence on which it is based, it cannot be classed as an insane delusion. In everyday life men of the strongest minds, being in possession of the same facts, reach different conclusions. Here the maker of the will, being presumably in possession of at least as much knowledge about certain occurrences as his relatives and neighbors, reached a different conclusion as to who were responsible for them, and the fact that he reached a different conclusion from most of his relatives and neighbors did not make his belief an insane delusion.

# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Diseases of Children, Chicago

*December, VIII, No. 6, pp. 385-488*

1 *Infantile Scurvy: The Blood, Blood-Vessels and the Diet. A. F. Hess and M. Fish, New York.
2 *Experimentally Produced Internal Hydrocephalus. W. E. Dandy and K. D. Blackfan, Baltimore.

1. **Infantile Scurvy.**—A study of the cause of the bleeding in infantile scurvy including a consideration of the clotting-power of the blood, forms the nucleus of the investigation made by Hess and Fish. For the coagulation tests blood was aspirated directly from the blood-vessels and oxalated. This plasma showed a slight diminution in clotting-power. This defect did not seem, however, to be the result of an insufficiency of calcium. The antithrombin was not increased. Small amounts of blood were also obtained by puncture of the finger. Examinations of this blood revealed a normal number of blood platelets. In other respects the picture was that of a simple secondary anemia, except that the hemoglobin was diminished out of proportion to the red blood-cells. A marked regeneration of these cells during convalescence, leading to a polycythemia, was also noticed.

These various departures from the norm according to the authors are insufficient to account for the hemorrhages associated with the disease. The integrity of the blood-vessels was therefore investigated. The vessels of normal infants were found to withstand, without apparent disturbance, 90 degrees of pressure for three minutes, whereas the vessels of infants suffering from scurvy gave way under this pressure. Numerous petechial hemorrhages of the skin or mucous membranes were frequently noted as one of the earliest signs of the disease. The well-known "exudative diathesis" of Czerny was found definitely to predispose to the development of scurvy.

Several cases of scurvy developed in infants who were being fed on milk which was pasteurized to 145 F. for thirty minutes. They were cured by receiving fruit-juices or raw milk. Orange-juice was found not to lose its efficacy as the result of being boiled for ten minutes. The juice of the peel was successfully substituted as an antiscorbutic for the juice of the orange. Potato proved to be an excellent antiscorbutic. It is suggested that it be added to pasteurized milk as potato-water instead of the barley-water which is now commonly used as a diluent. In this way the necessity will be obviated of giving orange-juice. Cod-liver oil or olive oil, although given for weeks, did not prevent the development of scurvy.

2. **Internal Hydrocephalus.**—An internal hydrocephalus was experimentally produced by Dandy and Blackfan in dogs by placing an obstruction in the aqueduct of Sylvius. It was made evident that the cerebrospinal fluid is formed in the ventricles faster than it can be absorbed, and that the aqueduct of Sylvius is essential for its escape. An internal hydrocephalus resulted from placing an obstruction in the aqueduct of Sylvius in spite of the extirpation of the choroid plexus of both lateral ventricles. An internal hydrocephalus may also result from an experimental ligation of the vena Galena magna near its origin; when the ligature is more distally placed or when the sinus rectus alone is ligated, an internal hydrocephalus does not result, owing to the efficient venous collateral circulation. Cerebrospinal fluid is derived mainly from the choroid plexuses, probably both by filtration and by secretion.

An increase of cerebrospinal fluid is caused by general venous congestion as demonstrated by temporary jugular compression. This increase of fluid ceases when the congestion is relieved by the collateral circulation. Drugs and glandular extracts produce but slight change in the rapidity of formation of cerebrospinal fluid. Pilocarpin produced a slight increase. There is a rapid constant formation and absorption of cerebrospinal fluid. A new supply is formed and absorbed at least every four to six hours. Cerebrospinal fluid is absorbed directly into the blood from the entire subarachnoid space. It is a diffuse process. There is practically no absorption from the ventricles.

The maintenance of an equilibrium between the formation and the absorption of cerebrospinal fluid necessitates a communication between the ventricles and the subarachnoid space. Communication is solely by the foramina of Magendie and Luschka. After the introduction of phenolsulphonephthalein into the subarachnoid space it soon appears in the lateral ventricles. There are therefore no valves at these openings. If an obstruction exists at the aqueduct of Sylvius, phenolsulphonephthalein does not appear in the spinal fluid. The so-called foramina of Mierzejewsky and Bichat therefore do not exist.

In seven patients with internal hydrocephalus lack of communication was demonstrated clinically. In each of these seven cases there was practically no absorption from the ventricles, while the subarachnoid absorption was high. The internal hydrocephalus, therefore, resulted because the passage of fluid from the ventricles into the subarachnoid space was prevented. Four cases of internal hydrocephalus in which there was communication between the ventricles and the subarachnoid space were studied. In these cases there was a low subarachnoid absorption. Meningitis was the cause of the hydrocephalus in two patients with the obstructive type and two with the communicating type of hydrocephalus. The probable cause of internal hydrocephalus following the excision of a meningocele is the limitation of absorbing surface and consequent diminution in the absorption of cerebrospinal fluid.

The authors point out that surgical treatment differs according to the variety of internal hydrocephalus. In the obstructive type the obstruction must be removed. In the communicating type it is necessary to increase the area for the absorption of fluid.

### Annals of Surgery, Philadelphia

*December, LX, No. 6, pp. 665-818*

3 *Biliary Surgery. J. F. Erdmann, New York.
4 *Case of Retention Cysts of Pancreas. J. Speese, Philadelphia.
5 Cystic Lymphangioma of Great Omentum. Report of Case. G. W. Outerbridge, Philadelphia.
6 Priapism; Report of Case and Study of Literature. F. Hinman, Baltimore.
7 *Rupture of Bladder. J. B. Clark, New York.
8 *Operative Treatment of Acute Epididymitis. D. O. Smith and B. H. Frayser, Ancon, C. Z.
9 Hydronephrosis. G. D. Stewart and W. H. Barber, New York.
10 Pyelography in Diagnosis of Traumatic Injury of Kidney. Report of Three Cases. W. H. Luckett and L. Friedman, New York.
11 Congenital Malformation of Posterior Urethra. O. S. Lowsley, New York.
12 Circulatory and Trophic Disturbances of Extremities. H. N. Collins, New York.
13 Cinematoplastic Amputations. Report of Two Cases. A. P. C. Ashhurst, Philadelphia.

3. **Biliary Surgery.**—An analysis of 270 cases operated on within a period of fifty-one months with 13 deaths is presented by Erdmann. His records show 54 cases of acute cholecystitis; 34 cases of gangrenous cholecystitis, and 115 cases of cholecystitis not otherwise classified—this series included all varieties, from non-inflammatory to hydrops. There were 6 cases of perforated cholecystitis; 6 non-calculous; 4 malignant, and 8 cases of hydrops; cholangeitis 23 cases. In addition, acute hemorrhagic pancreatitis, with suppuration or sloughing, was observed six times. The operations recorded were as follows: Cholecystostomy, 125 cases, with 5 deaths. Cholecystectomy, 96 cases, with 4 deaths. Choledochotomy and transduodenal choledochotomy, 5 cases in all with 2 deaths. Cholecystostomy, with choledochotomy, 17 cases, with one death. Cholecystectomy with choledochotomy, 27 cases, with one death. Cholecystostomy with and without combined operations on the duct, 142 cases with 6 deaths. Cholecystectomy, with and without combined operations on the ducts 123 cases with 5 deaths.

4. **Retention Cysts of Pancreas.**—Speese's patient, a male aged 59, noted a feeling of discomfort in the epigastrium six years ago, and at times suffered from pain which radiated from the epigastrium to the lower dorsal region. Coincident with the discomfort, he experienced a sensation of pulsation in the upper portion of the abdomen, and several months ago was able to palpate a mass in the midline above the umbilicus, in the situation in which the pulsation was present. The mass would disappear for a time, then reappear, and of late has been present only in the standing posture. He has lost about six pounds in weight and has had several attacks of jaundice.

Physical examination showed in the epigastrium a pulsating mass which seemed to blend with the abdominal aorta. There was no tenderness or rigidity. Gastric analysis: Free HCl, 0; total acidity, 20; trace of lactic acid; occult blood, 0. Microscopic examination showed much mucus, starch granules and a few Oppler-Boas bacilli. Urine examination negative. Blood: Hemoglobin, 60; red blood-cells, 3,800,000; white blood-cells, 9,900.

At operation the stomach, duodenum and gall-bladder were found to be normal. In the folds of the gastrohepatic omentum a cystic tumor was found, the contour was irregular and the mass was about the size of a large peach. On the posterior aspect it seemed to be in relation with the vena cava and adherent to the head of the pancreas, so that in removing it a thin layer of pancreatic tissue was carried away with the tumor. The rent left in the gastrohepatic omentum was closed with a purse-string suture, leaving a small opening for a drainage tube. The patient made an uninterrupted recovery and was discharged cured. The tumor was composed of numerous cysts, the largest of which measured 2 cm. in diameter, the lining is smooth, and the contents consist of a cloudy fluid. In the center of the tumor, and surrounded by the multiple cysts, is a dense mass of whitish tissue which has the consistency of cartilage and contains several points of calcification.

7. **Rupture of Bladder.**—A case of intraperitoneal rupture of the bladder is reported by Clark which was not operated on until twenty-four hours after the rupture. The rupture of an apparently healthy bladder occurred without any sign of history of direct injury to the organ. After a day of heavy drinking, the patient slipped and fell down four or five steps in a sitting posture. He was immediately nauseated and vomited the contents of his stomach. He then started to walk home, twenty blocks away, and though seized with severe abdominal pain, he was able to reach his home, undress and go to bed. After a sleepless night, due to continued abdominal distress, he rose dressed about noon and went to a hospital.

The patient was prepared for operation. The usual suprapubic exposure showed a bladder extraperitoneally intact. The abdominal cavity being opened, a considerable quantity of urine and blood-clots were mopped out. A jagged transverse rent in the roof of the bladder, easily admitting three fingers, was found. The rents were closed by three layers of catgut sutures, placed successively through mucous membrane, muscular and peritoneal coats. The abdominal cavity was then closed in the usual way, with a cigarette drain and a catheter retained in the bladder. The patient sustained practically no shock from the operation and the postoperative course was uneventful. The retention catheter was removed after eight days and the patient was catheterized for a period of three or four days after which he was able to pass his urine easily. He was out of bed on the fourteenth day, and on the nineteenth day after operation, he seemed perfectly well and strong.

8. **Operative Treatment of Acute Epididymitis.**—Smith and Frayser are of opinion that in acute epididymitis epididymotomy is the rational thing to do because it shortens the duration of the disease; relieves the severe, weakening, sickening pain at once, causes the temperature to fall and induration to disappear rapidly.

### California State Journal of Medicine, San Francisco

*December, XII, No. 12, pp. 479-520*

14 *Case of Primary Sarcoma of Stomach Treated by Partial Gastrectomy. T. W. Huntington, San Francisco.
15 Bone Splinting in Vertebral Tuberculosis. H. M. Sherman and G. J. McChesney, San Francisco.

16 Infantile and Juvenile Tabes. H. Barkan, San Francisco.
17 Feeding in the First Month of Life. A. Brown, San Francisco.
18 Centralization of Public Health Administration. J. N. Force, Berkeley.
19 Points of Interest in Technic of Gastro-Enterostomy. P. S. Campiche, San Francisco.
20 Does a Relationship Exist Between Tuberculosis of Epididymis and Tuberculosis of Kidney? R. L. Rigdon, San Francisco.
21 Report of Two Cases of Hernia. J. J. A. Van Kaathoven, Los Angeles.
22 Mendelian Law and Its Relation to Inherited Conditions of the Eye. D. F. Church, Redlands.
23 Conservative Amputations of Lower Extremities. C. E. Phillips, Los Angeles.
24 Case of Abdominal Pregnancy. W. Himmelsbach, Watsonville.

14. **Primary Sarcoma of Stomach Treated by Partial Gastrectomy.**—Huntington's patient was a woman, aged 67. The main trouble seemed to have originated within a comparatively short interval extending over a period of six months, during which time her symptoms were not especially distressing. There was never any vomiting of food or evidences of hemorrhage in the stools. She suffered very little pain and only moderate distress, after the ingestion of solid food. Her appetite was fairly well maintained and her physical condition was such as not to attract attention, save in a general way. There was a notable drop in the patient's strength and vigor.

The feature of the case which seemed of special significance was the existence of tenderness on pressure at or near the pyloric region. This was constant, and on the increase during the past two months; pyloric insufficiency existed only in a comparatively moderate degree. There was, also, a slight loss of weight, six pounds in six months. The abdomen was opened through the inner border of the right rectus. On the stomach side of the pylorus there was a rounded mass about the size of a cherry lying apparently in the submucous and muscular coat of the viscus. Between the examining fingers, the peritoneum being tightly drawn over the mass, it presented a whitish uniformly globular tumor. It was distinctly hard and resistant. The lumen of the pylorus was definitely narrowed.

About one-fifth of the stomach and fully an inch of the duodenum were included in the resection. The divided ends of the stomach wall and the duodenum were enfolded and the suture lines reinforced. A formal posterior gastrojejunostomy was then completed. Patient left the hospital in splendid condition at the end of ten days. Section showed tumor to consist of very numerous, round, spindle-cells. Diagnosis: Fibrosarcoma of the stomach.

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## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Medical Journal, London

*November 28, II, No. 2813, pp. 909-952*

1 War and Typhoid. W. Osler.
2 *Report on Gas Gangrene. A. A. Bowlby and S. Rowland.
3 Injuries to Bowel from Shell and Bullet Wounds. P. Lockhart-Mummery.
4 Leeches. A. E. Shipley.

2. **Report on Gas Gangrene.**—The following conclusions are drawn by Bowlby and Rowland from their observations of this condition. All tight bandages and especially those applied at the first field dressing should be avoided. Shell wounds are so often followed by so much interstitial hemorrhage that the part swells and the bandage rapidly becomes tighter and interferes with the circulation. Consequently many bandages require to be cut within a few hours of their application. In many cases the tension requires to be relieved by incisions and drainage, and the opportunity should be taken to wash the wounds thoroughly with an antiseptic. Hydrogen peroxid is one of the best. Great care should be taken to remove portions of clothing as these contain the infective agent. Shattered fragments of bone and pieces of shell or gravel should be taken out. Amputation may often be successfully performed through tissues made emphysematous by gas but not yet gangrenous.

The group of anaerobes causing gangrene are spore-bearers, and spores (especially of this group of anaerobes) are especially difficult to kill by any antiseptic solution or even by boiling. Consequently, in order to sterilize instruments and other things that have been infected, other measures are required. (a) Destruction of blankets and clothing soaked by the discharge. (b) Heating in an autoclave at a temperature of 120 centigrade. (c) Boiling for an hour in a solution of 1 in 20 phenol or lysol (1 in 10). The mud on the clothes of wounded soldiers is almost certainly infected, and care should be exercised to see that the area in which operations or dressing of wounds are performed should be kept free from possible contamination from such a source. When possible, it is advisable to isolate patients under treatment in hospitals, and this is all the more necessary on account of the bad smell which is inseparable from the condition.

### Lancet, London

*November, 28, II, No. 4761, pp. 1233-1286*

5 Patient and Disease. D. Duckworth.
6 *Myeloid Sarcoma; Analysis of Fifty Cases. M. J. Stewart.
7 *Heart-Block in Acute Rheumatic Carditis. A. E. Naish and A. M. Kennedy.
8 Localization of Bullets and Shrapnel. W. Overend.

6. **Myeloid Sarcoma.**—In every one of the fifty cases recorded by Stewart the diagnosis was confirmed or made by microscopic examination of the tumor. Of the 50 cases, 35 are from the jaws, 11 from the long bones, and 4 from other situations. The situation in 26 out of the 35 jaw cases was: Upper jaw, 12; lower jaw, 13; both jaws, 1. The incidence in other bones was: Femur, 6 (4 lower end and 2 upper end); humerus, 3 (2 lower end and 1 upper end); metacarpal, 3; tibia, upper end, 1; radius, upper end, 1; and coccyx, 1.

Stewart concludes from analysis of these cases that myeloid sarcoma is locally malignant only and does not undergo dissemination. It is to be clearly distinguished, both clinically and pathologically, from malignant giant-cell sarcoma, in which death with visceral dissemination is the rule, even after the most radical operative treatment.

The histologic diagnosis is based on the morphologic characters of the giant-cells, especially as regards their nuclei. In myeloid sarcoma the latter are numerous, uniform, small, and without mitoses; in malignant giant-cell sarcoma they are few, sometimes single, irregular, and often very large, while mitotic figures are frequent. Stewart makes a strong plea for the conservative treatment of myeloid sarcoma. He advocates thorough curettage as the operation of choice in the first instance in suitable cases; failing this, a local resection of the growth. Amputation should be the last resort, and only after the failure of less radical measures. An accurate histologic investigation of the tumor is in all cases essential.

7. **Heart-Block in Acute Rheumatic Carditis.**—Naish and Kennedy report two cases of heart-block which occurred in the course of acute rheumatic carditis in children and were associated with similar histologic changes in the cardiac musculature.

### Berliner klinische Wochenschrift

*November 9, LI, No. 45, pp. 1781-1804*

9 Gunshot Wounds of the Stomach. (Perforierende Schussverletzungen des Magens.) Adler.
10 *Tetanus. H. Mühsam.
11 Gunshot Wound of Spinal Cord. (Rückenmarksverletzung.) E. Froehlich.
12 *Treatment of War Wounds of the Eyes. (Die Kriegschirurgie des Sehorgans.) K. Steindorff.
13 *The Symptoms of Brown-Séquard's Paralysis. M. Bernhardt.
14 *Renal Diabetes. C. D. de Langen.
15 Factors in Hernia of the Diaphragm. (Zur Entstehung der Hernia diaphragmatica und Dilatation des Zwerchfells.) F. Fidler.

10. **Tetanus.**—Mühsam remarks that other germs which get into the wound with the tetanus bacilli use up the oxygen and thus favor the anaerobic proliferation of the tetanus bacilli. Another favoring factor is the demoralization of the circulation in the injured tissues in the depths of the wound. The toxins generated may diffuse through the devitalized tissue into sound tissue until they reach a nerve. The practical

inference is to clear out all devitalized tissue and saprophytes, etc., liable to use up the oxygen, and, last, but not least, to flood the depths of the wound with oxygen in addition to the routine treatment with antitetanus serum and sedatives as indicated. Hydrogen dioxid is another important aid in treatment. It may be necessary to make a breach in the teeth, when the jaws are locked together, so that the patient can expectorate. From lack of any gap in the teeth he lost a patient from aspiration pneumonia as the man was unable to spit although his condition otherwise was not so serious. Local warmth sometimes aids in the subsidence of the trismus.

12. **Injuries of the Eyes in War.**—Steindorff cites the statistics in this line from the wars of the last seventy years and discusses the management of cases of the kind.

13. **Brown-Séquard's Paralysis.**—The patient whose case is described is a man of 45 who has been under observation for six years. The disturbances have never been severe enough to interfere with his work as a railroad employe. The Wassermann test was positive and the motor symptoms improved under specific treatment but the sensory disturbances were not influenced. The syphilitic nature of the trouble is confirmed by symptoms which indicate three distinct foci in the left spinal cord, although there was no history of known syphilis and the man's wife and two children are healthy.

14. **Renal Diabetes.**—This article has already been reviewed in The Journal, Feb. 28, 1914, p. 739.

### Deutsche medizinische Wochenschrift, Berlin

*November 5, XL, No. 45, pp. 1929-1952*

16 Sepsis from Wounds in War. (Wundinfektionskrankheiten.) G. Jochmann.
17 Three Cases of Wounds from Alleged Dumdum Bullets. (Bis zum 20. Oktober behandelte Dum-Dum-Verletzungen aus dem gegenwärtigen Kriege.) W. Pöppelmann.
18 Diarrhea of Gastric Origin. (Ueber gastrogene Diarrhoen und das Vorkommen von Achylia pancreatica bei Achylia gastrica.) A. Bittorf.
19 The State and the Food Supply. (Der Staat und die Volksernährung.) M. Rubner.
20 Diagnosis of Typhoid and Cholera in the Field Laboratory. M. Christian.

### Medizinische Klinik, Berlin

*November 8, X, No. 45, pp. 1655-1678*

21 Prophylaxis and Treatment of Bubonic Plague. (Pest.) R. Poch.
22 War Wounds of Peripheral Nerves. (Kriegsverletzungen des peripherischen Nervensystems.) O. Hezel.
23 *Nature and Treatment of Psoriasis. (Schuppenflechte.) B. Spiethoff.
24 Connection between Instability of the Vagus System and Seasickness. (Ueber die Korrelation der Vagotonie zur Seekrankheit.) B. O. Pribram.

23. **Psoriasis.**—Spiethoff discusses the various theories that have been advanced in regard to the origin of psoriasis, but does not think that any of them have conclusive weight. An inherited tendency seems evident in about 5 or 6 per cent. of the cases, and anything causing internal disturbances is liable to aggravate the condition or bring on attacks, especially digestive disturbances, abuse of coffee, tobacco or alcohol, a diet too rich in albumin, or constitutional disease. One of his most inveterate cases of psoriasis was in a man with exophthalmic goiter. In another case so severe that the scalp and ears were covered with crusts, tests of the stomach functioning revealed anacidity. When diabetes and glycosuria can be excluded, benefit is often derived from a vegetarian diet. As to symptomatic measures, he does not rank any very high except Roentgen exposures. These are peculiarly effectual in the old cases with tough infiltrations on the limbs and head. Among the internal remedies he thinks that arsenic seems to be the only one that is worth mentioning; he has never seen any effect from salvarsan. Patients with severe psoriasis, taking a course of salvarsan for syphilis, did not find that the medication had any influence on the psoriasis. Serotherapy is inconstant in its action, but he extols the benefit from venesection in cases with much itching. Withdrawing from 50 to 100 c.c. of blood, repeating this two days later, generally put an end to the itching in his experience with it.

### Münchener medizinische Wochenschrift, Munich

*November 10, LXI, No. 45, pp. 2197-2232*

25 *Localization of Foreign Bodies. (Fremdkörperlokalisation.) G. Holzknecht.
26 Technic for Serodiagnosis. (Zur Methodik des Abderhaldenschen Dialysierverfahrens.) H. Nieden.
27 *Varnish in Treatment of Wounds. (Welche Harzlösungen sind für Verbandzwecke geeignet?) K. Dieterich.
28 *The Work at a Base Hospital. (Der Betrieb eines Reservelazarettes.) H. Schridde.
29 Physical Bases of Radium Therapy. Kohlrausch. Commenced in No. 44.
30 *Gaseous Gangrene and Phlegmons. (Gasgangran: einige Fälle von Gasphlegmonen.) E. Fraenkel and K. Franke.
31 Gunshot Wounds of the Spinal Cord. (Schussverletzungen des Rückenmarks.) N. Guleke.
32 Foot-Pump Apparatus for Local Anesthesia. (Pneumatische Lokalanästhesie.) F. Kuhn.
33 *Danger of Anaphylaxis from Antitetanus Serum. (Die Anaphylaxiegefahr bei der Serumbehandlung des Tetanus.) L. Simon.
34 *Intraspinal Magnesium Sulphate Treatment of Tetanus; Eight Cases. K. W. Eunike.
35 *Antitetanus Serum Plus Large Doses of Chloral in Tetanus. (Zur Behandlung des Wundstarrkrampfs.) A. Angerer.
36 Shell Wounds of the Bladder. (Zwei Blasenverletzungen durch Schrapnellkugeln.) Pitzner. (Spontaner Abgang eines in die Harnblase gedrungenen Granatsplitters.) H. Nobiling.
37 Typhus and Relapsing Fever. (Ueber Fleckfieber und Rückfallfieber.) Mühlens. Commenced in No. 44.

25. **Localization of Foreign Bodies with the Roentgen Rays.**—Holzknecht gives an illustrated description of the various technics best adapted to locate foreign bodies in the skull, limbs and trunk. He emphasizes the importance of heeding the geometrical principles involved.

27. **Varnish for Dressing Wounds.**—In the Balkan wars and in the present war extensive use has been made of a varnish applied around the wound as this fastens in all germs and the wound is thus saved from contamination from the environment. Another advantage is that the dressing sticks to the varnish and is thus held better in place. Opinions differ as to the value of varnish treatment, some lauding it and others finding it inconvenient. Dieterich says that if a varnish is to be used, dammar, colophonium and turpentine are just as good for the purpose as the more expensive resins, and they can be dissolved in benzol instead of chloroform, the cost thus being only a small fraction of that of ordinary varnish. He gives some formulas for a good inexpensive varnish of a neutral reaction, and thus non-irritating. One formula calls for 250 gm. dammar; 30 gm. castor oil or linseed oil; 700 gm. benzol; 50 gm. sodium bicarbonate and 5 drops of amyl acetate (*Birnenäther*). These ingredients are shaken up together repeatedly as they are kept at room-temperature for several days. Then the mixture is filtered, adding a little more of the solvent if any has evaporated. A few drops of the amyl acetate are then added to the mixture, when it is ready for use. Another formula is a mixture of 300 gm. light colophony; 20 gm. Venetian turpentine; 10 gm. castor or linseed oil; 700 gm. benzol, 60 gm. sodium bicarbonate and a few drops of amyl acetate.

28. **The Base Hospital**—Schridde mentions a number of practical points he has learned in his service at Dortmund in which large numbers of sick and wounded soldiers have been received. With a special ward for skin and venereal diseases the men are cured much quicker than in the mixed wards and his special ward is always crowded. Experience has also confirmed the advantages of keeping the military and the civilian sick separate. He states that prisoners are treated in every respect the same as the other inmates of the hospital except that they are not given reading matter, games, tobacco or dainties sent in from outside; they are not allowed to leave their ward, and no visits are permitted from outsiders. The hospital also takes women in training for Red Cross nursing, rejecting all those who do not seem strong and well or who have much disturbance at menstruation.

30. **Gaseous Gangrene.**—Fraenkel says that when there is no superposed infection the gaseous gangrene is not accompanied by suppuration. It is in fact a malignant emphysema. It can be differentiated from malignant edema in twelve or eighteen hours by inoculation of animals, the guinea-pig for

gas-gangrene, the rabbit for malignant edema, the rabbit being apparently completely refractory to the germ of gas-gangrene. Staining a smear with a diluted solution of carbol-fuchsin will show the gas bacillus with its rounded ends, instead of the beveled ends of the anthrax bacillus, and its short thick shape distinguishes it from the slender bacillus of malignant edema. The bacillus of gas-gangrene is strictly anaerobic, and consequently treatment must aim to admit air freely to check its growth. Ample incisions and playing a jet of oxygen on the tissues, with extensive use of hydrogen peroxid, are the main reliance. If these fail, amputation may save the rest of the body. No serotherapy or internal measures have yet proved of use, but the patient's strength must be kept up.

Franke relates that in his six cases of gaseous phlegmon it developed several days after a shell wound in the leg. The onset was sudden and stormy, the limb became painful and discolored, the symptoms and aspect resembling those of acute and rapidly progressing venous thrombosis except for the accumulating gas. The zone of demarcation was more painful on pressure than the peripheral region. Amputation was the only recourse in four cases, and it came in time in two. In the two others the trunk was already involved and the patients seemed doomed, but one was saved by exarticulation of the thigh; the emphysema in abdomen and chest then promptly subsided. The other patient was febrile and did not survive the operation.

33. **Anaphylaxis from Antitetanus Serum.**—Simon had four rapidly fatal cases of tetanus among the 700 wounded in his service during four weeks. Then came a series of four mild cases with recovery under antitetanus serum treatment. In two other cases tetanus developed soon after a shell injury of the upper arm. One man was given 200 antitetanus serum units, both intravenous and intraspinal, repeated the next day and followed daily with 100 units intravenously after the arm had been amputated. He was progressing favorably until the intravenous injection the fourteenth day was followed by signs of severe anaphylaxis. Under stimulants in an hour he recuperated. The next day he developed an exanthem. No further antitoxin was given and in a few days all traces of the tetanus had vanished. In the other case there was some twitching in the arm and face but as this subsided after intravenous injection of 300 units, the assumption of tetanus seemed to have been erroneous. Thirteen days later the symptoms returned in a severe form and the intravenous injection of 300 units was repeated. It was followed in a few minutes by cyanosis, a chill and temperature of 40.9 C., but the pulse kept good. After this partial shock had subsided there was no return of the symptoms of tetanus. Three days later, the seventeenth day after the first injection, 100 units were injected intravenously again, and this time a typical severe anaphylactic shock ensued at once, with total unconsciousness for half an hour and marbling of the body, the pulse scarcely perceptible, and finally a chill and temperature of 40.1 C. The recovery from the shock was rapid and complete in both cases. By the next day the pulse and breathing were normal and the men felt none the worse for it. These cases suggest that the tenth day seems to be the danger line. In a more recent case, after the patient had been given 1,000 units of the serum in the course of ten days, Simon changed to magnesium sulphate, injecting subcutaneously every day from 40 to 60 c.c. of a 25 per cent. solution. This patient is now practically cured.

34. **Treatment of Tetanus.**—Eunike reiterates that magnesium sulphate treatment is only symptomatic, and that antitetanus serum should never be neglected in treatment. In his eight cases, the five with the most serious syndrome were not influenced by the drug. In the other cases great benefit was apparent although the tetanus was of a severe type. The sulphate was given by intradural injection of 10 c.c. of a 10 per cent. solution; a second dose of 8 c.c. was given three days later as symptoms returned. Disturbances in hearing and hallucinations followed one of the injections in each case, but the tetanus was materially relieved in both after each injection.

35. **Tetanus.**—Angerer extols the excellent results he has had recently in the twenty-four cases of tetanus in his service treated by antitetanus serum plus 5 gm. of chloral in an enema twice a day, or 10 gm. once a day, supplemented by one or two doses of 0.01 gm. morphin. By this means the patient is kept drowsy, in a kind of twilight sleep, and thus is spared all nervous shocks from without. The results have been very encouraging. He has discarded magnesium sulphate as his experiences with it were very unfavorable. He keeps up the antitetanus serum, 100 units both intraspinally and subcutaneously, until the symptoms show a turn for the better—the amounts thus totaling from 300 to 1,600 units.

### Riforma Medica, Naples

*October 17, XXX, No. 42, pp. 1149-1176*

38 Experimental and Clinical Study of Biologic and Therapeutic Action of Benzol, Selenium, Tellurium and Thorium. (Azione di alcune sostanze sul sangue ed organi emopojetici.) C. Martelli.

*October 31, No. 44, pp. 1205-1232*

39 Fatigue Toxins as Factor in Immunity. (Il valore delle kenotossine nei processi d'immunita.) V. Palmulli.

40 *The Pituitary Body in Pregnancy. (Ipofisi e gravidanza.) U. Scinicariello.

41 Serovaccine Therapy in Tuberculosis. (Il trattamento Bruschettini nella cura della tuberculosi.) A. Cadani and A. Carafoli.

40. **Experimental Research on the Pituitary Body.**—Scinicariello thinks he is justified in affirming on the basis of his research on three dogs and a bitch, that the pituitary body is not a vitally indispensable organ and that its destruction *in situ* does not entail psychic disturbances if there are no other lesions, tumors, etc., to compromise the functioning of the brain. After destruction of the hypophysis no motor or sensory disturbances were observed, no macroscopic changes in the shafts of the long bones, nor any tendency to obesity. As late as four months after the destruction of the pituitary body, one bitch conceived and bore an apparently normal litter; delivery proceeded apparently physiologically although the hypophysis was supposedly entirely destroyed and no trace of it was found post mortem.

### Hygiea, Stockholm

*LXXVI, No. 20, pp. 1137-1199*

42 *Spontaneous Subarachnoidal Hemorrhage. (Spontana subarachnoidalblödningens patologi och diagnostik.) A. Forsheim.

42. **Spontaneous Hemorrhage in the Subarachnoidal Cavity.**—In Forsheim's first case the patient was a previously healthy woman of 20 who was taken suddenly with symptoms suggesting acute spinal meningitis. The attack was like an apoplectic stroke, the patient falling but not losing consciousness, complaining of intense headache and pain in the spine. She vomited several times and lay with her head thrown back, the pain in the back of the neck increasing when it was straightened. The Kernig-Lasègue signs were positive alike on both sides. There was no nystagmus nor paresis; the diagnosis of subarachnoid hemorrhage was made at once and ice was applied to the head and spine and calcium chlorid and acetyl salicylic acid were given. The next day lumbar puncture released blood-stained cerebrospinal fluid under very high pressure (330 mm.) and the patient was relieved immediately. The proportion of reds and whites was about the same as in the blood and there were no clots. Lumbar puncture the following day showed still a pressure of 220 mm. but it dropped to 120 mm. after withdrawal of 20 c.c. Continued improvement followed, the temperature dropped to normal the fourth day after the second puncture and recovery was soon complete. The hemorrhage occurred while she was pumping water. The second patient was a youth of 17 and nine lumbar punctures were required. The onset and course were the same as in the first case. The fluid was under 450 mm. pressure at first, the pulse 60. The pressure kept high, over 300 mm. during the period of the first seven lumbar punctures, but there did not seem to be any additional hemorrhage after the first. Both patients recovered completely. Forsheim warns of the necessity for recording the pressure in the fluid, not allowing it to drop too low during the procedure, and repeating it at need.

# Book Notices

A Text-Book of the Diseases of the Nose and Throat. By Jonathan Wright, M.D., Director of the Department of Laboratories, New York Post-Graduate Medical School, and Harmon Smith, M.D., Surgeon to the Throat Department of the Manhattan Eye, Ear, Nose and Throat Hospital. Cloth. Price, $5 net. Pp. 683, with 327 illustrations. Philadelphia: Lea & Febiger, 1914.

Any work fathered by this well-known pathologist must command the respect of the profession, and those who are familiar with the clear, carefully prepared articles of the gifted secretary of the American Laryngological Association will necessarily be attracted by this greater work. It is largely devoted to the etiology and pathology of the diseases of which it treats, but the symptomatology and diagnosis, the topical and operative treatment of the diseases of the upper air passages have not been neglected. The work is comprehensive and yet fairly concise, and goes directly to the point without tiring the reader with a mass of speculation and unproved theory. The equipment and methods of examination are well described in the first chapter. The second chapter is devoted to the embryology and anatomy of the nose, its external deformities and their correction. The third chapter considers the anatomy, histology and physiology of the internal nose, thus furnishing a foundation on which the student may build a consistent system of diagnosis and treatment of the numerous abnormal conditions of this region. The anatomy, embryology and histology of the pharynx and larynx each have a separate chapter. The numerous diseases of these parts have all been carefully considered and treated in a manner especially adapted for the practitioner who wishes to know, and for the student trying to learn. The book is admirably illustrated and is arranged for quick and accurate reference by the man in active practice, which gives it especial value; but it also is peculiarly adapted to the needs of students who have not had experience in this field.

Technic der Speziellen Klinischen Untersuchungsmethoden. Herausgegeben von Prof. Dr. Theodor Brugsch, 1 Assistent der 11 Medizinischen, und Prof. Alfred Schittenhelm, Direktor der Medizinischen Universitätsklinik in Königsberg. Second edition, Parts 1 and 2. Paper. Price, 36 marks. Pp. 1078, with 476 illustrations. Berlin: Urban & Schwarzenberg, 1914.

These two volumes form the second part of the authors' "Lehrbuch klinischer Untersuchungsmethoden," the first part of which appeared a few years ago. In this section have been grouped the special laboratory methods, which are such valuable adjuncts to the more direct clinical examination of the patient. The subject-matter of these volumes is varied, covering pathologic, bacteriologic, serologic and chemical methods which may be employed in the effort to reach an accurate diagnosis. The work is entitled to rank with the older one of Sahli, which has so long been regarded as the most authoritative one on the subject. Although these volumes do not take the place of those dealing with special fields of laboratory diagnosis, yet they may be recommended to the student and laboratory worker as a reliable and fairly comprehensive guide.

The Medical Record Visiting List or Physician's Diary for 1915. Leather. Price, $1.50. New York: William Wood & Co., 1914.

Practitioner's Visiting List for 1915. Leather. Price, $1.25 net. Philadelphia: Lea and Febiger.

The Physician's Visiting List for 1915. Leather. Price, $1.25. Philadelphia: P. Blakiston's Son & Co., 1914.

The visiting lists for 1915 follow in general the style adopted in previous years. The make-up is the same as to arrangement of pages and sections for memoranda.

The Medical Record Visiting List contains a calendar, obstetric table, table of approximate equivalents, dosages, a list of solutions for subcutaneous injection and for atomization and inhalation, some miscellaneous hints, information on the treatment of poisoning and emergencies, artificial respiration, signs of death, and hints on the writings of wills.

The Practitioner's Visiting List gives information on dentition, a note on estimating the date of confinement, comparative scales of weights and measures, a section on the examination of the urine, a table of incompatibilities, a note on artificial respiration, a table of the eruptive fevers, a list of poisons and antidotes, a table of doses given in apothecaries' and metric systems, and a list of therapeutic reminders similar to that published in various handbooks issued by drug houses. Finally there is an article on the ligation of arteries.

The Physician's Visiting List is issued for various numbers of patients. It contains a calendar, a table for calculating the period of uterogestation, an article on incompatibilities, the treatment of poisoning, tables of weights and measures, a dosage table which gives official and unofficial drugs in both apothecaries' and metric systems, a table of quarantine periods in infectious diseases, an article on the treatment of asphyxia and apnea, and a comparison of the thermometric scales.

The Cancer Problem. By William Seaman Bainbridge, A. M., Sc.D., M.D., Professor of Surgery, New York Polyclinic Medical School and Hospital. Cloth. Price, $4 net. Pp. 534, with 38 illustrations. New York: The Macmillan Company, 1914.

The purpose of this book is to give in succinct form such a summary of the knowledge concerning cancer as may be of value to the general practitioner, the specialist, the intelligent layman and the lecturer on health matters. There are fourteen sections: on history, the major part being devoted to the history of modern cancer research; general distribution, botanical, zoological, geographical and ethnologic; statistical considerations; etiology; histopathology; cancer research—a summary of the world's work; clinical course; prophylaxis; investigation of cancer cures; non-surgical treatment; surgical treatment; irremovable cancer; institutions for the care of cancer patients, and on the campaign of education. This enumeration indicates that every phase of the cancer problem receives consideration, and it must be said that the object of giving a dependable summary of our knowledge of cancer for the large circle of readers has been accomplished with success. The various theories are stated clearly, the statements of facts are reliable, the practical deductions are sound, and an attitude of openmindedness is maintained in regard to all open questions. Being a fluent writer, the author often uses many more words than necessary, and quite a little detail has been introduced that is of no particular value in a book of this nature; but on the whole he has acquitted himself of the difficult task with credit.

The Pharmacy Handbook. By F. W. Crossley-Holland, F.C.S. Cloth. Price, $2. Pp. 224. New York: Oxford University Press, 1914.

The chief aim of this book is to present ready reference to information on matters which come within the purview of the practicing pharmacist. It is not a systematic treatise on pharmacy, but includes such incidental matters as the relations of the pharmacist to the physician, the trend of therapeutics, facts with reference to the newer therapeutic remedies, some of the principles of dietetics, etc. A special chapter is given to bacteriology, another to incompatibility and one to the ethics of pharmacy. In this chapter the author discusses the ownership of the prescription in which he states that custom and the patient have settled the matter, and the prescription seems unquestionably to belong to the patient. On the other hand, he states that the pharmacists's copy belongs to the pharmacist alone.

The Feces of Children and Adults. Their Examination and Diagnostic Significance with Indications for Treatment. By P. J. Cammidge, M.D. Cloth. Price, $5 net. Pp. 516, with 109 illustrations. New York: William Wood & Co., 1914.

This new book of Cammidge makes extensive use of Hecht's "Die Faeces des Säuglings und des Kindes" as well as of Schmidt and Strasburger's "Die Faeces des Menschen," although much original matter is also included. The practical part of the book follows as far as possible the sequence in which routine examinations are usually made, namely, macroscopic examination, microscopic examination for general food and other residues, parasites and their ova, as well as for various bacteria, and, lastly, the chemical examination. Chapter IX, dealing with the diagnostic value of examinations of the feces, is especially valuable and worthy of mention. Chapter X discusses the indications for the treatment of abnormalities found. The subject-matter is well selected and arranged; the text is clear and concise; the methods of examination are the most satisfactory at our disposal. The illustrations are excellent. Cammidge rightly points out that "it is essential, for the greatest advantage to accrue to the patient, that the pathologist should be aware of the clinical signs and symptoms, so that he may arrange his investigations accordingly." The results of these investigations should be interpreted by the examiner only in consultation with the clinician. This book may be regarded as the most authoritative in the English language and should lead to the more frequent examination of the feces as well as to a better understanding of such examinations when made. We earnestly recommend this book to all practitioners, especially to those who may wish to have their fecal examinations made by others and who may desire a fuller knowledge of the proper interpretation of such examinations.

Pathogenic Micro-Organisms. A Practical Manual for Students, Physicians and Health Officers. By William Hallock Park, M.D., Professor of Bacteriology, University and Bellevue Hospital Medical College, and Anna W. Williams, M.D., Assistant Director of the Bureau of Laboratories, New York. Fifth Edition. Cloth. Price, $4 net. Pp. 684, with 219 illustrations. Philadelphia: Lea & Febiger, 1914.

In this edition of the well-known book of Park and Williams the material has been rearranged in order to bring more closely together all of the pathogenic organisms. Part I deals with the general characteristics and methods of study of all the micro-organisms considered (molds, yeasts, bacteria and protozoa); Part II includes the study of the individual pathogenic organisms, while Part III presents certain practical aspects of the subject under the title "Applied Microbiology." The subject of immunity has been extensively discussed. A new chapter on filterable viruses has been inserted. This is one of the most practical books at the disposal of the general or special worker, although not so extensive as some. The sections on technic are much more exhaustive than are usually found in general works on bacteriology, while the subject-matter is written with direct appeal to the physician and health officer. The enormous practical experience of the writers in the laboratories of the New York Health Department lends strength to the statements given as well as to the selection of methods advocated. The book may be unhesitatingly recommended to all workers who have occasion to resort to bacteriologic methods in their investigations.

Morris' Human Anatomy. A Complete Systematic Treatise by English and American Authors. Edited by C. M. Jackson, M.S., M.D., Professor of Anatomy, University of Minnesota. Fifth edition. Cloth. Price, $6 net. Pp. 1539, with 1,182 illustrations. Philadelphia. P. Blakiston's Son & Co., 1914.

This edition of this standard work includes many new illustrations and a few changes in arrangement. There is a good thumb index, which aids in the usefulness of such large books as our modern anatomies have come to be. An interesting feature is the reproduction of serial roentgenograms of the stomach. Needless to state, the Basle anatomic nomenclature is used throughout, the previous edition of this book being the first general text-book in anatomy in English to adopt the now generally used terminology.

A Text-Book of Physiological Chemistry. By Olof Hammarsten, Emeritus Professor of Medical and Physiological Chemistry in the University of Upsala. With the Collaboration of S. G. Hedin, Professor of Medical and Physiological Chemistry in the University of Upsala. Authorized translation from the Eighth German Edition by John A. Mandel, Sc.D., Professor of Chemistry in the New York University and Bellevue Hospital Medical College. Seventh edition. Cloth. Price, $4 net. Pp. 1026. New York: John Wiley & Sons, 1914.

"At this time, when so many new and important biochemical facts are being published and when so many older theories and deductions are found more or less erroneous, due to recent investigations using new methods," it is very fortunate that we have been given this complete and critical compilation by Professor Hammarsten. In the work of revision, Professor Hedin has aided considerably by taking care of many of the chapters dealing with subjects with which his own work has been closely identified. This work does not lend itself to a close review, as the subject-matter is too extensive and too diversified. The work stands as the most authoritative one on this subject, so that we must thank Professor Mandel for his careful and excellent translation. The book is recommended both to the student and the advanced worker as a mine of information on the various phases of physiologic chemistry.

A Manual of Bacteriology, Clinical and Applied. By R. Tanner Hewlett, M.D., F.R.C.P., D.P.H., Professor of Bacteriology in the University of London. Fifth edition. Cloth. Price, $4.50. Pp. 668, with illustrations. St. Louis: C. V. Mosby Company, 1914.

The text in this edition of Hewlett's book has been revised, and many alterations and additions have been made in the preliminary chapters dealing with the structure and classification of micro-organisms and with the methods of cultivation, isolation and staining. The portions treating of the specific organisms have, for the most part, been enlarged, while much new matter dealing with the protozoa has been inserted. The theoretical parts of the book have been considerably augmented. The text is clear and concise; the subject-matter is well selected; the methods of diagnosis, while not exhaustive, are adequate for general work, and the general make-up of the work is satisfactory. The book is to be recommended to the student as well as to the general practitioner who may wish to become more familiar with this field of medical science.

A Practical Medical Dictionary of Words Used in Medicine. With Their Derivation and Pronunciation, Including Dental, Veterinary, Chemical, Botanical, Electrical, Life Insurance and Other Special Terms; Anatomical Tables of the Titles in General Use and Those Sanctioned by the Basle Anatomical Convention; Pharmaceutical Preparations, Official in the U. S. and British Pharmacopeias and Contained in the National Formulary; Chemical and Therapeutic Information as to Mineral Springs of America and Europe and Comprehensive Lists of Synonyms. By Thomas Lathrop Stedman, A.M., M.D. Third edition. Leather. Price, $5 net. Pp. 1057, with illustrations. New York: William Wood & Co., 1914.

This edition is larger by thirty pages than the previous one, and new plates have been made for the whole book. It has been brought up to date by the incorporation of a large number of new terms which have come into medical literature since the former issue.

Heredity and Sex. By Thomas Hunt Morgan, Ph.D., Professor of Experimental Zoology, Columbia University. Cloth. Price, $1.75 net. Pp. 282, with 121 illustrations. New York: Columbia University Press, 1913.

This book consists of the Columbia University Jesup Lectures for 1913. The newest researches are included, and the author correlates the study of heredity with the study of the changes in the germ cell. The work includes chapters on the evolution of sex; mechanism of sex determination; Mendelian principles; secondary sexual characters; effects of castration and transplantation; gynandromorphism, hermaphroditism, parthenogenesis and sex; fertility and special cases of sex inheritance. There is a well-chosen bibliography to complete a book which is succinct, nicely printed and well illustrated.

The Infant—Nutrition and Management. By Eric Pritchard, M. A., M.D., M.R.C.P., Physician to the Queen's Hospital for Children, London. Cloth. Price, $1 net. Pp. 265. New York: Longmans, Green & Co., 1914.

The author has here collected lectures delivered at sundry times and places on such subjects as the establishment of lactation and management of breast feeding, physiologic principles concerned in the nutrition and the quantitative food requirements of infants, training of the nerve centers, constipation and its treatment with petrolatum, convulsions, rickets, etc. It fairly well covers the general principles of the subject, and in a way that in many instances is quite at variance with orthodox views. As a book it has the defects of the diffuse style of the lecture and many repetitions, for which the author makes apology.

# JOURNALS INDEXED IN THE CURRENT MEDICAL LITERATURE DEPARTMENT JULY-DECEMBER, 1914

The following journals have been indexed in the Current Literature Department of THE JOURNAL during the past six months. Any of the foreign journals, except those starred, will be lent by THE JOURNAL to subscribers in the United States and to Fellows of the American Medical Association for a period not exceeding three days. Only one journal may be borrowed at a time. Requests for periodicals should be addressed to the Library of the American Medical Association and six cents in stamps should be enclosed. This covers the average expense of mailing a journal. Domestic journals can be obtained by sending the approximate amount direct to the respective publishers. Thus most of the journals indexed are accessible to the general practitioner, no matter where he may be located.

Albany Medical Annals. M. $2 170 Washington Ave., Albany, N. Y.
American Journal of Anatomy. Bi-m. $5. 36th St. and Woodland Ave., Philadelphia.
American Journal of Diseases of Children. M. $3. American Medical Association, 535 N. Dearborn St., Chicago.
American Journal of Insanity. Q. $5. Johns Hopkins Press, Baltimore.
American Jóurnal of the Medical Sciences. M. $5. Lea & Febiger, 706 Sansom St., Philadelphia.
American Journal of Obstetrics and Diseases of Women and Children. M. $5. Wood & Co., 51 Fifth Ave., New York City.
American Journal of Orthopedic Surgery. Q. $3. P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia.
American Journal of Physiology. M. $5. Johns Hopkins Medical School, Baltimore, Md.
American Journal of Public Health. M. $3. 755 Boylston St., Boston.
American Journal of Roentgenology. M. $5. 32 Adams Ave., West, Detroit.
American Journal of Tropical Diseases and Preventive Medicine. M. $2. P. O. Drawer 602, New Orleans, La.
Annales de gynécologie et d'obstétrique. M. 22 francs. Paris.
Annales de médecine et chirurgie infantiles. Semi-m. 12 francs. Paris.
Annales de la Société médecine et chirurgie de Liége. M. 8 francs.
Annals of Ophthalmology. Q. $4. Mermod-Jaccard Bldg., St. Louis.
Annals of Otology, Rhinology and Laryngology. Q. $4. Mermod-Jaccard Bldg., St. Louis.
Annals of Surgery. M. $5. J. B. Lippincott Co., E. Washington Square, Philadelphia.
Annals of Tropical Medicine and Parasitology. Q. $5. Liverpool.
Archiv für Gynäkologie. Irregular. Price varies. Berlin.
Archiv für Kinderheilkunde. Irregular. 15 marks. Stuttgart.
Archiv für klinische Chirurgie. Irregular. Price varies. Berlin.
Archiv für Verdauungs-Krankheiten. Bi-m. 24 marks. Berlin.
Archives des Sciences Biologiques. Irreg. 9 rubles. Petrograd.
Archives générales de chirurgie. M. 26 francs. Paris.
Archives générales de médecine. M. 18 francs. Paris.
Archives of Diagnosis. Q. $1. 250 W. 73d St., New York.
Archives of Internal Medicine. M. $4. American Medical Association, 535 N. Dearborn St., Chicago.
*Archives internationales de chirurgie. Irregular. 30 francs. Ghent.
*Archives des maladies de l'appareil digestif et de la nutrition. M. 14 francs. Paris.
Archives des maladies du cœur, des vaisseaux et du sang. M. 17 francs. Paris.
*Archives de médecine des enfants. M. 18 francs. Paris.
Archives mensuelles d'obstétrique et de gynécologie. M. 25 francs. Paris.
Archives of Ophthalmology. Bi-m. $5. G. P. Putnam's Sons, 27 W. 23d St., New York.
Archives of Pediatrics. M. $3. E. B. Treat & Co., 241 W. 23d St., New York.
Archives of Roentgen Ray. M. $4.50. London.
Arizona Medical Journal. M. $2. Phoenix, Ariz.
*Beiträge zur Geburtshilfe und Gynaekologie. Irregular. Price varies. Leipsic.
Beiträge zur Klinik der Tuberkulose. Irregular. 16 marks. Wurzburg.
*Beiträge zur klinischen Chirurgie. M. Price varies. Tübingen.
Berliner klinische Wochenschrift. W. 24 marks. Berlin.
Boston Medical and Surgical Journal. W. $5. 101 Tremont St., Boston.
Brain: A Journal of Neurology. Irregular. $4. London.
Brazil Medico. W. 20 milreis. Rio de Janeiro.
Bristol Medico-Chirurgical Journal. Bi-m. $3.
British Journal of Children's Diseases. M. $5. London.
British Journal of Surgery. Q. $6.50. William Wood & Company, 51 Fifth Ave., New York.
British Journal of Tuberculosis. Q. $1.25. London.
British Medical Journal. W. $8.50. London.
Bulletin de l'Académie de médecine. W. 20 francs. Paris.
Bulletin of the American Academy of Medicine. Bi-m. $3. 52 N. Fourth St., Easton, Pa.
Bulletin of the Johns Hopkins Hospital. M. $2. Baltimore.
Bulletin of the Lying-in Hospital of the City of New York. Irregular. $1. 23 E. 93d St., New York City.
Bulletin of the Medical and Chirurgical Faculty of Maryland. M. $0.25. 1211 Cathedral St., Baltimore.
Bulletins de la Société de pédiatrie de Paris. M. 10 francs.
California State Journal of Medicine. M. $1. Butler Bldg., San Francisco.
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This is an index not only to the reading matter in The Journal, but also to original articles in the principal medical periodicals of this and other countries. The reading matter appearing in The Journal is distinguished by the use of **black-faced numerals.**

The letters used to explain in which department the matter indexed appears are as follows: "E," Editorial; "C," Correspondence; "T," Therapeutics; "Ml," Medicolegal; "P," Propaganda for Reform; "ME," Medical Economics; "ab," abstract; the star (*) indicates an "Original Article" in The Journal.

This is a subject index and one should, therefore, look for the chief word, with the following exceptions: "Deaths" and "Society Proceedings" are indexed under these titles at the end of the letters "D" and "S." Matter pertaining to the Association is indexed under "American Medical Association."

All matter is indexed under the most important word of the heading used in The Journal, and also under the subject heading. For instance, abscess of the brain will be found under "abscess," as well as under "brain." Such titles as "ocular manifestations, etc." have been indexed under "Eye." Cross references have been liberally used.

The figures in parentheses refer to the paragraph, the number following to the page in The Journal.

ABDOMEN, gunshot wound of, with
rupture of pregnant uterus, *243

This reference is to an original article in The Journal, as shown both by the star and by the black-faced numerals indicating the page.

ACID, fruit, and blood, **420**

This reference, as indicated by the black-faced figures, is also in The Journal, and on turning to page 420 we find an answer to a question in the Department of Queries and Minor Notes.

HERNIA, diaphragmatic, (125) **1234**

In this reference, the (125) indicates that the article is in the Current Literature Department and the fact that the page number is in black-faced type shows that the article is abstracted and discussed in The Journal. Turning to page 1234 we find (125) refers to an article by S. McGuire in the *Southern Medical Journal*, September.

ACETONEMIA, periodical vomiting
with, (87) 813

The fact that in this last reference the page is given in ordinary type indicates that only the title of the article is given. Turning to page 813 we find that the numeral (87) refers to a paper on that subject by G. Hilliger which appeared in *Jahrbuch für Kinderheilkunde*, July.

In the Author's Index are the names of the authors of articles which have appeared in The Journal of the American Medical Association and of articles that have been listed from week to week in the Department of Current Medical Literature as having appeared in other journals. The black-faced numerals indicate that the article is in The Journal, either in full or in abstract. The star (*) preceding the page number, indicates an original article.

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**SOCIETIES**

*Acad.—Academy.*
*Am.—American.*
*A.—Association.*
*Conf.—Conference.*
*Cong.—Congress.*
*Conv.—Convention.*
*Internat.—International.*
*M.—Medical, Medicine.*
*Phar.—Pharmaceutical.*
*S.—Society.*
*Surg.—Surgical, Surgery, Surgeons.*

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List of National Societies appeared in this space two weeks ago, the officers of the A. M. A., last week. Corrections will be appreciated.

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|---|---|---|---|
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| Arkansas Medical Society | St. Cloud Cooper, Ft. Smith | C. P. Meriwether, 309 S. Tr. Bldg., Little Rock | Little Rock, May, 1915. |
| California, Med. Soc. of the State of | H. M. Sherman, San Francisco | Philip M. Jones, Butler Bldg., San Francisco | |
| Colorado State Medical Society | Geo. B. Packard, Denver | Crum Epler, Pueblo | Denver, Oct. 5-7, 1915. |
| Connecticut State Medical Society | Oliver C. Smith, Hartford | M. M. Scarbrough, 76 Wall St., New Haven | Hartford, 1915. |
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| District of Columbia, Med. Soc. of | John R. Wellington, Washington | H. C. Macatee, 1478 Harvard St., N.W., Wash'n | |
| Florida Medical Association | F. Clifton Moor, Tallahassee | Graham E. Henson, Jacksonville | DeLand, May 12-14, 1915. |
| Georgia, Medical Association of | Wm. B. Hardman, Commerce | Wm. C. Lyle, Augusta | Macon, 1915. |
| Hawaii, Medical Society of | H. V. Murray, Honolulu | F. P. Reynolds, Honolulu | |
| Idaho State Medical Association | John N. Alley, Lapwai | Ed. E. Maxey, Boise | Lewiston, 1915. |
| Illinois State Medical Society | A. L. Brittin, Athens | W. H. Gilmore, Mt. Vernon | Springfield, May 19-20, '15. |
| Indiana State Medical Association | J. P. Salb, Jasper | Chas. N. Combs, Terre Haute | Indianapolis, Sept. 23-24. |
| Iowa State Medical Society | H. C. Eschbach, Albia | J. W. Osborn, Cit. Nat. Bk. Bldg., Des Moines | Waterloo, 1915. |
| Isthmian Canal Zone, Med. Assn. of | D. F. Reeder, Ancon | H. C. Clark, Ancon | Ancon, March 20, 1915. |
| Kansas Medical Society | William F. Sawhill, Concordia | Chas. S. Huffman, Columbus | Kansas City, 1915. |
| Kentucky State Medical Association | John J. Moren, Louisville | Arthur T. McCormack, Bowling Green | Louisville, Oct., 1915. |
| Louisiana State Medical Society | George S. Bel, New Orleans | L. R. DeBuys, Maison Blanche Bldg., N. Orleans | Lake Charles, Apr. 20-22, '15 |
| Maine Medical Association | Herman L. Bartlett, Norway | John B. Thompson, 109 State St., Bangor | Poland Springs, June, 1915. |
| Maryland, Med. and Chir. Faculty of | Randolph Winslow, Baltimore | John Ruhräh, 1211 Cathedral St., Baltimore | Baltimore, Apr., 1915. |
| Massachusetts Medical Society | Chas. F. Withington, Boston | Walter L. Burrage, 282 Newbury St., Boston | Boston, June 8-9, 1915. |
| Michigan State Medical Society | Reuben Peterson, Ann Arbor | F. C. Warnshuis, 91 Monroe Av., Grand Rapids | Grand Rapids, Sept., 1915. |
| Minnesota State Medical Assn | John T. Rogers, St. Paul | Thos. McDavitt, 814 Lowry Bldg., St. Paul | Rochester, 1915. |
| Mississippi State Medical Assn | Jacob S. Ullman, Natchez | E. F. Howard, 1st Nat. Bk. Bldg., Vicksburg | Hattiesburg, May 11, 1915. |
| Missouri State Medical Association | Henry C. Shuttee, Westplains | E. J. Goodwin, 3525 Pine St., St. Louis | St. Joseph, May 11-13, '15. |
| Montana State Medical Association | James H. Irwin, Great Falls | E. G. Balsam, Billings | Bozeman, July 14-15, 1915. |
| Nebraska State Medical Association | John P. Gilligan, O'Neill | Jos. M. Aiken, 466 Brandeis Block, Omaha | Hastings, May 18-20, 1915. |
| Nevada State Medical Association | P. J. Mangan, Winnemucca | Martin A. Robison, Reno | Reno, June, 1915. |
| New Hampshire Medical Society | Herbert K. Faulkner, Keene | D. E. Sullivan, 7 No. State St., Concord | 1915. |
| New Jersey, Medical Society of | Frank D. Gray, Jersey City | Thos. N. Gray, E. Orange | Spring Lake, June 22-24, '15 |
| New Mexico Medical Society | William T. Joyner, Roswell | R. E. McBride, Las Cruces | Las Vegas, 1915. |
| New York, Med. Soc. of the State of | Grover Wende, Buffalo | Wisner R. Townsend, 17 West 43d St., N. Y. | Buffalo, April 27-29, 1915. |
| N. Carolina, Med. Soc. of the State of | L. B. McBrayer, Sanitorium | John Ferrell, 725 Southern Bldg., Wash'n, D.C. | Greensboro, June 16, 1915. |
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| Oregon State Medical Association | Alpha E. Rockey, Portland | M. B. Marcellus, 901 Selling Bldg., Portland | Portland, 1915. |
| Pennsylvania, Med. Soc. of State of | E. B. Heckel, Pittsburgh | Cyrus Lee Stevens, Athens | Philadelphia, Sept., 1915. |
| Philippine Islands Medical Society | N M. Saleeby, Manila | R. B. Gibson, Manila | Manila. |
| Porto Rico, Med. Assn. of | B. K. Ashford, San Juan | Jorge del Toro, San Juan | Guayama, Dec., 1914. |
| Rhode Island Medical Society | Stephen A. Welch, Providence | J. Perkins, 125 Waterman St., Providence | 1915. |
| South Carolina Medical Association | E. F. Parker, Charleston | Edgar A. Hines, Seneca | Greenwood, Apr. 20-22, '15. |
| South Dakota State Med. Assn | Fred Treon, Chamberlain | R. D. Alway, 212 Main St., Aberdeen | Sioux Falls, 1915. |
| Tennessee State Medical Assn | Samuel M. Miller, Knoxville | Olin West, First Nat'l Bank Bldg., Nashville | Nashville, Apr., 1915. |
| Texas, State Medical Association of | Frank D. Boyd, Ft. Worth | H. Taylor, W. Nat'l Bank Bldg., Fort Worth | Fort Worth, 1915. |
| Utah State Medical Association | R. S. Joyce, Ogden | W. Brown Ewing, 801 Boston Bldg., S. L. City | Salt Lake City, 1915. |
| Vermont State Medical Society | William W. Townsend, Rutland | J. M. Hamilton, Rutland | Burlington, Oct., 1915. |
| Virginia, Medical Society of | Samuel Lile, Lynchburg | Paulus A. Irving, Farmville | Richmond, 1915. |
| Washington State Medical Assn | Casper W. Sharples, Seattle | C. H. Thomson, Walker Bldg., Seattle | Tacoma, 1915. |
| West Virginia State Med. Assn | R. E. Venning, Charlestown | A. P. Butt, Davis | Huntington, May 12-14, '15 |
| Wisconsin, State Med. Society of | Theodore J. Redelings, Marinette. | Rock Sleyster, Waupun | Milwaukee, Oct., 1915. |
| Wyoming State Medical Society | Amos. W. Barber, Cheyenne | W. H. Roberts, Sheridan | |

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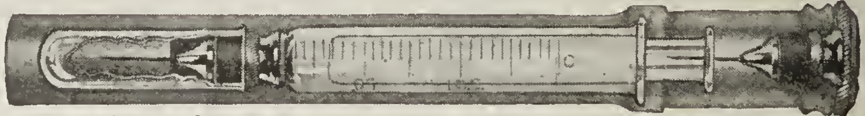

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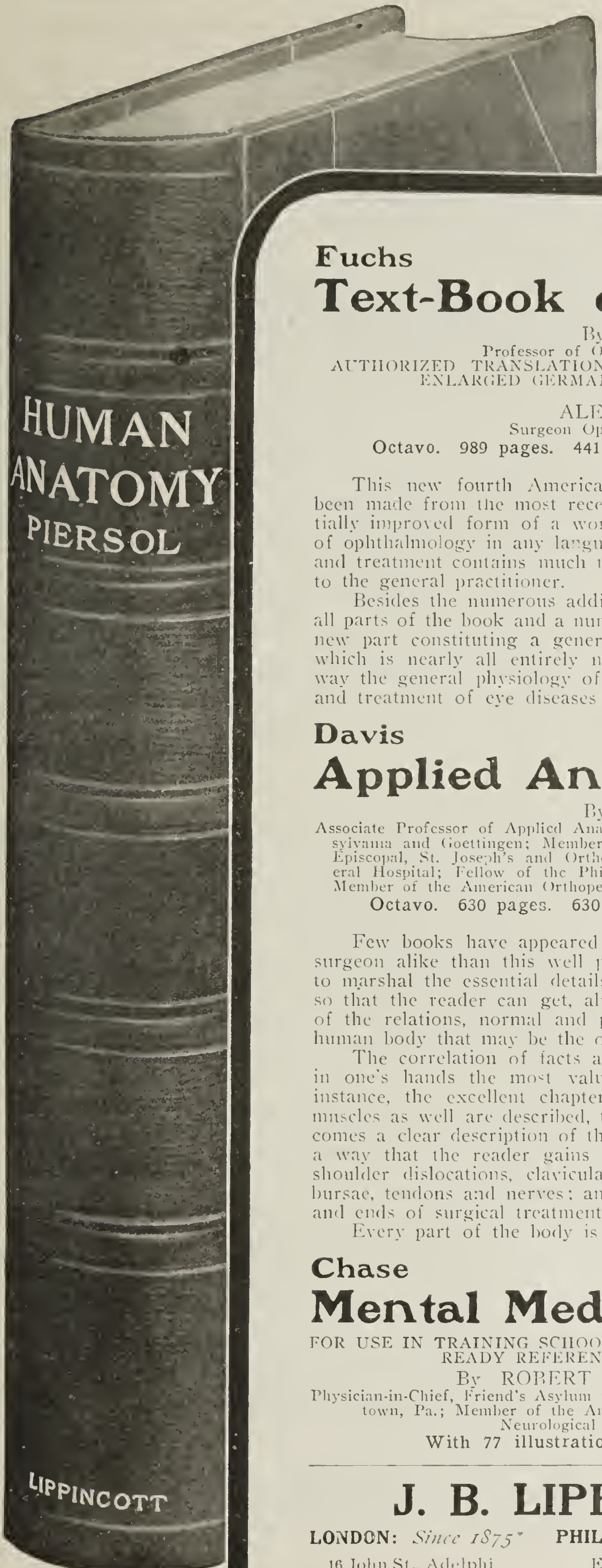

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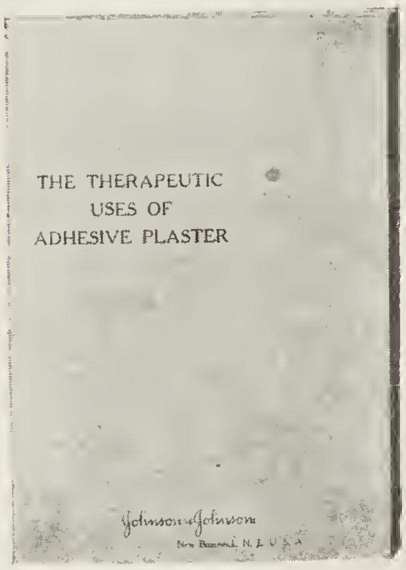

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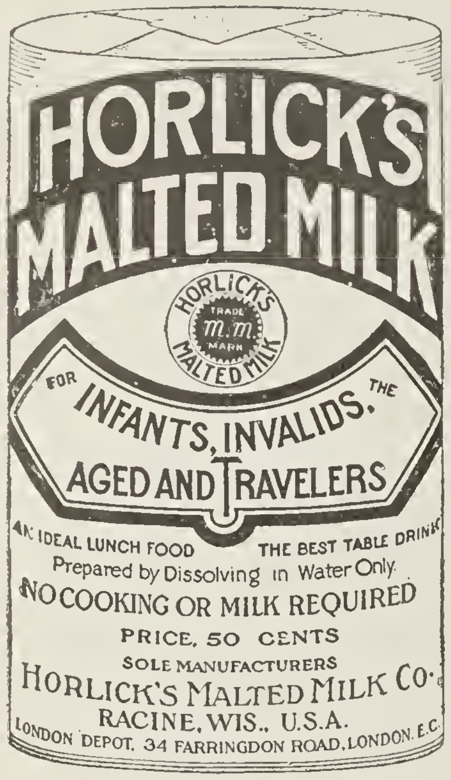
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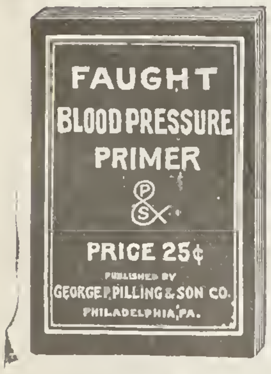
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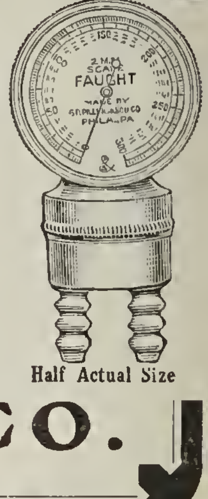

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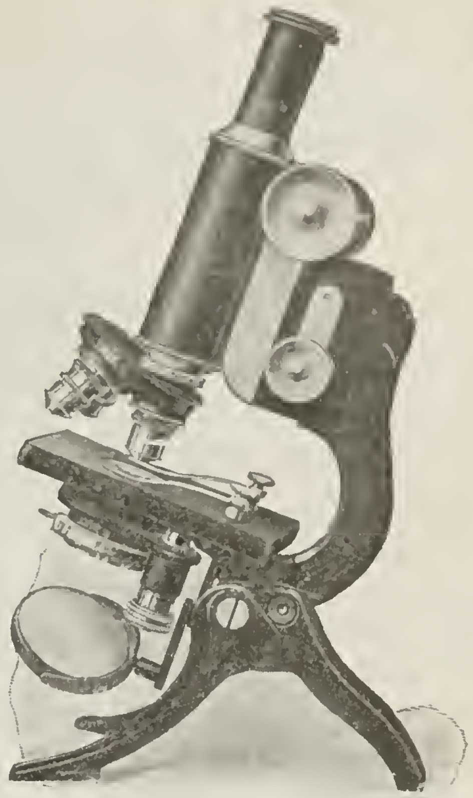

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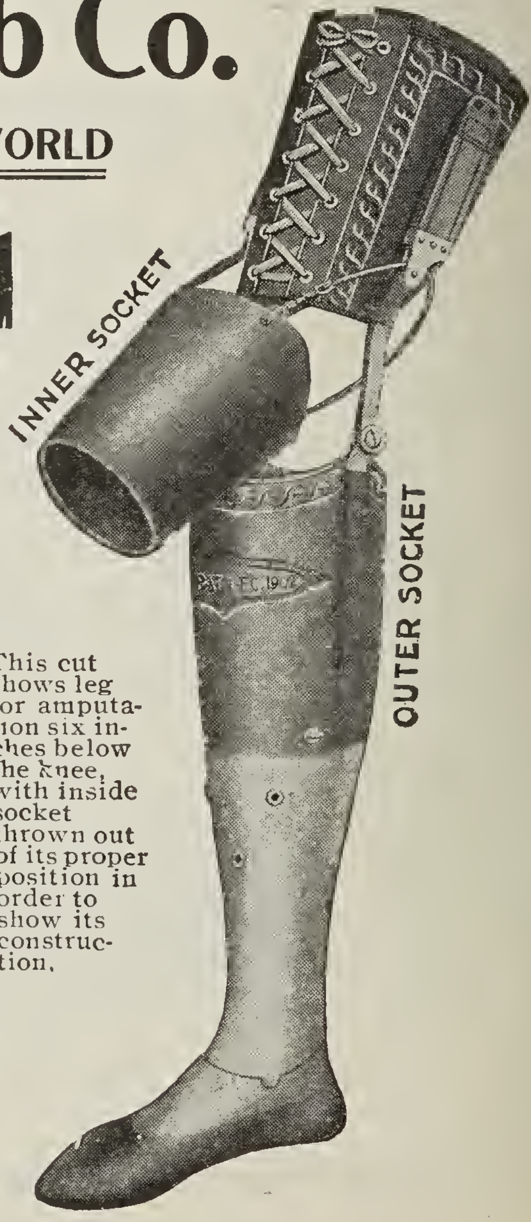

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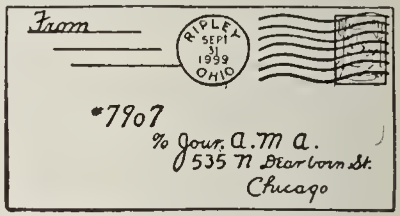

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*(Continued on next page)*

### A M. A ANNOUNCEMENT

*(Continued from preceding page)*

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—o—

### WORD FROM THE FRONT

*To the Editor:*—Please discontinue my Fellowship in the A. M. A. and my subscription to THE JOURNAL. There is too little ammunition for the man on the firing line in it—no time for scientific research in the trenches.

A. Beil, M.D., Selby, S. Dak.

—o—

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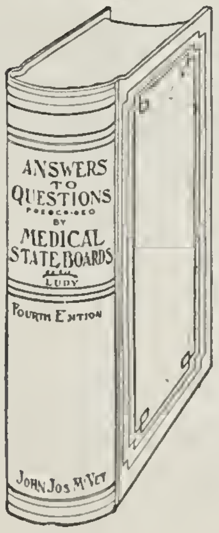
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*(Continued on next page)*

## KNOCKS AND BOOSTS

(*Continued from preceding page*)

as this, which not only protects their rights and makes possible great privileges, but has the courage to stand for the highest ideals of medical practice.—*Ohio State Medical Jour.*

—o—

### FROM THE ANTIPODES

*To the Editor:*—Please accept my sincere appreciation of THE JOURNAL. The section on "Propaganda for Reform" is sufficient alone to give it a place of respect and esteem by all physicians. Your editorials are valuable and helpful. L. B. Kline, M.D. (the Foreign Christian Missionary Society), The Christian Hospital, Vigan, P. I.

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—o—

### FATAL HYPERESTHESIA

A——— J———, a native of Richmond, Va., and for many months a familiar sight on the streets of the city, died at his home here Monday afternoon of sensibility.—Abilene (Tex.) *Daily Reporter.*

—o—

### DOC HELPS HIS COMMUNITY

We are told by Dr. Brinson of this place that a good preventative for scarlet fever and diphtheria is to give the children tincture of iron, one drop for each year old, after meals. The doctor says any child may take this remedy and not be at all liable to those diseases.—Springfield (Ga.) *Herald.*

—o—

### A RUFFLED CONDITION

Patrol Wagon Driver F——— J——— was successfully operated on for corrugated veins at his home yesterday.—Hamilton (Ohio) *News.*

—o—

### THE PATH OF LEAST RESISTANCE

C——— J———, who is ill with rheumatic fever, is no better to-day and grave fears are felt for his recovery, as the fever has a tendency to go to his heart.—Aberdeen (S. Dak.) *News.*

—o—

### PERHAPS HE ENDED HIS LIFE

Whether Hat Frame Manufacturer Killed Himself or Committed Suicide Is Expected to be Determined in a Few Hours.—Display Headline, Chicago *Daily News.*

—o—

### THE EDITOR REMARKS

A girl died in New York from hydrophobia after being bitten by a cat. Some doctors say there is no such disease, but its victims die just as dead as if there were.—Birmingham (Ala.) *Ledger.*

—o—

### TEACHING SEX HYGIENE

These questions were asked the sophomore class in the academic department, University of California. The subject was sex hygiene.

H. E. Castle, M.D., San Francisco.

Q. Name the female organs of reproduction.

A. The umbilical cord which connects the sex organs with the hip bones.

Q. What is ovulation?

A. Ovulation is the passing of the ova from one ovary across to the other through the aqueduct. It occurs every month.

Q. Name the social diseases.

A. Well, I know only one, and that is appendicitis.

(*Tonics and Sedatives on next page*)

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WANTED—AN UNOPPOSED TOWN AND country practice paying from $3,500 to $4,000 annually, preferably where there is no drug store; or a contract practice paying at least $250 to $300 per month, or a practice with light competition; have the cash to pay; west or middle west; must locate in three weeks. Add. 7325 E, % AMA.

WANTED — ILLINOIS OR SOUTHERN Wisconsin, $2,500 cash practice; will pay $200 cash, balance monthly payments; have office equipment and drugs; prefer to pay on property, but if desired will buy office equipment; willing to come to demonstrate to you I am capable and trustworthy; explain fully; not in any hurry; May 1 satisfactory. Add. 7428 E, % AMA.

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WANTED—PARTNERSHIP —SURGICAL— A surgeon, 12 years' experience, and now doing a large general and surgical business, desires partnership with an established surgeon or general practitioner doing surgery; correspondence invited and thorough investigation desired; willing to pay cash for the right opportunity. Add. 7436 H, % AMA.

### SITUATIONS WANTED

WANTED—BY WOMAN PHYSICIAN—POsition as superintendent of hospital or sanatorium or as assistant physician in state hospital for insane or in private sanatorium; experienced. Add. 7470 I, % AMA.

WANTED—SALARIED POSITION, INSTItution or assist scurgeon; graduate Class A school, also A.B. and B.S. degrees; American, aged 30; one year in large hospital; good surgical training; competent anesthetist; usual laboratory work; also stenographer; license Kentucky and reciprocating states; excellent references; available at once. Add. 7476 M, % AMA.

(*Continued on next page*)

## Tonics and Sedatives

### HE WAS SO NERVOUS

He was a nervous man. Most men are when they find themselves in a dentist's chair, but he was exceptionally so. The tooth that had to come out was quite a small affair—from the dentist's point of view. From the patient's it felt about the same size as a house.

He decided to have gas. The dentist, who was in a hurry to go to a baseball game, tried to persuade him to do without, but he was determined.

The dentist, in a fever of impatience, waited for the victim to lose consciousness, but the nervous man insisted on keeping one eye open, though he had had enough gas to float an airship.

Unable to contain himself any longer, the irate tooth puller exclaimed:

"Let yourself go, man! Shut your eye, you idiot!"

Somewhere from the back blocks of dreamland the patient murmured sleepily:

"Can't—it's glass."—Philadelphia *Record.*

—o—

### A HEAVY MORTALITY

Said the bibulous gentleman who had been reading birth and death statistics: "Do you know, James, every time I breathe a man dies?"

"Then," said James, "why don't you chew cloves?"—*The Housekeeper.*

—o—

### THE DIFFERENCE

"Do you find that set of books you bought interesting?"

"Not very," confessed the man who tries to improve himself. "But I'd feel better about it if the man who comes around to collect were as good an entertainer as the one who sold me the books."—Washington *Star.*

—o—

### THOSE STREET CARS

The street-car conductor examined the transfer thoughtfully, and said meekly: "This transfer expired an hour ago, lady."

The lady, digging in her purse after a coin, replied: "No wonder, with not a single ventilator open in the whole car."—*Puck.*

—o—

### THERE ARE NO BAD ONES

The senator from Mississippi asked an old colored man what breed of chickens he considered best, and he replied:

"All kinds has merits. De w'ite ones is de easiest to find, but de black ones is de easiest to hide after you gits 'em.—*Tit-Bits.*

—o—

### WHAT SHE NEEDED

A girl, reading in a paper that fish was excellent brain food, wrote to the editor:

"Dear Sir—Seeing as you say how fish is good for the brains, what kind of fish shall I eat?"

To this the editor replied:

"Dear Miss—Judging from the composition of your letter, I should advise you to eat a whale."—*Tit-Bits.*

—o—

### BITTER REVENGE

After Jimmy's tooth was drawn, he rose from the chair, held out his little hand, and said:

"Give it to me, please."

With an accommodating smile, the dentist wrapped the tooth in paper, and extended it to Jimmy.

"But what are you going to do with it?" he asked.

"I am going to take it home," was the reply, "cram sugar into it and watch it ache."—*Pearson's Weekly.*

—o—

### A SLEEP PRODUCER

Sir Algernon Fitzhugh had just moved up from "dear old Lunnun" into the country and found himself unable to sleep because of the

(*Continued on next page*)

X-Ray Efficiency

It is the film or plate that keeps pace with the rapid changes and advancement in X-Ray apparatus, that is giving the best results. Eastman X-Ray Films and Seed X-Ray Plates are used with equal success with the most modern, as well as the older X-Ray equipment.

*For sale by all supply houses. Illustrated booklet, "X-Ray Efficiency," by mail on request.*

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LET US SHOW YOU! WE CAN!

Address Box 351, Yonkers, N. Y.

A CLASSIFIED Advertisement inserted in THE JOURNAL will be read by about TWO-THIRDS of the medical profession.

(*Continued from preceding page*)

WANTED — LOCUM TENENS POSITION with a view of partnership or assistant in surgery and medicine; unemployed after December, 1914; 45 years old, pleasing personality, sober; graduate of eastern school; active practice 18 years; registered in Ohio, West Virginia, Illinois, Wisconsin, South Dakota, Nebraska. Add. 7429 I, % AMA.

WANTED—POSITION AS ASSISTANT TO surgeon in Chicago by graduate Class A medical college; married; aged 30 years; hospital internship as senior house surgeon, New York; course in gynecology and cystoscopy, New York Post-Graduate Medical College; excellent experience in surgery, anesthesia and obstetrics. Add. 7466 I, % AMA.

WANTED—ASSISTANTSHIP OR INTERNSHIP; single, aged 26; graduate Class A school, 1913; 18 months' hospital training; 6 months' general practice; good in general laboratory work and anesthetics; state license; please state salary; can come at once. Add. 7329 I, % AMA.

WANTED — A POSITION FOR EXPERIENCE only with surgeon or busy obstetrician in Chicago or other large city for six months; I have my own automobile and instruments; I might consider an offer as locum tenens in city; graduate of Northwestern and have had three years of factory work and general practice. Add. 7482 I, % AMA.

WANTED — SITUATION — LIBERAL bonus for information leading to suitable appointment with corporation or as assistant to specialist in south; 7 years' general and contract practice; graduate A+ school hospital. Physician, 723 Howard Ave., New Orleans, La. I

WANTED—GRADUATE CLASS A SCHOOL —One year's internship in a large general city hospital and 3 years' private practice, desires salaried position or good location where can make money from start; capable of doing any work. Add. 7468 I, % AMA.

WANTED—POSITION IN NON-SURGICAL hospital or sanatorium for tuberculosis; I am a 1912 graduate; aged 29; hold two degrees besides M.D. Add. 7353 I, % AMA.

WANTED—ASSOCIATION WITH OLDER physician on salary or commission basis, or would accept suitable location if can pay for same out of earnings; have had postgraduate work in laboratory diagnosis; some hospital experience; one year general practice; am 26 years old, 1913 graduate; licensed Illinois and Nebraska. Add. 7266 I, % AMA.

WANTED—POSITION AS LABORATORY technician; 6 years' experience, pathology and bacteriology sectioning, microphotography, Wassermann, Vaccines, Widal, etc. Please state salary and terms in first letter. References given and required. Prospects. Add. 7472 I, % AMA.

WANTED — A POSITION DESIRED BY 1911 graduate; have had good hospital experience, contagious and penal instititutional work; would prefer some institution, such as tuberculosis, insane or salaried general hospital; best of references; can come at once; state salary and details in first letter. Add. 7383 I, % AMA.

WANTED—POSITION AS ASSISTANT OR partnership with an eye, ear, nose and throat specialist; have had several years' hospital experience; for past nine months resident surgeon in an eye, ear, nose and throat hospital; graduate of A+ university; single, Protestant, aged 27; best of references; prefer the south, but will go anywhere. Add. 7439 I, % AMA.

WANTED — SALARIED POSITION WITH busy physician, surgeon or with corporation; prefer west; experienced in mining and lumbering contract work; also general practice; best references and good habits; energetic, agreeable personality and good appearance; Class A school; married; Protestant; had internship in general hospital; aged 27; give full data in first letter. Add. 7277 I, % AMA.

WANTED — ASSISTANTSHIP IN CONTRACT or general practice by graduate of Class A+ medical school; American, 31 years old; 2½ years' experience in practice, hospital and as assistant; references given; salary $100 a month with prospects; would consider investment in practice including as part small stable contract. Add. 7473 I, % AMA.

(*Continued on next page*)

## TONICS AND SEDATIVES

(*Continued from preceding page*)

quiet of the night. A friend advised him to get a phonograph and play himself to sleep. Sir Algernon decided to try it. About a month later the friend met him and asked:

"Well, Algy, how did it work?"

"It didn't work," he replied. "They sent the blame thing with only one record, 'God Save the King,' and every time I tried it I had to stand up."

—o—

### HIGH FINANCE

When Jones was married he was making eight dollars a week. The first week he gave his wife seven and kept one for himself. The next week he kept seven and gave his wife one.

"How do you expect me to get along on one dollar?" asked Mrs. Jones.

"I don't know," said Jones. "I had a rotten time last week myself."

—o—

### THE DOCTOR'S CARD

From time to time The Journal receives peculiar specimens of physicians' cards. The following is a recent example:

From 10 a. m. to 9 p. m. Diplomas in Office
Dr. C. B. Q.———, M.D., A.M.
Ex-Surgeon Transatlantic Steamers France-America
Thirty Years of Practice in El Paso County
New Treatment (French) in Chronic Diseases by Animal Therapy
Neurasthenia, Rheumatism, Blood Dyscrasia, Etc.
Office and Residence, 211 W——— Street, N——— C———, C———.

## Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interests of our readers and as space permits.

Optic Projection. Principles, Installation and Use of the Magic Lantern, Projection Microscope, Reflecting Lantern and Moving Picture Machine. By Simon Henry Gage, Professor of Histology and Embryology, Emeritus, Cornell University, and Henry Phelps Gage, Ph.D. Cloth. Price, $3. Pp. 731, with 413 illustrations. Ithaca, N. Y.: Comstock Publishing Company, 1914.

Two Years of the Home Hospital Experiment. Methods, Results and Comparative Cost of the Combined and Hospital Treatment of Families Made Dependent by Tuberculosis, 1912-14. Paper. Pp. 112. New York: Association for Improving the Condition of the Poor, 1914.

Child Training as an Exact Science. A Treatise Based on the Principles of Modern Psychology, Normal and Abnormal. By George W. Jacoby, M.D. Cloth. Price, $1.50 net. Pp. 384, with illustrations. New York: Funk & Wagnalls Company, 1914.

A System of Operative Surgery. By Various Authors. Edited by F. F. Burghard, M.S., F.R.C.S., Lecturer on Surgery, King's College Hospital. Second edition. Five volumes. Cloth. Price, $30. New York: Oxford University Press, 1914.

Dissection Methods and Guides. By David Gregg Metheny, M.D., L.R.C.P., L.R.C.S. Cloth. Price, $1.25 net. Pp. 131, with 12 illustrations. Philadelphia: W. B. Saunders Company, 1914.

A Text-Book for Midwives. By John S. Fairbairn, M.A., B.M., B.Ch., Obstetric Physician, St. Thomas' Hospital. Cloth. Price, $3.75. Pp. 317, with 107 illustrations. New York: Oxford University Press, 1914.

Evolution of Sex in Plants. By John Merle Coulter, Head of the Department of Botany, University of Chicago. Cloth. Price, $1 net. Pp. 140, with 46 illustrations. Chicago: University of Chicago Press, 1914.

(*Continued on next page*)

"AMBUMATIC" WASHABLE ABDOMINAL
**SUPPORTERS**

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**ELASTIC STOCKINGS, TRUSSES, CORSETS, ETC.**

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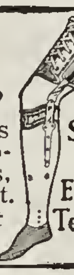
**LUX** **LEGS ARMS BRACES**



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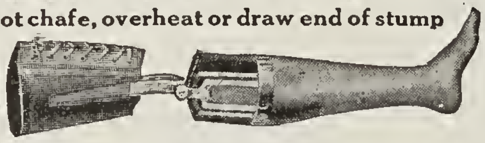

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**E. H. ERICKSON ARTIFICIAL LIMB CO.**
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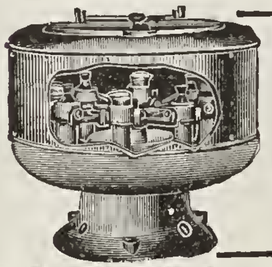

**High Power Electric Centrifuges**

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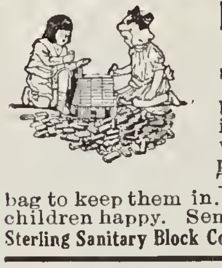
**Doctor: Children's Blocks**



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Let us send you "nearly a bushel" of clean, sanitary building blocks for children. Enough worth while. No paste, paint or paper. Shaped like bricks. Three sizes. Dandy red mission bag to keep them in. $1.00 buys enough. Make the children happy. Send today.

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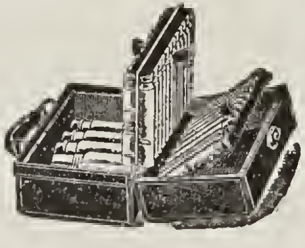

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(*Continued from preceding page*)

WANTED — POSITION AS ASSISTANT physician in hospital for insane by graduate of Harvard Medical School; 18 months' experience in general hospital, 3 years with insane; 8 months' private practice; registered or can reciprocate in 28 states; aged 32; excellent references. Dr. H. V. Hendricks, Hardwick, Mass. I

WANTED — POSITION AS ASSISTANT, contract work or locum tenens; general hospital training; recently completed a 7 months' internship in the Chicago Lying-In Hospital and Dispensary; registered in Illinois; highest references; prefer work where there is obstetrics or surgery; aged 27, single. Add. 7459 I, % AMA.

WANTED — SALARIED POSITION BY woman physician capable of doing laboratory work; experienced in hospital work and in general practice. Add. 7418 I, % AMA.

## NURSES LOCATION WANTED

WANTED — TRAINED NURSE WISHES position as assistant in a busy doctor's office; P.-G. course in laboratory work; salary $75 per month; Chicago preferred; phone Lincoln 5698, or add. 7469, % AMA.

## STENOGRAPHERS

WANTED — BY STENOGRAPHER—POSITION as private secretary and assistant to physician in New York City; energetic young woman; several years medical experience; unquestionable references. Add. 7416 I, % AMA.

## MISCELLANEOUS—WANTED

THE CARTWRIGHT PRIZE OF THE Association of the Alumni of the College of Physicians and Surgeons, Medical Department of Columbia University, New York. This biennial prize of $500, open for universal competition, will be awarded at Commencement, 1915. If no one of the competing essays is deemed sufficiently meritorious, the prize is not awarded.

An essay, in order to be held worthy of the prize, must contain the original investigations made by the writer. This prize is not awarded to an essay which is the work of more than one author, or which is at the same time submitted for another prize, or that has been previously published in any form. It must be on a medical, surgical or kindred subject. Each competitor is required to send with his essay a statement that these requirements have been complied with. Essays in competition for this prize must be sent to the undersigned on or before April 1, 1915. Competing essays must be typewritten, and they must be in English, marked with a device or motto, and accompanied by a sealed envelope similarly marked, containing the name and address of the author. The payment of the prize money to the successful essayist will be made on his filing with the treasurer of this association a printed copy of the essay. In 1916 the Alumni Prize will be offered. The requirements of this are the same as those of the Cartwright prize; excepting that competition is restricted to P. & S. Alumni. H. E. Hale, M.D., Secretary of the Association of the Alumni of the College of Physicians and Surgeons, 770 West End Ave., New York City. J

## BOOKS WANTED AND FOR SALE

WANTED—JANUARY, MARCH AND NOVEMBER, 1914, *American Journal of Diseases of Children*. We will pay 50 cents each for January and March issues, and 25 cents each for November issues, returned in good condition. Add. Amer. Med. Assn., 535 N. Dearborn St., Chicago. M

## APPARATUS, ETC., FOR SALE

FOR SALE — SPENCER MICROSCOPE and centrifuge; absolutely new; cost $125 with objectives; in perfect condition; do not have time for microscopic work; best offer above $75 with check inclosed takes both. Add. Dr. E. C. Wills, Yuma, Ariz. K

FOR SALE—X-RAY COIL, 15-INCH, DIrect current; mercury interrupter, in solid oak case; good as new; one fluoroscope; one tube stand; one Cornell tube complete; one Betz (6½-inch) tube; one M. & W. Boston tube (6½-inch); one Shutts, Walters & Co. tube, 7-inch; all perfect; $175 cash. Dr. E. D. Hammond, 1008-9 Walker Bank Bldg., Salt Lake City, Utah. K

(*Continued on next page*)

## BOOKS RECEIVED

(Continued from preceding page)

California and the Far West. Suggestions for the West-Bound Traveler. By K. E. M. Dumbell. Cloth. Price, 75 cents. Pp. 198. New York: James Pott & Co., 1914.

With Sabre and Scalpel. The Autobiography of a Soldier and Surgeon. By John Allan Wyeth, M.D., LL.D. Cloth. Price, $3 net. Pp. 535, with illustrations. New York: Harper & Brothers, 1914.

Fear and Conventionality. By Elsie Clews Parsons, Ph.D. Cloth. Price, $1.50 net. Pp. 239. New York: G. P. Putnam's Sons, 1914.

## *The Public Service*

### U. S. Public Health Service

Changes for the seven days ended Dec. 9, 1914:

Carrington, P. M., surgeon, granted 5 days' leave of absence to be taken between Dec. 5 and 15, 1914.

McMullen, John, surgeon, directed to proceed to Louisville, Ky., for conference with state health authorities relative to trachoma situation.

Lumsden, L. L., surgeon, directed to proceed to Wilmington, N. C., and such other communities in that state as may be necessary to make inspections of methods of sanitation and inquiry as to results following the adoption of these methods; like inspections and observations to be made in the state of Virginia if found necessary.

Currie, D. H., surgeon, granted 1 year's leave of absence, without pay, from Dec. 20, 1914, for duty as secretary of the State Board of Health, at the request of the governor of California.

Frost, W. H., P. A. surgeon, directed to stop in Washington, D. C., en route to station for conference on stream pollution investigations.

Sweeney, A. B., asst.-surgeon, relieved from duty at the Immigration Station, Ellis Island, N. Y., and directed to proceed to the New Orleans Quarantine Station and report to the medical officer in charge for duty and assignment to quarters.

Glanville, W. E., asst.-surgeon, relieved from duty on the revenue-cutter *Bear* and directed to report to the medical officer in charge Angel Island Quarantine Station for temporary duty and assignment to quarters.

Galloway, Jr., T. C., asst.-surgeon, relieved from duty on revenue-cutter *Unalga* and directed to proceed to San Francisco and report to the commanding officer of the revenue-cutter *McCulloch* for duty.

Sutton, Don C., asst.-surgeon, leave of absence for 5 days en route to Galveston, Tex., amended to read "1 day's leave of absence en route to station."

Faget, F. M., asst.-surgeon, relieved from duty at the New Orleans Quarantine Station and directed to proceed to New Orleans, La., for duty in plague eradicative measures.

Keating, T. F., asst.-surgeon, leave of absence for 3 days en route to San Francisco, amended to read "2 days' leave of absence en route to station."

Cox, Ora H., asst.-surgeon, relieved from duty at the Quarantine Station, Marcus Hook, Pa., and directed to proceed to Arundel Cove, South Baltimore, Md., not later than Dec. 12, 1914, and report to the commanding officer of the revenue-cutter *Androscoggin* for duty in relief of crews of vessels engaged in deep sea fisheries off the New England coast.

Hommon, H. B., sanitary chemist, directed to proceed, about Dec. 7, 1914, to Casey, Iowa, for the purpose of inspecting a creamery waste disposal plant at that point in cooperation with the United States Department of Agriculture.

McBurney, J. W., sanitary bacteriologist, directed to proceed, about Dec. 17, 1914, to Luray, Va., for duty in operation of the experimental tannery waste disposal plant during absence of Sanitary Chemist H. C. Colson.

(Continued on next page)

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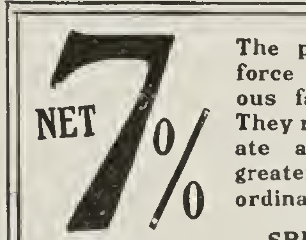
J. Roland Hall
EASTON, PENNSYLVANIA



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(Continued from preceding page)

VICTOR COMPRESSION DIAPHRAGM x-ray tube stands for stereoscopic work; regular $150; special price, $75. National Physicians' Exchange, 30 E. Randolph St., Chicago, Ill. K

## PRACTICES FOR SALE

FOR SALE — IN SOUTHERN CALIFORnia's delightful climate, in one of the best coast cities, growing rapidly, a beautiful two-story home (10 rooms), with hot-water heating, in center of city; lot 100x150 feet, with garage; established 21 years; there is a great future for the whole of the Pacific Coast, but especially in this section; best of reasons for selling, together with the most desirable office in the city in an up-to-date office building, with furniture, instruments, including new high-frequency and x-ray apparatus, complete, costing $400; large medical library; all for $10,000; two-thirds cash. Add. 7300 N, % AMA.

FOR SALE—COLORADO — $3,000 PRACtice; town of 250; large territory; nearest competition 12 miles; retiring on account of other business interests; will sell and introduce for actual cost of office and laboratory outfit, about $300; good income assured from the start. Add. 7452 N, % AMA.

FOR SALE—COLORADO — $5,000 CITY practice; only requirement, purchase of splendidly located modern residence at present value, $6,500; fine opening for physician needing altitude and mountain air, yet able to work; $2,000 will handle; present owner has other opening and can deliver goods to capable man. Add. 7432 N, % AMA.

FOR SALE—CONNECTICUT—$4,000 GENeral practice, in one of the best small cities in state; population 20,000 and growing; collections 98 per cent.; established 12 years; splendid office equipment; transferable appointments; reason for selling, going to specialize; will sell right to quick buyer; this ad. appears but once. Add. 7478 N, % AMA.

FOR SALE—CENTRAL ILLINOIS—$2,500 village and country practice in town of 1,400 on railroad; collections 98 per cent.; competition right; rich farming community; good schools, 4 churches; price, $4,000, includes house and office, new barn, office furniture and large stock of drugs; further particulars on inquiry. Add. 7430 N, % AMA.

FOR SALE — CENTRAL ILLINOIS — A $4,000 practice and a $6,000 bungalow in a town of 1,400 inhabitants; modern improvements; fine educational center; easy competition; person doing surgery can do $5,000; price, $6,000; one-half down, rest easy terms; fine opportunity; good money from the start; leaving to specialize. Add. 7391 N, % AMA.

FOR SALE — ILLINOIS—AM GOING TO city and will sell my practice (10 years), office outfit, drugs, etc., horse, buggy, sleigh, automobile, house and lot, any part or all to suit purchaser; price accordingly; village of 1,000, within 20 miles of Springfield, Ill.; excellent country. Add. 7446 N, % AMA.

FOR SALE — IOWA — ESTABLISHED medical and surgical practice of 33 years; town 2,000; average practice from $3,500 to $4,500 per annum; library, instruments and office equipment one-third cost, shown by books; drugs and surgical supplies and dressings invoice present cost; 20-room residence, built five years ago; all modern improvements, steam heat, electricity, hot and cold water, sewerage, etc.; cost $8,500; will sell for $7,500; this would make fine hospital; with security 50 to 75 per cent. of the purchase price will be carried to suit purchaser, at 6 per cent. semi-annual interest. Add. 7304 N, % AMA.

FOR SALE—IOWA—PHYSICIAN RETIRing will sell office furniture from $200 to $300; good opportunity for competent man; will give thorough introduction; modern, up-to-date town of 3,000; central Iowa. Add. 7461 N, % AMA.

FOR SALE—SOUTHWESTERN IOWA—TO Protestant physician buying modern residence will surrender $3,000 practice in rich farming district; good roads; collections 95 per cent.; competition light; town of 700, with religious and educational advantages; electric light, waterworks, two railroads; near Omaha; introduction and immediate possession given; $1,000 down, balance to suit purchaser. Add. 7219 N, % AMA.

(Continued on next page)

## THE PUBLIC SERVICE

*(Continued from preceding page)*

### Medical Corps, U. S. Navy

Changes for the week ending Dec. 5, 1914:

Crawford, R. L., asst.-surg., from *Virginia* to *Nashville.*

Wood, C. C., asst.-surg., from *Nashville* to *Virginia.*

Garrison, P. E., passed asst.-surg., from Naval Medical School, Washington, D. C., to *Solace.*

Butler, C. St. J., surg., to Naval Medical School.

Healey, T. R., asst.-surg., M. R. C., commissioned Nov. 12, 1914.

Strite, C. E., passed asst.-surg., from Marine Detachment, Pensacola, Fla., to Navy Aeronautic Station, Pensacola, Fla.

Sheldon, E. L. L., passed asst.-surg., from *Solace* to Naval Medical School.

Charlton, C. F., asst.-surg., resignation accepted to take effect Jan. 16, 1915.

Bassin, J. N., asst.-surg., M.R.C., detached Receiving Ship at Norfolk, to home.

Pollard, J. B., passed asst.-surg., detached Advance Base Maneuvers, Atlantic Fleet, to temporary duty, Atlantic Reserve Fleet.

Harlan, T., passed asst.-surg., detached Marine Brigade; to *Neptune.*

Carpenter, D. N., surg., detached Advance Base Brigade, Atlantic Fleet; to temporary duty, Bureau of Medicine and Surgery.

Farenholt, A., surg., detached *St. Louis*; to *Oregon.*

Baker, M. C., passed asst.-surg., detached *Chattanooga;* to home and wait orders.

Kerr, W. M., passed asst.-surg., detached *Rainbow;* to *Chattanooga.*

Koltes, F. X., passed asst.-surg., detached Advance Base Maneuvers, Atlantic Fleet; to Atlantic Reserve Fleet.

Kelley, H. L., passed asst.-surg., detached Advance Base Maneuvers, Atlantic Fleet; to *Olympia.*

Chambers, W., passed asst.-surg., detached Marine Expeditionary Force, Atlantic Fleet; to Asiatic Station via Army Transport of Jan. 5, 1915.

Dorsey, B. H., passed asst.-surg., detached Connecticut; to Atlantic Reserve Fleet.

Cornett, H. V., asst.-surg., detached *Hancock;* to Asiatic Station via Army Transport, January, 1915.

Haworth, W. L., asst.-surg., detached Marine Expeditionary Force, Atlantic Fleet; to *Prometheus.*

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### Medical Department, U. S. Army

Changes for the week ended Dec. 12, 1914:

Bastion, Joseph E., capt. Med. Corps, on leave of absence for one month and fifteen days effective about Dec. 20, 1914.

Bevans, J. L., major, Med. Corps, reports arrival at Fort McKinley, Maine, for duty.

Fox, James S., capt. Med. Corps, granted 21 days' leave on surgeon's certificate of disability.

Collins, C. C., major, Med. Corps, is granted one month's extension of leave already granted.

Hartsock, Frederick M., major, Med. Corps, relieved from duty with the Second Division and will proceed to New York City and report for duty at the Medical Supply Depot.

Russell, Frederick F., major, Med. Corps, granted one month's leave of absence.

Whitcomb, Clement C., major Med. Corps, granted one month's leave of absence upon his relief from his present duties.

Burnett, Thomas W., first lieut., Med. Corps, relieved from further duty at Fort Rosecrans, Cal., upon the expiration of present leave, and will report to Madison Barracks, New York, for duty.

Bauer, Louis H., first lieut. Med. Corps, will proceed to Jackson Barracks, La., and report for duty with the Ninety-first Company, Coast Artillery Corps, to accompany that organization to San Francisco, Cal.

Van Dusen James W., major Med. Corps, upon arrival in the U. S. will proceed to Fort Niagara, New York and report at that post for duty.

Burket, John A., capt. Med. Corps, granted two months leave to take effect on his arrival in the United States.

*(Continued from preceding page)*

FOR SALE—EASTERN IOWA PRACTICE of $3,500 to $4,000 for price of office and equipment at invoice; if you want something good for a town and country practice, write at once for particulars. Add. 7467 N, % AMA.

FOR SALE—CENTRAL KANSAS TOWN of 350; practice and drug stock; practice runs $3,000 per year independent of store; good paying drug store; does not need registered pharmacist; can use auto 11 months in year; want to sell quick; prices and terms reasonable; no competition closer than 7 miles. Add. 7451 N, % AMA.

FOR SALE—KANSAS—$3,000 UNOPPOSED practice; town 300 on railroad; 99 per cent. collectable; competition 7, 8, 12 and 14 miles; rent low; good schools and churches; wealthy German-American settlement; fine auto roads; retain books and instruments; possession immediately; money at beginning; cash $400. Add. 7298 N, % AMA.

FOR SALE—KENTUCKY — $3,000 PRACTICE established ten years in railroad town of 5,000; two railroads; railroad pay-roll monthly $28,000; will introduce; practice free for price of real estate; auto and office equipment optional; reasons for selling on request; this appears but once; a snap. Add. 7479 N, % AMA.

FOR SALE—MICHIGAN—GOOD COUNTRY practice, fine home, barn and garage and three finest building lots in town; in first-class farming section; nice people; good collections; no competition; within 25 miles of Grand Rapids on county automobile road. Add. 7299 N, % AMA.

FOR SALE — SOUTHERN MICHIGAN— $3,000 practice; two buildings finely located on Main St.; office building has three large rooms; complete office fixtures; electric light and everything modern; excellent bargain; worth $3,000; price, $2,000, half cash; balance time; thorough introduction; satisfactory reason for selling. Add. 7371 N, % AMA.

FOR SALE—MINNESOTA — $4,500 PRACTICE; population nearly 9,000; good schools and churches; large territory; good roads; drug store building and other rentable properties at $8,000, together with half interest in drug store; seven-room residence in drug store building; rent received per month, $80; my half share in drug store at $2,300; registered druggist employed; if neither share in drug store nor properties be wanted, nothing to sell except to take over practice; one speaking Swedish or Norwegian preferred; must sell before March 1; intend to study abroad; no better proposition offered; only parties interested having cash and mean business need answer. Add. 7464 N, % AMA.

FOR SALE—MISSOURI — $2,500 PROPERTY and office equipment with $3,500 yearly practice in good growing town of 600 in one of the best sections of state; large territory; good fees; competition congenial; will introduce thoroughly and make reasonable terms as to payments and time of possession; good reasons for selling; no blue-sky proposition. Add. 7455 N, % AMA.

FOR SALE—MISSOURI—FINE PRACTICE Have been here 3½ years and have cleared over $10,000. Any good live M.D. can do the same or better. Easy competition. Good town, school, churches, etc., $1,000 buys in, with part down. Close to big city. Investigate. Add. 7477 % AMA.

FOR SALE — IN NORTH MISSISSIPPI delta, $2,500 to $3,000 practice for price of drugs, instruments, horse and buggy; collections 90 per cent.; position as railroad surgeon transferable; good roads; crop conditions good; single man only; reasons for selling, going to take some special work preparatory to forming partnership elsewhere. Add. 7447 N, % AMA.

FOR SALE—MISSOURI — FOR YOUNG man; well-equipped, well-located office; town of 11,000; accessible to hospitals of larger city; can probably transfer $1,000 per year, ethical appointment work; price, without surgical instruments or microscope, $490; family reasons for selling. Add. 7375 N, % AMA.

FOR SALE—NEBRASKA — $3,600 CASH city practice free to purchaser 12-room all modern office and residence, $4,800; sleeping porch, garage, shade, fruit trees, flowers; near several churches and schools; splendid for German, Bohemian, Polish or Irish Catholic. Add. 7460 N, % AMA.

FOR SALE — OMAHA — NEBRASKA — practice—Collections $3,600 year, the one city in the world above the hard times and generally good in hard times. Extra fine deal, introduction; 12 years established; modern residence and outfit for sale, part cash. Competition light at my point; English speaking doctor can hold business and if German or Bohemian or Polish is spoken—all the better; act quick on this fine deal. Address owner, Dr. Burkard, 1902 South 17th St., Omaha, Nebr. N

FOR SALE—SOUTHERN NEW JERSEY— Practice, 20 miles from Philadelphia; population 6,000; library and complete equipment; stable and garage; practice has averaged over $3,000 per year; write at once. Add. 7465 N, % AMA.

FOR SALE — NEW YORK — WANT AN A-1 physician to purchase beautiful home now occupied by physician with good practice, situated in a village on State road, 5 miles from City of Auburn, N. Y. House modern in every detail, with barns, garage, beautiful surroundings, 7 acres of land, in a thriving country district. Price very reasonable. Address F. M. Colwell, Auburn, N. Y. N

FOR SALE—NEW YORK — EYE, EAR, nose and throat practice; city of 100,000; growing rapidly; large manufacturing industries; best educational and social advantages; residence and office on one of the best corners; value $25,000; $5,000 cash; an unusual opportunity to secure an old established practice at the value of the real estate; wish to retire. Add. 7408 N, % AMA.

FOR SALE — WESTERN N. Y.—$400 — Practice in village of Cohocton, Steuben Co., N. Y.; horse-driving outfit; posession given immediately; no real estate, house-barn to rent; running water, electric lights, bath, furnace heat; good schools and churches; don't write, come and see me, must leave here before Jan. 1. Fine opening for young man. Address F. W. Manly, M.D., Cohocton, N. Y. N

FOR SALE — WESTERN NEW YORK— $4,500 practice; collections 95 per cent.; good live town 1,800; good farming community; no hills; many macadamized state roads; good schools, churches; large modern house, good barn; price, $5,500; $1,500 cash, balance to suit; will introduce; money from beginning; if you mean business, write for full information. Add. 7384 N, % AMA.

FOR SALE—OKLAHOMA—A $2,000 CASH practice, office equipment and appointments in town of 10,000, in coal, oil and gas region, for price of elegant residence worth $6,000; one block from square; easy terms; large glass factories; good opening for surgeon. Add. Box 291, Okmulgee, Okla. N

FOR SALE—OKLAHOMA—A $5,000 PRACTICE, $1,800 contract, per annum; reason for wanting to sell, want to retire shortly from practice; or would sell one-half interest for $1,000 to a good young physician; must come well recommended; those that haven't the cash need not reply. Add. 7409 N, % AMA.

FOR SALE—PHILADELPHIA—OPPORTUNITY to acquire a good general practice with corner property in good location, occupied for past 17 years by physician lately deceased; will sell or rent property or will rent offices and board tenant and family; with prompt action almost entire practice can be turned over; exceptional opportunity for some one who will act quickly; must be physician of ability. Add. or call on Sidney E. Smith, 543 Land Title Bldg., Philadelphia, Pa. N

FOR SALE — PHILADELPHIA — BY woman physician; established medical and gynecological practice; also drugs for dispensing; operating table; instruments; part of library; to purchaser of $5,200 property; twelve-room house, on double car line, in good residential section; $1,600 cash required. Good reason for selling. Add. 7480 N, % AMA.

FOR SALE—TEXAS—GROWING CITY OF 60,000 population, largest cotton shipping port in the world; medical and surgical practice among better class of people; good collections averaging between $4,500 and $5,000 per year. Unsurpassed office location, office handsomely and completely furnished; very reasonable rent; leaving city for good on account of ill health in my family, if you have $2,000 cash write, if not don't write. Add. 7481 N, % AMA.

*(Continued on next page)*

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# *National (the original) Glycerinized Vaccine*

# —perfect vaccination results.

Sold on Ivory Protected Points and in Capillary Glass Tubes. Ask your nearest druggist. Fifteen cents the point or tube; $1.50 the package of ten.

National Vaccine & Antitoxin Institute
"Oldest in America"
Washington, D. C.

N. B.—NATIONAL Diphtheria Antitoxin is prepared in these same carefully conducted laboratories. It is a clear, pure, highly concentrated serum. Furnished in ready-to-use syringes at prices which are not exorbitant: 1,000 units, $1.50; 3,000 units, $3.25; 5,000 units, $5.00; 10,000 units, $10.00. Other doses priced proportionately.

FOR SALE—TEXAS—$3,500 UNOPPOSED practice; 20 miles nearest competition; fine roads for auto; rich country; growing practice; fees good; fine schools and churches; town of 500; well-settled farming country around; price, $3,200; just cost of 6-room house, garage and 1½ acres of land; northwest Texas; terms on part. Add. 7232 N, % AMA.

FOR SALE—VIRGINIA — $3,000 CASH practice in small town on Southern Railway; 7-room house, stable and outhouses; no competition; growing practice; will introduce right man; part cash and balance on easy terms; price, $3,000. Add. 7373 N, % AMA.

FOR SALE — CENTRAL WISCONSIN— Having formed partnership in large city, offer $3,000 cash practice for immediate sale; railroad town 1,600; large tributary territory; prosperous dairy farms; good schools, churches and roads; location established over 10 years; unusually well-equipped office, seven rooms, electric light, low rent, large drug stock; one other doctor; no real estate; price, $1,000, includes Ford runabout in excellent condition; will introduce thoroughly; exceptional opportunity for progressive German-speaking physician. Add. 7440 N, % AMA.

FOR SALE — MILWAUKEE, WIS.—$6,000 cash practice; am going west on account of health in family; complete office, auto, residence; price of practice, office and auto, $1,500; including residence, $7,000; auto and residence optional; excellent opportunity; easy terms. Add. 7471 N, % AMA.

FOR SALE—WYOMING—$6,000 AVERAGE practice for 8 years; $7,500 modern house, 9 rooms; county seat town; railroad division; one other physician; must go to lower altitude account health of wife; 4,700 feet altitude. Add. 7407 N, % AMA.

## HOSPITALS, SANITARIA for SALE

FOR SALE—FINE LARGE 40-BED TUBERculous sanatorium in southern California; 15 miles from Los Angeles; 21 buildings and 10 acres good fruit land; well advertised; now open and doing business; $7,500 cash payment handles; balance like rent. Add. 7456 O, % AMA.

FOR SALE — WASHINGTON — WELL-equipped small hospital; only hospital in county; large territory; mining contracts for whole district; no surgical opposition; contracts and practice average better than $700 cash per month; property includes five-room modern bungalow, garage, hospital, wood-shed, ice-house, seven lots; $10,000; $4,000 cash; will make you money and pay for itself in two years; am going south. Add. 7462 O, % AMA.

FOR SALE — IN CENTRAL WEST VIRginia; at a bargain; a beautiful and well-equipped hospital and sanitarium; terms reasonable; reason for selling, owner's health bad; will sell all or one-half interest. Add. Room 5, Morgan Bldg., Charleston, W. Va. O

## DRUG STORES FOR SALE

FOR SALE—PHYSICIAN DESIRING TO enter practice in Chicago can obtain good opening through purchase of live drug store; will consider real estate in trade or part payment. For full particulars write or call on Barnett Bros., 29 S. La Salle St., Chicago, Ill. U

## FOR RENT

FOR RENT—CHICAGO—SUITE OF TWO fine offices and private reception room; near transfer corner; suitable for dentist and physician; particularly eye and ear specialist; all modern conveniences; concession to May 1. 3019 Indiana Ave., over Armour Postal Station, Chicago, Ill. Phone Douglas 464. Q

## LOCATIONS FOR SANITARIA

FOR SALE — SANATORIUM SITE—"THE Maples," North Broadway, Saratoga Springs, N. Y.; two three-story brick houses with basements; 52 rooms, furnished, steam heated; located in most exclusive residental district; three-minute walk from medicinal spring baths; high, rich and other mineral springs; Saratoga will command patients formerly sent to European baths; particulars and terms on application. Add. Dr. Lester Taylor, 422 Osborn Bldg., Cleveland, Ohio. P

See page 20 for cost of classified and commercial announcement advertisements.

EXCELLENT LOCATION FOR YOUNG practitioners to conduct a hospital (building formerly occupied by the Chicago Lying-in Hospital), at 515 S. Ashland Blvd., Chicago; in immediate locality of all large West Side hospitals. For particulars add. the University of Chicago, 5750 Ellis Ave., Chicago, Ill. P

## CARDIO VASCULAR DISEASES

COMPLETE FACILITIES FOR BAD-Nauheim treatment (salts from the original springs) at Augusta, Ga., from December to May; no sanatorium, but hotels and cottages in the immediate neighborhood. J. H. Honan, M.D., 936 Hickman Road, The Hill, Augusta, Ga.

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TRAINING SCHOOL FOR NURSES—OUR course of instruction covers three years and the student receives thorough training both in theory and practice. We are located in the great clinical medical center of the middle west, with unsurpassed facilities for obtaining practical knowledge. Catalogue and application blanks mailed free. For additional information refer to our ad. page 21 this issue. Address Mary C. Wheeler, Supt. Ill. Training School for Nurses, 509 Honore St., Chicago. BB

## EDUCATIONAL

CLINICAL COURSES IN CHICAGO—SPEcial general courses covering a period of four weeks are given at our institution. Price for complete course, $25. We are located in Chicago's great medical center. The new Cook County Hospital (over 2,000 beds) is located opposite our institution. For full information write Dr. Alex C. Wiener, Secretary, 1844 W. Harrison St., Chicago. CC

OPERATIVE SURGERY AND GYNECOLogy on the cadaver. Special courses begin the first Monday of each month at our institution. Lantern demonstrations and personal operative laboratory work. For details refer to our adv. on page 34, this issue. For rates, etc., write Dr. R. Max Goepp, Dean, Philadelphia Polyclinic, 18th and Lombard Sts., Philadelphia. CC

## COLLECTIONS, MED. BROKERS

DOCTOR, IF YOU WISH TO BUY INTO practice, write for our list. It is free. If you want to sell, want partner, write for terms. Physicians and nurses placed in salaried positions. Terms on request. We furnish interns, assistants, locum tenens, nurses, free to physicians and hospitals. Halbur Exchange, Halbur, Iowa. EE

SALARIED APPOINTMENTS OBTAINED —1,000 medical and surgical positions already secured for our clients; medical practices, drug stores and real estate bought and sold in all sections; business established 33 years. Write immediately for terms to "The Medical Echo," Lynn, Mass. EE

HOUSE OF KNIEST—ESTABLISHED 1904. Gilt-edge references. Special plans. Physicians and nurses furnished free of charge for institutions, doctors, corporations, etc. All kinds of practices, partnerships and salaried positions for doctors, veterinarians, dentists, nurses in 48 states. Practices handled for sale. Drug stores with and without practices in all states—same handled. All kinds of positions for drug men. F. V. Kniest, R. P., Bee Bldg., Omaha, Neb. EE

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*(Continued on next page)*

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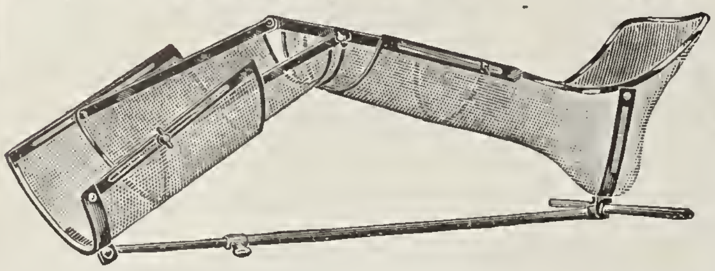

These may be easily done away with by using the **DEPUY COMBINATION LEG SPLINT** and at the same time give comfort and satisfaction to your patient. On account of its great adaptability it is largely used in private and hospital practice. In this one single splint you have the well known Bucks, Hodgens and McIntyre. We make two sizes, large size No. 65 and the small size No. 66. They are ten dollars each with express charges prepaid. It will give us pleasure to send our little booklet, also our price list of our full line of splints.

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The walls are of extra heavy fabric and the tread is specially compounded and cured to give extreme wearing quality.

Our direct selling method enables us to offer an extra service, strictly high grade tire fully covered by **the standard 3,500-mile guarantee at 15 to 25 per cent.** under the other guaranteed tires.

All **America Heavy Car Type Tires** are sold with privilege of return if not found upon examination to be entirely satisfactory, and the decision lies with you.

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| 30x3 | $11.45 | $2.40 | 31x4 | $21.55 | $3.80 | 36x4 | $25.45 | $4.45 |
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| 32x3½ | 16.65 | 3.20 | 33x4 | 23.15 | 4.05 | 37x4½ | 35.25 | 5.70 |
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*When ordering specify style, whether regular Clincher, Q. D. Clincher or straight side.*

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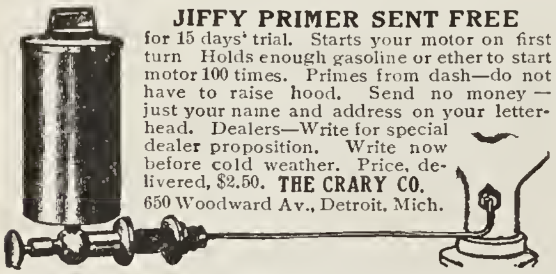

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PHYSICIANS' LABELS — SIZE 2 BY 3 inches; your name, address, blank lines for directions; non-curling gummed paper; 1,000 prepaid, $1; money order, drafts, stamps (no checks); doctors' stationery of all kinds; send for price-list. The Fuller Press, successors to McDonald & Co., 1863 Ogden Ave., Chicago GG

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WANTED — MEDICAL BOOK CANVASSers; qualified salesmen, physicians or former detail men; for northern section of Illinois, Wisconsin, Minnesota and the two Dakotas; must have experience; exclusive territory; highest commissions. Our books received "Gold Medal Award at XVII International Congress of Medicine, 1913." Add. Rebman Company, 141-145 W. 36th St., New York City. JJ

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An effective therapeutic agent for removing **Moles and Warts, Papillomata, Epitheliomata, Angiomata, Lupus Vulgaris. All pigmentary, hairy congenital deformities of skin and many other dermatoses.**

*Illustrated circular free on request.*

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All the features of the highest priced tires, combined in one tire—At the price of a plain tread tire or less,

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is refined by us from Pennsylvania Crude Oil. It contains **No Carbon, has High Fire Test, Low Cold Test and Great Viscosity.**
Sold by all dealers or will be shipped direct from our refinery, Bradford, Pa., in 5 or 10 gal. cans, barrels or half barrels. Your money back if not satisfactory in every respect.
Prices and samples upon request.

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MR. E. H. PERRY of Hudson, Wisconsin says:
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**MAXOTIRES ARE GUARANTEED FOR ONE YEAR**

Doctor: If your dealer has none, write us for prices. *Express prepaid.*

**The Maxo Dept., K. & W. RUBBER CO., Ashland, OHIO**

See page 20 for cost of classified and commercial announcement advertisements.

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WANTED — LIVE AGENTS IN EVERY state to sell Coleman's Electricity in Diseases of the Eye, Ear, Nose and Throat; only book on the subject; good commission. Add. Dr. W. Franklin Coleman, 15 E. Washington St., Chicago, Ill. JJ

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For local and general anesthesia
Economical — Safe — Convenient
No leakage! No breakage! No clogging!

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Postage charges paid. Safe delivery guaranteed.
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PAINT YOUR CAR YOURSELF — SAVE $25 to $75 by doing the work at home with the Arsenal system. Our big free booklet, "The Car Beautiful," tells how. Send for it to-day. Arsenal Varnish Co., Dept. M, Rock Island. Ill. II

AUTO GLOVES—YOU CAN WASH GRINnell Gloves in soap and water or gasoline and they will dry out soft and pliable as new. They are as soft as velvet, yet are unexcelled in wearing quality. The other exclusive features of our gloves are briefly described in our adv. on page 31, this issue. Morrison-Ricker Mfg. Co., 92 Broad St., Grinnell, Iowa. II

## SANITARIUMS, HOSPITALS

DRY AIR, SUNSHINE AND MILD TEMperature is the atmosphere we are now enjoying down here. When desired our patients can sleep in cottages with individual screened porches with or without bath. Our special study is the proper care and successful treatment of Pulmonary Tuberculosis. Booklet mailed postpaid on request. Dr. Oliver T. Hyde, Med. Dir., Saint Joseph Sanat., Albuquerque, N. M. PP

## MISCELLANEOUS COM. ADVTS.

TO CALIFORNIA VIA THE CHICAGO and North-Western Line. Four fast exposition trains daily between Chicago and California. Direct connection with trains from all points on our line. Write us for folders quoting routes, fares, etc. Our adv. on page 43 will interest you. Add. C. A. Cairns, G. P. & T. A., 226 West Jackson Blvd., Chicago, Ill. KK

DO YOU REALIZE THAT YOUR OCCUpation is a hazardous one? If a physician escapes accidental malignant infection so commonly acquired in professional work, the feverish activity of modern civilization may at any time permanently disable him or summarily take his life. Full protection for yourself and family by a reliable accident insurance policy is the indemnity purchased by all sensible men. Our organization is operated primarily in the interest of the medical profession—its directors are physicians, and by eliminating all vitiating office extravagances, all agents' commissions, etc., we can offer you reliable accident insurance at very low cost. Circular describing benefits for accidental injuries, average cost to members, etc., mailed free on request. Add. E. E. Elliott, Sec. Physicians' Casualty Assn. of Am., 304 City National Bank Bldg., Omaha, Neb. KK

THE PHYSICIAN OF DISCRETION INsists on knowing the character of products he is asked to prescribe. New and Nonofficial Remedies (published annually under the direction of the Council on Pharmacy and Chemistry of the American Medical Association) describes those preparations of recent introduction which have been examined and are of recognized standard. The members of the Council are pharmacists and clinicians of acknowledged authority and national reputation. The rules under which the Council operates are just and reasonable, yet fully restrictive so as to exclude any product not worthy of your support. Sixteen hundred and three different remedies are described in the 1914 edition—products representing significant advances in therapeutics. This book gives you truthful unbiased information respecting the indications for and methods of administration. Over 320 pp. Price: Cloth, 50 cents; paper cover, 25 cents, postpaid. American Medical Association, 535 N. Dearborn St., Chicago, Ill. GG

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## WINTER SEMESTER CLASSES NOW FORMING

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INDIVIDUAL and GRADED INSTRUCTIONS in all branches. Operative, Clinical, Bed-Side Work, Laboratory.

ADVANCED STUDENTS, limited numbers accommodated in Special Student Clinics. When applying for place in these Clinics, state education and previous experience.

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## THE GENUINE HAMMOCK CART vs. THE BUGGY

**ARGUMENT:**

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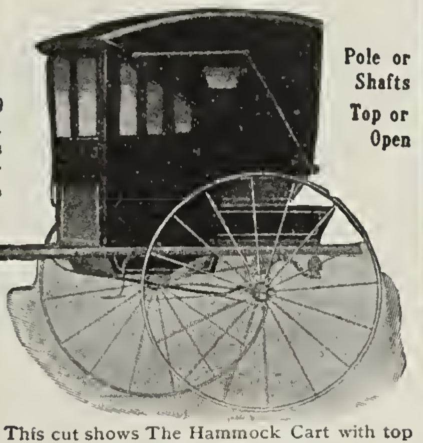

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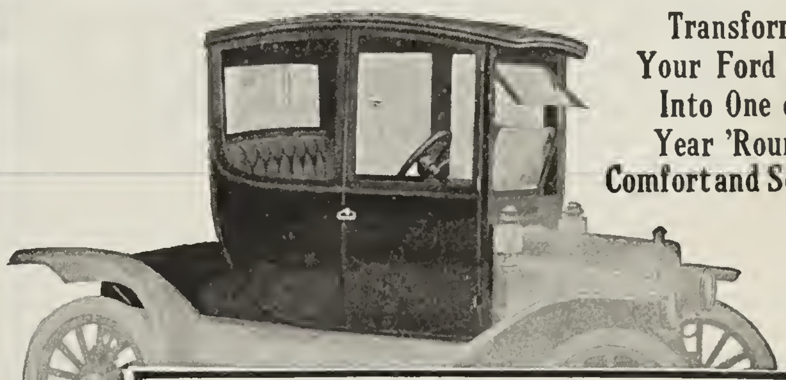

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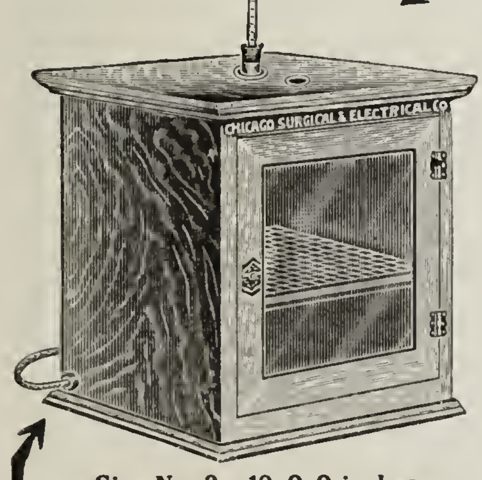

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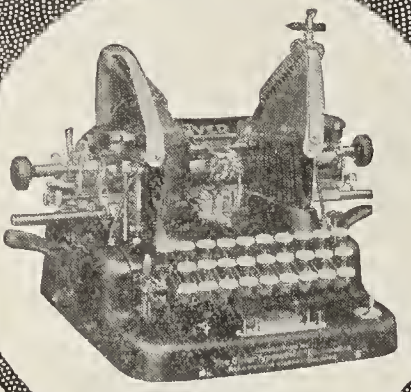

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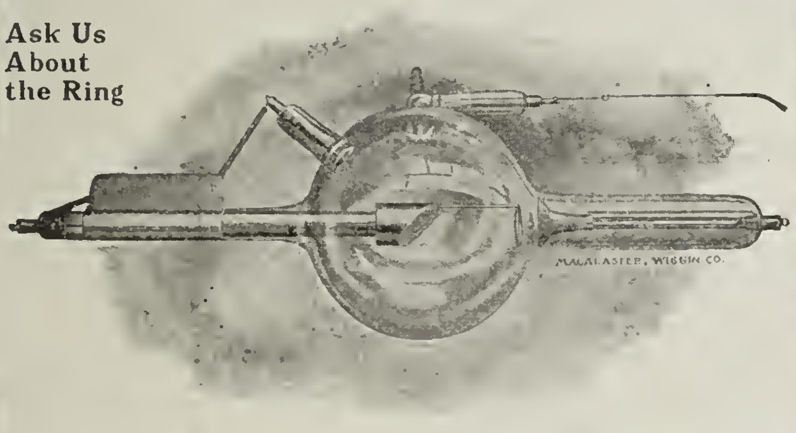

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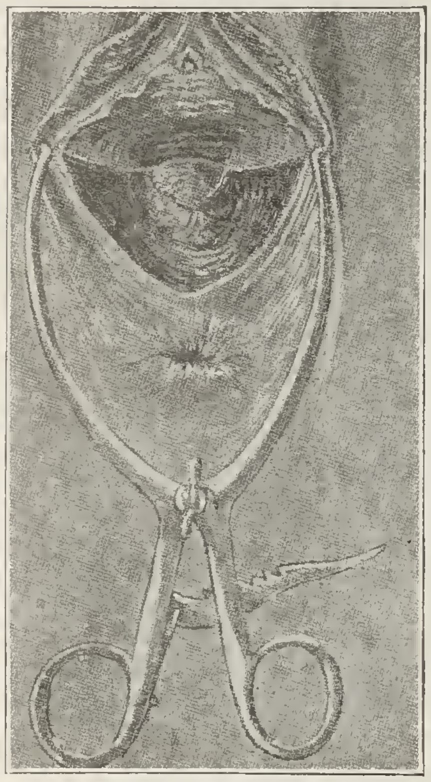

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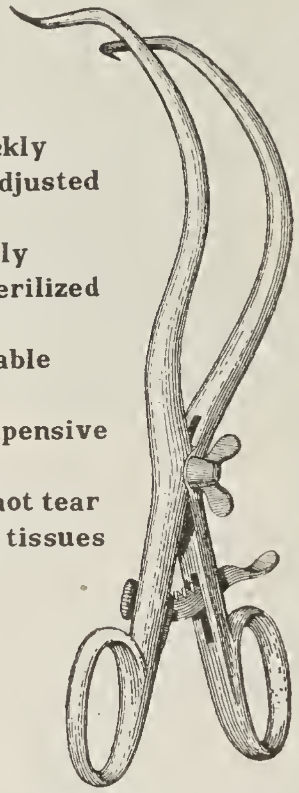

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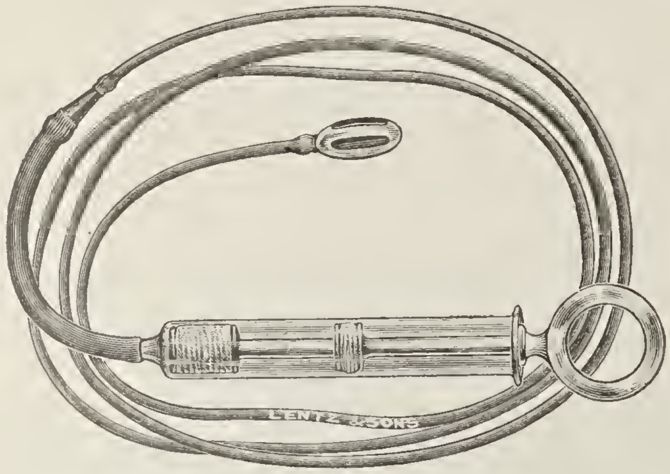

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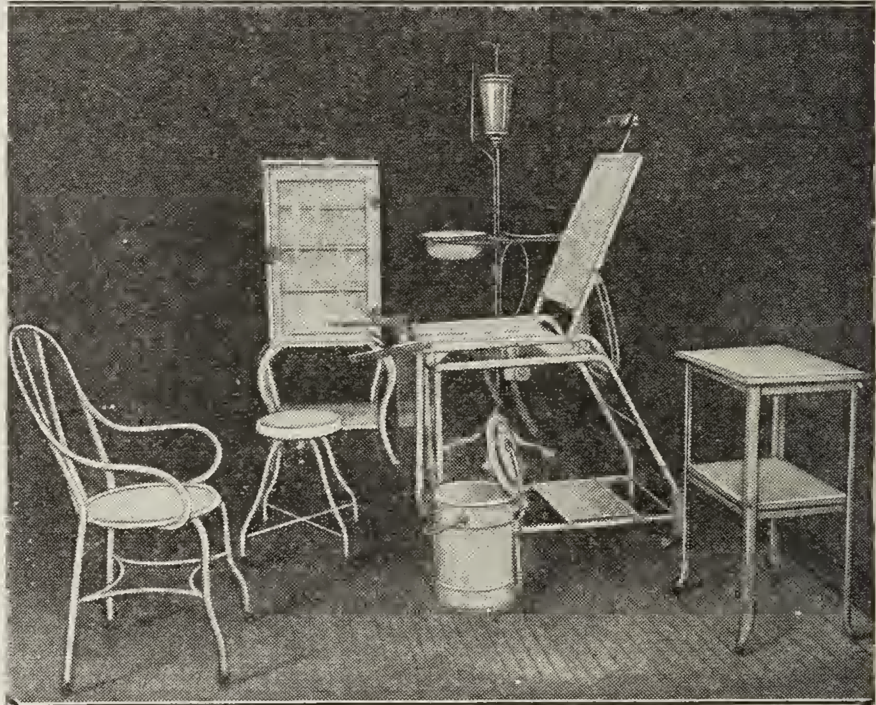

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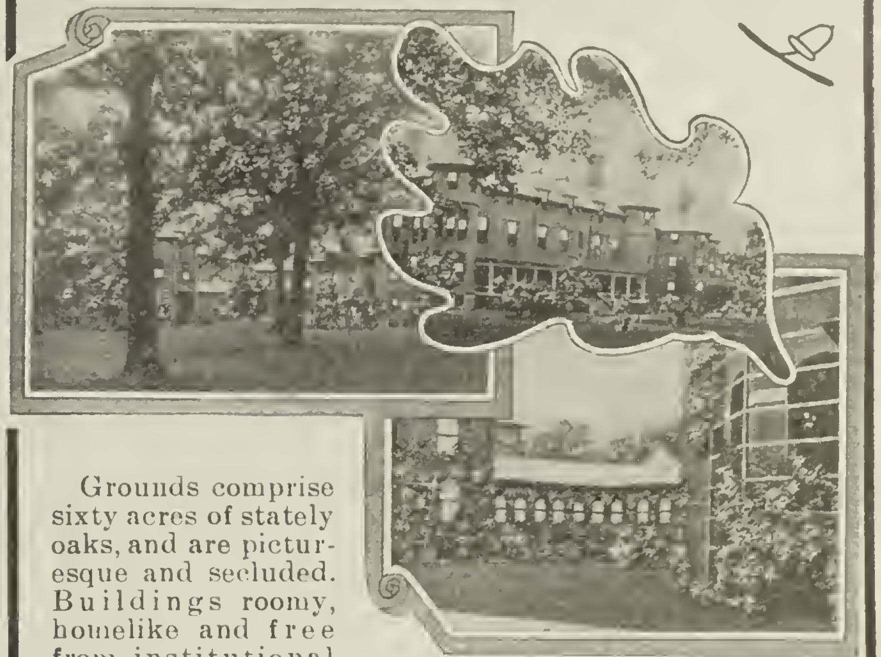

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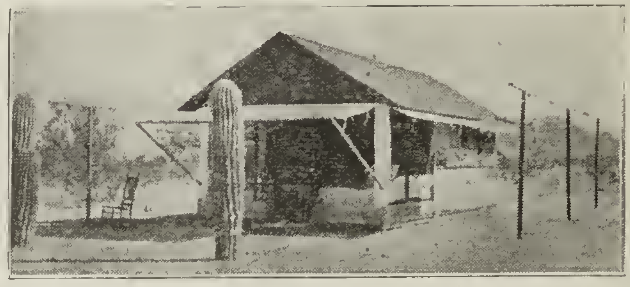

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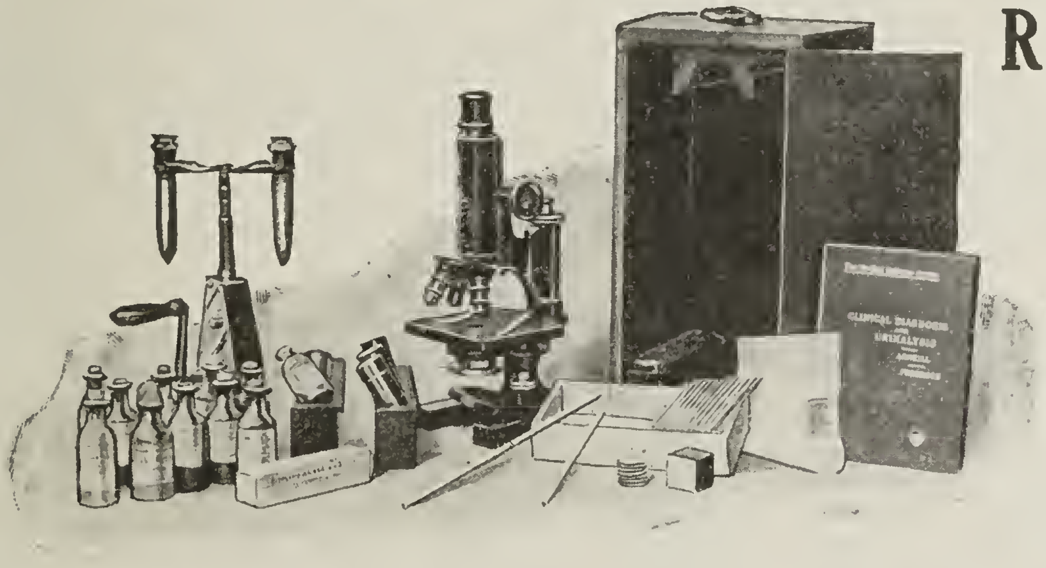

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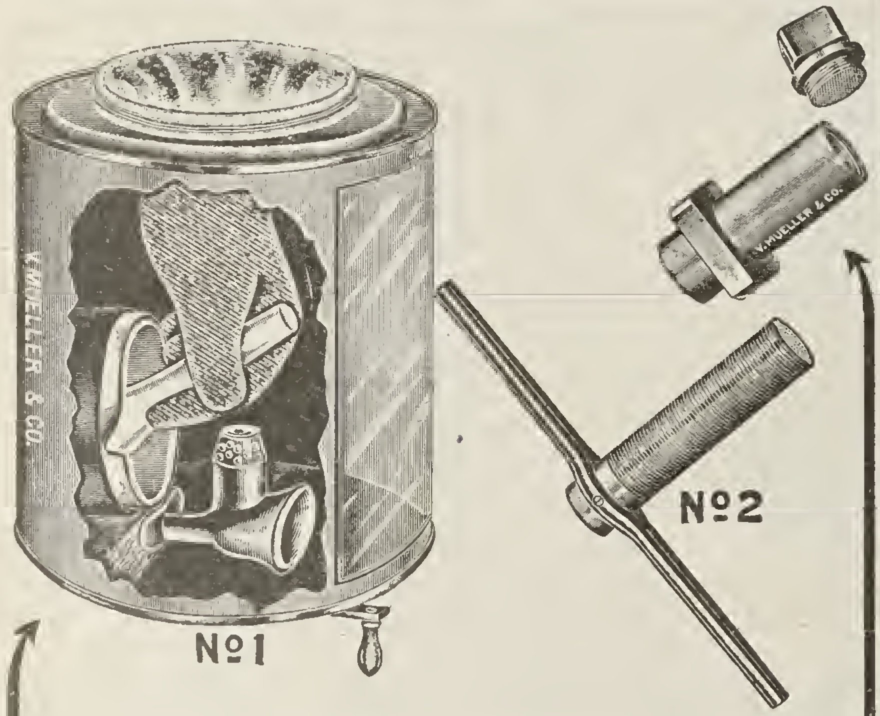
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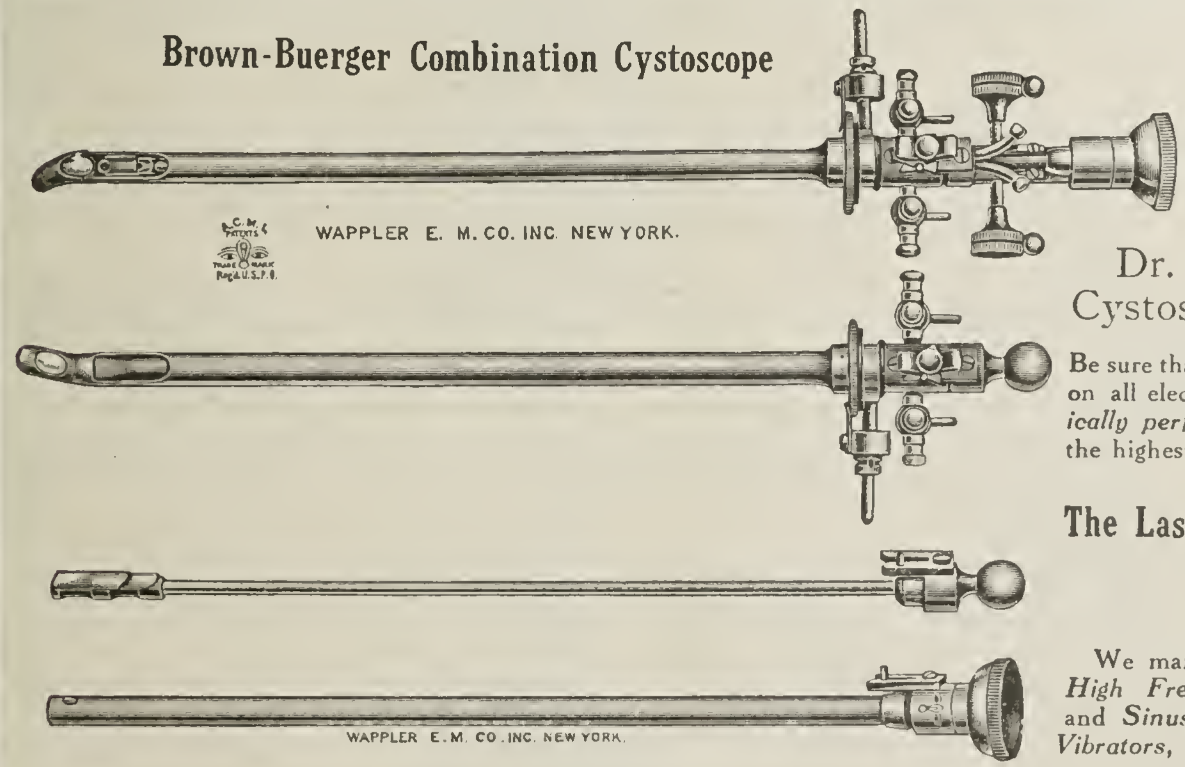
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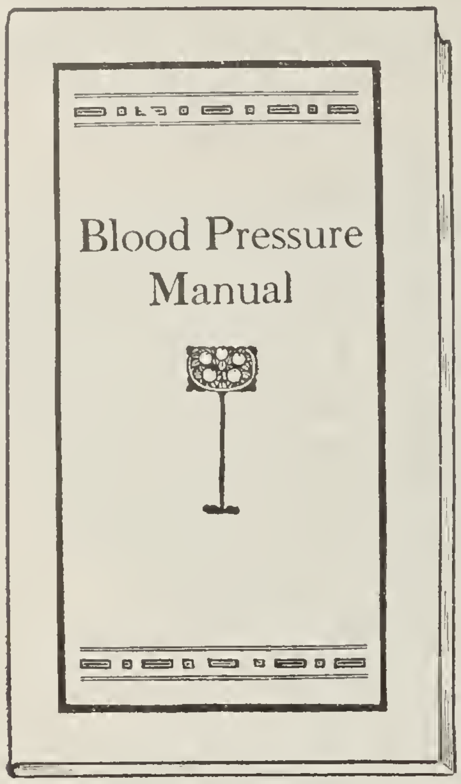

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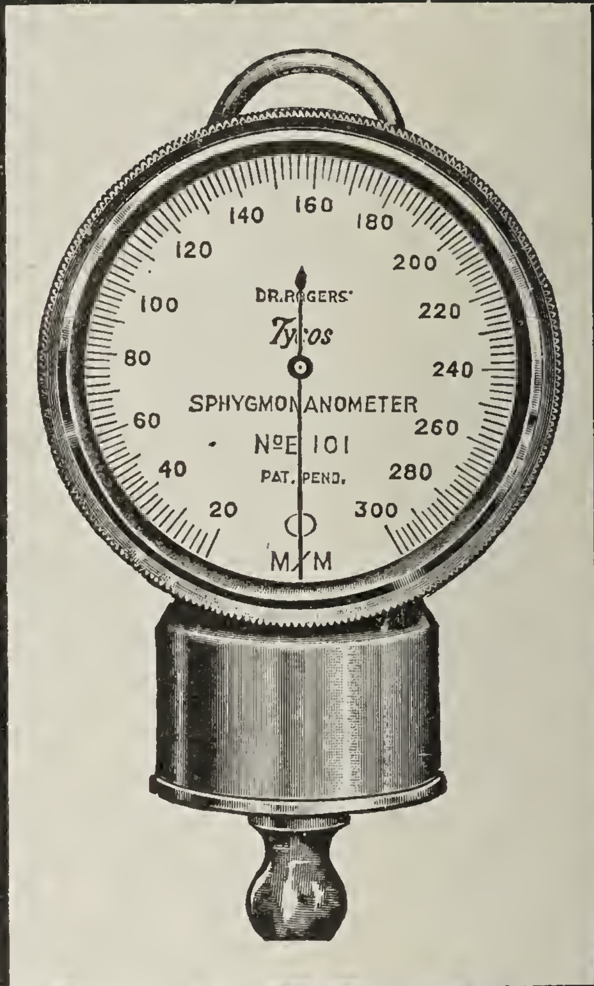

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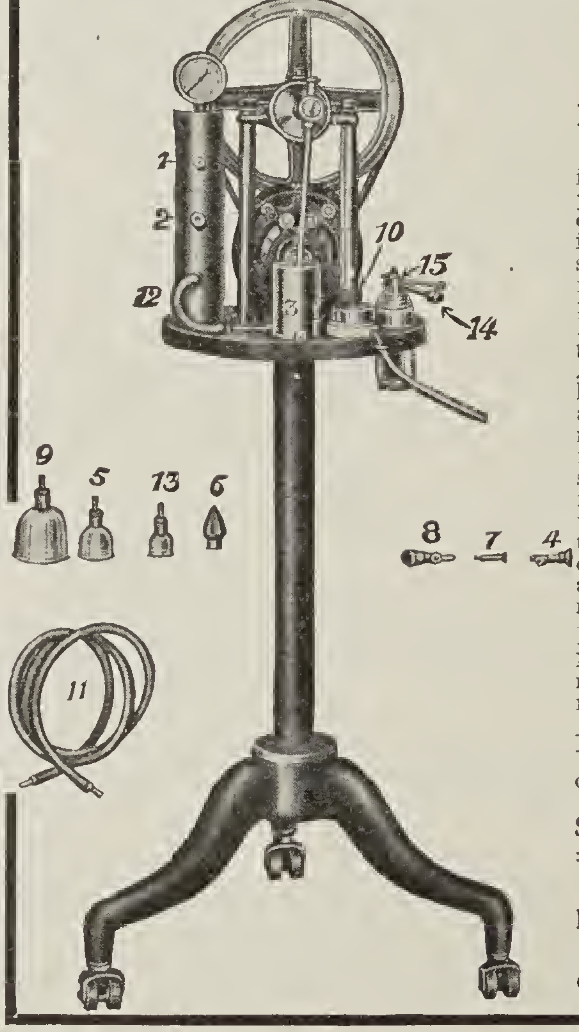

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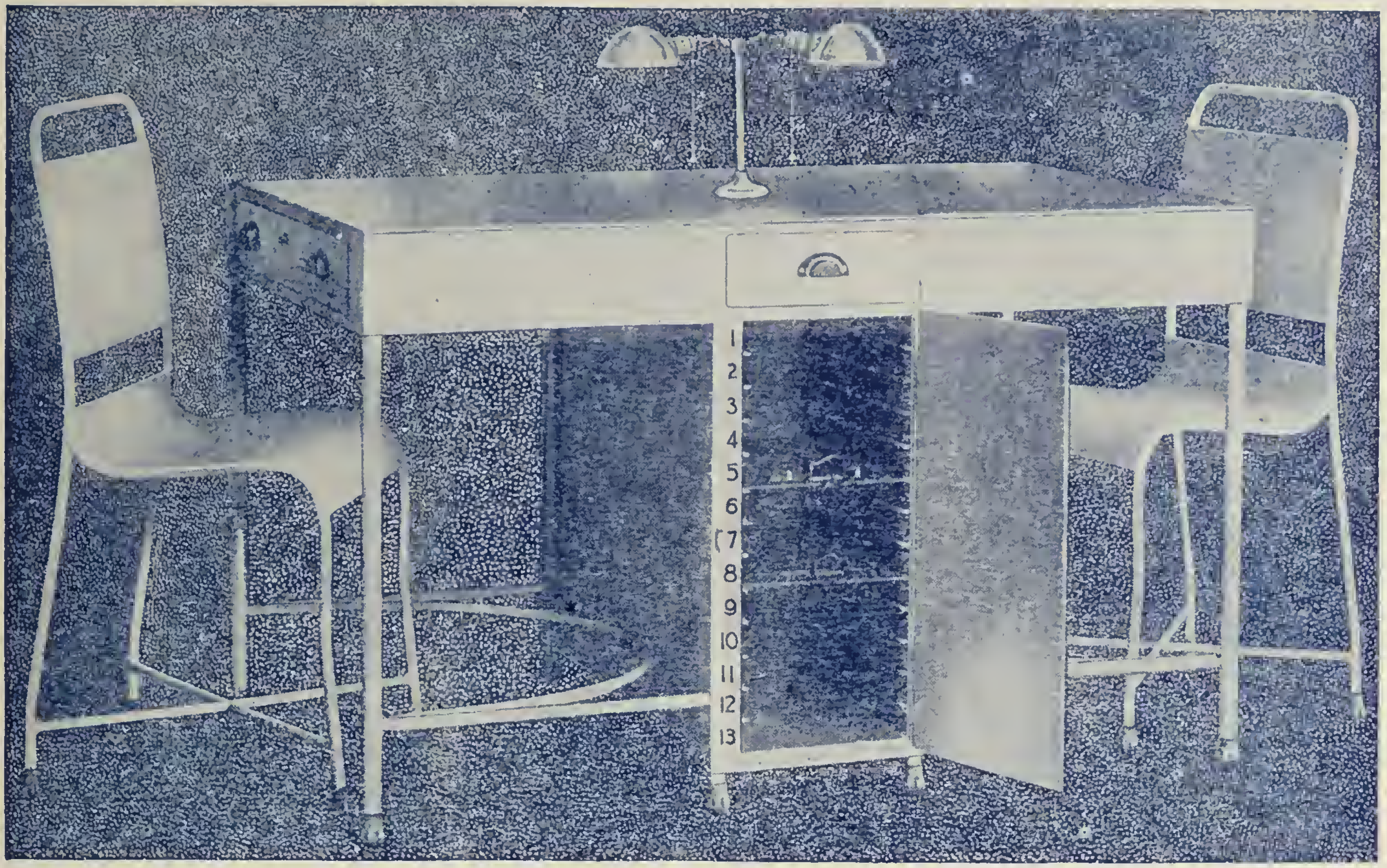

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